



Marie Skłodowska-Curie Actions Research and Innovation Staff Exchange (RISE)

RISE impact analysis

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The members of the RISE Task Force are listed as authors of the document. However, we would like to acknowledge the contributions of other colleagues (in particular A3 RCN & REA COMM teams) who assisted with certain aspects of the study, as this is truly a team effort. Additionally, we would like to extend our gratitude for the support of Mr. Rodrigo Gutierrez Dominguez, Head of the Sector. The members of the RISE Task Force are as listed here in alphabetical order:

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2. List of Abbreviations

Abbreviations	Definition and links
AC	Associated Country
COFUND	Co-funding of funding of regional, national and international programmes
CORDA	Common Research Data Warehouse
CORDIS	Community Research and Development Information Service
DG EAC	Directorate General for Education, Youth, Sport and Culture
ERA	European Research Area
EU Survey	European Commission survey tool
F2P	Feedback to Policy
H2020	Horizon 2020 R&I Framework Programme
HE	Horizon Europe R&I Framework Programme
HES	Higher or secondary education institutions
IF	Individual Fellowships
IR	Innovation Radar
IRSES	International Research Staff Exchange Scheme
ITN	Innovative Training Networks
MI	Measurable Indicator
MSCA	Marie Skłodowska-Curie Actions
MS	Member States
Panels in RISE	Chemistry (CHE); Social Sciences and Humanities (SOC); Economic Sciences (ECO); Information Science and Engineering (ENG); Environment and Geosciences (ENV); Life Sciences (LIF), Mathematics (MAT), Physics (PHY)
PMON	Project Monitoring
PRC	Business organisations that are “private for profit”

PUB	Public body excluding research and education
RAV	RISE Added Value
REC	Research Organisations
RD	Researcher Declaration
R&I	Research and Innovation
RISE	Research and Innovation Staff Exchange
SE	Staff Exchanges
SMEs	Small and medium enterprises
STEM	Science, Technology, Engineering and Mathematics
SWOT	Strengths, Weaknesses, Opportunities and Threats
TC	Third Countries

3. Overview of key messages & conclusions

The quantitative and qualitative data analysed in the frame of this report show that RISE is delivering on its objectives and emerges as a key contributor to a number of key aspects of the MSCA and H2020 research and innovation landscape. The key messages for the research community, policy makers and the public at large are the following:

1. RISE yielded a significant share of identified innovations and patents in MSCA.
2. RISE has been an important and dynamic contributor to H2020 global R&I collaborations.
3. Participation and commitment of RISE business partners significantly increased during H2020.
4. RISE projects highly contributed to the multidisciplinary dimension of MSCA and fostered long lasting research collaborations.
5. RISE has been a positive contributor to careers and employment of fellows and has promoted gender balance in research consortia.
6. Training activities of RISE projects offer to fellows new core skills along with varying networking opportunities

The overall findings supported by data-based evidence prove that the RISE action is unique contributor, even a leader in certain domains, to the MSCA family. RISE fosters tangible innovations (patents, products, services, ideas) of economic and societal value. RISE also makes a difference to careers of the research staff and triggers sustained networking and collaborations of organisations around the globe.

4. Introduction of the Project Scope

The Research and Innovation Staff Exchange (RISE) action is part of the Marie Skłodowska-Curie Actions (MSCA) under Horizon 2020 framework programme (H2020), 2014-2020, the EU's framework programme for research and innovation. The MSCA contribute to both excellent science and boosting of scientific careers. RISE supported about 35 000 out of the 65 000 researchers funded by the MSCA under H2020, contributing to the development of the European Research Area [1]. The transition from H2020 to Horizon Europe framework programme is a convenient time to look back and reflect on the unique contribution of the action with our available data.

The report is based on the project results from 2014 throughout the whole H2020.

Furthermore, the analysis aims at verifying whether the current methodology and benchmarks are sufficient to understand the specific impact of RISE funding on research performance and careers. The report is a compilation of both qualitative information - along with findings derived from data gathering - and quantitative analysis from several robust data sources (see Section 2, Step 3 below).

The report is presented in the form of a scientific style document (e.g. methods, results, discussion, conclusions) and has a presentation of the data analysis and considerations for future work.

The report conclusions can be used for promotion of RISE’s successor action under Horizon Europe, namely MSCA Staff Exchanges. The consolidated results of the report are also intended for possible follow-up actions involving stakeholders such as: interested policy DGs, MSCA Alumni Association, Programme Committee, National Contact Points, R&I community (e.g., scientific societies, universities, industrial partner communities) through outreach and promotion events.

5. Methods

In the frame of the analysis, the data collection and reporting (RISE projects 2014-2020) has been performed in a structured and iterative manner in close collaboration with DG EAC, REA Project Officers and RISE beneficiaries. The RISE Task Force has put effort to achieve a maximal use of existing information in EU databases, already published EU reports, previously run surveys and project reporting information. In addition, the RISE Survey 2021 with project coordinators [4] was designed and launched during the project implementation in view of collecting qualitative data and information from RISE project coordinators.

Step 1: Definition of key impact indicators

To frame the data gathering and analysis approach, the key areas where RISE can add value were first identified. These areas were aligned with the objectives of the H2020 MSCA Work Programme [2], continued under Horizon Europe [3] (Table 1). From these core areas, the RISE Task Force developed a list of agreed indicators for this study which are entitled RISE Added Value Areas (RAVs). For each RAV a list of Measurable Indicators (MIs) was identified (Annex 1). This allowed the RISE Task Force to work in sub-teams and analyse in detail the available information and potential gaps (Step 2), then to perform the data mining and analysis (Step 3).

MSCA Key Impact Levels	Areas to explore added value of RISE
Research and Innovation system* (R&I)	Innovation potential of RISE (Innovation Radar) Intersectoral participation (SMEs & large industry) International participation (third country partners) Multidisciplinarity of RISE projects
Participating organisations	Boosting research and innovation capacity Lasting research collaborations Promoting gender balance Enhancement of SMEs
R&I staff & professional development	Career boosting/promotion for male and female fellows New job opportunities Enhanced skills, training and networking

Table 1: List of MSCA Key Impacts and areas to explore where RISE adds value. This is considered at the levels of the R&I system, as part of the European Research Area (ERA), at level of the organisations participating and the level of the individuals involved.

Step 2: Confirmation of available information sources and/or filling gaps of data collection

Once the RAVs and MIs were defined, it became apparent that there was not always sufficient quantitative data for some elements. This was particularly evident when considering people and careers (RAV7 and 8), as well as for evidence of lasting collaborations (RAV5). Therefore, to fill some of these data gaps within the timeframe of this study, the RISE Survey 2021 was designed and launched, that allowed the collection from responding coordinators of key information including examples of best career stories, best publications, evidence of sustainability, confirmation of contribution to career development and skills acquired [4]. Moreover, the RISE Survey was used to explore some of the benefits and challenges of working across sectors and with organisations across the globe. Good examples of RISE projects¹ (delivered via the RISE Survey 2021) are highlighted at the end of each result section per RAV.

Step 3: Data gathering through use of EU tools, databases and other sources

The following approach was used to collect and analyse the data:

- using CORDA and Horizon Dashboard databases by filtering through the pre-selected measurable indicators (MIs);
- extracting information from the feedback of RISE Survey 2021[4];
- screening different reports, surveys, and other official sources (e.g., DG EAC reports/statistics, MSCA researchers' questionnaires, Eurostat, science R&I performance of the EU 2020 report, etc.) for any relevant qualitative information or raw data for further analysis [6,9-10].

Step 4: Consultation of the results and final reporting

The RISE Task Force used multiple rounds of consultation to confirm the selected data and key messages to share. This was performed in regular online task force meetings involving REA.A3 management for key decision points and milestones reached. Feedback from the unit staff and DG EAC was gathered in a dedicated workshop which occurred on 25 October 2021. This information was used to prepare the discussion section of this report and conclusions.

6. Results

The analysis of the key areas where RISE has impact on careers, organisations and on the European research system is presented here as RAV indicators across eight areas. For each area we summarise the key findings and provide an example of a representative RISE project (with the project number and CORDIS link in the footnotes). In addition, the main considerations for analysis and future work are highlighted.

¹ Although the Survey was addressed to RISE coordinators, the provided feedback was used to identify the so-called "RISE good project examples", thereby success stories in various implementation aspects that are listed at the end of each RAV section.

The results are presented in an order that first considers the “Excellent Science” pillar of H2020 in terms of the innovations yielded **(RAV1)**.

This is followed by a detailed analysis of the contributing factors to MSCA innovations being international **(RAV2)**, intersectoral **(RAV3)**, multidisciplinary **(RAV4)** as well as the fostering of long-lasting research collaborations **(RAV5)**. The remainder of the analysis concentrates on the “Impact” pillar of H2020, in particular “Excellent Careers” and the contributions of RISE to leveraging the potential of the future generation of top-notch researchers. This includes how RISE works to reach H2020 crosscutting goals on gender balance **(RAV6)** and contributes to personal/professional development and boosting employability of the seconded fellows² **(RAV7/8)**.

The report proposes concrete areas that will strengthen the contribution of RISE/Staff Exchanges³ to scientific excellence, administrative excellence and MSCA Careers excellence.

6.1. Innovation potential (RAV1)

The innovation aspect was analysed based on the objective of the RISE programme, namely, to foster a shared culture of research and innovation that welcomes and rewards creativity and entrepreneurship and helps to turn creative ideas into innovative products, services, or processes⁴.

Summary of findings: In the frame of this analysis, the RISE Task Force has also gathered, and analysed data retrieved from the Innovation Radar (IR)⁵ initiative [7] available in the Horizon Dashboard and CORDA databases. Built on contributions of independent business and innovation experts, the IR methodology⁶ gathers during the project life a set of signals relating to the type and level of innovations⁷ developed in a project, their market maturity, and the readiness of relevant innovators to exploit their innovations in the market.

RISE has actively participated in the IR exercises (implemented between 2017-2019) with a total number of 81 screened projects, which accounts for 32% of the IR screened projects for the whole MSCA family (by October 2022). For this analysis, we looked into IR data involving RISE projects that reached a certain maturity level (calls 2014-2017), while considering that RISE projects from subsequent calls will produce results later on.

² For the purpose of the impact analysis we use the term “fellow” given that it is a common term in the MSCA to refer to the participating researchers. In particular for RISE, the term “fellow” concerns any type of eligible staff (‘early stage and experienced researcher’/administrative, managerial or technical staff supporting research and innovation activities under the action).

³ The MSCA-Staff Exchanges (SE) action (successor of RISE in Horizon Europe) funds short-term international and inter-sectoral exchanges of staff members involved in research and innovation activities of participating organisations. More information about the SE action is available [here](#).

⁴ Work Programme 2018-2020. 3. Marie Skłodowska-Curie actions ([h2020-wp1820-msca_en.pdf \(europa.eu\)](#))

⁵ IR is an initiative supported by the European Commission focussing on the identification of high potential innovations and the key innovators behind them in H2020 projects and their specific “go to market” needs.

⁶ Detailed info about the IR process (and its new implementation mode via [PMON](#)) is available in the Dissemination and Exploitation [IR wiki space](#) of the European Commission.

The [IR questionnaire](#) is also available there.

⁷ According to [Wikipedia](#), innovation is the practical implementation of [ideas](#) that result in the introduction of new [goods](#) or [services](#) or improvement in offering goods or services. [ISO TC 279](#) defines innovation as “a new or changed entity realizing or redistributing value”.

Type of elements measured	Total Numbers
Number of reviewed projects	81
Number of identified innovations	195
Number of distinct innovators*	403

Table 2: Number of projects, innovations and innovators reviewed by Innovation Radar exercises (Source: 2021 CORDA database/IR screening data/Data collection period 2017-2019)*. More detailed information about the types of innovators in RISE will follow under the next RAVs.

In Table 3 we can observe a number of 195 innovations yielded by 81 IR screened RISE projects, thereby a significant share of ~35% of the innovations identified for all MSCA projects that participated in IR exercises over the same period (568 innovations in total). The table is also listing the number of innovations and screened proposals for the other MSCA actions. The ratio of number of innovations over the number of IR-screened projects was also estimated to derive a reliable “index” for innovation yielding using normalised data. This indicator reflects the average innovation yield per proposal for both RISE and other MSCA actions. According to the results, RISE scores higher than the average for total MSCA (2.40 vs 2.25). The analysis therefore shows that RISE projects have demonstrated a high innovation capacity and significantly contributed to the innovations identified so far through IR initiative for the whole MSCA family.

	Total Number of innovations (A)	Number of IR screened proposals (B)	Innovation Yield Index (A)/(B)
RISE	195	81	2.40
IF	70	59	1.19
ITN	270	101	2.67
COFUND	33	12	2.75
MSCA (Total)	568	253	2.25

Table 3: Yielding of RISE/MSCA innovations identified through IR process (Source: 2021 CORDA database/IR screening data).

Furthermore, the relevant CORDA data were analysed for a few qualitative aspects of RISE innovations. In terms of the “innovation type”, RISE innovations are predominantly new and especially product-oriented innovations (60%) (Figure 1).

In addition, RISE can trigger a significant societal impact leading to innovation that have a practical added value for EU citizens, thereby meeting certain needs of their daily life as proven by further IR data analysis.

More specifically, RISE innovations have “high” and “very high” innovation level (Figure-2), meaning that through the utility of the final product they could lead to new customers with a high satisfaction level⁸. The analysis revealed that around 50% of innovations could be easily appreciated by customers/citizens.

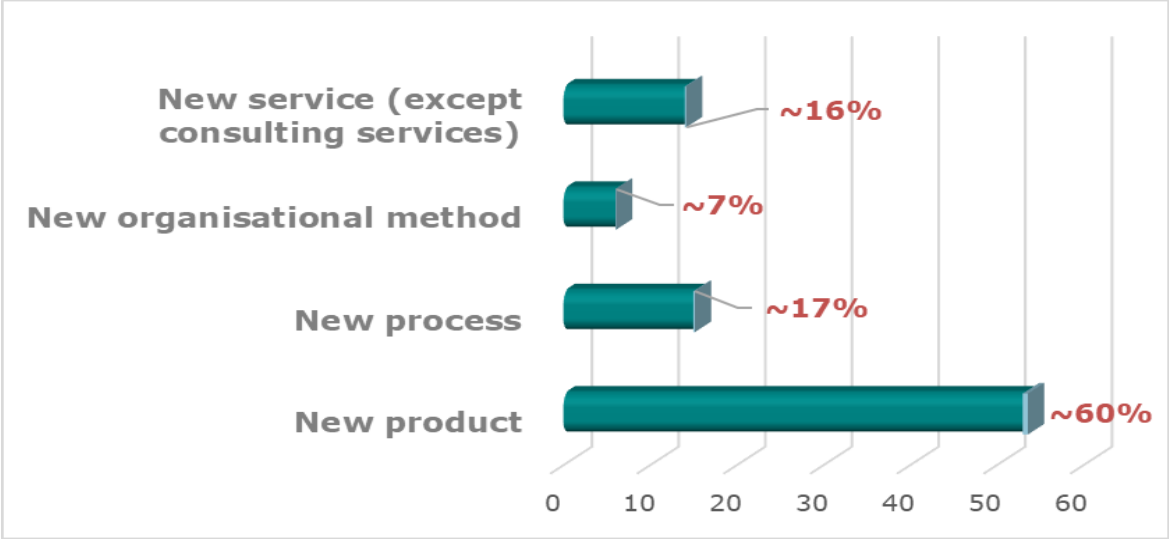


Figure 1: Overview of the Innovation Radar (IR) data collected for the type of RISE innovations (Source: 2021 CORDA database/IR screening data).

