European Commission

Study on the impact of Erasmus+ Higher Education Partnerships and Knowledge Alliances at local, national and European levels on key Higher Education policy priorities

Education, Youth Sport and Culture

EUROPEAN COMMISSION

Directorate-General for Education, Youth, Sport and Culture

Directorate B — Youth, Education and Erasmus+

Unit B.1 — Higher Education

Contact e-mail: EAC-UNITE-B1@ec.europa.eu

European Commission
B-1049 Brussels

EUROPEAN COMMISSION

Study on the impact of Erasmus+ Higher Education Strategic Partnerships and Knowledge Alliances at local, national and European levels on key Higher Education policy priorities

Final Report

Project team:

Mantas Budraitis, Vitalis Nakrošis, Dovydas Caturianas, Laurynas Stankevičius, Gintaras Martinaitis, Gustė Statulevičiūtė, Karolina Zinkevičiūtė, Bernhard Dachs, Michael Dinges, Robert Kalcik, Anja Köngeter, Anna Wang

CONTRACTOR:

PPMI Group

SUBCONTRACTOR:

AIT Austrian Institute of Technology

LEGAL NOTICE

Luxembourg: Publications Office of the European Union, 2019

Print ISBN 978-92-76-03964-8 doi:10.2766/35865 NC-02-19-324-EN-C
PDF ISBN 978-92-76-03962-4 doi:10.2766/87791 NC-02-19-324-EN-N

Abstract

This report summarises the key findings of the study on the impact of Erasmus+ Higher Education Strategic Partnerships and Knowledge Alliances at local, national and European levels on key higher education policy priorities. In addition to the analysis of the impacts each of these actions had at policy/systemic, organisational and individual levels, the study also reflects on complementarities, synergies and gaps in the combined outcome of transnational cooperation projects supported by the Erasmus+ programme. This research study aims to contribute to the overall assessment of the Erasmus+ programme and should thus be useful for reflection on the next generation of the EU programme in the field of education, in particular for the dimension of transnational cooperation and its relevance for national and European policy development.

The study was conducted by PPMI (Lithuania) and the Austrian Institute of Technology (Austria). It relies on evidence gathered and analysed using a mix of qualitative and quantitative methods, including 1) interviews with EU officers, representatives of National Agencies and National Authorities, as well as representatives of participating organisations, 2) an extensive survey programme addressing coordinating and partner organisations of the Erasmus+ Higher Education Strategic Partnership and Knowledge Alliance projects, and representatives of the National Agencies and National Authorities, 3) a large-scale case study programme, and 4) an analysis of various publicly available data and data provided by the Commission/EACEA.

Building on the findings of the analysis, the report provides recommendations on areas where implementation and results of Higher Education Strategic Partnerships and Knowledge Alliances could be improved in the future, while also identifying and specifying how the different types of stakeholders could contribute to this end.

Table of Contents

List of tables, figures and boxes

Tables

Figures

Boxes

Executive Summary

This study provides the analysis of two types of Erasmus+ cooperation projects: Higher Education Strategic Partnerships and Knowledge Alliances, including their coverage of the policy priorities and objectives.

The study assessed what impact these projects had at systemic/policy, organisational and individual levels and how this affected the modernisation of higher education systems in Europe. Study findings are based on quantitative survey responses from 258 Strategic Partnership and Knowledge Alliance projects awarded in 2014-2016. In comparison, it is estimated that to date more than 1 000+ projects have been funded through these actions of the Erasmus+ programme. The research is also based on results of a quantitative survey of the Erasmus+ National Agencies and National Authorities, findings of 26 case studies in which individual projects were analysed in greater detail and evidence drawn from a qualitative follow-up survey of Strategic Partnership projects.

Key findings on systemic level impacts

Inter-university cooperation supported through Erasmus+ Strategic Partnerships in Higher Education and Knowledge Alliances leads to ***an increase in the quality, relevance, innovativeness and accessibility of European higher education.***

Both Higher Education Strategic Partnerships and Knowledge Alliances were found to be **highly relevant** in addressing the objectives defined in the EU Higher Education Modernisation Agenda[1] and the Communication on Opening Up Education, paving the way in implementing the European Education Area[2]. In addition, both actions and their projects **effectively contribute and continue to drive positive developments** in European higher education.

More specifically, the study has identified that Higher Education Strategic Partnerships strongly contribute to realising **the European Education Area goals** and **enable more active knowledge and innovation transfer**, especially among project partners:

- **More than 90% of higher education institutions** have indicated that Strategic Partnerships **improve quality and relevance of higher education curricula/ learning and teaching.** These projects aimed for a multi-disciplinary approach, for instance by establishing a project-based learning platform for teachers working in the field of engineering or developing a digital learning tool on cyber security training.
- **Four in five higher education institutions** feel better equipped to tackle skills mismatches in the labour market by fostering interdisciplinarity, facilitating better ICT integration, as well as strongly supporting development and application of innovative pedagogies.
- **Over 40% of projects** develop **tools and approaches for innovative teaching,** which, combined with better ICT integration, contributes to an improved workforce in higher education institutions, higher numbers of university graduates with improved digital competences, better higher education accessibility to students from disadvantaged socio-economic backgrounds, etc.

[1] https://eur-lex.europa.eu/legal content/EN/TXT/?qid=1496304694958&uri=COM:2017:247:FIN
[2] https://ec.europa.eu/education/education-in-the-eu/european-education-area_en

- **20% of projects** contribute to the introduction and strengthening of **entrepreneurship and entrepreneurial learning** in higher education despite limited business presence in projects as formal partners.
- **Three in five projects** are thought to have contributed to social inclusion and non-discrimination in higher education.

The above statements were also supported by most of the National Agencies and National Authorities.

Knowledge Alliances had a similar effect, as they:

- **strengthen the knowledge triangle**, which serves both the needs of participating businesses and the participating higher education institutions;
- contribute to **improved quality and relevance** of higher education curricula through the development of new teaching and learning approaches;
- develop and apply methods related to **student-centred learning** and were characterised by **openness towards experimental and novel** ways;
- strongly contribute to reinforcing the response of the higher education system to **macroeconomic challenges**, such as employment and economic growth. This primarily happens to **effective university–business cooperation** within projects;
- proved to be effective and relevant to addressing **skills mismatches** and **increased 'resilience' of graduates,** by emphasising business needs and focusing on **soft and transversal skills development**.

The extent to which projects succeeded to trigger systemic/policy level changes by directly reaching out to policymakers at EU and/or national levels depends on whether there is a decentralised (national) or a centralised (European) management mode of Higher Education Strategic Partnerships and Knowledge Alliances respectively:

- The impact of Strategic Partnerships is triggered by the **high number of relevant projects that contribute to gradual changes at systemic/policy level**. The effects of these gradual changes, however, could be even higher if these projects received more **centralised support for mutual learning, cross-project and cross-action knowledge exchange** and innovation transfer (e.g. thematic Cluster Meetings, e-platform like Yammer, etc.).
- On the other hand, the impact of Knowledge Alliances comes from the centralised mode of management, as this enables the projects to achieve incremental policy changes in the area **of university–business cooperation**.

Key findings on organisational/institutional-level impacts

Strategic Partnerships in Higher Education are essential to enabling higher education institutions to develop innovative teaching and curricula, to be more interdisciplinary, more accessible and digital and to better deliver on labour market needs:

- **9 out of 10 organisations** taking part in Erasmus+ Strategic Partnerships are more internationally oriented as a result of the cooperation established through the projects;
- altogether **85% of higher education institutions** consider projects to have directly contributed to innovation in pedagogical skills;
- **up to 50% of higher education institutions** involved in a Strategic Partnership, have introduced new digital tools in teaching and learning activities as a direct result of their project.

Moreover, study findings confirmed that **project objectives are strongly linked to the institutional strategies of organisations** participating in both Higher Education Strategic Partnerships and Knowledge Alliances.

Both Higher Education Strategic Partnerships and Knowledge Alliances are equally important and successful in creating **sustainable cooperation within newly formed consortia and in strengthening the already existing partnerships** (e.g. by enabling continuity of previous collaborations in the form of follow-up projects within the framework of Erasmus+). For example, in **90% of cases, cooperation between universities funded by Strategic Partnerships continued beyond the scope of their project.**

There is also a strong complementarity in this regard between Higher Education Strategic Partnerships and Knowledge Alliances:

- Higher Education Strategic Partnerships contributed to **knowledge transfer between different sectors and partners**, as well as to sharing knowledge and good practices between different types of participating organisations from different sectors, regions and countries.
- Knowledge Alliances very effectively **improved cross-sectoral cooperation** by successfully engaging businesses as project partners and as a target group of project activities. These projects were attractive to businesses, as they offered new and strengthened interactions, as well as new trainings in cooperation with higher education institutions.

The **motivation of universities/institutions** to engage in Higher Education Strategic Partnerships and Knowledge Alliances was found to be similar and **driven by proven positive outcomes of these transnational cooperation projects**, i.e. strengthened university profiles and recognition in their fields; reputation improvement resulting from the increased employability of students, strengthened professional profiles of teaching staff and increased institutional capacity for innovation.

The key **motivators for business participation** in Knowledge Alliances were also linked to **concrete expectations** on outputs/outcomes of these projects. Even more than in the case of universities, business participation was found to be driven by specific current or future needs of involved companies and enterprises. **Hence, businesses involved in Knowledge Alliances aimed to increase their innovation capacity through accessing state-of-the-art research done by higher education institutions and fresh ideas from students, and to strengthen their international and cross-sectoral cooperation networks.**

The study found that results were **innovative and highly transferable** in both actions. For example, 55% of Higher Education Strategic Partnerships produced updated or new courses/curricula, 40% produced innovative teaching materials and around 33% of projects developed digital platforms/e-learning tools. In order to generate these kinds of outputs, more than 50% of Higher Education Strategic Partnerships actively used the **different mobility formats** available. By using mobility activities as a 'testbed' for development and experimentation with innovative methods and approaches, over 90% of Higher Education Strategic Partnerships enabled further **internationalisation** of higher education institutions, facilitated **intercultural learning and cross-border cooperation**, and led to wider **integration of ICT and blended learning in higher education curricula**.

Very much like Higher Education Strategic Partnerships, Knowledge Alliances were focused on developing new, innovative and multidisciplinary approaches to teaching and learning – new methods, guidelines, courses, curricula, integrating different study

modes, but also often resulted in the creation of new networks of organisations/ professionals/virtual communities. These outputs were due to the Knowledge Alliances' commitment to **cross-sectoral learning and collaboration**, the will to increase course variety through **multidisciplinarity and study mode integration** and the application of **innovative formats with a multiplier effect** (e.g. through 'train-the-trainer' approaches). So, embedding and taking up outputs developed by awarded projects has led to the following organisational outcomes: 1) innovative approaches for addressing target groups, 2) more modern, dynamic, committed and professional environment inside the organisation, 3) increased capacity and professionalism to work at EU/international level, etc.

Key findings on individual level impacts

Higher Education Strategic Partnerships and Knowledge Alliances strongly contribute to the improvement of skills and competences of students, teaching and business (in the case of Knowledge Alliances) staff involved in project activities:

- According to **82%** of higher education institutions, students involved in Higher Education Strategic Partnership projects improved their **social, civic and intercultural competences**, and also enhanced their **transversal skills**, such as digital and entrepreneurial skills, creativity and teamwork.
- **A third of projects** of Higher Education Strategic Partnerships, at least to some extent, led to the **creation of spin-offs and start-ups**, directly contributing to the emergence of entrepreneurs. Information on these ventures is limited, although one spin-off is meant to cater services for weddings.
- In **more than 60%** of projects, the teaching staff involved in Higher Education Strategic Partnerships advanced their **pedagogical skills and competences** through increased participation in innovative blended mobility formats, by learning about new and innovative ICT-facilitated teaching methods, being exposed to the benefits of working in international teams, collaborating with business, etc.
- Knowledge Alliances had a **high impact on the development of skills needed for better labour market outcomes**, such as transversal, innovation, and entrepreneurial skills.
- Soft/transversal skills development in Knowledge Alliances are perceived to make graduates and staff more successful on the labour market, as well as to contribute to their **increased 'resilience'**, by equipping them with skills applicable across professions and future fields.
- University–business cooperation within Knowledge Alliances allowed for university–business **joint development and delivery of trainings**, oftentimes in both sectors, ensuring that students, higher education staff, and company employees are addressed. Cross-sectoral cooperation in Knowledge Alliances promoted the implementation of **real-life problem-based learning approaches** that allow for **practical experience** and development of key transversal skills such as critical thinking, cognitive flexibility, teamwork, etc.

Study recommendations

Based on these study findings, the following actions are recommended:

- At the level of the European Commission/EACEA, National Agencies and National Authorities:
  1. Take active measures to **facilitate policy learning and the exploitation of outcomes** produced by Higher Education Strategic Partnerships and Knowledge Alliances at systemic level.
  2. Support more actively **cross-project and cross-action learning** in Knowledge Alliances and, especially in Higher Education Strategic Partnerships.
  3. **Keep the key features** of both Higher Education Strategic Partnerships and Knowledge Alliances, allowing the future projects to build on the complementarities and strengths of these features.
  4. Take measures to address the **increasing demand for more active monitoring of the Erasmus+ transnational cooperation** in higher education project portfolios.
- At the level of project coordinators and partners:
  5. Make additional efforts in both Higher Education Strategic Partnerships and Knowledge Alliances **to embed project outputs** within participating organisations and ensure organisation-wide awareness of these outputs.
  6. Take into consideration the **success factors of successful transnational cooperation projects** in future Strategic Partnerships in Higher Education and Knowledge Alliances.

Introduction

The importance of a high-quality higher education, as well as of cooperation between higher education and other sectors for the overall social and economic development in Europe has long been recognised by policymakers at the EU and national levels. In line with the European higher education policy developments, the Erasmus+ programme puts great emphasis on fostering cooperation between higher education institutions (*hereinafter – HEIs*), businesses and other stakeholders. In particular, the implementation of Strategic Partnerships and Knowledge Alliances under Key Action 2 saw a substantial increase in their grant budget allowing more partnership projects to be selected and funded.

In this context, there is much interest in the contribution of Strategic Partnerships and Knowledge Alliances to supporting national and European higher education policy developments and the impact of these transnational and often cross-sectoral projects on key higher education policy priorities and innovation in higher education. To establish the extent of these impacts, this study provides an in-depth analysis of both actions in parallel, elaborating (whenever possible) on the specificities, differences/similarities, synergies and complementarities between these two actions.

The study was launched in the wider framework of the overall assessment of the Erasmus+ programme. It is expected that the results of this study will be useful for and inform the preparation of the next generation of EU programme(s) in the field of education, in particular for the dimension of transnational cooperation in higher education.

Object of analysis and scope of the study

The **overall objective** of this study was to provide an analysis of two types of Erasmus+ transnational cooperation projects – Higher Education Strategic Partnerships (*hereinafter* – HE SPs) and Knowledge Alliances (*hereinafter* – KAs) – and their coverage of the policy priorities and objectives. The analysis assessed what impact these projects had at local, national and European levels on the modernisation of higher education systems.

More specifically, this is an **in-depth study with evaluative character**, which delivers the following results:

- an assessment of impacts of two Erasmus+ actions on higher education policy priorities and innovation at systemic/policy, institutional/organisational and individual levels based on a rigorous approach, sound and innovative methodology;
- a comparative analysis, focusing primarily on the specificities, differences/similarities, synergies and complementarities of HE SPs and KAs;
- a set of specific and actionable recommendations as to how the design and implementation modalities of higher education partnerships could be improved in future EU transnational cooperation actions.

Structure of the report

The report starts with a brief *outline of the methodology* applied to collect, process and analyse the data needed to inform the study. The description of methodological aspects is followed by the analytical part of the report, which is organised into *three main chapters, each covering a different – systemic, organisational and individual – level of analysis*. In every chapter we have sections for presenting separately the findings about impacts of HE SPs and KAs, and a dedicated sub-chapter for the

insights on differences, similarities, synergies and complementarities of these two actions. The report concludes with a chapter on study conclusions and recommendations.

The main report is complemented by a set of annexes. Most of these annexes are working documents developed to inform the analysis and to present in greater detail the quantitative and qualitative data collected while preparing this study:

- Annex 1: Thematic case studies on impacts of Higher Education Strategic Partnerships;
- Annex 2: Thematic case studies on impacts of Knowledge Alliances;
- Annex 3: Project case studies on individual Higher Education Strategic Partnerships;
- Annex 4: Project case studies on individual Knowledge Alliances;
- Annex 5: Survey data and metadata;
- Annex 6: List of interviewees.

1. Methodology

The analysis presented in this study was based on findings drawn from multiple sources, primarily from a wide survey programme covering all key stakeholders (i.e. participating organisations, National Agencies and National Authorities) of HE SP and KA actions, findings of thematic and individual project case studies, interview data, administrative and publicly available data about HE SP and KA projects, outcomes of the social network analysis conducted by our team specifically for this study, etc. All study findings were triangulated to ensure they are reliable and to make full use of both quantitative and qualitative data feeding the analysis.

Below follows a brief overview of all key data collection and analysis methods and techniques applied in this study.

Desk research

Desk research for this study was organised and consisted of the following activities:

- *literature review*, which involved identification and review of relevant policy documents, programme guidelines, relevant studies and evaluations, position papers, Erasmus+ country reports, etc.
- *qualitative analysis of the HE SP project summaries* resulting in systematic review of 476 project summaries available on the Erasmus+ project results platform;
- *analysis of administrative and monitoring data*, which consisted of a review of HE SP project applications and/or reports received from projects selected for case studies, project applications and reports of all KA projects (awarded in 2014-2016) received from the EACEA, and administrative and monitoring data about HE SP and KA projects (awarded in 2014-2016) provided to the study team by the Commission/ EACEA.

Exploratory interviews

Exploratory interviews were used to inform the development of survey questionnaires and case study templates. To this end, 11 interviews organised into three strands were carried out:

- at *EU level* the study team participated in two meetings with DG EAC and EACEA officials, each focusing on one of the Erasmus+ actions analysed in this study;
- at *national level* the study team had six interviews with representatives of Finnish, German and Slovenian National Agencies and National Authorities;
- at *project level* exploratory interviews were conducted with the representatives of organisational beneficiaries of KA projects – we conducted two face-to-face interviews during the thematic cluster meeting organised by EACEA in February 2018.

Survey programme

The original survey programme aimed to collect feedback and perceptions of participating organisations, National Agencies and National Authorities. It consisted of four survey campaigns: survey of the National Authorities, survey of the National Agencies, survey of organisations participating in HE SP projects, and survey of organisations participating in KA projects. Its implementation consisted of three stages: 1) testing of the survey questionnaires, 2) deployment and implementation of the survey, and 3) cleaning and statistical analysis of the survey data.

One-by-one all four surveys were launched and implemented from May 14th to June 8th. Invitations to participate were sent to entire populations of the Erasmus+ NAs, NAUs and coordinators of HE SP and KA projects awarded in 2014-2016. The study team is especially grateful to all the NAs, who helped with the distribution of invitations to coordinators of HE SPs. The results of all four surveys are provided in Annex 3.

The response rate in all surveys was high (see Table 1). In particular, the results were found to be statistically significant (at 95% confidence level and 5% margin of error) for both surveys of participating organisations in HE SPs and KAs.

Table 1. Results of the survey programme

SURVEY	POPULATION	COMPLETE REPLIES	RESPONSE RATE
NAU survey	35	19	54%
NA survey	34	28	82%
HE SP survey	478 projects	220 projects	46% of projects
	1 283 organisations:	374 organisations	29% of all organisations
	409 coordinators[3]	177 coordinators	43% of all coordinators
	874 partners	187 partners	21% of all partners
KA survey	40 projects	38 projects	95% of projects
	443 organisations:	130 organisations:	29% of all organisations
	40 coordinators[1]	23 coordinators	58% of all coordinators
	403 partners	107 partners	26% of all partners
Follow-up HE SP survey	108 projects	63 projects	58% of all projects
	153 organisations	74 organisations	48% of all organisations

Source: PPMI.

In October 2018 the study team launched an additional/follow-up survey of organisations participating in HE SP projects. The main goal of this qualitative survey was to inform the preparation of case studies on impacts of HE SPs in pre-defined thematic areas. The results (raw data) of this survey are provided in Annex 4.

Case studies

The case study analysis was used in this study to 1) validate the causal links implied by the quantitative evidence collected through surveys, and 2) contextualise/conduct an in-depth analysis of impacts identified at systemic, organisational and individual levels. To this end, the study team prepared **34 case study reports**, including 22 case studies focusing on analysis of HE SPs and 12 case studies analysing the KA action.

- 5 out of 22 case studies analysing HE SPs are *thematic case studies* (see Annex 1);
- the remaining 17 case studies are *case studies of individual HE SP projects* (see Annex 5);
- 3 out of 12 case studies analysing KAs are *thematic case studies* (see Annex 2);
- the remaining 9 case studies are *case studies of individual KA projects* (see Annex 6).

[3] Some organisations have coordinated several projects, thus this number indicates organisations coordinating at least one project.

Social network analysis

Social Network Analysis (*hereinafter* – SNA) utilises what is called 'relational data,' i.e. contacts, ties and connections, group attachments that relate one agent to another and that cannot be reduced to the properties of the individual agents themselves[4]. In this study SNA was used to systematically assess the topics/themes covered by HE SPs awarded in 2014-2016, and to prepare visualisations of thematic clusterisation patterns in funded projects. In addition, the study team utilised SNA to describe the overall network structure and showcase the overall integration and interconnectedness of participating organisations involved in HE SPs awarded in 2014-2016 (see sub-sections 2.1.2 and 2.3.2).

[4] Scott, John. *Social network analysis*. Sage, 2017, p. 4.

2. Main study findings

2.1. Findings on systemic/policy level impacts

2.1.1. Impact of Higher Education Strategic Partnerships on the modernisation of higher education

Key findings

1. Due to the strong relevance of topics covered for higher education policies and their critical mass*, Higher Education Strategic Partnerships (HE SPs) proved to be **a highly relevant instrument** for addressing most of the objectives set out in the 2011 EU Higher Education Modernisation Agenda and the 2013 Communication on Opening Up Education.
2. The effectiveness of Strategic Partnerships in terms of their **contribution to systemic/policy-level changes ranged from high to moderate**, depending on the priority area considered.
3. Strategic Partnerships were **highly effective at improving quality and relevance of HE** by fostering interdisciplinarity, facilitating better ICT integration in HE, as well as strongly supporting development and application of innovative pedagogies.
4. Strategic Partnerships effectively developed an assortment of tools and approaches for innovative teaching, promoted the professional development of innovative educators, which in combination with better ICT integration already contributed and will continue contributing to the redesign of curricula, improved workforce in HEIs, higher numbers of university graduates with improved digital competences, better HE accessibility to students from disadvantaged socioeconomic backgrounds, etc.
5. Through cross-border cooperation between international project partners, produced outputs and extensively used mobility activities, Strategic Partnerships strongly contributed to **realisation of the European Education Area goals** and **enabled more active knowledge and innovation transfer**, especially among project partners.
6. Strategic Partnerships strongly contributed to the introduction and strengthening of entrepreneurship and entrepreneurial learning in HE despite very limited business presence in projects as formal partners.
7. Albeit to a smaller degree (in comparison to other areas), Strategic Partnerships were conducive to increasing the social inclusion in HE and reinforcing the democratic values and fundamental rights in the participating countries.

Relevance for addressing higher education modernisation and broader challenges

As indicated in the Erasmus+ programme guides 2015 and 2016[5], HE SPs should be instrumental in supporting higher education institutions as they respond to challenges identified in the 2011 EU Modernisation Agenda and should take action in at least one of its priority areas: 1) increasing attainment levels; 2) improving the quality and relevance of higher education; 3) strengthening quality through mobility and cross-border cooperation; 4) making the knowledge triangle work; and 5) improving

* During the period analysed by this study (i.e. 2014-2016), the number of projects amounted to almost 500 projects, covering all Erasmus+ Programme Countries.

[5] Erasmus+ programme guide 2014 did not define any field-specific priorities for Strategic Partnership projects. However, most of the field-specific priorities defined in subsequent programme guides were included among the aims of the Strategic Partnership action.

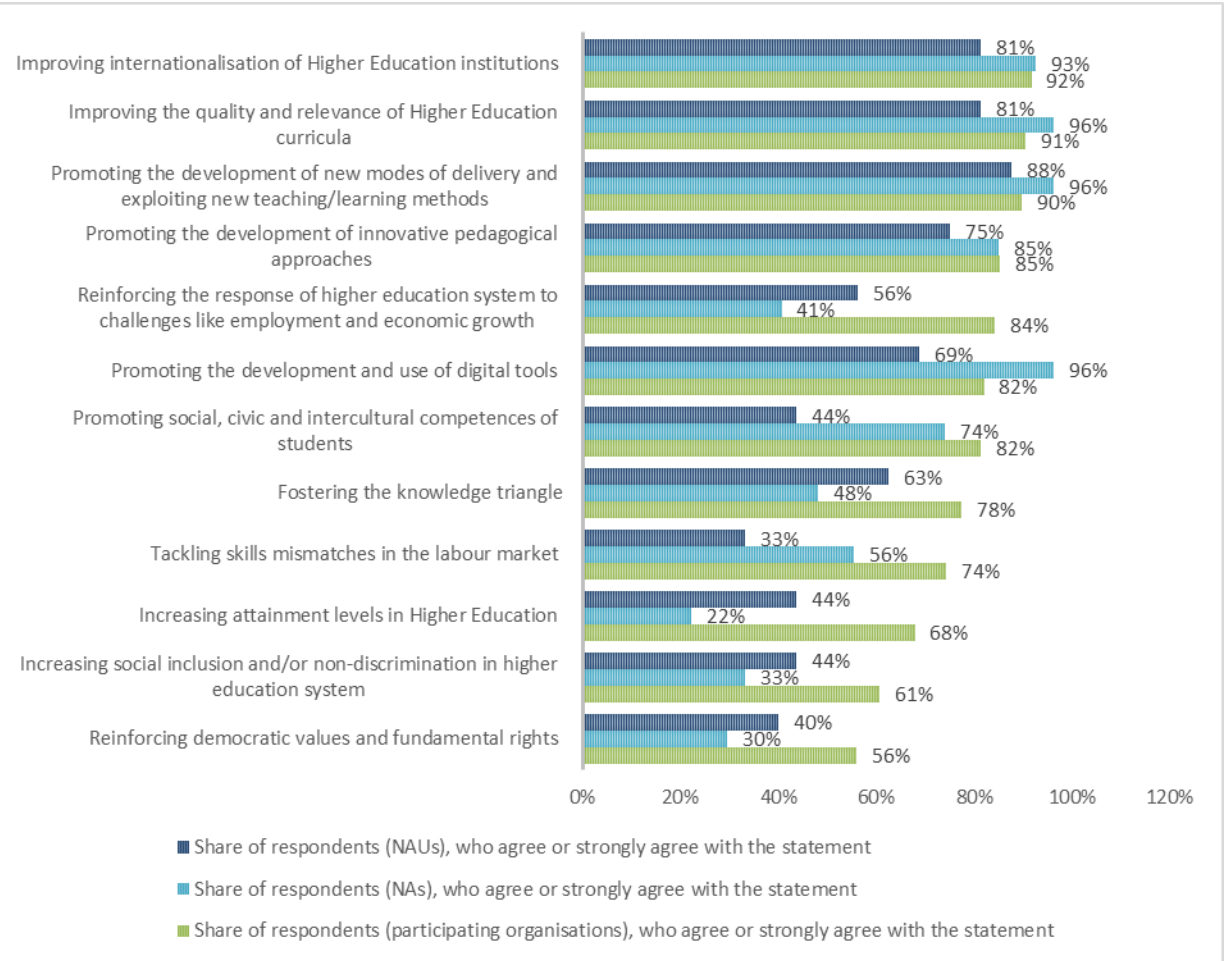
governance and funding[6]. Higher Education Strategic Partnerships should also support the implementation of the 2013 Communication on Opening Up Education, by:

1. promoting the development of new modes of delivery, in particular the integration of a greater variety of study modes through new forms of personalised learning, strategic use of open educational resources, virtual mobility, blended mobility and virtual learning platforms;
2. stimulating the internationalisation of Europe's higher education systems in Europe and beyond.