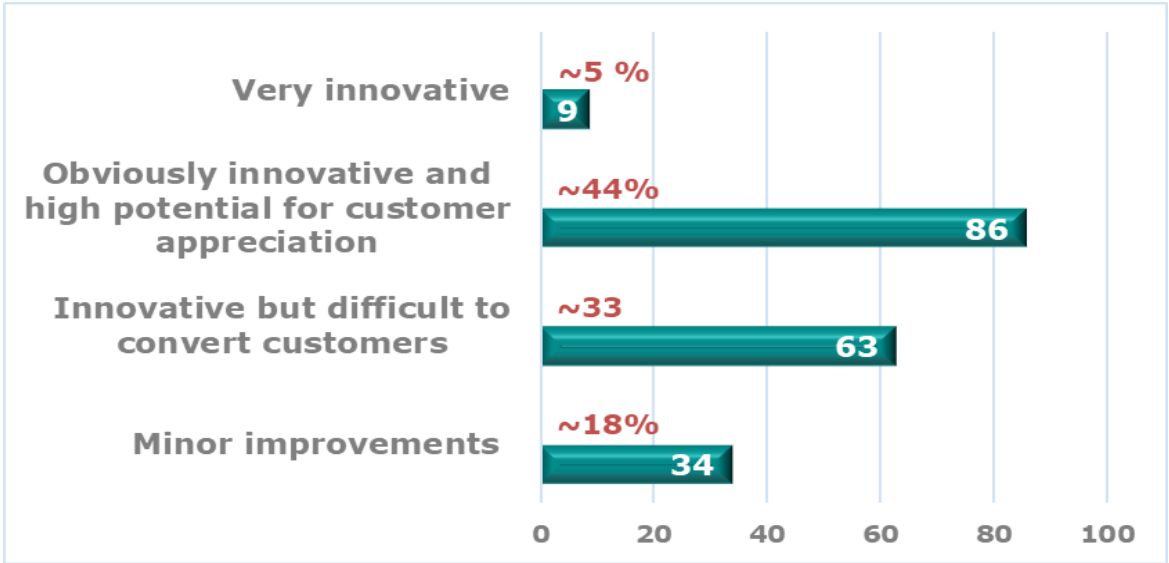


Figure 2: Overview of the Innovation Radar (IR) data collected for the level of RISE innovations (Source: 2021 CORDA database/IR screening data).

Moreover, in terms of “market maturity”, results show that a significant share of (>60%) of RISE innovations are addressed to an emerging market where there is a growing demand and few offerings are available; thus there are chances that the respective innovation creates such a new market. This is considered as a “strength” of RISE innovations given that emerging markets [8] often indicate a transitioning from a low income, less developed, pre-

⁸ Innovation level provides an indication of whether the implementation of the innovation can lead to new customers along with the level of their satisfaction through its utility.

industrial economy towards a modern, industrial economy with a higher standard of living (Figure 3).

Therefore, further to the above indicated social impact, RISE innovations can lead to new markets and boost economies, in low-income countries and thereby exert a financial impact (e.g. new job creation/start up business in this sector etc.).

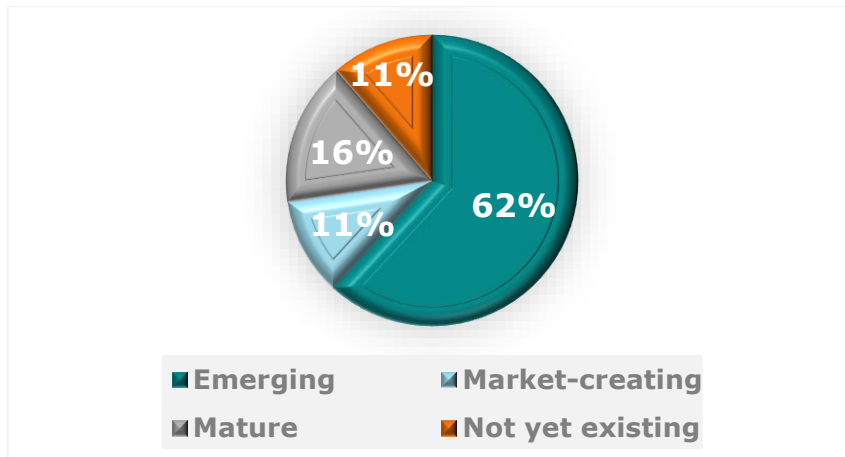


Figure 3: Overview of the Innovation Radar (IR) data collected for the market maturity of RISE innovations (Source: 2021 CORDA database/IR screening data).

This analysis has also considered the “innovation maturity⁹” towards commercialisation (Figure 4). This IR indicator has four categories: Exploring, Tech Ready, Market Ready, Business Ready¹⁰. RISE innovations are in their vast majority in the Exploring stage of maturity (74%). At its opposite end 11,30% of RISE IR screened innovations are Business Ready (Figure 4). This means that RISE innovations still need further time to be fully ready for commercialisation.

Furthermore, a breakdown analysis of RISE innovation data across the eight RISE scientific panels (CHE, ECO, SOC, ENG, ENV, LIF, MAT, PHY) was performed. The analysis revealed that the ENG panel performs best in terms of the total number of innovations. Yet most panels have a significant percentage (above 50%) of innovations related to products (new or significantly improved products). LIF and ENG panels have the highest percentage in terms of innovations highly appreciated by the customers. In most panels, most innovations (above 50%) are addressed at emerging markets (in terms of market maturity).

⁹ Market maturity in the frame of IR methodology defines the general status of the market at which the innovation could be addressed upon its implementation and concerns four types: emerging, market creating, mature and non-existing markets.

¹⁰ For the definitions of each category of the innovation maturity IR indicator, see IR methodology webpage [Innovation Radar > Methodology \(innoradar.eu\)](https://www.innoradar.eu)

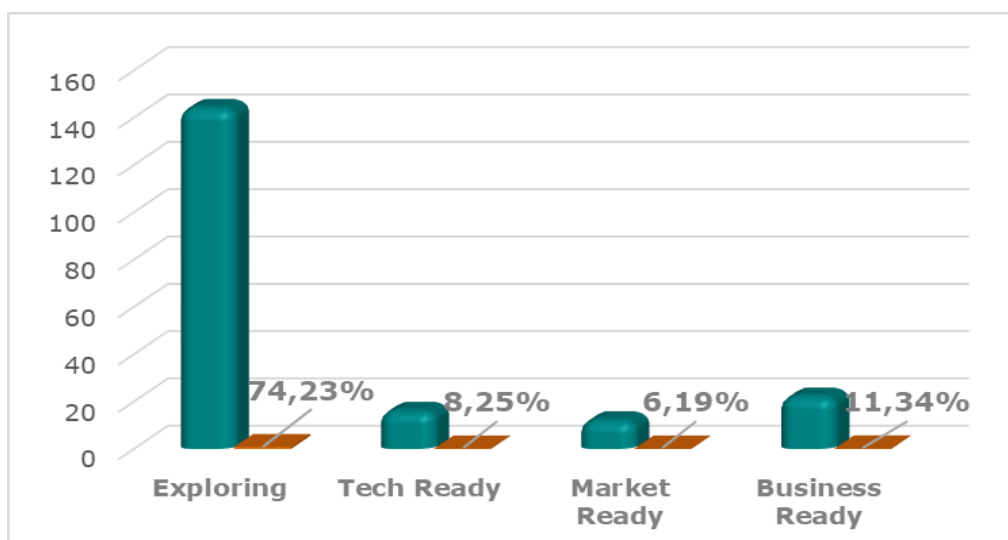


Figure 4: Innovation maturity levels of RISE innovations (Source: 2021 CORDA database/IR screening data).

Panel	Total Number of innovations	% of innovations refer to products (new/improved)	% of innovations with customer appreciation	% of innovations addressed at emerging markets
CHE	15	53%	27%	53%
ECO	10	0%	30%	50%
SOC	16	6%	43%	38%
ENG	79	58%	53%	65%
ENV	32	47%	31%	62%
LIF	25	64%	60%	80%
MAT	4	25%	0%	50%
PHY	13	69%	38%	62%

Table 4: Breakdown of RISE innovations per RISE panel (Source: 2021 CORDA database/IR screening data).

“Highlights” from RISE innovations identified through the IR process are listed in Annex 2. It is only an indicative (non-exhaustive) list of promising RISE innovations with reference to the RISE panel, the type and level of innovation, as well as the market maturity.

Further to Innovation Radar, European Commission has developed Horizon Results Booster (HRB)¹¹, another -free of charge- service that aims to maximize the impact of EU funded

¹¹ More information about the Horizon Results Booster (HRB): <https://www.horizonresultsbooster.eu/>

research projects. HRB helps beneficiaries to set up and better implement their dissemination and exploitation actions along with development of business development plans and methodology for product commercialization. The HRB services are implemented by external consultants under confidentiality agreement from July 2020 to June 2024. RISE Action has been a significant contributor to the implementation of HRB. By February 2023, RISE projects account for ~25% of total number of MSCA project applications for various HRB services (figure provided by RTD unit responsible for HRB). This is another “qualitative” indicator revealing the willingness of RISE projects to further invest on their innovation potential and convert research findings to market ideas.

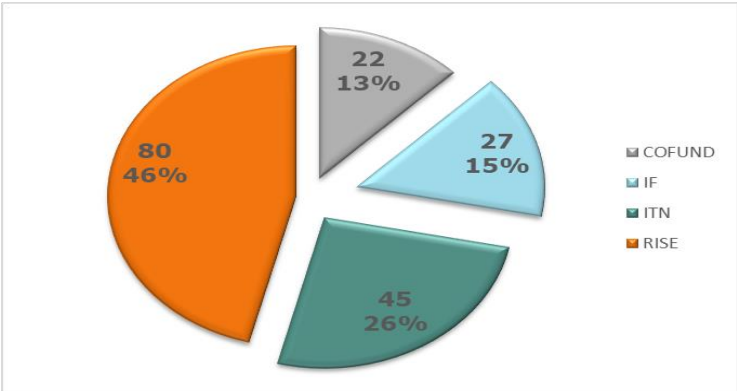


Figure 5: Summary of the data collected for patent applications (Source: 2021 CORDA database/IR screening data).

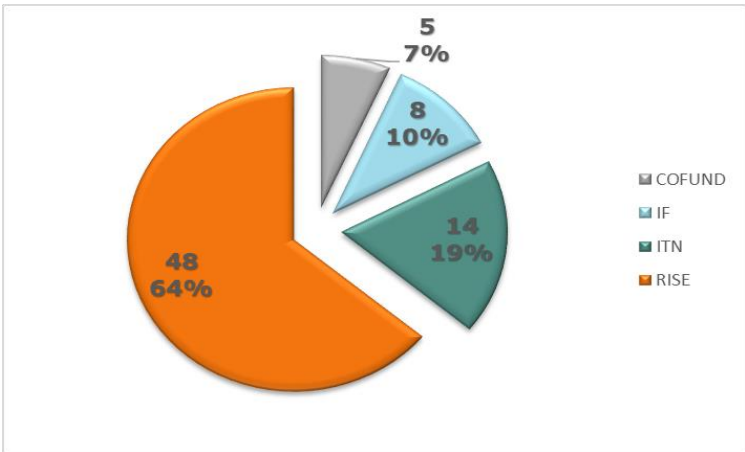
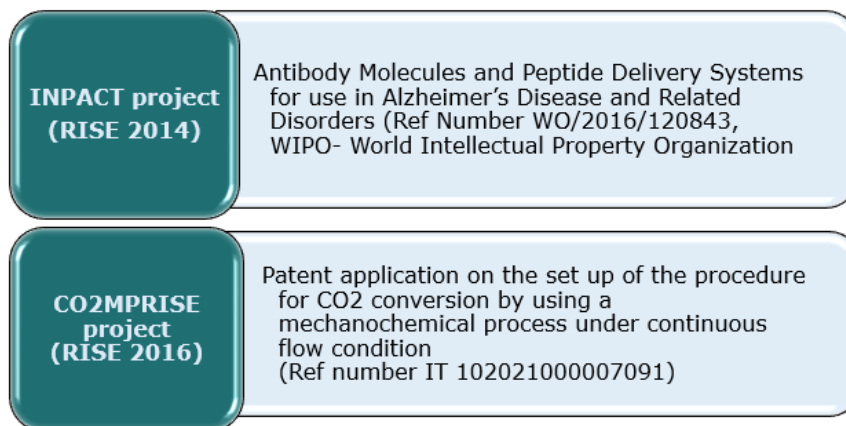


Figure 6: Summary of the data collected for awarded patents. (Source: 2021 CORDA database/IR screening data).

In addition, CORDA data analysis has shown that RISE stands very well in terms of patent applications (Figure 5) and awarded patents (Figure 6). By October 2021 RISE accounted for 46% of patent applications in the MSCA programme (80 RISE patent applications out of a total of 174 for MSCA). 64% of awarded patents within the MSCA during the life cycle of projects were yielded by RISE projects (48 RISE awarded patents out of a total of 75 for the whole MSCA).

Out of the 48 RISE awarded patents, two noteworthy examples of health and environmental interest respectively are given below:

INPACT- <https://cordis.europa.eu/project/id/644167>,
CO2MPRISE - <https://cordis.europa.eu/project/id/734873>



Key message: RISE yielded a significant share of identified innovations and patents in MSCA.

RISE is undeniably an action that fosters innovation. RISE outcomes can positively affect citizens' lives and there is a strong potential for new markets creation. RISE has a high proportion of the innovations identified at the level of the MSCA family and leads in the MSCA for the number of patent applications and awarded patents.

These findings can be considered as significant considering the relatively small size (in terms of number of projects) and budget of the RISE programme (less than 10% of the whole MSCA budget).

Considerations for data analysis and future work: RISE projects were selected by Project Officers for the Innovation Radar (IR) screening on the basis of meeting two main conditions: (1) to have shown a good implementation and yielded a good amount of results (to this aim the vast majority of such "mature" grants comes from 2014-2017 calls); (2) to have at least one business partner in their consortium, a factor that - by default - favours the innovation capacity and orientation of the research project.

Further to the above-discussed analysis of CORDA database/Horizon Dashboard IR data, the findings of a more recent (January 2022) RISE Innovation Radar Survey¹² (on the RISE IR screened projects) were also screened for the purpose of this report.

The survey aimed to contact the coordinators of RISE projects that participated already in the 2017-2019 IR exercises to inquire about their experience from their IR participation (satisfaction level) as well to explore the "readiness level" of their identified innovations (e.g. lead to new product development, plan for commercialisation, etc.). In a nutshell:

¹² RISE Innovation Radar Survey (Dec 2021-Jan 2022). The survey was sent to 81 RISE projects that were screened via IR process during 2017-2019. Responses were received from 42 coordinators (=52% response rate) analysed and findings were compiled in an internal Survey report.

- most RISE coordinators (~75%) assessed IR as a (very or relatively) helpful process/service to identify their project's innovations;
- a remarkable share of RISE innovations (~50%) may have changed "readiness level" since IR screening so that consortia welcome more support to go to market;
- a significant share of RISE identified innovations (~40%) already led to patents/trademarks (or may well do so by the end of the project).

The survey identified a number of RISE innovation "success stories" referring to projects that reached the market through the developments of new products. Annex 5 provides a non-exhaustive list of the RISE-IR success stories.

Future work could possibly include checking whether current findings and conclusions could be confirmed or even reinforced with more IR updated data extraction and analysis. The IR screening of more RISE projects is expected to take place during the 2nd half of 2023 via the launching of a new exercise (that will focus on RISE projects from 2017-2019 calls).

RISE good project example: A good example of RISE project (WASTCARd, <https://cordis.europa.eu/project/id/645759>) with strong innovation potential (as provided by feedback received via the RISE Survey 2021) is given below:

**RISE project as "good example" for high
"innovation potential"
WASTCARd-(2014 RISE Call)
*Wrist and arm sensing technologies for cardiac
arrhythmias detection***

WASTCARd is a completed RISE project from LIF Panel that investigated enabling technologies for non-invasive recording hearth rhythm during long period of time.

WASTCARd offers a good example of how RISE projects can lead to prototype production of products that can have a real impact on the health of EU citizens.

In this case, an enabling technology for non-invasive recording of heart rhythms during long periods (>36h) is possible using a wrist/arm wearable device. The device has novel ECG sensing techniques and embedded real-time cardiac arrhythmia detection processes. The consortium consists of 6 beneficiaries (MS/AC) out of which SMEs and 4 TC partners.