In addition to the priorities above specific to the higher education field, all Strategic Partnership projects are required to address at least one horizontal priority, as specified in the Erasmus+ programme guide of the respective year.

As demonstrated by Figure 1, there is some variation in the extent to which HE SPs are being regarded as **relevant for addressing the challenges and strategic objectives** defined in the previously mentioned policy documents. It is also evident, however, that HE SPs awarded in the period 2014-2016 were strongly aligned with and addressed most of these strategic objectives rather thoroughly.

Figure 1. Relevance of the HE SP projects towards addressing various challenges, as perceived by participating organisations, the National Agencies and National Authorities



[6] In 2017 the Renewed EU Agenda for Higher Education was adopted, providing a new framework for the Calls after 2017. However, Higher Education Strategic Partnerships and Knowledge Alliances awarded under the 2017 and 2018 Calls are beyond the scope of this study.

Source: Survey of HE SP participating organisations. Answers to the survey question "Overall, do you agree or disagree that your project contributes to addressing the following challenges?". Surveys of the National Agencies and National Authorities. Answers to the survey question "In your opinion, have the Higher Education Strategic Partnership projects, which were awarded under 2014, 2015 and 2016 calls, helped to overcome the following challenges that Erasmus+ programme aims to address?".

Based on the survey, participating organisations perceive **HE SPs as particularly relevant for increasing the internationalisation of HEIs and/or improving the quality and relevance of higher education curricula** – slightly more than 90% of participating organisations surveyed in this study claimed their projects address these challenges. There is also a consensus that HE SPs are of critical importance to promoting the development of new modes of delivery and exploiting new teaching and learning methods, fostering the development of innovative pedagogical approaches or reinforcing the response of higher education systems to employment and economic growth challenges.

The opinions of participating organisations were to a large degree echoed by the National Agencies and National Authorities, with more than 90% of NAs (who have completed the survey) agreeing that HE SPs primarily addressed challenges, such as development and use of digital tools, improvement of curricula's quality and relevance, development of new modes of delivery and exploitation of new technologies in learning and teaching, also improved internationalisation in higher education. Albeit with lower certainty (ranging from 69% to 88%) and in different order, the NAUs picked largely the same set of challenges as NAs and participating organisations when indicating how relevant were HE SPs in addressing these challenges.

Findings drawn from quantitative (survey) data corroborate with insights of the Erasmus+ mid-term evaluation National Reports, according to which HE SPs are particularly useful for improving the quality of training, innovation and internationalisation of higher education systems, as they bring together organisations from different geographical contexts and pool their competences and experiences[7].

Contribution to systemic/policy level changes

The following sub-sections of this chapter summarise study findings on the extent to which HE SPs were not only relevant, but also effective at enabling and driving systemic/policy level changes.

Improving quality and relevance of higher education

As demonstrated in Figure 2, HE SPs were regarded as moderately or highly effective in addressing multiple challenges faced by higher education. According to participating organisations, their projects were simultaneously driving a multitude of systemic developments in higher education, ranging from production of evidence that can be used to develop national higher education systems to improvement of knowledge exchange within higher education networks. In order to assess the contribution of HE SPs to improving the quality and relevance of European higher education, it is particularly worth drawing our attention to the impacts of HE SPs in increasing ICT integration in higher education curricula, and their input to wider application of innovative methods/innovative pedagogies.

In general, the study found HE SPs to be a very important and effective instrument for **better ICT integration in higher education curricula**. This finding was strongly supported by opinions of participating organisations and NAs: almost 70% of respondents in the first group and around 78% in the second group agreed or strongly agreed on this impact of HE SPs. The NAUs were more modest in their assessment,

[7] National Report on the Implementation and Impact of Erasmus+ Programme – Italy (translation by Silvestrini, M.), p. 13-14.

with only 35% of respondents in this group acknowledging the positive developments in this area as a result of implemented HE SPs. Based on the evidence presented further in this report and drawn from multiple case studies, the broader outcomes of HE SPs contributing to this positive development were found to be rather diverse:

1. HE SPs already contributed and will contribute in the future to improved quality of higher education through redesign of curricula, programmes and modules in HEIs driven by better ICT integration. For instance, 46.5% of participating organisations indicated that e-learning platforms, online collaboration platforms and databases were/will be produced as a result of their project. This effect should not be limited to HEIs implementing HE SPs, as other HEIs can benefit from relevant open-access intellectual outputs.

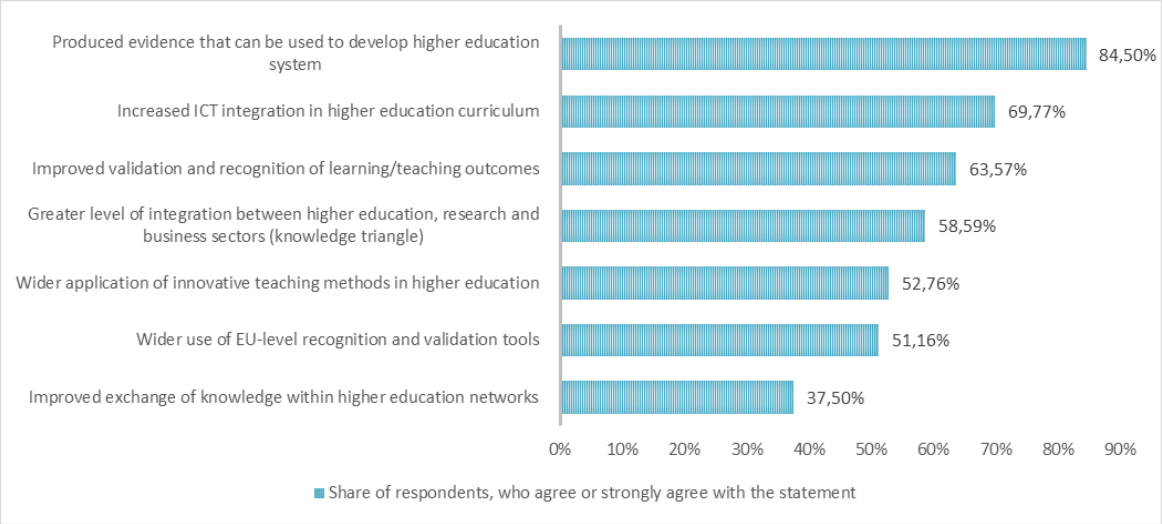
2. Labour markets in Programme Countries should see an **influx of graduates with improved digital competences**, some of them direct beneficiaries of (mobility) activities in HE SPs, while others – students benefiting from the ICT-based or ICT-enriched intellectual outputs developed as a result of HE SPs. A total of 92% of participating organisations indicated that students were direct beneficiaries of the intellectual outputs (including ICT-based or ICT-enriched intellectual outputs) developed in the HE SP project.

3. HE SPs directly contributed to **opening up of higher education** as they made all their intellectual outputs developed in the course of the project accessible online to virtually anyone. This obligatory practical application of ICT enabled more active knowledge exchange and should be useful for cross-institutional learning, new cooperation opportunities, etc.

4. As the university teaching staff got involved in project activities and/or directly contributed to development of ICT-based and otherwise ICT-featuring intellectual outputs, HE SPs end up contributing to **improvement of workforce in higher education**, capable of ICT application for teaching purposes and delivery of innovative ICT-enhanced curriculum. Altogether 90% of participating organisations indicated that academic staff were direct beneficiaries of the intellectual outputs (including ICT-based or ICT-enriched intellectual outputs) developed in the HE SP project.

5. Finally, relevance of higher education should continue improving as a result of its improved accessibility to students from disadvantaged socioeconomic backgrounds and young people belonging to marginalised groups. Around 50% of participating organisations stated that participation in the HE SP project increased their organisation's capacity to include students/staff with special needs and from disadvantaged backgrounds. The example of project *Moonlite*, where online language courses were used to develop and improve the linguistic competences of displaced people illustrates how massive open online courses (MOOCs) developed by HE SPs contribute to the outcome above.

Figure 2. Effectiveness of the HE SP projects in driving changes in higher education systems



Source: Survey of HE SP participating organisations. Answers to the survey question "In general, do you agree or disagree that your project has contributed to the following changes in the national and/or European Higher Education Systems?"

The study also found that HE SPs effectively contributed to the **development of tools and processes of innovative teaching and to professional development of innovative educators** – teaching staff in HEIs. As shown in Figure 2, almost 53% of participating organisations agreed that HE SPs enabled wider application of innovative teaching methods in higher education. The effect at organisational level was even more profound, as 86% of participating organisations stated that as a result of their HE SP experience, their organisations adopted more innovative teaching methods/ approaches. These findings are in line with the fact that the topic 'New innovative curricula/educational methods/development of training courses' was by far the most frequently covered topic in HE SPs awarded in 2014-2016. The strong emphasis placed by HE SPs on innovative pedagogy and development of innovative intellectual outputs was also perceived as highly impactful among the NAs and NAUs, with 96% of respondents in the first group and almost 88% of respondents in the second group agreeing on positive HE SP outcomes in this area, i.e. promoted development of new modes of delivery and exploitation of new technologies in learning and teaching.

Based on the qualitative evidence drawn from case studies, interviews and desk research, HE SPs very actively developed and **cultivated student-centred teaching approaches**, sought to attune the curricula to current and emerging labour market needs and fostered employability and entrepreneurship by incorporating more opportunities for work-based learning:

- a few examples of HE SPs employing 'gamification' of education were identified in our thematic case study on new innovative curricula and educational methods;
- a number of strategies and approaches adopted by HE SPs to address the skills mismatch and facilitate entrepreneurship were outlined in the thematic case study on entrepreneurial learning and entrepreneurship education in HE SPs;
- case studies on projects like *NAIP* or *IncluSME* demonstrated how HE SPs fostered integration of creative collaborative learning in higher music education and intercultural learning in STEM subjects;
- etc.

Furthermore, the study confirmed a strong element of multi-disciplinarity in teaching and learning approaches developed by HE SPs. For example, almost 67% of

participating organisations stated that participation in intensive study programmes organised as part of their HE SP project enabled both students and teachers to work together in multinational and multidisciplinary groups. Overall, 89% of participating organisations claimed that as a result of their HE SP project, they now offer **education and training which better reflects labour market needs**.

In addition, HE SPs actively served as a platform for professional development to university teaching staff, introducing them to new and progressive concepts, such as reflective teaching[8], formative assessment[9], encouraging use of open education resources, more active application of self- and peer-assessment[10], etc. A more detailed analysis of **reinforcement of profiles of teaching professionals** in HE SP is provided in sub-section 2.5.5 and the thematic case study on new innovative curricula and educational methods.

Strengthening of higher education through mobility and cross-border cooperation

There is strong evidence of **a critical mass of HE SPs systematically stimulating mobility and cross-border cooperation in higher education**:

- HE SPs as transnational cooperation projects HE SPs inherently contribute mobility and cross-border cooperation through a formal requirement for consortia to consist of at least three organisations from three different Programme Countries and a set of LTT/mobility activities available to choose from for consortia applying and implementing HE SPs;
- International cooperation, international relations and development cooperation were among the most central topics explored by HE SPs awarded in 2014-2016 (see section 2.1.2 for more details);
- Overall, 70% of NAs and 88% of NAUs surveyed for this study were positive that HE SPs contributed to making their higher education systems in their country more international.

Study findings on the **extent to which various benefits of mobility and cross-border cooperation stimulated by HE SPs materialised are mixed**: the opinions/perceptions of different stakeholders on certain impacts diverged.

To begin with, as a result of the cross-border cooperation enabled by HE SPs, organisations from different countries and from different national higher education systems were provided with opportunities to share their knowledge and gained **access to innovative practices/methods and approaches** which otherwise could be underutilised (e.g. localised), underdeveloped or even non-existent. Almost 53% of participating organisations agree or strongly agree that HE SPs contributed to wider application of innovative teaching methods in their country. These claims have been supported by other stakeholders, as 53% of NAUs and 85% of NAs were positive (agreed or strongly agreed) about this impact of implemented HE SPs.

Second, participation in HE SPs obliges higher education institutions to hold a valid Erasmus Charter for Higher Education. This quality framework for European and international cooperation activities, among other factors requires that full recognition for satisfactorily completed activities of study mobility for students is ensured and that staff are given recognition for their teaching and training activities undertaken during

[8] Development and Implementation of Interactive Mobile E-learning Apps for European Nursing Education (*DIMEANE*).
[9] Opening Universities for Virtual Mobility, http://openstudies.eu
[10] How to Achieve Innovative, Inclusive and Fit-for-Market Specialised Translator Training? - A Transferable Model for Training Institutions", http://etransfair.eu

mobility period. As a result, HE SPs contributed to a **wider use of European tools for recognition and validation of learning outcomes** – 51% of participating organisations were positive that such impact has materialised. Somewhat controversially, only 35% of NAs and only 18% of NAUs shared this perception, suggesting the actual scale of this impact was smaller or was perceived differently by different stakeholders.

Third, the possibility for HE SPs to utilise various kinds of mobility/learning, teaching and training activities **directly contributed to further realisation of the European Education Area goals** and has **indirectly contributed to realisation of an innovative 'internalisation at home' practice**. Of participating organisations who indicated that long-term teaching and training assignments were used in their project, 39% also confirmed that it contributed to Internationalisation at Home of the receiving higher education institution. On doing so, these HE SPs addressed one of the key priority areas identified in the European Commission's Communication European Higher Education in the World: Promoting Internationalisation at Home and digital learning (COM/2013/499). The study also identified a HE SP project (see Box 1) which recently presented a set of innovative resources highly relevant for universities seeking to review and improve their Internationalisation at Home practices.

Box 1. The case of the ATIAH project

The rationale behind the 'Internationalisation at Home' concept is that the goals of higher education internationalisation should extend beyond the economically driven motivation to recruit international students and staff. **For universities seeking to graduate interculturally competent global citizens,** benefits of an internationalised university experience should not be limited to the internationally mobile minority. **Internationalisation at home enables students who pursue HE in their home countries to learn foreign languages, have access to staff with international experience, benefit from learning with peers from other countries and cultures, and engage in international collaboration via online learning.**

Hence, the ATIAH project developed a set of innovative resources tools for higher education institutions wishing to review and improve their Internationalisation at Home (IaH) practices:

1. A **Self-audit Tool**. This is an evaluation tool intended to help individuals or organisations to find out whether and to what extent they enact Internationalisation at Home practices.
2. A **Curriculum Framework** for 'internationalising the university experience.' The Curriculum Framework is intended to support administrators and curriculum developers in designing an internationalised curriculum.
3. An **Evidence Framework**. The Evidence Framework is intended to assist higher education institutions to clarify and communicate evidence of Internationalisation at Home so that the benefits of an internationalised university experience are available to all students and staff.

Source: the in-progress case study on project "Developing pedagogical approaches and tools for innovative 'Internationalisation at Home' practice in higher education," https://research.ncl.ac.uk/atiah.

Finally, transnational cooperation projects **helped to strengthen the links between higher education institutions and local/regional/National Authorities**. As many as 54% of participating organisations were positive about this outcome of their HE SP project. The extent to which this impact can be attributed to cross-border cooperation activities of HE SPs, however, was probably smaller, as public bodies were rather infrequent partners in HE SPs awarded in 2014-2016 (for more details see sub-section 2.2.2). Also, only 35% of NAUs agree or strongly agree that HE SPs contributed to improved awareness of policymakers about the issues tackled by HE

SPs. Hence, optimistic perceptions of participating organisations were likely influenced by their interaction with local/regional/National Authorities during multiplier events and/or consultations carried out by project teams to inform their needs analysis, etc.

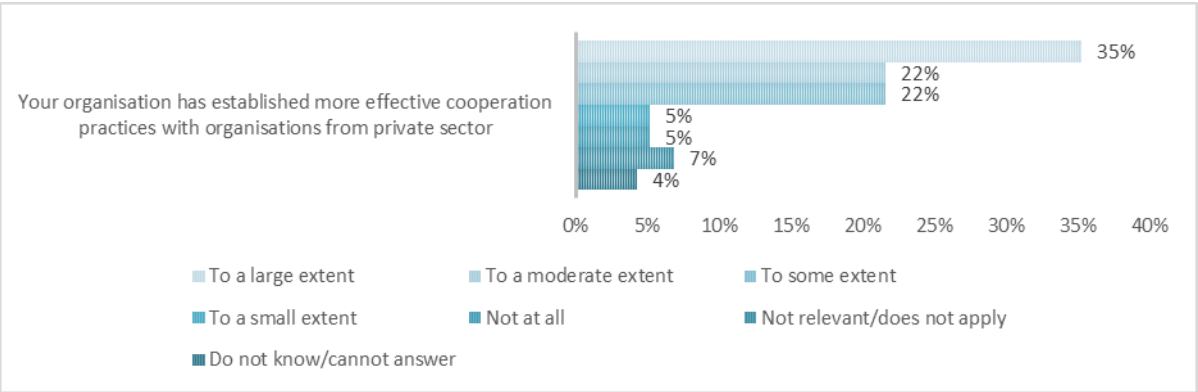
Making the knowledge triangle work

The study has found both quantitative and qualitative **evidence of HE SPs contributing to university–business cooperation**. It was also found that, as a side effect, this cooperation sometimes resulted in commercialisation opportunities, signifying that HE SPs had some success in catalysing the knowledge triangle integration.

Based on the available administrative data about organisations involved in HE SPs in the period 2014-2016, SMEs comprised only 5% of the total number of participating organisations. Despite limited business presence in HE SPs as a formal partner, around 79% of participating organisations surveyed for this study said that participation in the project has helped them at least to some extent in establishing a more effective cooperation with private sector organisations (see Figure 3). **Apparently, active** consultations with industry during implementation of HE SP project activities and **rather high** interconnectedness of business partners with HEIs in project consortia (see also the results of network analysis in sub-section 2.3.2) helped to **offset the limitation mentioned above**.

Both formal and informal university–business cooperation was highly relevant in HE SPs, as around 25% of HE SPs awarded in 2014-2016 explored topics linked to entrepreneurship and overcoming of skills mismatches. Based on the qualitative (case study and interview) data, the collaboration **usually entailed business involvement in teaching or curriculum design activities. For example, this happened in the case of the** *ICT Entrepreneur* project, where cooperation between academia and private enterprises (experts, mentors) was indicated to be a critical factor to the project's success, and where business representatives significantly contributed to capturing the sector demands in the education/training programmes. A similar case is the *IBIS* project, which aimed to bring students closer to the world of start-up businesses by collaborating with entrepreneurs that have already achieved international success.

Figure 3. Cooperation established with enterprises in the HE SP projects



Source: survey of the Erasmus HE SP participating organisations, answers to the survey question "To what extent, if any, has participation in the Strategic Partnership led to the following changes/improvements in your organisation: Your organisation has established more effective cooperation practices with organisations from private sector," (Q15), PPMI, 2018.

Although HE SPs are primarily tailored to benefit HEIs, the study has found evidence that **increased university–business interactions were also beneficial to the business community**. Based on the interview data, some companies in HE SPs

acquired valuable knowledge which was later used to expand their business and enter the new markets (e.g. see the example of the *UGT* project summarised in Box 2). Also, HE SPs focusing on entrepreneurship education and entrepreneurial learning topics, among other things, **facilitated the creation of new businesses**. For instance, project *ICT Entrepreneur* developed a high-quality pre-accelerator programme for information and communications technology (ICT) students and graduates. Interviews carried out with the project team revealed that at least six participants (30% of individual beneficiaries) started their own companies upon the completion of the project's Entrepreneurship Academy.

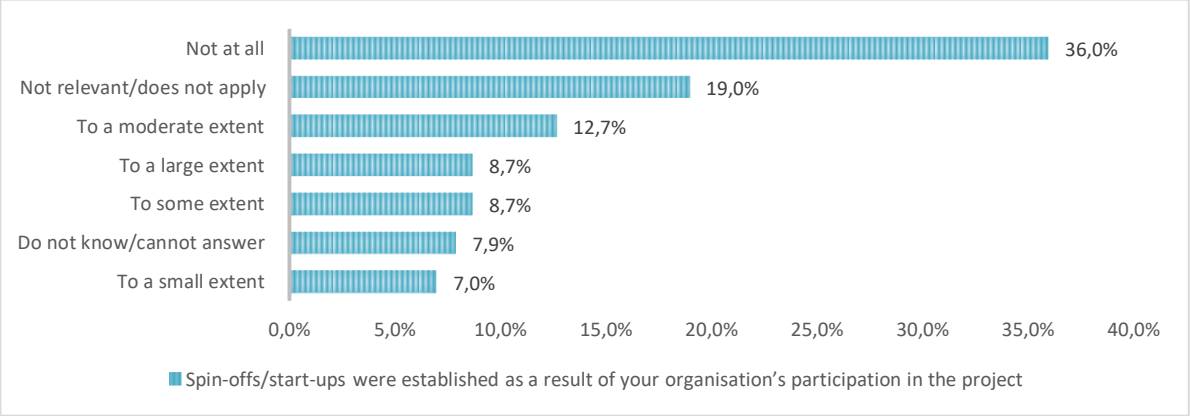
Box 2. Business-academia cooperation in the UGT project

SMEs that have participated in *UGT* project, such as Horticity and Hei-tro have reported being able to widen the scope of their activities, by acquiring relevant skills and tools to offer online learning as well as to develop new business initiatives and plans, based on their previous experience in urban agriculture. Hei-tro has recently won a public call in Germany to create the first aquaponics rooftop greenhouse, which will become the largest one in Europe. Horticity is using the newly acquired skills to create other online materials. Also, together with the University of Bologna, Horticity was contacted by an NGO in Palestine to create community gardens.

Source: Case study on the URBAN GReen Education for ENTteRprising Agricultural Innovation project.

The latter qualitative findings were supported by data of the participating organisations' survey. Around 37% of respondents indicated that their organisation's participation in a HE SP project at least to some extent contributed to establishment of new spin-off or start-up companies. This is a very significant result, bearing in mind that only a small fraction of HE SP projects were directly addressing entrepreneurship-related topics or explicitly aimed at fostering the creation of start-ups.

Figure 4. Contribution of the HE SP projects to creation of new spin-off and start-up companies



Source: survey of the Erasmus HE SP participating organisations, answers to the survey question 'To what extent, if any, has participation in the Strategic Partnership led to the following changes/improvements in your organisation: Education and training activities offered by the participating education institutions better reflect labour market needs"' (Q 15), PPMI, 2018.

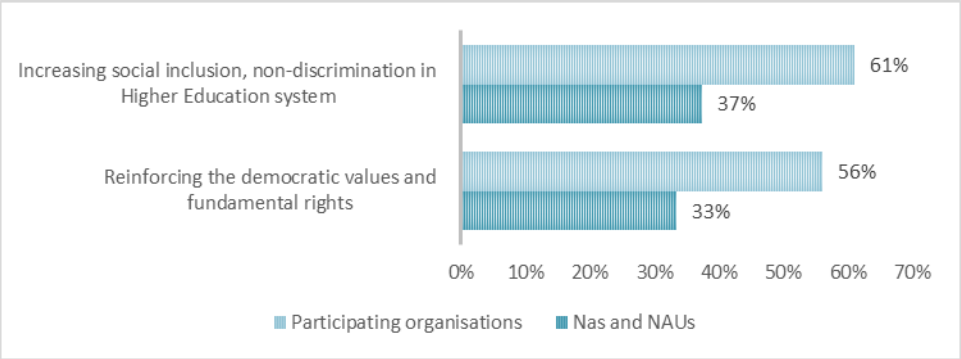
Facilitating social inclusion and reinforcing democratic values and fundamental rights

The impact of HE SPs on addressing this challenge is positive although less pronounced (in comparison to changes brought in response to other challenges). Around 61% of participating organisations and 37% of NAs and NAUs surveyed for this study agreed or strongly agreed that HE SPs are helping to increase social inclusion and non-discrimination in higher education. Similarly, 56% of participating

organisations and 33% of NAs and NAUs were positive about the contribution of HE SPs to reinforcing democratic values and fundamental rights in their countries.

According to qualitative (case study and desk research) evidence, HE SPs implemented activities encompassing interactions with people with disabilities, displaced people (refugees, immigrants), as well as groups from lower socioeconomic backgrounds. HE SPs also aimed to develop curricula that would a) help specialists by equipping them with knowledge and tools for responding to the needs of such groups or b) address marginalised students directly. For instance, the *eTransFair* project networked with organisations representing the disabled and gathered feedback on how to make translation training programmes more inclusive and accessible to all. Likewise, the project *EC+* addressed people with special needs, and aimed at training students in specialised communication with the disabled and prevention of exclusion[11]. HE SPs also recognised the need to improve modern multicultural classrooms and to better integrate students and academics with immigrant/refugee background, since highly diverse learning abilities in such classrooms sometimes lead to inconsistent performance. Hence, project consortia took measures to intensify their cooperation with local authorities, NGOs like the Red Cross[12] and refugee support groups[13] to be better versed on the issue.