6.2. International collaborations (RAV2)

The international dimension of RISE, as defined via the secondments of staff between European and global partners, is a main objective of the action and expected to be its strong feature as "legacy" from its FP7 precursor (IRSES). The data gathering and analysis of this section aims at exploring whether RISE has maintained during H2020 or even further enhanced its role as an attractive MSCA programme for global partners and research fellows.

Summary of findings: In terms of third country (TC) participation, RISE data extracted from the Horizon Dashboard shows that around 30% of participants in RISE consortia are organisations from TC, which is considered as a significant share and highlights the international aspect of the action. The large majority (over 80%) of TC organisations in RISE belongs to the academic sector¹³ whereas less than 10% are declared as non-academic entities¹⁴.

For this analysis, further data on the total number of TC partners in RISE grants per RISE call were extracted from the CORDA database. By applying data normalisation, a specific “TC participation indicator” was estimated (reflecting the ratio of total number of TC participants over the total number of RISE grants per call). Such normalised data provides a more precise and valid picture of TC participation allowing a comparison within RISE calls. This data analysis revealed an increased participation of TC partners in RISE up to 20% higher in the RISE 2020 call compared to 2014 RISE call (“baseline” call for H2020).

Another relevant measurable indicator concerns the share of “RISE international grants” (defined in Horizon Dashboard as grants with at least one TC partner). Data from the Dashboard on the total number of international grants was normalised over the total number of RISE grants per call. As shown in Figure 7, although there is no steady trend throughout the RISE calls, there is eventually an increased percentage share of RISE international grants towards the end of H2020 (reaching a level of around 80% in 2020) thereby indicating a 15% increase compared to the RISE 2014 baseline. By considering both above-described metrics (TC indicator and share of RISE international grants), we can conclude that the participation of TC partners in RISE - with some fluctuation throughout the framework programme duration—increased during H2020. The positive trend indicates that the RISE action became more attractive to global R&I during the H2020 evolution.

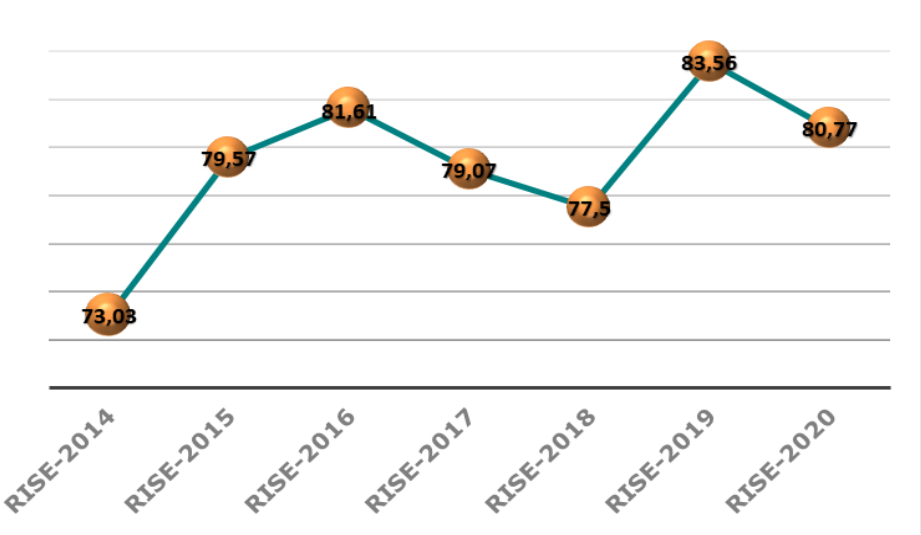


Figure 7: Overall positive trend of RISE international grant (at least 1 TC partner) in RISE calls (Source: 2021 CORDA database).

¹³ 'Academic sector' means public or private higher education establishments awarding academic degrees, public or private non-profit research organisations for whom one of the main objectives is to pursue research or technological development, and international European interest organisations (WP [h2020-wp1820-msca_en.pdf \(europa.eu\)](https://ec.europa.eu/horizon/wp1820/msca_en.pdf))

¹⁴ 'Non-academic sector' means any socio-economic actor not included in the academic sector and fulfilling the requirements of the H2020 Rules for Participation. This includes all fields of future workplaces of researchers, from industry to business, government, civil society organisations, cultural institutions, hospitals, etc (WP definition: [h2020-wp1820-msca_en.pdf \(europa.eu\)](https://ec.europa.eu/horizon/wp1820/msca_en.pdf))

Further information on RISE TC participation was retrieved from a 2019 study on international cooperation in the MSCA¹⁵, according to which RISE TC partners account for 56% of total MSCA TC partners in H2020. Raw data analysis from this study (2014-2018 MSCA calls) per “TC country group”¹⁶ revealed that the RISE share over the MSCA becomes even higher (at levels of 75 to 80%) for the partners from emerging and developing third countries (Figure 8). In addition, the “developing” and “high-income” country groups have slightly increased their share of participations in RISE in H2020, in comparison with FP7 - IRSES.

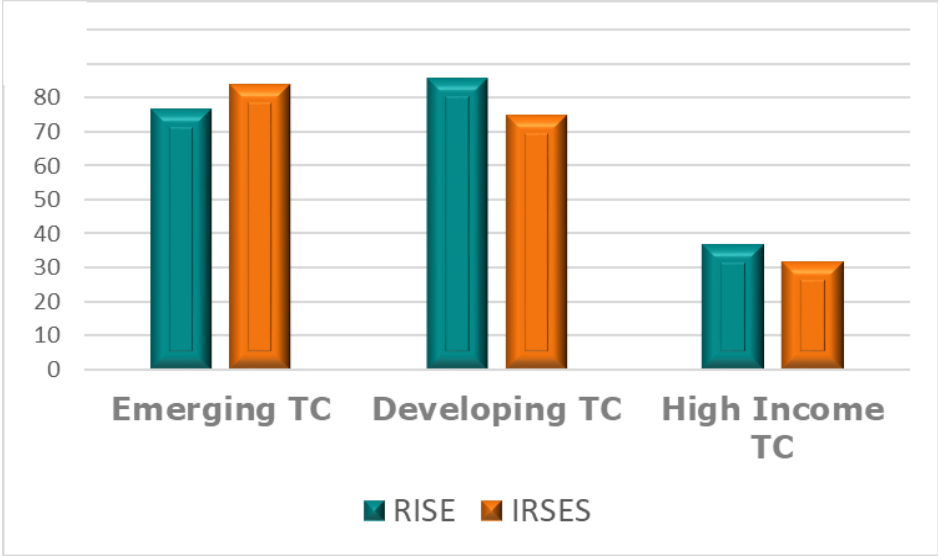


Figure 8: Percentage share of RISE TC participation over MSCA (+in comparison to previous programme FP7 - IRSES).

Another important aspect which was explored through available CORDA data, concerns the dynamics of the sending and receiving of staff in secondments, so called “mobility flow”. Data analysis shows that seconded staff from TC partners to beneficiaries located in Members States (MS) or Associated Countries (AC) account for 43% of the total number of RISE seconded fellows.

During the period 2015-2019, the absolute number of person-months (PMs) implemented by TC partners in RISE projects was significantly enhanced (eight times higher in 2019 than 2015) (Figure 9). The trend was similar for the secondments hosted by TC partners in the same period. These data indicate a growing commitment of TC partners to the RISE action with a significant share of implemented PMs (at a level of 20% of the total number of PMs implemented via RISE secondments annually). China is the highest contributor of RISE TC seconded staff to MS/AC (45%), whereas the USA, Brazil, Japan and India follow with lower

¹⁵ Study on International Cooperation in the Marie Skłodowska-Curie Actions” (Published on 17-12-2019, link: [Study on international cooperation in the Marie Skłodowska-Curie actions - Publications Office of the EU \(europa.eu\)](https://publications.europa.eu/en/publication-detail/-/publication/11111111-1111-1111-1111-111111111111))

¹⁶ The analysis of 2019 MSCA report on international collaboration refers to various TC country groups, that belong in two big categories: (1) TC countries eligible for EU funding (“ENP-non associated” and “developing countries” such as: Morocco, Belarus Kenya, Vietnam, Turkey etc.) and (2) TC countries non-eligible for EU funding (“emerging” and “high income” TC countries such as: Brazil, China USA, Japan etc).

but still significant shares (8 to 10%). On the other side, US partners hosted 33% of RISE MS/AC fellows, followed by China (19%), Japan (15%) and Australia (9%).

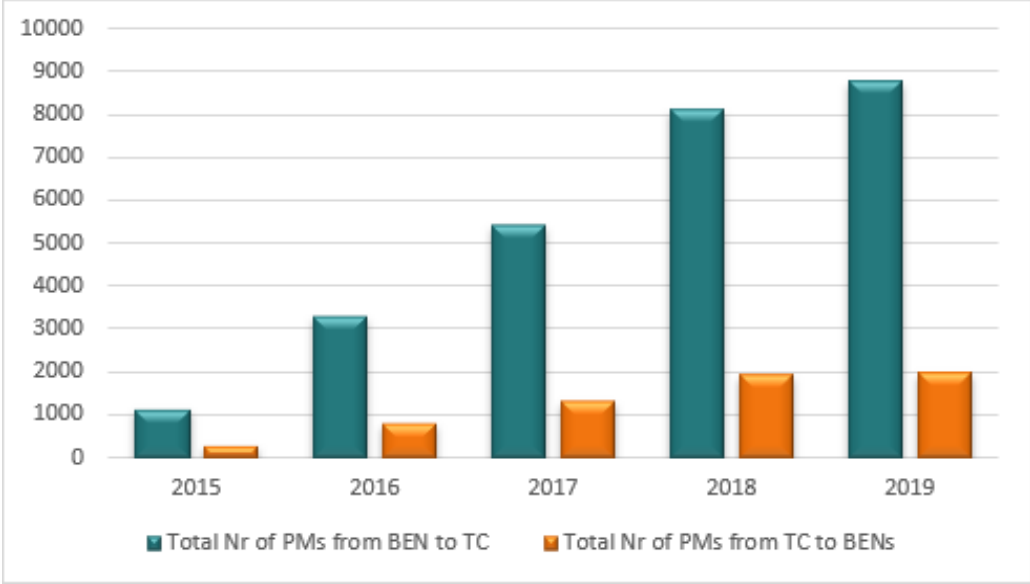


Figure 9: Increased commitment of TC partners as evidenced by sending & hosted secondments (expressed in person-months PMs) in RISE Calls (Source: 2021 CORDA database).

Available data on the total number of RISE fellows from AC participating in RISE calls were also extracted from the CORDA database (Figure 10). The analysis demonstrated a clear trend of increase of AC fellows’ participation in RISE (with a perfect coefficient correlation: $R^2 = 0.99$) towards the end of H2020. Results showed that the number of AC fellows who participated in RISE 2019 projects was 7 times higher than their respective number in RISE 2015. Switzerland and Ukraine share an equal high share of participation in RISE (18%), followed by Norway (16%) Turkey (13.5%) and Israel (11%). Significant shares of 8% are also owned by Tunisia, Serbia, and others.

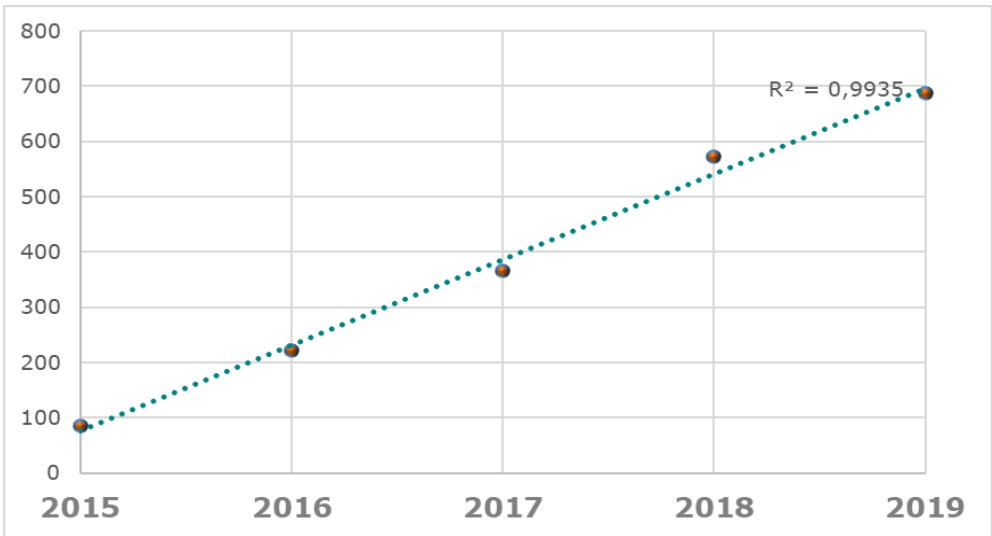


Figure 10: Trend of increased participation of AC fellows in RISE (Source: 2021 CORDA database, 2015-2019 RISE Calls).

Furthermore, the RISE Task Force searched for available evidence on the potential impact of RISE on innovation in TCs. Through further analysis of CORDA data (IR initiative), it was estimated that around 15% of RISE innovators (project institutes that are “owners” of the identified innovation) are TC partners. This is not a negligible share given that the percentage of companies in TC partners of RISE consortia is less than 10%. It could be that TC-located companies yield a “multiplying innovation effect” or even that synergies of TC organisations with European companies trigger a good innovation outcome (that could be particularly important for developing TC economies and their “emerging markets”).

Additional measurable indicators that demonstrate the potential of RISE to promote innovation in TC were retrieved from the 2019 MSCA report on international collaboration. A significant share (30%) of all TC businesses that participate in MSCA are partners in RISE grants. In addition, Figure 11 shows that over 50 % of MSCA projects with partnerships¹⁷ between EU companies and TC organisations (for projects from 2014-2019 calls) come from RISE (while the ITN action also owns a significant share of over 40%).

Key message: RISE has been an important and dynamic contributor to H2020 global R&I collaborations.

The international participation of RISE has grown during H2020, revealing that the action remains highly attractive for TC partners and researchers. RISE has developed as a significant contributor to the interactions and networking between European and global R&I institutes, serving thereby as a “vehicle” to innovation in TC organisations.

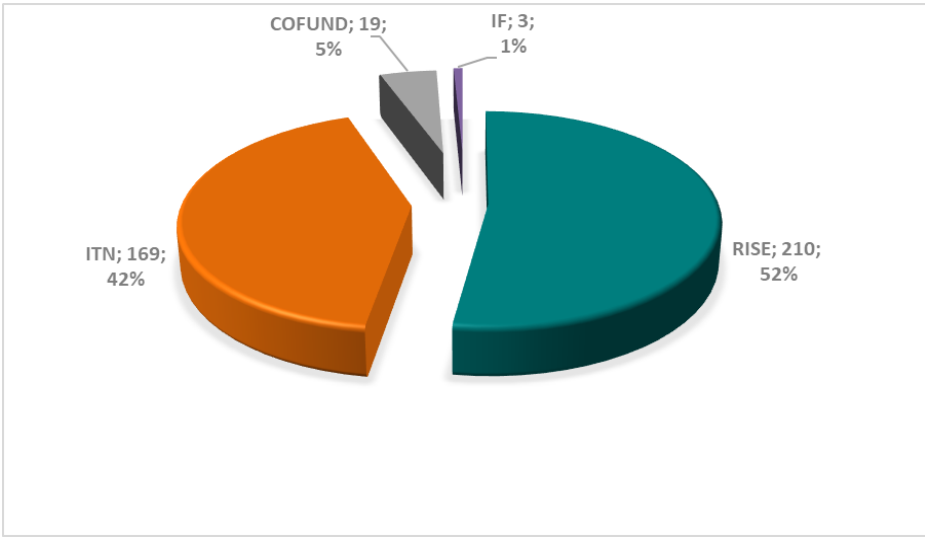


Figure 11: Share of RISE projects over MSCA projects with partnerships between EU business and TC organisations (Source: Report on MSCA international collaboration [6]).