Figure 5. Contribution of the HE SP projects to addressing broader socioeconomic challenges

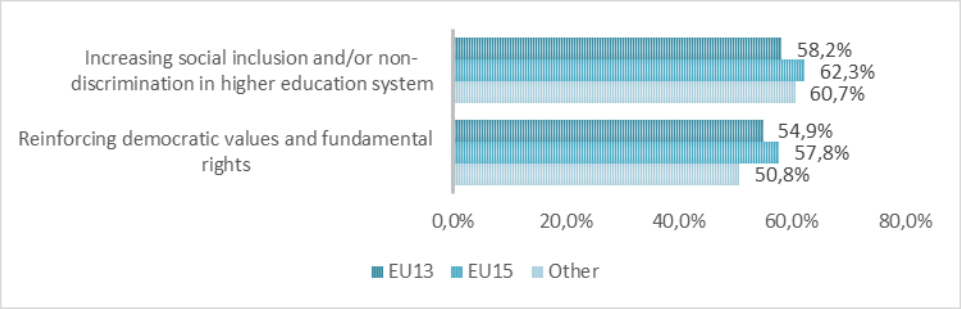


Source: survey of the Erasmus HE SP participating organisations, answers to the survey question "Overall, do you agree or disagree that your project contributes to addressing the following challenges?"; survey of the NAs and NAUS, combined answers to the survey question "In your opinion, have the Higher Education Strategic Partnership projects, which were awarded under 2014, 2015 and 2016 calls, helped to overcome the following challenges that Erasmus+ programme aims to address?"

Furthermore, as shown in Figure 6, there was largely no variation in the perceptions of participating organisations from the EU-13, EU-15 and other countries on the effectiveness of HE SPs in addressing these challenges. The most positive on the contribution of their projects to increasing social inclusion and non-discrimination in higher education and reinforcing the democratic values and fundamental rights were participating organisations from EU-15 countries. This indicates that HE SPs are not being viewed as an action/intervention inherently promoting democratisation and/or social inclusion, but projects which have these priorities and challenges as their central topic do make an impact. It should also be noted that several HE SPs focusing on topics of inclusion and equity or integration of refugees have already ended. This can also be an important factor explaining why the NAs and NAUs are less aware and unconvinced of the HE SPs' value in these areas.

[11] Enhancing communication: research to improve communication for people with special needs and development of ICT resources and tool, https://ecplusproject.uma.es.
[12] Facing Europe in Crisis: Shakespeare's World and Present Challenges, http://new-faces-erasmusplus.fr.
[13] Massive Open Online Courses Enhancing Linguistic And Transversal Skills For Social Inclusion And Employability, https://moonliteproject.eu.

Figure 6. Variation of perceptions among the participating organisations from EU-13, EU-15 and other countries



Source: survey of the Erasmus HE SP participating organisations, answers to the survey question "Overall, do you agree or disagree that your project contributes to addressing the following challenges?"

Projects like *WISE*[14] or *GO PRINCE*[15] could be mentioned as projects which embraced the social inclusion topic and have already delivered relevant results. The former aimed to develop an innovative methodology to track students in the educational lifecycle taking into account both objective and subjective elements so as to better assess their needs and provide tailored support services. As a result of its research efforts, the project produced the so-called WISE model and matrix. These outputs are available on the Erasmus+ project results platform, allowing for any other HEI to replicate the analysis, benchmark itself against the already available results or search for ideas on how their support services (especially for students – disadvantaged groups) could be improved. The *GO PRINCE* project sought to share the knowledge, understanding and best practice examples in inclusive education. To this end the project developed a manual, which encompasses case study reports on best practices and a model titled REACCH.

Addressing other significant challenges faced by higher education systems

It is less evident how HE SPs contribute to priorities, such as increasing attainment levels in higher education or improving higher education governance and funding. Even if comparative data were available on attainment levels before and after the new resources, practices and tools developed by HE SPs are integrated into curricula, it would be very difficult to attribute any positive or negative results to developments resulting from a single project.

Factors to maximise the project's impact

Finally, we look at the factors, which helped to maximise the impact of HE SP projects and should be embraced or at least considered by all future partnerships. More than half of the respondents to the survey of HE SP participating organisations (53.1% of respondents whose projects have already finished or are coming to an end) indicated that the **high quality of their project results** is the main factor that helped to maximise their project's impact. Other most frequently mentioned factors are summarised in Table 2, including such important aspects as the sustainability of project results (39.9%), the innovativeness of the project's results (39.0%) and the high relevance of the project's results for national/ EU higher education policy agenda (39.0%).

[14] Project "Welfare for Improved Social Dimension of Education", http://www.wise-project.eu/ and https://ec.europa.eu/programmes/erasmus-plus/projects/eplus-project-details/#project/2014-1-IT02-KA203-003486.

[15] Project "Inclusive Education in Early Childhood: Developing Good Practices", https://www.goprince.eu/ and https://ec.europa.eu/programmes/erasmus-plus/projects/eplus-project-details/#project/2014-1-TR01-KA203-011754.

The perceptions of participating organisations were very similar to the opinions of NAUs, which pointed out that HE SPs were able to maximise their impact on national/regional higher education systems if:

- they produced high-quality project results (mentioned by 56.3% per cent of respondents);
- project results were highly relevant and aligned with national higher education policy priorities (43.8%);
- HE SPs took active measures to ensure the sustainability of their project results (37.5%);
- they made the right choice of project partners from other countries (37.5%);
- there were synergies between national policy priorities and project objectives/outcomes (31.3%).

Table 2. TOP 10 factors that helped to maximise the impact of HE SP projects

FACTORS	PER CENT	COUNT
High quality of project's results	53.1%	113
Sustainability of project's results	39.9%	85
Innovativeness of project's results at country or industry level	39.0%	83
High relevance of project results for national/EU higher education policy priorities	39.0%	83
High project's output reusability/transferability potential	34.7%	74
Effective choice of international project partners (transnational partnerships)	34.7%	74
Effective project dissemination activities	30.5%	65
Synergy with ongoing higher education reform processes that could benefit from project's results	24.4%	52
Effective synergies between different sectors in the project (cross-sectoral partnerships)	15.0%	32
Effective project exploitation activities	8.0%	17

Source: survey of the Erasmus HE SP participating organisations, answers to the survey question 'In your opinion, what are the main factors that helped to maximise your project's impact at the higher education system/policy level? Please select up to five options.'

Interestingly, the role of factors such as effective project results exploitation activities (mentioned by 8.0% of respondents), willingness of policymakers to be engaged in the project (5.2%) and active engagement of information multipliers (3.8%) has been downplayed by the participating organisations. These findings further strengthen the argument that centralised and systemic support is needed in order to facilitate knowledge sharing and exchange, as well as improve the systemic/policy-level impacts of HE SP projects. Otherwise HE SPs will remain an instrument for incremental and somewhat compartmentalised higher education modernisation initiatives.

2.1.2. Potential of Strategic Partnerships for evidence-based policy

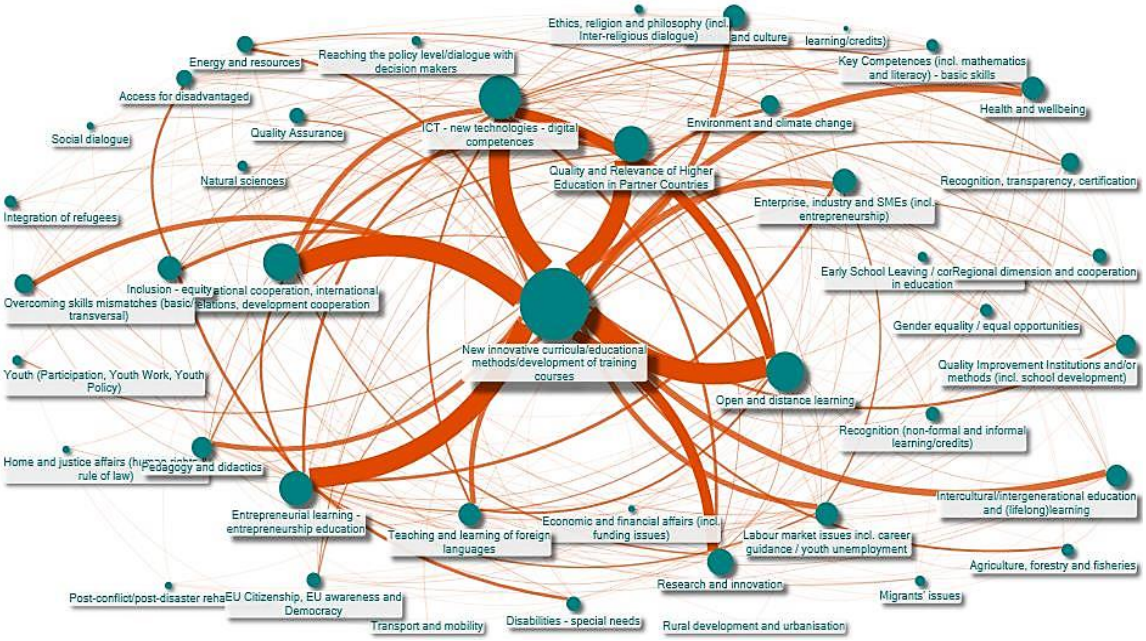
Key findings

1. Thematically Strategic Partnerships explored a diverse, yet strongly interconnected set of topics, offering **a coherent and effective response to challenges faced by higher education**.
2. A few dominant clusters of topics explored in HE SPs were identified, indicating a **strong potential for systemic-level impacts** in promotion of innovative pedagogy, ICT integration in higher education and/or internationalisation of higher education.
3. Strategic Partnerships had **somewhat limited success in reaching out to policy-makers** and, therefore, rather heavily relied on changes resulting from a critical mass of relevant projects.
4. Strategic Partnerships played a rather important **role in facilitating cognitive shifts at systemic/policy level**, but it did not translate into practical evidence-based policy decisions.
5. Strategic Partnerships were found to be lacking centralised support for mutual learning, cross-project and cross-action knowledge exchange and innovation transfer.

Thematic coverage of the awarded projects

The results of the social network analysis (hereinafter – SNA) carried out to systematically assess the topics/themes covered by HE SP projects awarded in 2014-2016 showed that 100% of 43 topics covered by these projects constitute a single component (see Figure 7). In other words, it is **a single network of interconnected topics**, not a universe of multiple networks: there were no sets/pairs or clusters of topics which always appeared together in HE SP projects but did not 'mix' with other topics. This evidence of a single and integrated network of topics indicates that in general, projects awarded in the period 2014-2016 created a favourable framework and environment for a decentralised and uniquely diverse, but at the same time rather coherent response to challenges faced in higher education.

Figure 7. Network of themes covered by the Erasmus+ HE SP projects



Source: Social Network Analysis, PPMI.

Note: The size of dots in the picture indicates how strongly interlinked the particular topic is with other topics (degree centrality), whereas the width of lines indicates how strong the link between two topics developed by SP projects in the period 2014-2016 is.

The analysis also revealed (based on *degree centrality* network indicator) that the overall network of topics covered by HE SPs was dominated by several **key topics**. These topics were addressed by a large number of projects and subsequently were strongly interlinked with other topics explored by those HE SPs. For example, the topic 'New innovative curricula/educational methods/development of training courses' was by far the best interlinked topic (had the largest number of links with other topics) and occupied a central role in the network (see Figure 7). The overwhelming centrality and importance of this topic generally means that a majority of projects awarded between 2014 and 2016 were engaged in developing new innovative curricula/educational methods/development of training courses, exploring it in combination with one or two other topics.

To a somewhat lesser extent, other key central topics in the Erasmus+ HE SP projects were 'ICT-new technologies-digital competences,' 'Open and distance learning,' 'International cooperation, international relations, development cooperation,' and 'Quality and Relevance of Higher Education in Partner Countries.' Hence, a typical HE SP focused on **a mix of these TOP-5 topics**, in some cases complementing it or substituting one of the dominant topics with a different, narrower and more specific topic (e.g. teaching of foreign languages, disabilities/ special needs, etc.).

Potential to influence policy

To determine the potential of HE SPs for evidence-based policy in thematic areas covered by these projects, the study authors looked at 1) the extent to which dissemination activities implemented by HE SPs succeed in reaching out to policymakers and 2) the level of public bodies' involvement in HE SP projects as project partners. As demonstrated further in this sub-section, there is sufficient evidence to conclude that participating organisations take active measures and rather frequently succeed at increasing the awareness of issues tackled by their projects among policymakers. On the other hand, aside from cognitive shifts no solid evidence of HE SPs having tangible impact on concrete political decisions has been found. Both insufficient attention to policy learning and inadequate support to knowledge sharing at the initiative of policymakers, and insufficient time perspective to observe tangible systemic/policy-level impacts could be the key factors explaining this observation.