¹⁷ The term partnership” refers to any research cooperation between EU companies and third countries. German and UK businesses cooperated with third country organisations most actively, while Spain, Italy and France were also in the top 5 according to this measure. While many different EU businesses cooperated with TC organisations, some of the leading institutions were: Philips (the Netherlands, various branches, 27 partnerships with TC organisations), Siemens (Germany, various branches, 27 partnerships), ELVESYS (France, 22 partnerships) AstraZeneca (UK, 17 partnerships), GlaxoSmithKline (UK, 17 partnerships), DSM (the Netherlands, various branches, 15 partnerships), BASF (Germany, 12 partnerships).

Considerations for data analysis: A limitation of this analysis concerns the fact that for some findings available data covered only a certain period of H2020. For instance, raw data from the 2019 study on MSCA international collaboration were used for estimating shares of RISE TC/AC participation over the MSCA (2014-2018 calls). It must be noted as well that the focus of this analysis was to define trends of TC participation within RISE calls.

RISE good project example: Around 80% of RISE projects that participated in 2021 RISE Survey involved TC partners in their consortia, a number fully aligned with Horizon Dashboard extracted data for RISE international grants. 50% of the RISE Survey 2021 reported a balanced mobility flow with TC partners and another half noted the career development of fellows as a major positive impact of their interaction with TC. A good example of a RISE project (OCTA, <https://cordis.europa.eu/project/id/778158>) with a strong international dimension and networking (as provided by the feedback received via RISE Survey 2021) is given below:

**RISE project as "good example" for
"international dimension"
OCTA-(2017 RISE Call)
Organic transfer applications**

OCTA is a project from CHE Panel that aims to create a new international EU-World Network concentrated on organic charge transfer processes and applications.

OCTA serves as good example for the international dimension of the RISE action. The OCTA consortium demonstrates a very good participation of active TC institutes with a wide geographic dispersion in four continents (*consortium members located in Europe, South America, Asia and Oceania*).

As confirmed by the TC partners via the project reporting, their participation in the projects has enabled: (1) the networking and expansion of academic contacts at global level, (2) the sharing of trust between different scientific cultures, (3) the acquisition of more experiences in key infrastructures and (4) the positive impact on employment and career perspective of their seconded fellows.

6.3. Intersectoral dimension of RISE (RAV3)

This indicator focused on one of the most important aspects of the MSCA and RISE, which is fostering collaborations between the non-academic and academic sectors. A quantitative overview of the situation was performed, and data were extracted from the CORDA database for the type of collaborations, assigned budget and mobility flows, together with a qualitative assessment of the benefits and challenges of intersectoral cooperation between business and academia. There was particular focus on the role and impact of RISE on small and medium-sized enterprises (SMEs)¹⁸, which are defined in the EU recommendation (2003/361/EC) [11] in terms of staff headcount and turnover.

¹⁸ EU definition for SMEs (2003/361/EC): The category of micro, small and medium-sized enterprises (SMEs) is made up of enterprises which employ fewer than 250 persons and which have an annual turnover not exceeding EUR 50 million, and/or an annual balance sheet total not exceeding EUR 43 million (available on [EUR-Lex - 32003H0361 - EN - EUR-Lex \(europa.eu\)](https://eur-lex.europa.eu/lexuri/cs/l?uri=32003H0361))

Summary of findings: Business organisations are among the most important participants in RISE, and this is confirmed by both quantitative and qualitative data. They bring a considerable benefit to the programme by contributing to the knowledge transfer across sectors. Their increased participation and involvement in secondments, together with the reported impact, testify that RISE is successful in promoting international and cross-sector collaboration through exchanging research and innovation staff, and sharing knowledge and ideas from research to market and vice-versa.

The first important finding is that business organisations (represented by PRC-private for profit entities in this data gathering and analysis) constitute the second highest participant group in RISE (22%), following higher or secondary education institutions (HES 57%) (Figure 12). Out of PRC organisations participating in RISE, the SMEs alone account for ~75%.

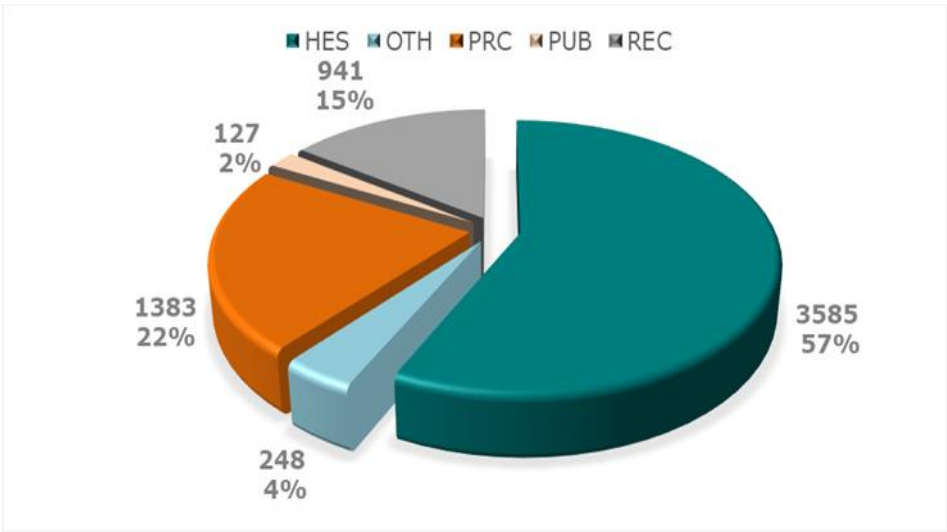


Figure 12: Overall organisations participating in RISE by total number and % share per type of RISE partner organisations (PRC private for profit; HES Higher or Secondary Education institutions; OTH Other; PUB refer to public body excluding research and education, REC: research organisations (Source: 2021 CODA database/H2020Dashboard).

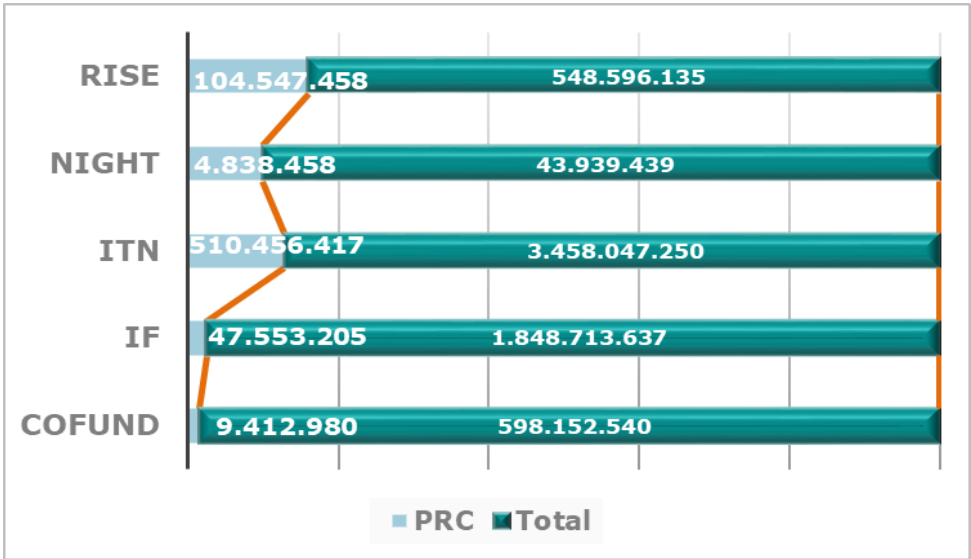


Figure 13: Budget share allocated to business organisations across the MSCA (Source: 2021 CODA database/Horizon Dashboard).

The difference between the two main groups of participants is considerably smaller if we only look at the unique participations (HES 39% vs PRC 36%). The second key finding is that at the level of all the MSCA, RISE businesses constitute the second biggest group (21%), after ITN (68%). At the level of the budget allocated to the business sector across the MSCA, businesses taking part in RISE receive proportionally more budget than in any other MSCA action (RISE 19%, ITN 15%, IF 3%, COFUND 2%; all MSCA 10.4%) (Figure 13). This is also the case for SMEs (RISE 15%; MSCA 6%).

Further into the analysis of the EU contribution allocated to business organisations (Figure 14), data showed a clear increase of the budget allocated to businesses. The augmentation is especially noticeable towards the end of H2020 (2018-2020 calls). Overall, the EU contribution to business organisations grew by 28% (in terms of percentage of the overall RISE budget) from 2014 to 2020 call (as baseline call for the framework).

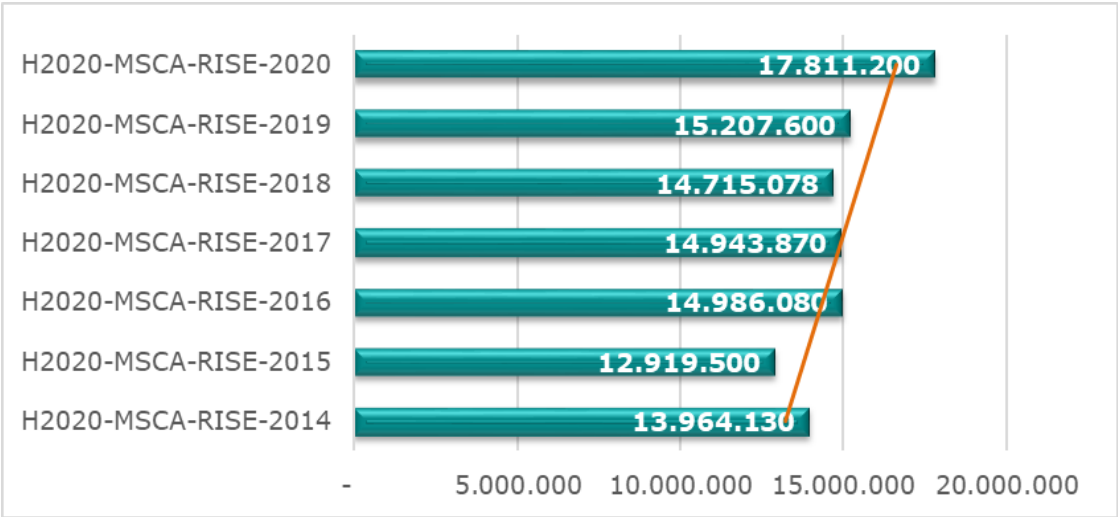


Figure 14: Budget allocated to business organisations within RISE between 2014 and 2020 calls (Source: 2021 CORDA database/Horizon Dashboard).

Third important finding is that the share of RISE coordinators from the business sector (~6%) is higher than in ITN (~3.5 %) which is the other MSCA action also designed to trigger participation of the private sector.

Moreover, RISE fellows from businesses spent more time in secondments (average secondment duration: 1.9 PMs) than the fellows seconded from other types of organisations (average secondment duration: 1.5 PMs). Overall, business partners in RISE hosted more fellows (“ingoing secondments”) than they sent (“outgoing secondments”). In 18% of all RISE secondments, businesses were the sending organisation (against 25% of RISE secondments for which the businesses were the hosting organisation). In addition, 80% of secondments from business organisations were spent in HES organisations and around 20% in research organisations (REC). These findings are particularly relevant for understanding the “mobility flows” and underline that the enforced intersectoral eligibility rule in RISE has been applied (i.e., secondments within Europe must be intersectoral to be eligible for EU funding by RISE).

To conclude this part of the analysis, the RISE Task Force looked into the available CORDA data on RISE secondments. During the period 2016-2019 (years when the secondments were completed), business organisations became more and more committed and active in RISE as evidenced by a clear increase of their implemented secondments. Results show that

the secondments intensity¹⁹ increased at a level of ~2.5 times higher between 2016 and 2019, pointing to an enhanced commitment and involvement of business partners in the implementation of RISE projects (Figure-15). This is an interesting finding for RISE, given the challenges that especially SMEs regularly face to implement staff exchanges (due to issues of limited resources and heavy workload).

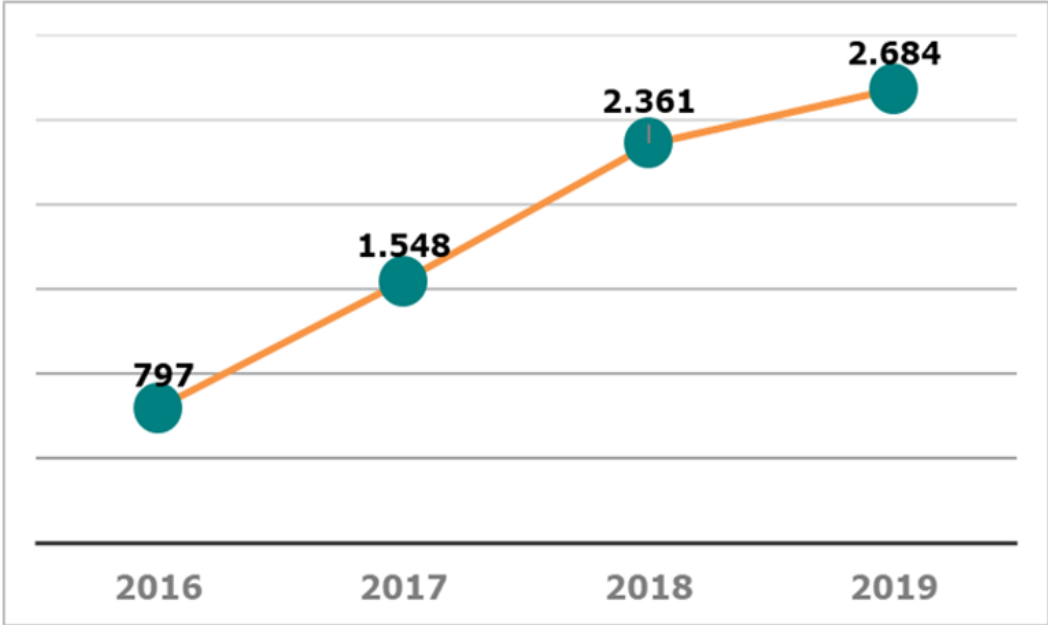


Figure 15: Number of person-months completed by business organisations per year (2016-2019) (Source:2021 CORDA database/Horizon Dashboard).

Finally, CORDA data from RISE participation in the IR initiative (see results RAV1) confirm that ~30% of RISE innovation owners are business partners. This significant share of RISE business innovators does meet the expectation that the presence of businesses in RISE consortia enhances the project innovation capacity and triggers the developments of product-based innovations.

Key message: Participation and commitment of RISE business partners significantly increased during H2020.

Data analysis have shown that businesses taking part in RISE receive proportionally more budget than in any other MSCA while RISE also exhibits the highest share of business project coordinators in MSCA family. In addition, the fact itself that secondments’ implementation by business partners in RISE was significantly increased towards end of H2020 further indicates that the business organisations involved in RISE show a strong interest in the programme with a proven commitment. Last but not least, as demonstrated by the information collected in the IR survey, the participation of private sector partners in RISE has resulted in a positive impact (e.g. in terms of triggering their innovation potential or their linking to multidisciplinary aspects of RISE projects).

¹⁹ This measure (secondments intensity) concerns “Number of secondment months completed per year”. The 237% increase is calculated based on % increase between 2016 and 2019 values

RISE good project example: An overview of ENHANCE (<https://cordis.europa.eu/project/id/873120>), as a good RISE project example with a strong intersectoral dimension and networking, is given below:

**RISE project as "good example" for
"intersectoral dimension"
ENHANCE-(2018 RISE Call)
*Human Performance in Complex Socio-Technical Systems***

The ENHANCE project (ECO-SOC panel) aims to investigate in various safety aspects of maritime applications by sharing knowledge between academic institutes and maritime industry. ENHANCE shows the importance of intersectoral collaboration in the maritime sector, which is considered one of the most safety-critical industries. Every year accidents and incidents incur financial losses and the loss of human lives. The consortium of this project consists of 7 beneficiaries, 3 of which are business organisations in the maritime sector.

According to the coordinator of the ENHANCE project: *"The secondments from academia (maritime universities) to the business sector (maritime industry) has strengthened the collaboration to an extent that it has increased the information flow, sharing of training methods and other organizational practices and joint publications between these institutions which will continue to exist in the future."*

6.4. Crossing disciplines - Multidisciplinary in RISE (RAV4)

This indicator assesses how RISE meets the objective of cross-fertilisation between research disciplines – being both able to allow for collaboration between disciplines and to involve researchers from multiple disciplines. The definitions used and main results are explored herein.

Summary of findings: Multidisciplinary²⁰ is an asset for researchers as it enhances knowledge in their own discipline; it is a benefit for projects bringing together a number of ideas and perspectives across different subjects; it offers alternative ways of looking at problems, identifying new and innovative solutions; and multidisciplinary collaborations contribute to researchers' lifelong learning.

²⁰ The use of "interdisciplinarity" term is more conventional in MSCA and present in the work program. For the purpose of data analysis, though, we realised that it would be challenging to use that "filter" in the existing Databases (CORDA, Dashboard) and collect data on "interdisciplinary" of RISE projects. For this reason, we decided to use, instead, the term "multidisciplinary" (which even if not "identical", is close to "interdisciplinarity" in terms of indicating projects of relevance to various scientific disciplines). Therefore, we base the current analysis on an accepted standard utilised by CORDIS (EuroSciVoc, covering the main scientific disciplines) to assess multidisciplinary in RISE (vs MSCA)

Considering multidisciplinary as ‘drawing from knowledge over different disciplines but staying within their boundaries’, the purpose of the analysis is to study the level of multidisciplinary in RISE projects, using the “European Science Vocabulary” (EuroSciVoc [12]) as a basis for the assessment.

EuroSciVoc is a multilingual taxonomy that represents all the main fields of science that were discovered from CORDIS content and organised through a semi-automatic process based on Natural Languages Processing techniques. All projects in CORDIS are categorised in six main disciplines or fields of science or disciplines and subsequent subcategories (Social Sciences; Natural Sciences; Medical and Health Sciences; Humanities; Engineering and Technology; and Agricultural Sciences). Thus, the analysis of the level of multidisciplinary of a project relied on the number of the different main disciplines that a project contains simultaneously. Based on this, a project was considered multidisciplinary if it contained two or more main EuroSciVoc fields of science.

Throughout 2014-2020 calls, RISE had a consistently fair representation in all the main disciplines of EuroSciVoc. When compared to other MSCA schemes, RISE has the most balanced distribution of projects in the different fields of science (Figure 16).

Data analysis (CORDA database, 2021) also confirmed that the vast majority of RISE projects (~80%) could be considered multidisciplinary (Figure 17). Additionally, >20% of all RISE projects combine 3 or more fields of science. As indicated in Figure 18, this share of RISE multidisciplinary projects is significant compared to other MSCA actions.

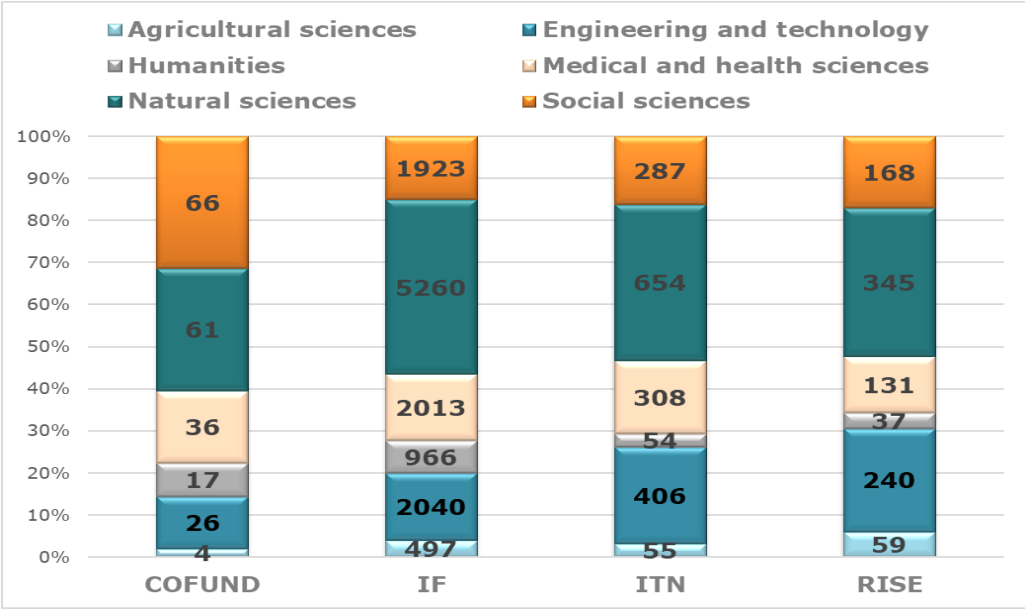


Figure 16: MSCA project distribution per fields of science (Source: 2021 CORDA database).

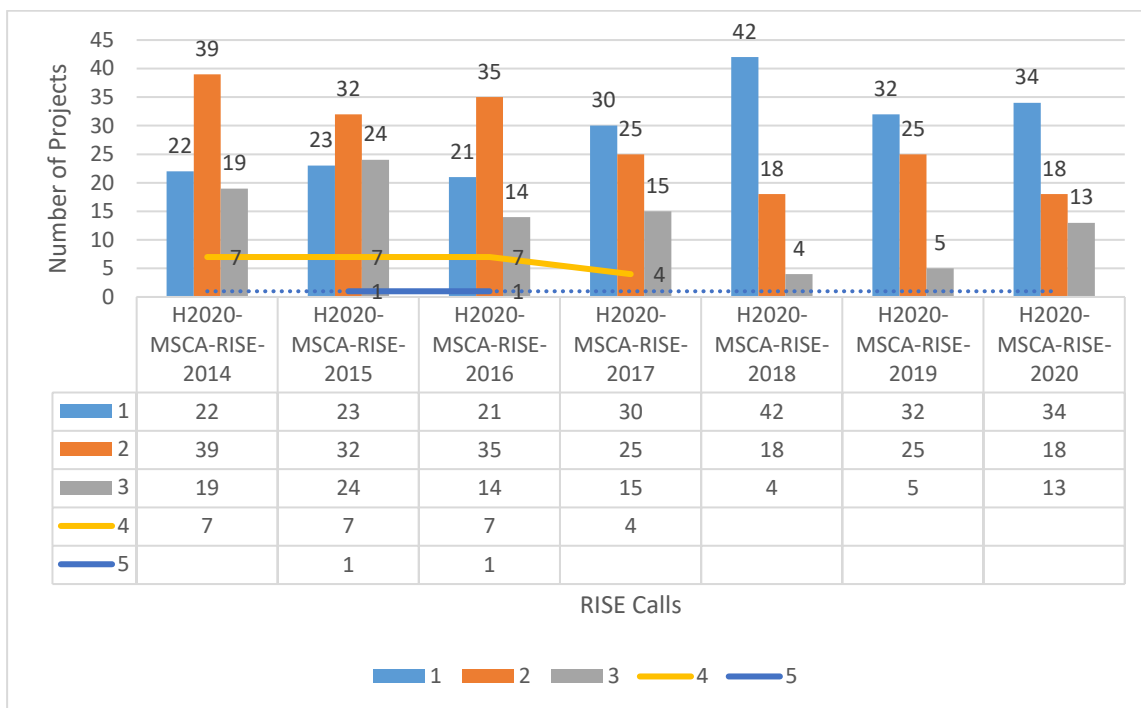


Figure 17: RISE project distribution according to their number of fields of science (Source: 2021 CODA database).

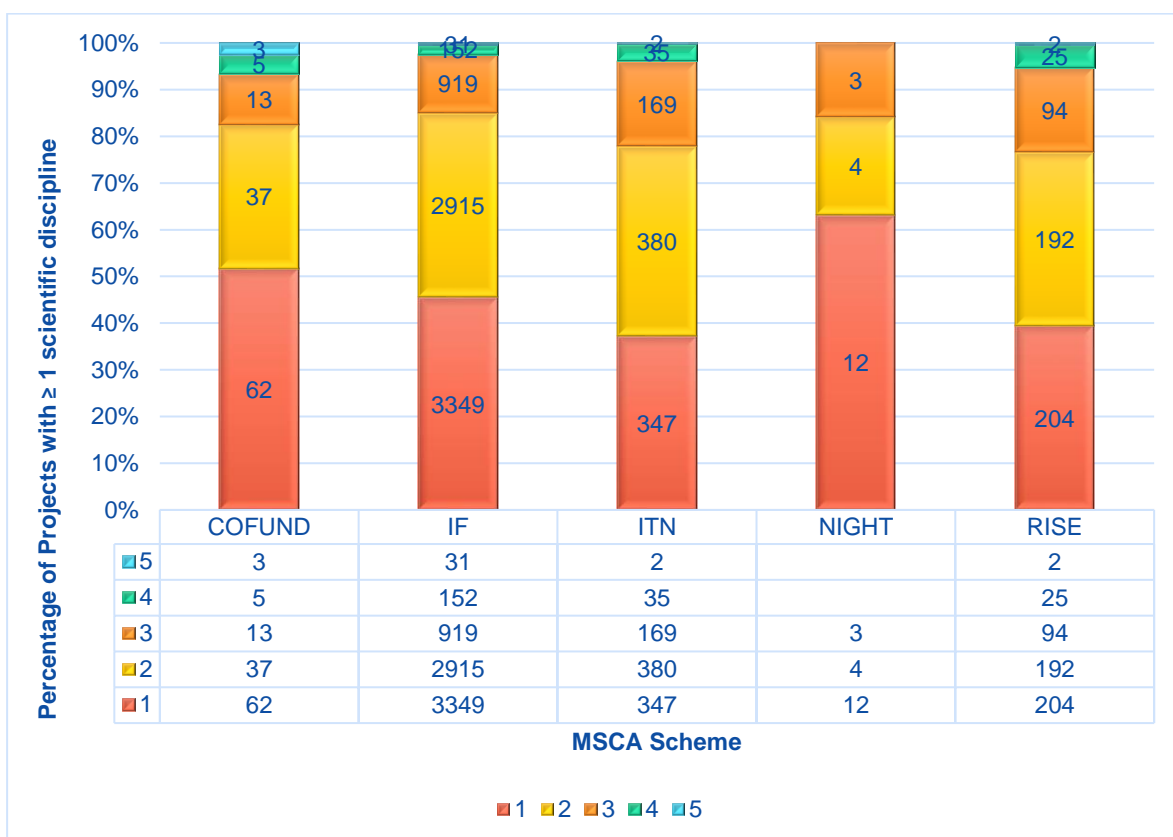


Figure 18: MSCA project distribution according to the number of fields of science (Source: 2021 CODA database).

Interestingly, we observed in the data a correlation between multidisciplinary and the participation of private sector organisations (PRC). Out of the 313 multidisciplinary RISE projects, around 80% (249 projects) have PRC participation (Table 5). The multidisciplinary character of RISE projects is also evidenced in MSCA reports [6][9][10], which conclude that RISE projects contributed to the mobility of fellows to other fields of research, helped organisations to work in teams from different scientific disciplines and allowed fellows to acquire knowledge of other research disciplines and interdisciplinary techniques.

Number of Multidisciplinary RISE projects	Number of RISE multidisciplinary projects involving PRC	Total Number of projects	Number of PRC per project
313	249	201	>2
		139	>3
		79	>4
		46	>5

Table 5: Correlation of number of RISE multidisciplinary projects with the number of business organisations included in the consortium (source:2021 CORDA database/Horizon Dashboard).

When analysed, the most common discipline combination for RISE projects is engineering & technology with natural sciences. The second most recurring combination is natural sciences with medical & health sciences.

Key message: RISE projects highly contributed to the multidisciplinary dimension of MSCA research projects.

RISE attracts consortia that work in all fields of science. RISE projects tend to be multidisciplinary (with the large majority of projects also involving PRC organisations) and often combine several fields of science.

Considerations for data analysis and future work: The distinction between “multidisciplinary” and “interdisciplinarity” and which standards to use for the taxonomy of disciplines can be challenging. Therefore, in this study, our rationale to base the analysis on an accepted standard (i.e., in this case EuroSciVoc, covering the main scientific disciplines) was an important step. Additionally, the data sources currently available do not enable the analysis of interdisciplinarity for ongoing RISE projects (term cannot be used as “filter” for data searching at the moment). Such information could be collected and made available for analysis of the Staff Exchanges-SE programme under Horizon Europe. More specifically, since “interdisciplinarity” has become a concrete aspect of MSCA-SE proposals (and MSCA-SE project during their implementation), the term is expected to reflect a specific screening criterion (“filter”) to be used for data searching purposes.

RISE good project example: A good example of RISE project (NANOMED, <https://cordis.europa.eu/project/id/676137>) with strong multidisciplinary aspects (as provided by feedback received via RISE Survey 2021) is given below:

**RISE project as "good example" for
"multidisciplinarity"
NANOMED-(2016 RISE Call)
*Nanoporous and Nanostructured Materials for
Medical Applications***

NANOMED is a project from CHE Panel that aims to develop novel nanostructured adsorbents for the treatment of very serious health conditions associated with acute and chronic exposure to external radiation and uptake of heavy metals.

NANOMED has 11 Beneficiaries (out of which 3 SMEs) and 2 TC partners and serves as good example for a multidisciplinary project that investigates in various fields of natural, medical and health sciences.

The testimonial from NANOMED in RISE Champions Survey shows how the crossing of disciplines in their project has led to important applications for medicine and careers:

"The project has allowed young fellows to receive scientific training in new disciplines and to learn about new techniques and equipment. The new skills will be really important for their future career as scientists. For instance, experts in materials science have been able to improve their background in the biomedical applications of these systems and vice versa."

6.5. Lasting research collaborations (RAV5)

One of the aims of RISE is to promote the development of sustainable collaborative projects (via research consortia) between different partners in the academic and non-academic sectors, within Europe and beyond. This "consortia approach" is seen as key to create an environment conducive for boosting knowledge and innovations. In order to evaluate the added value of RISE for this dimension, we extracted and analysed qualitative data (RISE Survey 2021 [4]) to explore incentives, perceived impact and challenges on working in diverse collaborative networks.

Summary of findings: For such analysis, there were no obvious indicators in the CORDA data nor other external data sources to measure "sustained collaboration". In this context, specific questions were included in the RISE Survey 2021 to capture both quantitative and qualitative data that could be linked to this aspect. From this data source, the respondents expressed the view that coordinators, researchers, and business partners are committed and have already benefited from RISE collaborations²¹.

For example, the question "Do you have new project thanks to RISE?" the majority of respondents replied yes (57%; 127 out of 222 participants). Moreover, they also reported that funding for their new projects came from various sources including, in this order: national funding > other funding > another RISE > another MSCA²² (Figure 19). In addition, the data showed that 88 respondents of RISE Survey 2021 (41%) actively engage various types of non-academic organisations in their consortia (such as the health sector, NGOs, museums,

²¹ See reference [4]: 2021RISE Survey – free text "open comments" of Q2 and 12

²² See reference [4]: 2021 RISE Survey – Q2: Did you or your RISE consortium get another grant thanks to your original RISE projects;

SMEs and large firms). It must be noted that the majority of non-academic organisations comprises private firms including large firms and SMEs (40% as shown in Figure 20).

The testimonial data showed that RISE projects truly contribute to increasing companies' ability to network with other firms (non-academic entities).

Another way to see lasting collaborations is to look at the impacts on different types of organisations and across organisations. For example, the main impacts for TC and SMEs were quite similar, ranking high the learning about new cultures (work and environment) and knowledge sharing – two elements that are important for trust building between partners (Table 6, AB). All responding organisations reported boosting of career opportunities. This is likely through the increased exposure to potential employers and networking. Concerning the impact on academia from all types of non-academic collaborations, an interesting finding is the increased awareness of trends in industry and also the gained specialised scientific and technical capabilities (Table 6, C).