Reach out to policymakers

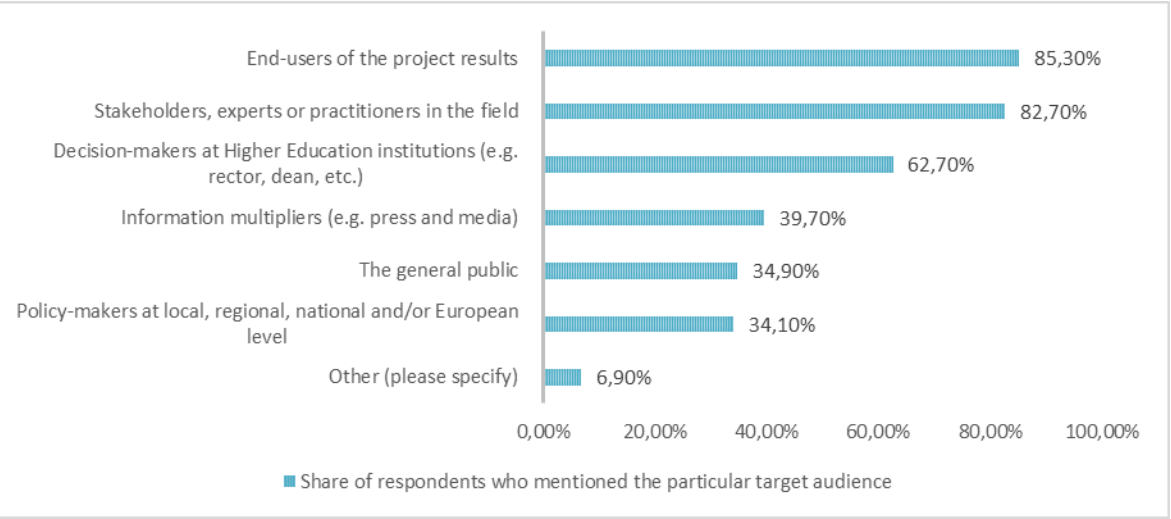
As part of the dissemination strategy put in place by HE SPs, projects often targeted policymakers as one of their target groups. However, the study has determined that for the majority of HE SPs, **policymakers were not among their primary target audiences**. Mentioned by almost 35% of surveyed participating organisations, they came after the end-users of project results, experts/practitioners in the field, decision-makers at HEIs, information multipliers, such as press and media, and the general public.

Despite of their somewhat lower profile in comparison to other target groups, policy-makers were still identified by some HE SPs as the end-users of their project results: after thoroughly screening the project summaries, we identified at least 27 projects where recommendations to policymakers were/will be produced by the finalised or still ongoing HE SPs. For instance, the *CWIHE*[16] project produced recommendations for

[16] „European Network of Cooperative and Work Integrated Higher Education", https://cwihe.com/. All key outputs of this project are also accessible on the Erasmus+ project results platform:

policymakers in higher education and regional development in the form of a manual on cooperative- and work-integrated higher education[17]. Similarly, the *ExplOERer*[18] project prepared recommendations for policies supporting the reuse of open educational resources, covering both passive and activity policies needed in this field.

Figure 8. Audiences targeted by dissemination measures in HE SP projects



Source: Survey of HE SP participating organisations. Answers to the survey question 'Please indicate which audiences were/will be targeted by your project's dissemination measures.'

Approximately 72% of participating organisations which addressed policymakers through their dissemination activities were confident of their success in drawing the attention of and engaging policymakers at local, regional, national and/or European levels[19]. The replies received from NAUs largely support these perceptions, although they also suggest that HE SPs were slightly less effective and successful than participating organisations believed. Around 44% of surveyed NAUs said that information about the results of HE SPs successfully reached the policymakers. Also, only 38% agreed that methods used by HE SPs to disseminate their project results were suitable for reaching out to policymakers. This mismatch could be attributed to the limited awareness of surveyed officials in NAUs about the interactions between HE SPs and policymakers at local or regional levels, or even within their own institution. However, as discussed further in this section, it is also true that coordinated knowledge-sharing events, which attract attention, are highly visible and involve multiple HE SP projects and stakeholders, were lacking.

Furthermore, participating organisations agreed that sharing their project results with policymakers was hindered by a range of **barriers** (see Figure 9), including overloaded policy-maker agendas (44.1%) or absence of ongoing policy reforms that could benefit from projects' results (21.8%), etc. In addition to these external and systematic factors, however, participating organisations also had to deal with internal challenges such as insufficient engagement of project partners in dissemination

https://ec.europa.eu/programmes/erasmus-plus/projects/eplus-project-details/#project/2014-1-ES01-KA203-004321.

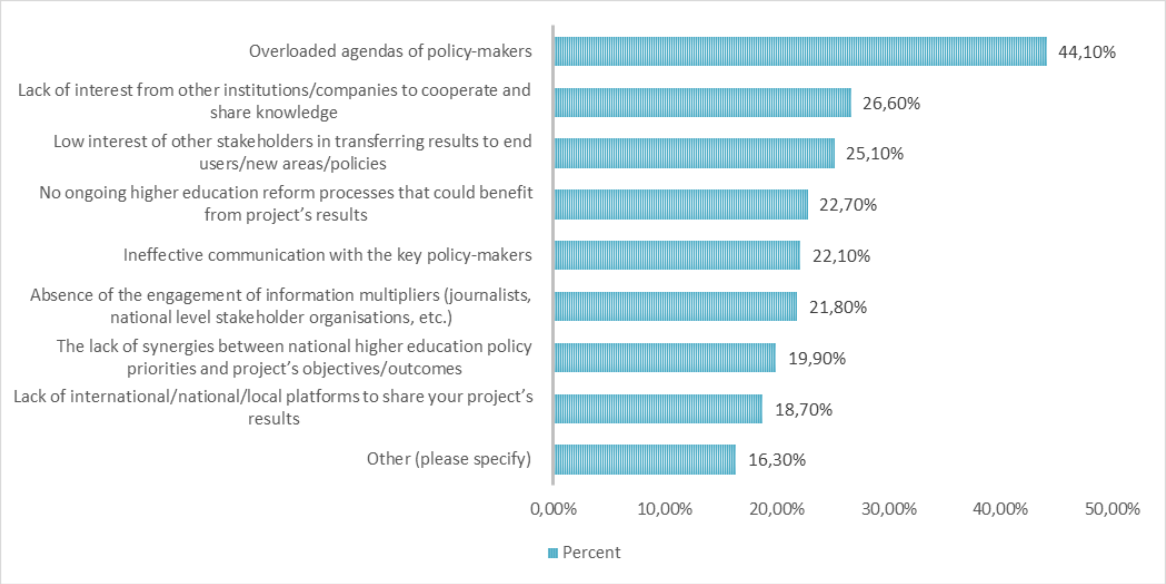
[17] Accessible online: https://ec.europa.eu/programmes/erasmus-plus/project-result-content/e9b23c89-2db5-4b61-979e-ddfd983137c1/CWIHE%20Policy%20Manual.pdf.

[18] „Supporting OER re-use in learning ecosystems", http://www.exploerer.gu.se.

[19] Results of the HE SP participating organisations' survey. Combined replies of respondents who agree or strongly agree with the relevant statement in the question ‚In general, do you agree or disagree that your project's dissemination measures succeeded/are likely to succeed to engage the following target groups? '

activities (13.9%) or unclear distribution of responsibilities for dissemination activities between project partners (8.1%)[20].

Figure 9. Barriers to sharing project results with policymakers and influencing the policymaking process



Source: Survey of HE SP participating organisations. Answers to the survey question 'In your opinion, what are the main external obstacles to spreading your project results to policy-makers or other relevant stakeholders, and influencing the policymaking processes? Please select up to five options.'

Even though policymakers as a target group were not always included in their dissemination strategies, it has been found that participating organisations frequently attended events (seminars/working groups/other knowledge exchange events and platforms) organised by local, national and/or European authorities. Around 55% of respondents claimed that they have participated in **activities outside project events** and shared their project results to inform the policymaking process (see Table 3).

Table 3. Participation in seminars/working groups/other knowledge events (multiple answer options were possible)

ANSWER	PER CENT	COUNT OF RESPONSES
Yes, in events organised and platforms offered by national-level authorities and/or National Agency	**36.0%**	**132**
Yes, in events organised and platforms offered by local authorities	**30.5%**	**112**
Yes, in events organised and platforms offered by international or EU-level bodies	**29.7%**	**109**
Do not know/cannot answer	**18.3%**	**67**
No	**18.3%**	**67**
Other (please specify)	**8.4%**	**31**

Source: Survey of HE SP participating organisations. Answers to the survey question 'Have your organisation's representatives been invited and participated in seminars/working groups/other knowledge

[20] Results of the HE SP participating organisations' survey: replies to the survey question 'Overall, what were the main constraints affecting the dissemination and exploitation of the project results? Please select up to five options.'

exchange events and platforms to share your project's results with policy-makers and to inform the policymaking process? Please select all relevant answers"'

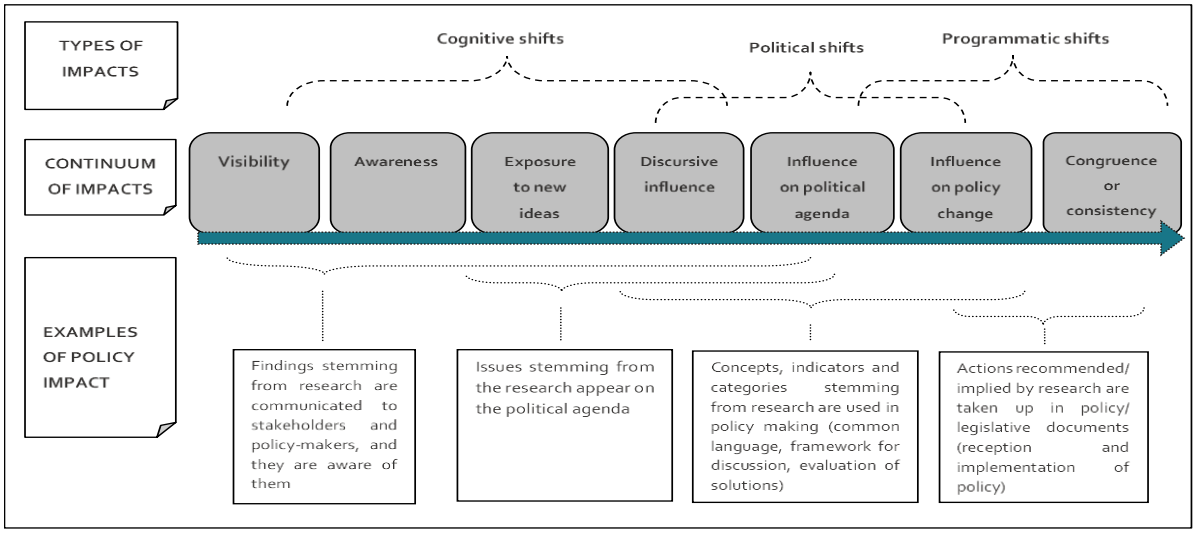
Inclusion of public bodies in project consortia

Another approach adopted by HE SPs aiming to contribute to evidence-based higher education policy involves including the policymakers in their project as project partners. Direct involvement in the project implementation should be useful not only for learning about issues tackled and results produced by HE SPs, but also for strengthening the cooperation between HEIs and public bodies in general. Examples of such collaboration in HE SPs, however, are exceedingly rare: only 16 respondents (4.4% of survey participants) from 12 different projects indicated that local, regional or National Authorities were involved in their project either as partners or as associated partners. This corroborates with our findings drawn from the Social Network Analysis of HE SP projects (see sub-section 2.2.2), which showed that **local and national public bodies are only peripheral actors** in the overall network of organisations participating in HE SPs.

Contribution of HE SPs to policy changes

Overall, HE SPs were found to have a **very limited role in facilitating programmatic shifts at national or European levels**, such as the adoption and implementation of new legislative decisions (see the continuum of systemic/policy level impacts in Figure 10). Although HE SPs showed attempts to reach out to policymakers and directly influence policy changes, it was not their strongest feature: only a small proportion of participating organisations believed their projects to a moderate or large extent contributed to adoption of new legislative decisions (7%) or budget allocation changes introduced by local, national or European authorities (4%). Although the critical mass of HE SPs could potentially contribute to policy learning and decision-making in the future, inherent limitations of these transnational cooperation projects must be acknowledged: HE SPs are rather small in terms of the budget and resources allocated to their implementation.

Figure 10. The continuum of systemic/policy-level impacts



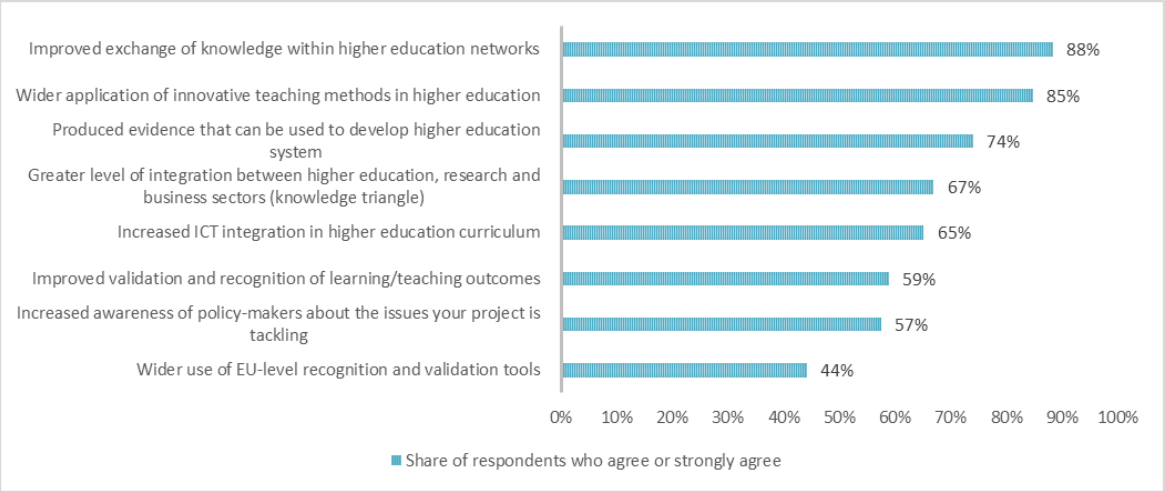
Source: developed by PPMI.