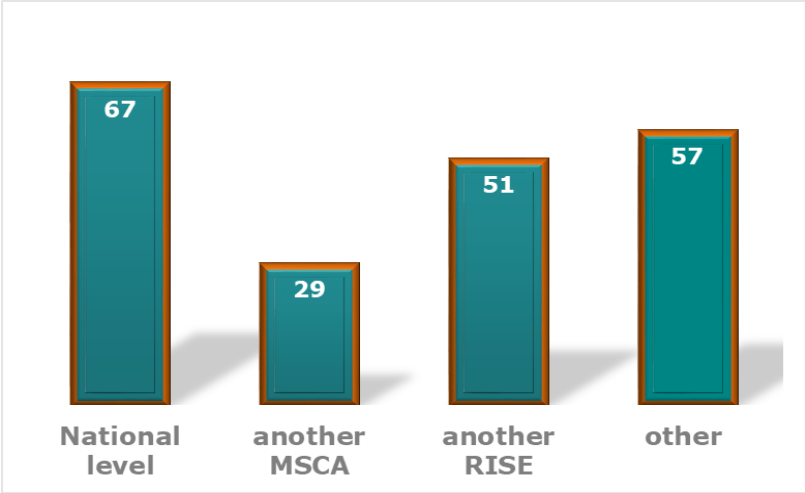


Figure 19: The RISE Survey 2021 showing the number of respondents' replies per type of funding they received due to RISE collaborations (127 out of 222) (Source [4]).

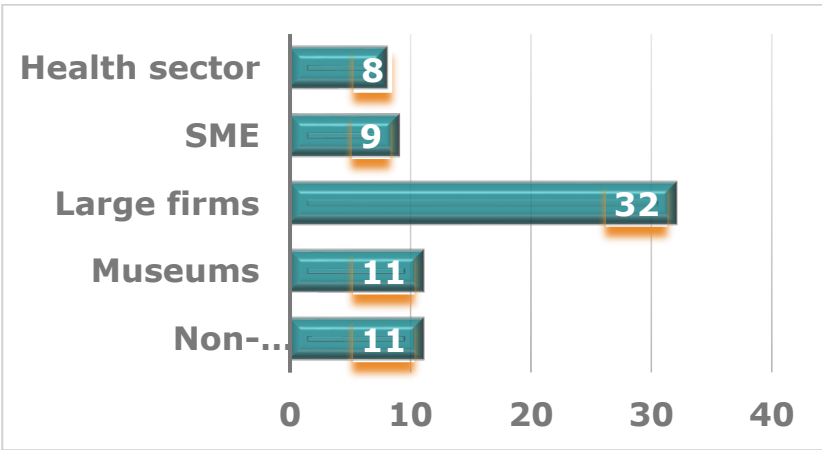












Figure 20: The RISE Survey 2021 showing the number of respondent replies per type of non-academic organisations that actively participate in RISE projects (80 out of 222) (Source [4])

(A) Impacts of third country collaborations:

		Answers	Ratio
Experience with new work culture/mentality		145	64 %
Facilitated transfer of knowledge between the organisations		142	63%
Led to any tangible innovative outcomes (e.g. innovations/trademarks)		40	18%
Contributed to the career development of fellow (i.e. through international exchanges)		138	61%
Open new pathways for working globally		126	56%

(B) Impacts of SME-academia collaborations:

		Answers	Ratio
Experience with new work culture/mentality		126	56%
Facilitated transfer of knowledge between the organisations		127	56%
Led to any tangible innovative outcomes (e.g. innovations/trademarks)		50	22%
Contributed to the career development of fellow (i.e. through intersectoral exchanges)		99	44%
Open new pathways for SME-academia interactions		106	47%

(C) Impact of academia working with any kind of non-academic partners:






		Answers	Ratio
Increase their own scientific and technological capabilities		126	56%
Commercial output is realized or is expected to materialize in the near future		53	24%
Increase the organisation's ability to network with other firms/ entities		122	54%
Awareness of trends in the industry		101	45%
Career opportunities for researchers		109	48%

Table 6: Responses from coordinators to RISE Survey 2021[4] on the impacts of RISE collaboration on TC (A); SME (B) and academic organisations (C) through their cooperation with any non-academic participants (e.g. large industry, SMEs, NGOs, museums, etc).

Key message: RISE action has fostered long lasting research collaborations.

RISE builds on existing cooperation and triggers new networks through obtaining new grants and by seeking new partnerships in academic and non-academic sectors. The results of the RISE Survey 2021 have demonstrated that the highest percentage of these long-lasting R&I collaborations are between academic and non-academic organisations, which is an important contribution of RISE to the MSCA programme concerning intersectoral cooperation. Mutual benefits for all organisations involved are key to the success of the RISE consortia approach in R&I; working with non-academic organisations means facing different work cultures. In addition, businesses stress the high relevance of the transfer of knowledge they benefited from thanks to RISE exchanges, something which would not have been possible for many of them without important investments. This is particularly relevant for SMEs. Academic institutions see the added value of RISE in increasing their technical capabilities networking, as well as the intangible and relevant view from the business sector regarding the market feasibility of conducted research and the enlargement of career perspectives for staff being seconded to non-academic participants.

Considerations for data analysis and future work: There are several sources of information for organisational data. However, within the scope of this project it was not possible to map networks of organisational contacts and come up with an index of sustainability. Hence, the data presented can only provide a qualitative sense of the added value of RISE to build on and build new networks and R&I ideas. Until any dimensions are added to the available data sources (e.g. Horizon Dashboard), regular feedback from coordinators using RISE Survey 2021 approach is useful for qualitative evidence.

RISE good project examples: SLAFNET (<https://cordis.europa.eu/project/id/734596>) & NANOGUARD2AR (<https://cordis.europa.eu/project/id/690968>) as testimonials from the RISE Survey 2021 illustrate the sustainability potential of collaborations in RISE in a wide range of disciplines:

SLAFNET project (RISE 2016)
Slavery in Africa: a dialogue between Europe and Africa

- **SLAFNET** is a project from ECO-SOC Panel that aims to establish a top-level scientific network of several institutions and research groups from Europe and Africa on the field of slavery studies.
- **Statement of SLAFNET Coordinator:** *"The sustainability of the network and the perpetuation of the initiated actions and the partnerships set up during the project. To this end, several research proposals were submitted to different National and EU funding actions by various members of the network..."*

NANOGUARD-2AR project (RISE 2015)
Nanomaterial based innovative engineered solutions

- **NANOGUARD2AR** is a project from CHE Panel that aims to develop technology readiness of breakthrough engineering solutions for indoor air safeguard.
- **Sustainable partnership:** The project upon its completion led to sustainable partnerships of academic (e.g. NOVA, COFAC) and non-academic organisations (e.g. NANOCENTER-LCC, NEUROPLAST-BV) that managed to prepare and submit successful proposals under H2020-MSCA-RISE-2020 Call and HE-MSCA-SE-2021 Call

6.6. Gender balance in project consortia (RAV6)

This indicator captured the available data on numbers of female fellows being seconded in RISE compared to other MSCA. The analysis also examined whether this contributed to reaching H2020 thematic targets for balance in teams and management roles of females in research projects.

Summary of findings: In H2020, the MSCA supported 65,000 researchers, out of which 42% were women. Although no significant difference can be found in the gender distribution of the COFUND, ITN and IF actions, RISE started from a lower percentage baseline in H2020. During the H2020 programme, gender participation in RISE has experienced a positive evolution, starting with 31% of female participation in 2015 and reaching 41% by the end of 2019²³.

Female coordinators represent ~30% of all coordinators (primary contact points) in the MSCA. RISE exhibited an overall positive trend during 2020 starting with ~30 % share of female coordinators in baseline year (2014), a percentage that remained stable for the next 2 years. Subsequently, it started dropping down to reach <20% in 2018 and eventually increased again to ~ 35% in 2020.

Empirically, gender distribution in science varies depending on the scientific discipline. This situation is reflected in RISE, similar to the trends reported in the rest of MSCA, with females serving as primary contact points only for 16% of the project coordinators in the ENG/MAT panels and 18% in the PHY panel. In addition, female fellows remain the minority (20%), in scientific and advisory boards of the RISE project research consortia.

On the other side, the representation of female coordinators in the non-STEM panels in RISE is significantly higher reaching ~50% in the SOC panel (Figure 21).

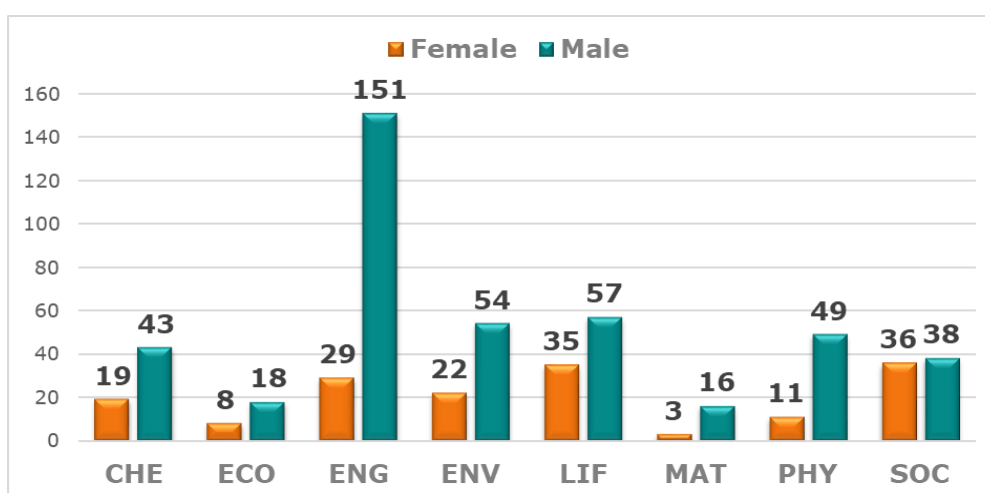


Figure 21: Absolute numbers of male and female coordinators funded by RISE in the various panels Chemistry (CHE); Economics (ECO); ENG (Engineering); ENV (Environment); Life Sciences (LIF), Math (MAT); Physics (PHY); and Social Sciences (SOC) (Source: CORDA database/Horizon Dashboard).

²³ Please note that for this set of data, we refer to the end year of secondment, therefore the 2015 data may concern secondments performed from 2014 calls.

Another interesting aspect of the analysed data is the difference in international versus intra-European secondment destinations for men and women. Specifically, data on secondment flows extracted from the CORDA database confirmed that the proportion of female fellows taking part in international secondments (MS/ACs to TCs) is lower (29%) than in intra-European secondments (MS/AC to MS/AC), reaching 40% (as shown in Table 7):

		Hosting	
		MS/AC	TC
Sending	MS/AC		
	Female	40%	29%
	Male	60%	71%
	TC		
	Female	35%	N/A
	Male	65%	N/A

Table 7: Ratios shown derived from the Research Declarations (RDs) extracted from CORDA database.

The lower percentage of female secondees in international exchanges may relate to various reasons (family, societal and geographic ones). The finding itself, though, may identify a need to encourage an increased women’s participation in synergies between EU and TC partners. This is a message that can be “conveyed” via (i) mid term meetings where REA PO could alert accordingly the RISE project partners to enhance the number of female researchers in the international exchanges (ii) future promotion campaigns for Staff exchanges where potential applicants should be encouraged to ensure an increased proportion of female scientific leaders in TC partners.

Key message: RISE has delivered on H2020 goals for gender balance.

Out of around 40,000 MSCA Researcher Declarations so far submitted between 2014 and 2020 (COFUND, IF, ITN and RISE), 41% were female fellows from RISE. The testimonial data from the RISE Survey 2021 confirms that the RISE programme has encouraged the promotion of equal opportunities and has ensured a balanced participation of women and men at all levels. Paired with this is the quantitative data that shows a trend of increasing numbers of females both for participation in research secondments and in the important management role of coordinator.

Considerations for data analysis: The main hurdle to overcome in this analysis was the data interpretation from the extractions made from the CORDA database. For example, it was important to consider the unique features of RISE (no recruitment and longer stays up to 12 months) that may lead to data misinterpretation when comparing to other actions where

researchers are specifically recruited and therefore the balance of males and females can be controlled in the selection process.

RISE good examples: RISE has several success stories and EU prize-winners that involve female fellows, such as:

- Dr Maria Fatima Lucas (Portugal), have won the “EU Prize for Women Innovators 2020” (B-Ligzymes project, RISE-2017 Call)
- Prof. T. Birshtein, was awarded the L’Oreal-UNESCO Prize “For Woman in Science” (Nanopol project, RISE-2018 Call)

A good project example (B-Ligzymes, <https://cordis.europa.eu/project/id/824017>) from the RISE Survey 2021 is given below:

The infographic consists of two main sections. The top section is a blue rounded rectangle with white text that reads: "RISE project as 'good example' for 'Gender balance' B-Ligzymes-(2017 RISE Call) Bacterial Enzymes and Bioprocesses for Lignin Valorisation". The bottom section is a light blue rounded rectangle with black text that describes the project's focus on gender balance and mentions Dr. Maria Fatima Lucas's award.

6.7. Careers and employability of fellows (RAV7)

This indicator focused on professional and personal development of RISE fellows and the perception of employability in various reports and testimonials.

Summary of findings: To examine the impact of RISE on careers and employability of fellows, two sets of surveys were considered (see methods): (1) 2021 & 2023 MSCA Reports on end of fellowships “Evaluation questionnaires” [5a,b]; (2) RISE Survey 2021.

One of the expected impacts of RISE at the staff member level is an increased set of skills, both research-related and transferable ones, leading to improved employability and career prospects both in and outside academia. Qualitative data from the RISE Survey 2021 (as well as from discussion in the midterm meetings) has reported increased opportunities for internal promotion or renewal of fellows following their involvement in a RISE project. Another interesting dimension is the exposure of fellows to non-academic sector. All MSCA actions involve engagement with non-academia.

Data analysis from the 2023 MSCA report (“Results of MSCA end of fellowship evaluation questionnaires-H2020”) has shown the leading role of RISE on fellows’ participation in MSCA. More specifically, RISE seconded fellows account (i) for 50% of the MSCA fellows (8956 out of 17794) who filled the Evaluation Questionnaires (within 3 months after end of fellowship) and (ii) ~60% of MSCA fellows (1343 out of 2206) who filled the follow up Questionnaire (two years after end of fellowship).

An important aspect of careers perspective for researchers concerns the opportunity of their engagement with non-academic sectors. Among the RISE respondents to the evaluation questionnaire, one third (33%) reported gaining experience in the non-academic sector during their MSCA project, mostly as part of short secondments undertaken at non-academic host organisations. The large majority of intersectoral mobilities have been with the private for-profit sector, either in large companies or in SMEs. The intersectoral mobility of MSCA fellows also varies according to fields of research. Information Science and Engineering (40%), Social Sciences and Humanities (36%) and Life Sciences (36%) have the highest share of fellows reporting experience in non-academic sectors. Physics has the lowest share, with only 17% of fellows reporting hosting arrangements outside academia.

In addition, earlier data gathered through the 2021 evaluation questionnaires clearly show that participation in a RISE project for individual fellows had a positive impact on personal (91%) and professional (88%) development. This reflects the good employability perception of RISE fellows who responded to this evaluation questionnaire (73% of the respondents selected good or very good impact on their employability).

Furthermore, according to the RISE Survey 2021 results, over 77% of projects reported that at least one fellow participating in a RISE action has obtained, or constituted part of a team that obtained another grant: MSCA (34%), European Research Council (6%), funding at national level (54%), company funding (10%) or any other type of grant (23%)²⁴

A cross study analysis of the RISE project coordinators' responses about this dimension of careers confirms the fellows' perceived positive outcome of secondments and other networking activities in RISE consortia.

Key message: RISE is a positive contributor to careers and employment of the seconded fellows.

Analysis of the data gathered from both MSCA evaluation questionnaires and the RISE Survey 2021 demonstrated that RISE strongly supports not only professional but also personal development of involved fellows. Participation in a RISE project clearly increases the employment attractiveness of fellows because they are exposed to international and intersectoral exchanges. RISE gives them the possibility to be hosted by leading organisations in different scientific/technical disciplines and therefore to acquire scientific/technical knowledge and interpersonal skills that contribute to their professional development. Moreover, RISE offers participation of administrative, managerial and technical staff, which allows them to enrich their technical knowledge thanks to secondments. This in turn enhances their employability.

Considerations for data analysis and future work: The main limitation in the analysis was that the current survey approaches provide qualitative and subjective results, based on perceptions of the respondent. While this study highlights that qualitative information is valuable, we acknowledge that it is not sufficient to make a baseline or to draw conclusions about actual professional developmental and make a direct link to employability outcomes.

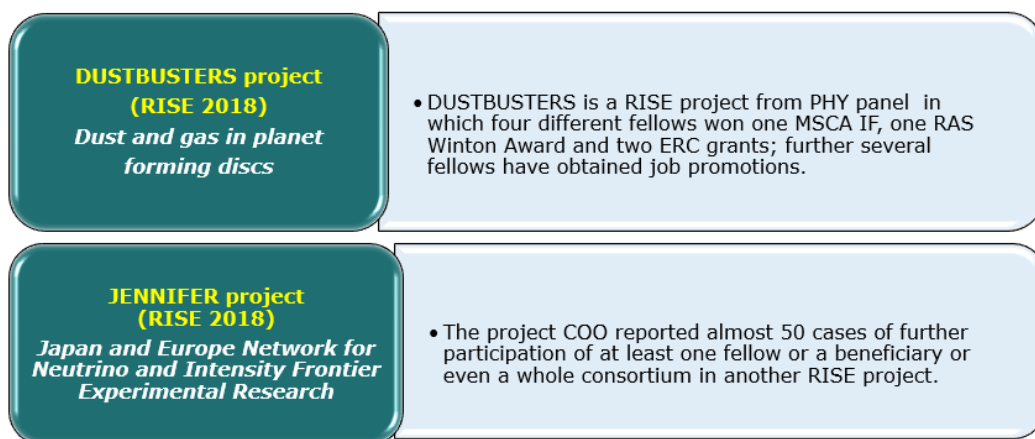
In the future, the evaluation questionnaire may include questions to allow gathering quantitative data on employment and career development beyond the RISE project timeframe. In the absence of benchmarks, the RISE Task Force found useful the approach

²⁴ Based on 222 replies in total for 2021 RISE Survey with 51% response rate for RISE 2014-2018 projects.

using testimonials and examples from RISE Survey 2021 (e.g. citing prizes, grants, etc.), as this provides a snapshot of all projects at the same time.

RISE good project examples: The RISE Survey 2021 provides a good number of success stories in terms of personal and professional development of individuals participating in a RISE consortium.

Two RISE projects (from the RISE Survey 2021) that offer good examples for “careers and employability of fellows” are (i) DUSTBUSTERS (<https://cordis.europa.eu/project/id/823823>) & (ii) JENNIFER (<https://cordis.europa.eu/project/id/822070>):



6.8. Development of fellows’ core skills through RISE training (RAV8)

This indicator zoomed in on the specific contribution of RISE to acquiring skills and experiences important for the careers of fellows. Networking and training activities were analysed as part of this aspect.

Summary of findings: The 2021 report MSCA evaluation questionnaire showed that a significant number of fellows managed to enhance their skills and experiences via RISE participation. Respondents said that their involvement in RISE had increased or strongly increased the following aspects: research knowledge (70%), ability to build and maintain partnerships (69%), presentation and communication skills (65%), quality of scientific output (62%), awareness about open access (52%), management skills (59%), writing skills grants/proposals (49%) and knowledge of IPR (43%).

In addition, the 2023 updated MSCA report further enhanced the broad picture for the positive impacts of RISE projects on the seconded fellows. More specifically:

- **Level of satisfaction on provided training and skilled development:** Overall, nearly 86% of respondents considered the training provided as good or very good. The level of satisfaction was higher among established researchers across all actions, in particular among former RISE participants, 92% of which found the training during the MSCA project good or very good.
- **Impact on networking skills:** RISE participants tended to recognise the impact on their networking skills more often than other actions. RISE fellows at a level of 94% consider their ability to build international/intersectoral partnerships to have increased or strongly increased. Overall, it must be noted that in the evaluation questionnaires

95% of RISE fellows rated their overall satisfaction with the fellowship as good or very good (sharing the highest in MSCA together with IF fellows).

Furthermore, according to the feedback from RISE coordinators via RISE Survey 2021, the development of new skills and gathering of new experiences for RISE fellows were supported largely by the effective participation of fellows in networking activities offered by RISE projects.

Thanks to RISE, fellows had a great opportunity to participate in high-level scientific conferences, seminars, workshops, summer schools, cluster events, etc. as part of their training and networking activities. The activities that were deemed to be the most effective and/or of highest impact are shown below (Table 8). As the results of the RISE Survey 2021 show, networking contributes not only to the enhancement of a new set of skills and experiences, but also to the emergence of new ideas, creation of new collaborations and often unexpected new career possibilities in an international context. In addition, the fellows gain new experiences and knowledge through intersectoral exchanges (in particular, between academia and industry), and thereby exposure to research and development environments. The fellows reported on their skills development in a positive way (see RAV7 – personal and professional development). This perception was confirmed in a cross-data analysis from the RISE Survey 2021²⁵.

Considerations for data analysis and future work: The main challenge for RAV8 was similar to RAV7 in the sense that the data set from the surveys was subjective according to what skills the fellows reported they had learned at the time of the project from a provided list (e.g., skills in writing grants, presenting, open access rules, IPR, etc). In addition, these skills and competencies were expected to be obtained by default, during RISE project implementation through the achievement of o the specific training and learning goals (which normally exist in a dedicated work package of a standard RISE project). Therefore, the questions in the 2021 RISE Survey were useful to explore which skills could be considered core competencies of the RISE fellows. The feedback obtained could be useful for policy work to reflect and compare with other existing EU-funded fellowship programmes that use core competencies for their programme baselines.

Another insight to the aspect of networking was the extraction from the CORDA database of the reported activities such as conferences, workshops, summer schools etc. From this, estimations of the total number of organisations and events could give an impression of the opportunities for networking and skills development. Even so, the numbers can only provide a qualitative impression as they are self-reported and comparability across programmes/actions would be difficult. These are all areas to discuss and develop within the methods used and IT tool variables.

RISE good project example: IKID project (<https://cordis.europa.eu/project/id/734712>) that offers a good example for professional development and core skills is given below:

²⁵ Question-14 of the RISE Survey 2021: What “core competencies” or “skill sets” do you think would be valuable to include in general outcomes (of RISE or other call/programme) MSCA fellows programmes to help their employability or otherwise career development in European research setting.

**RISE project as "good example" for
"professional development & core skills"
IKID-(2016 RISE Call)
*Institutions for Knowledge Intensive Development: Economic and Regulatory
Aspects in South-East Asian Transition Economies***

IKID is a completed RISE project (ECO-SOC panel) and offers a great example of boosting careers through networking via annual networking meetings, three summer schools, and teaching exchanges.

The Table 9 provides concrete examples of the project RISE networking. In particular, the positive outcomes these activities can bring to organisations (i.e. to find talented future employees and granting opportunities) and for careers (i.e. for maximal exposure of their skills, job seeking, training and mentoring). Please note that another "side-effect" of networking in RISE was the trust building across continents and different (research) cultures. This aspect is a key ingredient of consortium and career building as well as R&I success.

Activity type	Actions and outcomes of networking activities for career boosting
Annual meetings	<p>Action: three annual meetings (June 2017, 2018 and 2019) as part of the international Evolving Challenges in Enlarged Europe (ECEE) conferences.</p> <p>Outcome: fellows came together to listen to presentations by researchers worldwide, seek feedback on their research and establish contacts for future networking.</p>
Summer School	<p>Action: "Topics in Behavioural Economics" with professors from the University of Helsinki as the course instructors led to discussions about applying for a joint H2020 Twinning grant</p> <p>Outcome: resulted in the successful joint grant application Individual Behaviour and Economic Performance: Methodological Challenges and Institutional Context (IBEP; Grant 952574; 2020-2023)</p>
Conferences	<p>Action: series of ECEE conferences organised by the Department of Economics and Finance at Tallinn University of Technology in collaboration with Eesti Pank (Central Bank of Estonia) and Association for the Study of East European Economies and Cultures (USA)</p> <p>Outcome: providing excellent opportunity for further collaborations and networking often beyond the project</p>
Lecture and teaching exchanges	<p>Action: teaching at international universities on IKID topic areas has been another channel of networking and communicating IKID results.</p> <p>Outcome: Prof. Aaro Hazak has given lectures on institutions and economic development at various other transition economies than those in the IKID partnership - including the International Summer School in Economics and Management, organised by the Berlin Humboldt University at the University of Havana (Cuba, 2019), lectures at the University of Sarajevo (Bosnia and Herzegovina), University of Kragujevac (Serbia) etc.</p>
Other	<p>Action: participation of IKID fellows to an annual top event in institutional economics</p> <p>Outcome: opportunity to meet the Nobel Prize laureate Prof. Eric Maskin among many other prominent guests</p>

Table-8: Example from RISE project IKID of networking activity types and observed actions and outcomes during this project as reported in the 2021 RISE Survey.

7. Conclusions

The scope of this report is to determine and elaborate on the added value of RISE in terms of reaching its defined programme objectives along with its contributions to the wider goals of H2020 and the European Research Area (i.e. an R&I ecosystem of excellence in research, innovation, careers, infrastructures and overall capacities EU-wide).

This section first provides some clarifications on the overall study methodology (7.1) and then an overview of the key messages (and conclusions in bullet points) for the main areas of data analysis (7.2).

7.1. Considerations on overall study approach

The first challenge was for the RISE Task Force to select the appropriate methodology and indicators working with the available data.

The study design and data interpretations were done with caution in order to avoid simply confirming the “expected” without robust baselines/benchmarks. For this reason, the type of data extracted were not simply the standard per programme objectives, but also new aspects such as dynamic trends as the calls evolved (between 2014 and 2020) for the international and intersectoral dimension (RAV2 and 3) and observations per scientific panel (innovation areas-RAV1 and gender balance-RAV6).

In this way, the study provides the first holistic view of all calls of the programme using quantitative data that could be effectively normalised to compare against the baseline of H2020 and explore any trends during the evolution of the Framework Programme.

In addition, the 2021 RISE Survey allowed for qualitative probing into impact and challenges for organisations involved in the action. Therefore, the key findings of each RAV highlight the achievement of the expected objectives and also a number of unexpected trends/tendencies.

Providing comparisons to previous programmes was beyond the scope of this study. However, it is notable that the overall budget allocation and number of proposals received has increased between the 7th Framework Programme (IRSES action) and H2020 (RISE Action) (Annex 3, Figures 22 & 23), indicating that the action addresses some key gaps in the EU R&I scene such as mobility and exposure of researchers to intersectoral & international collaborations.

7.2. Key messages

The overall quantitative and qualitative data analysis shows that RISE is delivering very well on its objectives and emerges as a key contributor to a number of key aspects of the MSCA and H2020 research and innovation landscape. The core messages for the research community, policy makers and the public at large are the following:

Key message-1. RISE yielded a significant share of identified innovations and patents in MSCA (RAV-1):

- there is a significant share of RISE IR-identified innovations within the MSCA programme (~35%), especially considering the size and budget of RISE;
- the majority of RISE innovations are (new) product-oriented innovations (~60%) with a high level of appreciation by customers (>50%) and mainly concern emerging markets (~60%);
- RISE projects have yielded a significant number of patent applications and awarded patents (accounting for around the half of total number of MSCA patents).

Key message-2. RISE has been an important and dynamic contributor to H2020 global R&I collaborations (RAV-2):

- the international dimension remains a strong asset of RISE offering the highest participation of TC partners (~55%) in the MSCA family (even higher at ~80% for participants from emerging and developing TC);
- there are increasing trends of participation and commitment of TC partners within RISE calls (~8 times higher secondment intensity towards end of H2020);
- RISE is an important contributor to SME participation and innovation potential in TC through the triggering of global intersectoral collaborations (RISE offers ~50% of EU business-TC partnerships in H2020).

Key message-3. Participation and commitment of RISE business partners significantly increased during H2020 (RAV-3):

- Business²⁶ RISE partners receive the biggest share of total budget (~20%) within MSCA (budget share for SMEs: 15% for RISE vs 6% for MSCA on average);
- data show an increased commitment and active involvement of businesses measured by the secondment intensity (doubling towards end of H2020);
- there is a confirmed mutual benefit of the collaboration between non-academic (mainly SMEs) and academic organisations;
- ~15% of RISE innovation owners are TC partners, (and ~30% of TC-SMEs in MSCA participate in RISE), thereby indicating that the presence of businesses in RISE projects enhances their innovation capacity.

Key message-4. RISE projects highly contributed to the multidisciplinary dimension of MSCA and fostered long lasting research collaborations (RAV4 and RAV5):

- RISE has a consistently fair representation in all the main research disciplines²⁷, with a significant share of RISE projects (>20%) integrating three or more fields of science;

²⁶ For this impact analysis, data on “businesses” was collected in the CORDA database/Horizon Dashboard on the basis of entities’ classification as non-academic and more specifically under PRC (private for profit) status validated by EC services. In addition, the “SME” flag (self-assessment of entities) was used to identify this type of business organisations.

²⁷ For the purpose of data collection and analysis in this section, EuroSciVoc multilingual taxonomy was used according to which all projects in CORDIS are categorised in the following six main disciplines or fields of science: Social Sciences; Natural Sciences; Medical and Health Sciences; Humanities; Engineering and Technology; and Agricultural Sciences.

- RISE consortia succeed in maximising cross-fertilisation of disciplines and ensuring networking activities that foster long lasting collaborations.

Key message-5. RISE has been a positive contributor to careers and employment of fellows and promoted gender balance in research consortia (RAV6 and RAV7):

- RISE has a positive impact on personal and professional development and employment of fellows;
- RISE has encouraged the promotion of equal opportunities and has ensured a balanced participation of women and men at all levels, with increasing trends;
- A large majority of RISE projects (~80%) reported that at least one fellow participating in a RISE action has obtained, or constituted part of a team that obtained another grant.

Key message-6: Training activities of RISE projects offered to fellows new core skills along with varying networking opportunities (RAV8):

- A large majority of RISE seconded fellows (>60%) reported to have enhanced their skills/experiences (e.g. in management/communication) via RISE participation;
- the majority of RISE coordinators confirm a list of key skills that can be used as a basis for the development of core competencies of RISE fellows;
- RISE offers a high number of networking opportunities by the consortium approach to projects, the number of organisations involved and the variety of networking activities and training.

These key messages can be synthesised into the following conclusions:

- RISE has been a very appealing funding programme for businesses in the EU and beyond.
- RISE is a main contributor-even a leader in some domains-to the achievement of the MSCA objectives and wider R&I family goals for realising a European Research Area.
- RISE catalyses tangible innovations (patents, products, services, ideas) of economic and societal value.
- RISE makes a difference in sustained collaboration between organisations and career development of seconded staff.

These outcomes can be used for promotion of the new Staff Exchanges action in Horizon Europe and other evidence-based decision making activities.

8. References

- [1] European Research Area (ERA)
- [2] MSCA Work Programme for H2020 (2018-2020)
- [3] MSCA Work Programme for Horizon Europe (2021-2022)
- [4] Copy of the RISE Survey 2021. The survey was created for this RISE impact analysis and sent to 436 projects of RISE 2014-2018 calls. Responses were received from 222 coordinators (=51% response rate)
- [5] (a) End of fellowship evaluation questionnaire for MSCA fellows report (published on 25-02-21, link: <https://op.europa.eu/en/publication-detail/-/publication/cae806b5-7d63-11eb-9ac9-01aa75ed71a1/language-en>) (b) Results of MSCA end of fellowship evaluation questionnaire (H2020) 2023 update (published on: 30-01-23, link: <https://op.europa.eu/en/publication-detail/-/publication/2099ca03-a0a9-11ed-b508-01aa75ed71a1/language-en>)
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- [12] European Science Vocabulary ([EuroSciVoc](#))
- [13] Core competencies of EPIET – [European Programme of Intervention Epidemiology Fellowship programme of EU Technical Agency in Sweden](#), ECDC – European Centre for Disease Prevention and Control
- [14] RISE Innovation Radar Survey (2022). The survey was sent to 81 RISE projects that were screened via IR process during 2017-2019. Responses were received from 42 coordinators (=52% response rate)

Annex 1

List of RISE Added Value Indicators (RAV) and Measurable indicators (MIs).