In order to address these limitations, there is a lot of room for systemic-level actors to support efforts of individual HE SPs and set in motion their critical mass. In particular, NAUs should more actively "use the results of projects funded to identify 'what works' and to identify lessons learned relevant to the national context," as recommended by

the mid-term evaluation of the Erasmus+. Also, the Commission/EACEA and NAs should address the fact that **HE SPs lack centralised support for knowledge sharing and exchange** similar to that available for Knowledge Alliances – thematic Cluster Meetings periodically organised by the EACEA in Brussels. This is a significant drawback for projects of an action implemented under shared management, and it was only recognised through sporadic initiatives at national level, like conference/seminar on dissemination, sustainability and impact of Erasmus+ Strategic Partnerships organised by DAAD in Bonn on 17 May 2018. Such initiatives should be replicated and become more common.

At the current stage, HE SPs were found to be better suited for triggering **incremental modernisation of the higher education systems through innovations facilitating institutional development**. This is clearly illustrated by the strong conviction of participating organisations that their projects contributed to improving knowledge exchange within higher education networks (88%), widening application of innovative teaching methods (85%), producing evidence needed to develop higher education system (74%), etc.

Figure 11. Already evident and future changes in the national and/or European higher education systems as a result of HE SP projects



Source: Survey of HE SP participating organisations. Combined answers to the survey questions 'In general, do you agree or disagree that your project has contributed to the following changes in the national and/or European Higher Education Systems?' and 'In general, do you agree or disagree that your project is likely to contribute to the following changes in the national and/or European Higher Education Systems?'

In addition, the study determined that HE SPs played a rather important role in **facilitating cognitive shifts at systemic/policy level**: 42% of participating organisations believed that as a result of their project new items have been introduced in the higher education policy agenda (e.g. new topics, new discussion points, increased attention to challenges tackled by HE SPs), while 23% also claimed that their project results have been used to inform the formulation of new higher education policy proposals. These beliefs were confirmed by the NAUs: 12 out of 17 respondents (71%) surveyed for this study agreed that HE SPs contributed at least to some extent to the introduction of new items in the higher education policy agenda, with 8 out of 17 survey respondents (47%) also stating that the results of HE SPs were at least to some extent used to inform the formulation of new policy proposals.

2.1.3. Dissemination of project results in Strategic Partnerships

Key findings

1. The **most common dissemination measures** applied in Strategic Partnerships were project or organisational websites, various kinds of physical events, social media and targeted written material.
2. Strategic Partnerships rather actively exploited ICT for dissemination of their project results', but there is still room for improvement and better utilisation of modern and interactive communication and information-sharing means or formats.
3. The selection of activities for disseminating project results in HE SPs was found to be primarily tailored for sharing them with the end-users, key stakeholders, experts and practitioners in the field, often **underexploiting or missing opportunities** to involve/address information multipliers or reach policymakers.
4. The **most common challenges** to effective and successful dissemination were difficulties in identifying international/national/local platforms where project results could be presented, to ensure active engagement of project partners in dissemination and to clearly agree on the responsibilities of all partners for individual dissemination activities.

The **most common strategies for dissemination** of project results in HE SPs involved publishing them on a project website, organising conferences, workshops and other events involving participatory activities and reaching out to followers and the general public through social media, etc. A combination of these and several other types of dissemination measures/activities (see Table 4) can be described as the standard approach followed by HE SPs for sharing the results of their project with audiences beyond the project team. Importantly, this combination was rather well-balanced and encompassed both narrowly targeted and broadly reaching, also active and passive dissemination strategies. Also, this combination allowed addressing various audiences at local, regional, European and international levels. In Box 3 we provide an example of the *FOODCOST*[21] project, whose dissemination activities thoroughly addressed all these levels.

Box 3. Example of a dissemination strategy covering local, regional, European and international levels

At local level, the dissemination mainly focused on presenting the project at the partnering institutions. Over three years, the audience reached in all project countries was estimated to be around 1 200 students and 30 teachers.

At regional level, the dissemination focused on other institutions that were interested in cooperation (other universities, businesses and interest groups) and applied research. Project activities covered 14 businesses, about 40 participating experts, five other universities and 120 students, 12 secondary schools and 200 secondary school students and their teachers. Dissemination activities also entailed publishing in 10 regional media outlets through which the consortium estimated to reach about 30 000 listeners/ viewers and readers.

At European level, the dissemination activities consisted of a presentation of the project results in nine conferences whose total audience consisted of about 800 participants.

At international level, dissemination activities mainly involved presentations at international scientific conferences, such as the global marketing conference organised in Hong Kong in 2016, attended by 800 participants from countries such as India, Mongolia, South Korea and Australia. In addition, a platform called Visehradská University Association (www.vua.uniag.sk) was used to increase the outreach to international participants.

Source: case study on the FOODCOST project.

[21] Project "Urban Green Education for Enterprising Agricultural Innovation", http://www.urbangreentrain.eu.

The study also found that HE SPs quite actively **exploited the possibilities offered by ICT** to share the results of their project with their target groups:

- 95.2% of the participating organisations used project websites or their own organisational websites to raise general awareness about their project and its outcomes;
- 58.6% of surveyed participating organisations exploited social media;
- 33.4% of the participating organisations claimed that audio-visual media and communication channels such as radio, TV, YouTube, Flickr, video clips, podcasts or apps were also utilised by their project consortium;
- 13% of survey respondents representing participating organisations mentioned webinars as a tool for dissemination of project results.

Despite this positive trend, ICT application for dissemination purposes should become even more pronounced in the future to further complement and perhaps to a certain reduce the importance of physical events and traditional publications dominating the current set of dissemination measures most popular in HE SPs (see Table 4).

Table 4. TOP-7 dissemination measures used in the HE SP projects

DISSEMINATION MEASURES	PER CENT	COUNT
Project or organisational websites	95.20%	356
Conferences/workshops at local, national and European levels	86.60%	324
Information sessions, workshops, seminars, training courses, exhibitions, demonstrations, or peer reviews	74.30%	278
Social media	58.60%	219
Targeted written material such as reports, articles in specialised press, newsletters, press releases, leaflets or brochures	57.50%	215
Meetings and visits to key stakeholders	53.20%	199
Academic journal papers	49.20%	184

Source: Survey of HE SP participating organisations. Answers to the survey question 'Which of the following dissemination measures did your project use (or is planning to use)? Please select all relevant answers.'

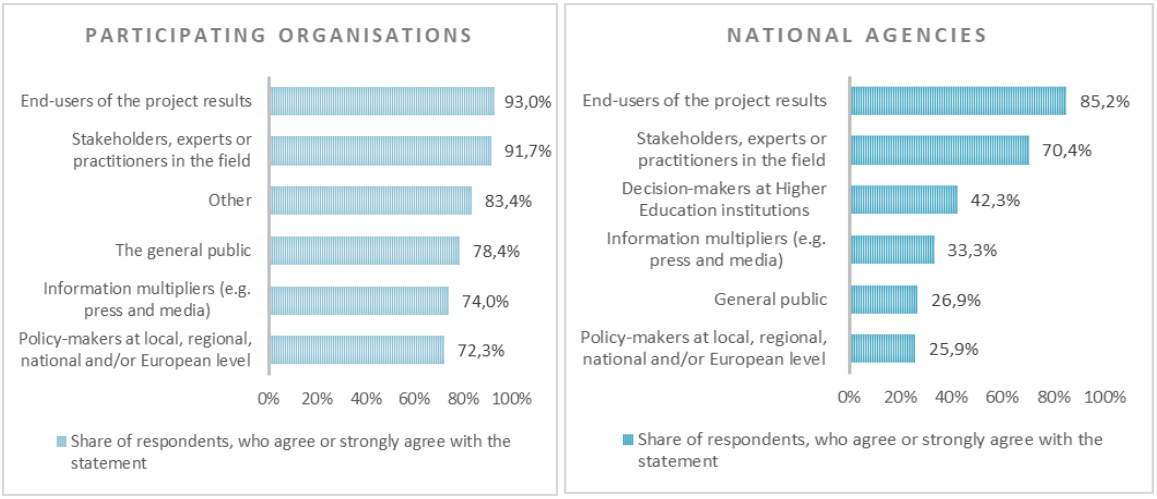
There is qualitative evidence proving that participating organisations actively exploit the possibility of organising multiplier events and promote their project results during other participatory project events, such as the final project conference, workshops organised in the context of intensive study programmes or other LTT activities, meetings with stakeholders to collect data for project research activities, etc. Another useful strategy mentioned by the representatives of the *OLA*[22] project, was their active collaboration with and engagement of the NAs to act as communication multipliers. Owing to their close collaboration, the NAs helped to promote conferences and other events organised by the project to other universities.

As already pointed out sub-section 1.1.2, HE SPs mostly use **dissemination activities tailored for reaching out to the end-users of resources** developed in the course of a project, as well as stakeholders, experts and/or practitioners in the field. Meanwhile information multipliers, the general public and policymakers, although defined as key target groups in multiple HE SP projects, rarely come at the top of the list. Although participating organisations claimed that their dissemination strategies are highly universal and succeed in reaching out to multiple target groups at once (see Figure 12), this was only partially confirmed by perceptions of the NAs. The latter suggested that HE SPs succeed in engaging the end-users of project results, relevant

[22] Project "Learning Agreement Online System", https://www.learning-agreement.eu/start.

stakeholders, experts and practitioners in the field, but not so much in reaching out to other target audiences. The in-depth analysis of the qualitative data (drawn from the case study analysis and systemic review of the HE SP project summaries) suggests that the implied simultaneous outreach to multiple target groups can be an unintended effect of dissemination activities, which are otherwise focused on the end-users of HE SP project results.

Figure 12. Perceived success of the HE SP projects in reaching out to the main target groups



Source: Surveys of the participating organisations and National Agencies. Answers to the survey question 'In general, do you agree or disagree that your project's dissemination measures succeeded/are likely to succeed to engage the following target groups?'

Building on the experience of HE SPs awarded in the period 2014-2016, the future HE SPs should focus on the following **success factors** if they aim to successfully disseminate their project projects: a) active engagement of their project partners in project dissemination activities, b) well-considered choice of dissemination activities best suited for reaching their target audiences, and c) clear agreement on the roles and responsibilities of each partner for implementing the individual dissemination activities. At the same time, all future HE SPs should consider strategies and prepare for how to overcome such **challenges** as identification of international/national/local platforms for their project results (a constraint mentioned by 13.9% of participating organisations surveyed for this study), ensuring active engagement of project partners in dissemination activities (13.9%) and clearly agreeing on the responsibilities of all partners for individual dissemination activities (8.1%).

Table 5. TOP-5 factors determining the success of dissemination activities

SUCCESS FACTORS	PER CENT	COUNT
Active engagement of project partners in dissemination activities	**57.90%**	**213**
Good choice of dissemination activities best suited to reaching the target audiences	**52.70%**	**194**
Clear distribution of responsibilities for dissemination activities between project partners	**37.00%**	**136**
Good choice of dissemination activities best suited to showcasing project results	**30.40%**	**112**
High replication/reusability/transferability potential of project outputs/lessons	**27.20%**	**100**

Source: Survey of HE SP participating organisations. Answers to the survey question 'Overall, what were the main factors that helped to maximise the impact of your project's dissemination and exploitation activities on the target groups? Please select up to five options.'

As a final note, it should be mentioned that during interviews with the participating organisations we have also learned that the importance of dissemination activities is sometimes undermined by outcomes of the application approval procedure. Some projects which face cuts in the requested budget are 'forced' or choose to economise by sacrificing some of the originally proposed dissemination measures. In addition, the authors of the study witnessed at least one case of a project with promising results but a somewhat under fulfilled dissemination strategy, because of insufficient human resources dedicated to implementation of related project activities (mostly due to maternity leave and staff turnover issues). A good practice for all future HE SPs would be to have a backup person for this role. At the same time, the NAs should more carefully consider the implications of budget cuts on awarded projects.

2.1.4. Impact of Knowledge Alliances on modernisation of higher education

Key findings

1. Knowledge Alliances proved to be **a relevant and effective instrument** for achieving most of the objectives defined in the 2011 EU Modernisation Agenda and the 2013 Communication on Opening Up Education.
2. Organisations participating in Knowledge Alliance projects were strongly oriented towards **Erasmus+ programme priorities.**
3. **Strengthening the knowledge triangle** is one of the key objectives of Knowledge Alliance projects, which served both the **needs** of participating **businesses** and the participating **higher education institutions**.
4. Knowledge Alliances contributed to improved **quality and relevance of HE curricula** through the development of **new teaching and learning approaches**. They developed and applied methods related **student-centred learning** and were characterised by **openness towards experimental and novel** ways. In this regard, Knowledge Alliances facilitated **change in the approaches and mindsets** of individual HE teachers and individual course offerings, or sometimes individual departments/HEIs.
5. Knowledge Alliances strongly contributed to reinforcing the response of the HE system to **macroeconomic challenges** such as employment and economic growth, primarily through **effective university–business cooperation** within projects.
6. Knowledge Alliances proved to be effective and relevant to addressing **skills mismatches** and **increased 'resilience' of graduates** by emphasising business needs and focusing on **soft and transversal skills development**. These skills are applicable/transferable across all professions and key to ensuring relevance for future domains.
7. Knowledge Alliances contributed to increasing organisations' **capacity for innovation** and led to **organisational innovations, product/service innovations and process innovations** for participating organisations.