RISE-Added-value- (RAV)☐	Measurable-indicators☑ (MI)☐
RAV-1: Innovations yielded☐	<p>MI-1(a): % of RISE project innovations out of REA project innovations☑ (+ maybe to make reference to capacity & potential innovation indicators?? to be checked)☑</p> <p>MI-1(b): share of RISE innovation type (product/service/method new or improved)☑</p> <p>MI-1(c): share of RISE innovation level (e.g. high, average)☑</p> <p>MI-1(d): share of the level of project innovation maturity (e.g. exploring, market ready)☑</p> <p>MI-1(e): Share of innovation market category (e.g. creating/emerging)☑</p> <p>MI-1(f): Number of patent applications/trademarks yielded by RISE project☐</p>
RAV-2: International dimension of RISE☐	<p>MI-2(a): Participation of TC organisations in RISE consortia/RISE-TC trends in H2020-Call☑</p> <p>MI-2(b): Share of RISE-TC over MSCA-TC/MSCA trends per country group (+RISE vs IRSES)☑</p> <p>MI-2(c): RISE-TC staff mobility flows / (+key TC countries) / share of RISE staff seconded to TC (or hosted by TC) over MSCA fellows☑</p> <p>MI-2(d): RISE-EU-IND/TC partnerships & TC-IND participation in MSCA Actions for H2020☑</p> <p>MI-2(e): Trends of AC fellows participation in RISE (vs MSCA) / RISE key AC participations☑</p> <p>MI-2(f): Qualitative observations from 2021 EU Survey / % of Champion RISE projects with TC partners / mobility flows & major positive impact☐</p>
RAV-3: Intersectoral dimension of RISE☑☐	<p>MI-3(a): Share of business participation in RISE consortia☑</p> <p>MI-3(b): Secondments flows☑</p> <p>MI-3(c): Share of business organisations reporting positive impact on transfer of knowledge across sectors, following their participation in RISE.☑</p> <p>MI-3(d): Share of SMEs declaring that project contributed to increase the scientific and technological capabilities of the own company☑</p> <p>MI-3(e): Share of business organisations declaring that participation in RISE improved their staff's career prospects☐</p>
RAV-4: Crossing disciplines☐	<p>MI-4(a): % Distribution of RISE multidisciplinary projects over the general fields of Science; comparison with MSCA☑</p> <p>MI-4(b): % of RISE multidisciplinary projects (that cover two or more scientific disciplines); comparison with MSCA.☑</p> <p>MI-4(c): Share of RISE fellows who confirmed multidisciplinary mobility after end of fellowships☑</p> <p>MI-4(d): % of TC partners who achieved multidisciplinary interaction through their RISE action☑</p> <p>MI-4(e): % of European researchers who achieved multidisciplinary interaction through their RISE secondments in TC partners☐</p>
RAV-5: Lasting research collaborations☐	<p>MI-5(a): Share of beneficiaries declaring that project contributed to increase company's ability to network☑</p> <p>MI-5(b): Number of Coordinators that confirm participation in follow-up projects due to RISE collaboration (e.g. evidence further funding).☐</p>
RAV-6: Gender dimension☐	<p>MI-6(a): % female over the total of RISE Researchers☑</p> <p>MI-6(b): % female over the total of RISE Researchers vs total MSCA and each MSCA type of action.☑</p> <p>MI-6(c): % female coordinators over total of RISE coordinators☑</p> <p>MI-6(d): % female coordinators over total of RISE coordinators vs total MSCA and each MSCA type of action☐</p>
RAV-7: Improved careers and employability☐	<p>MI-7(a): % of RISE fellows (out of their total) who confirmed they managed to upgrade their career via RISE participation?☑</p> <p>MI-7(b): Type of grants received due to RISE (e.g. national level or ERC grant to MSCA fellows) and/or other special recognition (e.g. prizes, top publications, etc...)?☑</p> <p>MI-7(c): Example of RISE fellows who managed to get a new job/position via RISE participation (promotion/salary increases)?☐</p>
RAV-8: Enhanced set of skills & experiences☐	<p>MI-8(a): % of RISE fellows who confirmed that they managed to enhance their skills/experiences via RISE participation.☑</p> <p>MI-8(b): Number of RISE fellows actively participating in networking activities with examples from projects:☐</p>

Annex 2

Non-exhaustive list of promising RISE innovations (Source: CORDA database/IR screening).

<i>Number</i>	<i>Innovation Title</i>	<i>Panel</i>	<i>Innovation type</i>	<i>Innovation level</i>	<i>Innovation maturity</i>	<i>Market maturity</i>
1	Novel Drug Delivery Systems (DDS) based on biodegradable hydrogels and nano-micro-particles for ocular treatments	LIF	New product	Obviously innovative and easily appreciated advantages to customer	Business Ready	Emerging market
2	Hybrid optoacoustic equipment to visualise deep-seated tumours for Open Surgery	LIF	New product	Obviously innovative and easily appreciated advantages to customer	Business Ready	Emerging market
3	New Biosensor Device to measure impedance and electrophysiological properties (for use in the cosmetic industry)	ENV	New product	Obviously innovative and easily appreciated advantages to customer	Exploring	Market-creating
4	Innovative photo-electrocatalysis process for wastewater purification	ENV	Significantly improved product	Obviously innovative and easily appreciated advantages to customer	Exploring	Emerging market
5	An on-line toolkit to help companies better manage their young employees, benefit from their aptitudes and skills and retain them to develop successful careers	ECO-SOC	Significantly improved product	Obviously innovative and easily appreciated advantages to customer	Business Ready	Emerging market
6	Online, free course content for training volunteer citizen translators for post-editing in crisis settings	ECO-SOC	New product	Obviously innovative and easily appreciated advantages to customer	Exploring	Emerging market

7	Innovative Gaseous Plasma Antenna for use in Telecommunications	MATH-PHY	New product	Obviously innovative and easily appreciated advantages to customer	Business Ready	Emerging market
8	Simulations on High Performance Computing facilities for the identification of Black holes and the related visualization animations using INTEL expertise	MATH-PHY	New process	Some distinct, probably minor, improvements over existing products	Exploring	The market is not yet existing, and it is not yet clear that the innovation has potential to create a new market
9	Blending of polymers with carbon nanoforms for improved electrochromic displays properties	CHE	Significantly improved process	Some distinct, probably minor, improvements over existing products	Exploring	Market-creating
10	Gas sensor nanomaterials based on "Safe by design" concept for VOC's components identification like methanol detection and further monitoring implementation applications	CHE	New product	Obviously innovative and easily appreciated advantages to customer	Tech Ready	Emerging market
11	Machine learning, clustering and anomaly detection for traffic estimation, road riskiness, and accident prevention	ENG	Significantly improved service	Obviously innovative and easily appreciated advantages to customer	Business ready	Market-creating
12	Improved reminding solutions deployed within smart environments to support persons with dementia	ENG	New product	Innovative but could be difficult to convert customers	Tech Ready	Emerging market

Annex 3

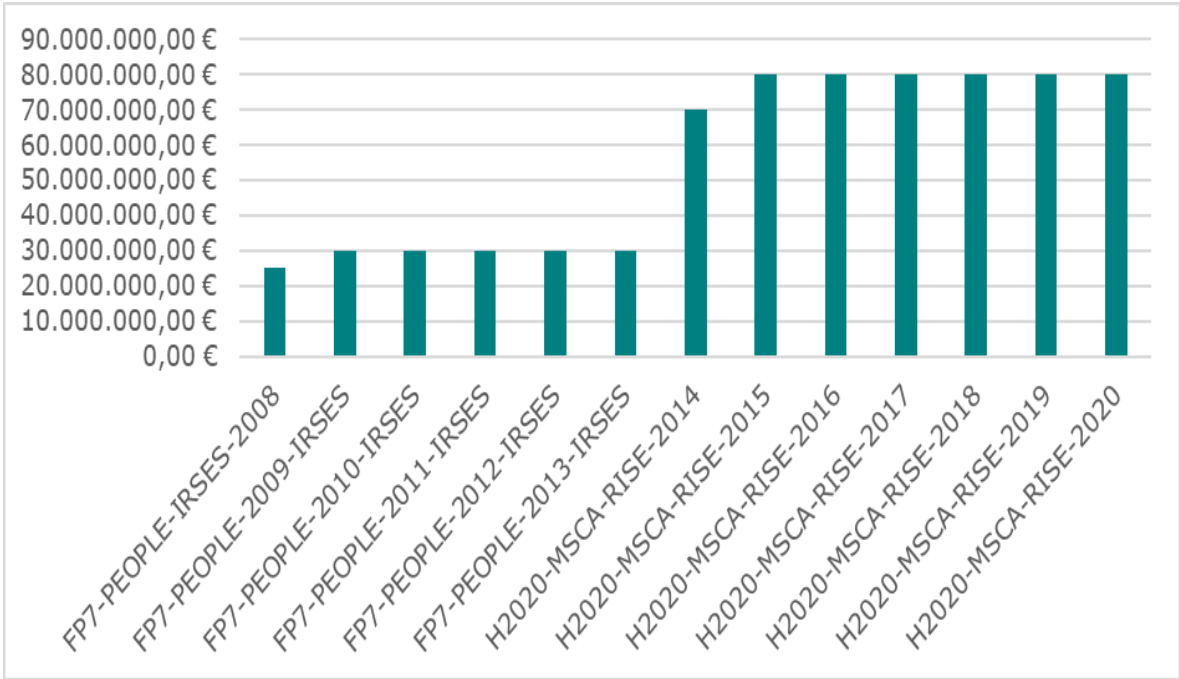


Figure 22: Comparison of RISE and IRSES in terms of call indicative (Source CORDA database).

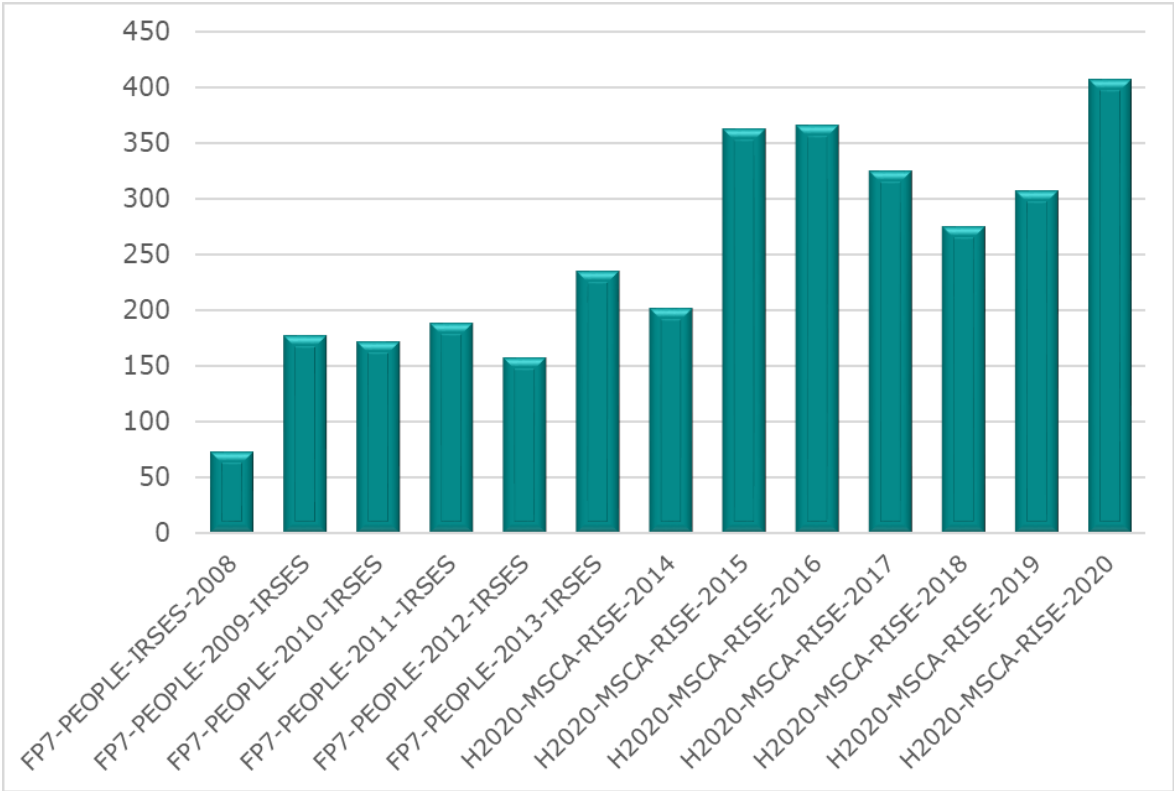










Figure 23: Comparison of RISE and IRSES in terms number of proposals received (Source CORDA database).

Annex 4





Challenges and opportunities collected by the RISE Survey 2021 [4].

Q14. What “core competencies” or “skill sets” do you think would be valuable to include in general outcomes (of RISE or other call/programme) MSCA fellows programmes to help their employability or otherwise career development in a European research setting: (please tick all that apply) - Research skills and ability to work between sectors and disciplines.





General skills:

		Answers	Ratio
Topic specific knowledge (scientific content and technologies)		156	69.33%
Grant writing		163	72.44%
Searching for grant opportunities (national and EU level)		141	62.67%
Searching for partners for grant applications		119	52.89%
Organisation/participation in workshops		121	53.78%
Leadership skills		149	66.22%
An awareness of IPR protection and the patent application process		87	38.67%
No Answer		2	0.89%









Dissemination skills:

		Answers	Ratio
Ability of writing scientific publications		200	88.89%
Fully knowledgeable of open access processes		129	57.33%
Capable of preparing/giving scientific presentations		166	73.78%
No Answer		3	1.33%

Communication skills:

		Answers	Ratio
Use of social media		143	63.56%
Ability to develop outreach activities for different age groups		148	65.78%
Knowledge of the H2020 Booster services		96	42.67%
No Answer		14	6.22%

Overall proficiency in the listed tools and cross-cutting policy issues in H2020 programme:

		Answers	Ratio
Funding and tenders portal knowledge		158	70.22%
Applying as an expert		112	49.78%
Grant management tools		143	63.56%
Open Science (open access, data management, etc....)		148	65.78%
Innovation Radar		72	32%
Gender dimension		118	52.44%
Key policy areas of European Commission (e.g. Green Deal, Missions, ERA, etc....)		100	44.44%
No Answer		8	3.56%

Annex 5

Indicative list of IR-RISE success stories leading to market product /patents (RISE Innovation Radar Survey-2022).

IR-RISE success story (+cordis link)	Title & short description of innovation
LISTEN (644283)	Development of the software and hardware components of a Wireless Acoustic Sensor Network for the smart home (as the front-end for a hands-free large-vocabulary speech recognition system)
CURE-XF (734353)	Market idea development of (i) innovation titled “Finding Varieties of Olives that are resistant to Xylella fastidiosa” (ii) innovation titled “Traps for Spittlebugs”
QUEST (691037)	Market development of SYP auto-sampler (see page waikatoscscientific.com for details)
WASRCARd (645759)	Market development of a wrist/arm wearable device (enabling technology for non-invasive recording of heart rhythms during long periods >36h)
miRNA-DisEASY (690866)	Optimization and validation of a miRNA detection kit based on Optoi semiconductor optical detector
REMIX (778078)	Development of dermal delivery system from sol-gel material using high pressure instrument (for oils and lipophilic drugs for skin applications). The product first designed for the market of Thailand as starting point with the idea to move the product to EU market (<i>Thailand registered and protected trademark: 048702</i>)
CO2MPRISE (734873)	Patent application on the setup of the procedure for CO2 conversion by using a mechanochemical process under continuous flow conditions (<i>IT 102021000007091</i>)
VAHVISTUS (734759)	<ul style="list-style-type: none"> - Patent on “bioactive inorganic nanomatrices based on hydrated polyvalent transition metal oxides” (<i>patent application No. BR 10 2019</i>) - Synthetic pathways to novel thiol-containing stabilizing ligands (<i>patent applications EP11712599.7 and WO10128204</i>)

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