The KA action aims at strengthening Europe's innovation capacity and at fostering innovation in higher education, business and the broader socioeconomic environment. Additionally, for the KA action, there is an implicit aim to strengthen the cooperation between HE and business and to make this cooperation a more common feature in the European HE landscape. The main attention is turned to projects that contribute to the modernisation of Europe's higher education systems as outlined in the 2011 EC Communication on the Modernisation Agenda for Higher Education[23]. For this study, the 2011 Communication serves as the framework, for calls after 2017, the 2017

[23] 2011 EC Communication on the modernisation agenda of Europe's higher education systems: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52011DC0567&from=EN.

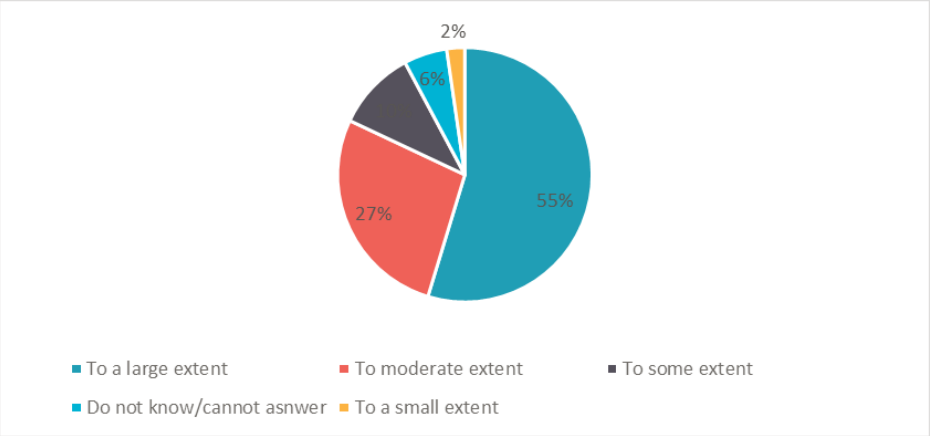
Communication 'Renewed EU Agenda for Higher Education' is the reference point. The 2011 Communication outlines the following modernisation goals:

1. increase attainment levels;
2. improve the quality and relevance of higher education; strengthen quality through mobility and cross-border cooperation;
3. make the knowledge triangle work;
4. improve governance and funding.

Additional emphasis is placed on making use of existing initiatives, and on the intelligent use of digital tools as recommended in the 2013 EU Communication on Opening Up Education[24].

Participating organisations are **strongly oriented towards Erasmus+ programme priorities**, which signals projects aiming to contribute, at least strongly, to goals of modernisation and response to larger challenges. More than half of respondents indicate that KA priorities match their organisations' priorities to a large extent and another quarter see a moderate correspondence (see Figure 13).

Figure 13. Relevance of the Erasmus+ programme priorities to participating organisations (N=128)



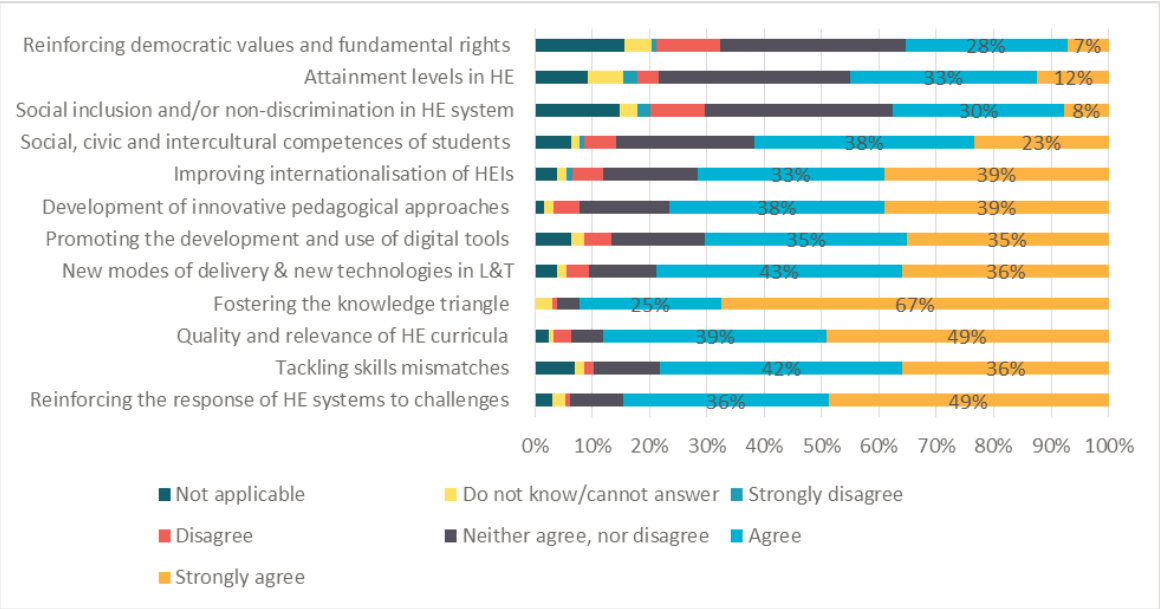
Source: Survey results, PPMI 2018.

KA projects address a wide range of challenges (see Figure 14), where **system level challenges** and improving teaching and learning practices were among the most frequently cited goals. The highest proportion of survey respondents claimed to address the **knowledge triangle** – the integration between education, research and business sectors (92%) – followed by improving the **quality and relevance of HE curricula** (86%) and **reinforcing the response of the HE system to macroeconomic challenges** such as employment and economic growth (84%). Furthermore, four fifths of all respondents agreed or strongly agreed to contribute to producing **evidence that can be used to develop HE systems** (Figure 16).

Slightly less than half of respondents (45%) agreed that their projects aim at increasing **attainment levels**, one of the goals on the modernisation agenda. This result is in line with the focus and objectives of the KA action, which does not place special emphasis on tackling challenges related to attainment levels. Interviews with KA participants confirm this result, where few perceive increasing attainment levels as among their primary project objectives or goals.

[24] 2013 EC Communication on Opening Up Education: http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52013DC0654&from=EN.

Figure 14. KA projects' contribution to addressing larger challenges (N=129)



Source: Survey results, PPMI 2018.

The overall objectives of the KA action do not specifically aim to reinforce democratic values or increase cohesion. Slightly more than a third of respondents agreed that their projects would aim at societal challenges related to **equity and inclusion**, such as reinforcing democratic values (34%) or increasing social inclusion (36%). Examining the correlation between answer categories, shows that the latter two challenges are distinct from most other project aims. Only the goal of promoting social, civic and intercultural competences of students exhibits a high correlation with fostering democratic values and social inclusion. Integrating education, research and business is negatively correlated with the challenge of social inclusion and reinforcing democratic values as almost no project jointly addresses these challenges. However, our interviews suggest that although most projects do not have an explicit à priori focus on inclusion, democratic values, or civic and intercultural competences, there are positive side-effects such as increased cross-cultural dialogue and understanding simply through project activities, which explains the answer patterns. Intercultural communication is an **inherent component of all KA projects** and interview partners frequently state that they have improved their soft skills related to intercultural aspects.

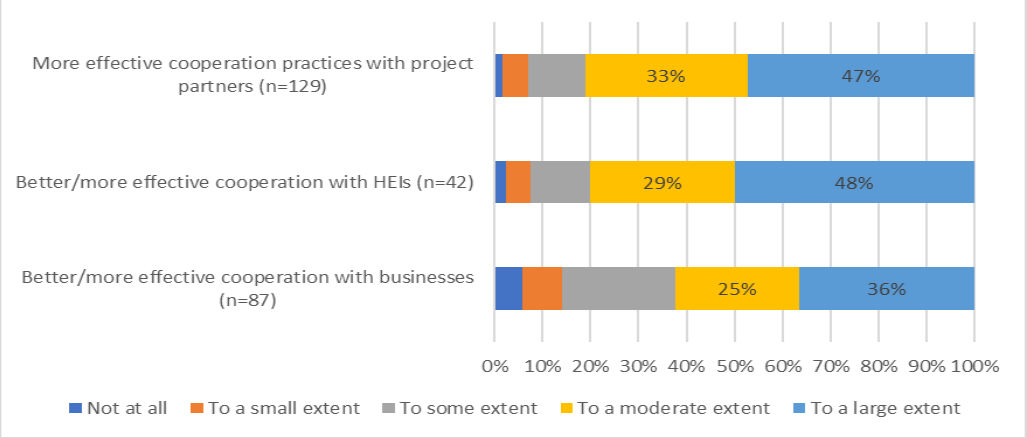
Fostering the knowledge triangle

KAs widely address challenges associated with the knowledge triangle (92%, see Figure 15). Strengthening cooperation at the knowledge triangle interface, is one of the key objectives of Knowledge Alliance projects. The survey results and the analysis of the individual and thematic case studies indicate in this regard, that 1) most of the projects build upon a network of partners in which well-known and new partners were brought together (65%) or 2) project partners even had collaborated with the majority of project partners before (15%). The KA projects hence serve the purpose to widen collaboration patterns to some extent and to strengthen collaboration in the specific areas of the KA projects. Thereby, the projects seek to serve both the needs of participating businesses and the participating higher education institutions. This can be illustrated by the fact that that professional from companies (85%), students (82%) and higher education staff (82%) were targeted by and large to the same extent within the projects.

Projects seek to foster the knowledge triangle mainly through better **cooperation and organisational networks between HEIs and businesses**. Survey respondents (see Figure 15) indicate that:

1. overall, 80% established better and more effective cooperation practices with project partners
2. 77% established better and more effective cooperation with HEIs
3. 61% established better and more effective cooperation with businesses

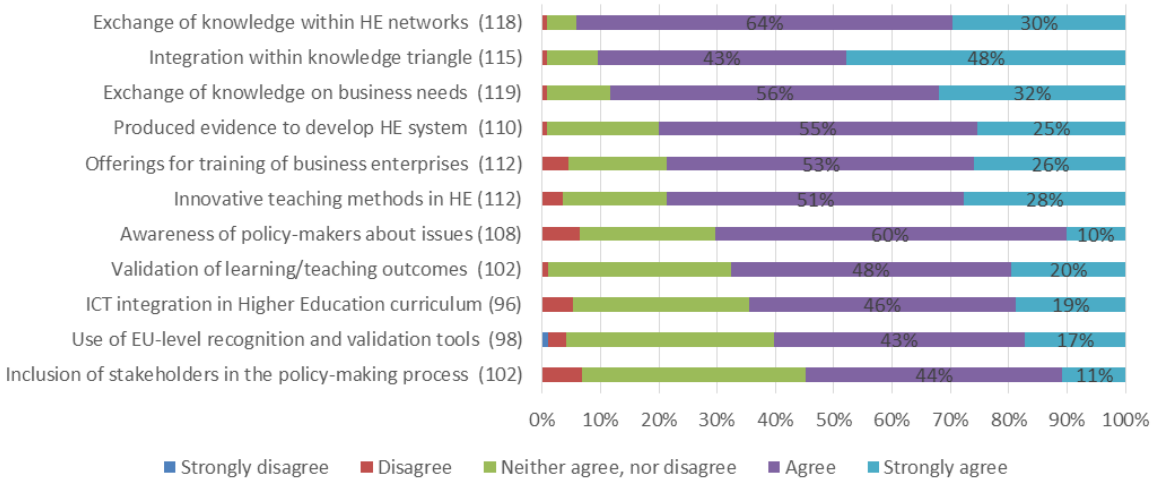
Figure 15. Effects of participation in KA projects on cooperation and networks



Source: Survey results, PPMI 2018.

Furthermore, there is also evidence that KA projects have or may (in cases of ongoing projects) result in positive changes in HE systems. In terms of contribution to national and European HE systems, almost all survey respondents indicated that their project has or is likely to contribute to improving the **exchange of knowledge** within higher education networks. As a key priority of KA, 91% of projects indicated that they **raise the level of integration between higher education, research and business sectors** as well as a greater exchange of knowledge on **business needs** (Figure 16). KAs also foster better integration within the knowledge triangle through innovation and knowledge transfers between partner organisations in other countries and other sectors (see Figure 16).

Figure 16. Perceived contribution to changes in higher education



Source: Survey results, PPMI 2018.

Improving the relevance and quality of HE curricula

Almost 86% of survey respondents indicate that their project aims to contribute to improved quality and relevance of HE curricula, thus aiming to **contribute to the modernisation of HE systems**. In the KA-context, projects improve or aim to improve curricula by **developing new teaching and learning approaches**. Improving the quality and relevance of curricula is a key priority of KA projects, as can be seen in Figure 16. Four fifths of all respondents agreed or strongly agreed to contribute to producing **evidence that can be used to develop HE systems**, a wider application of innovative **teaching methods** and improving offerings for training of business enterprises (Figure 16).

In 2013, the 'Report to the European Commission on Improving the Quality of Teaching and Learning in Europe's Higher Education Institutions' suggested that the old teacher-centred model of education is replaced by a **new model** that is more flexible in forms of delivery, focuses on the needs and personal development of students. The notions expressed in the report have since been a basis for multiple projects and initiatives at both European and national levels. Most importantly, the newest edition of the Standards and Guidelines for Quality Assurance in the European Higher Education Area (EQA) contain a 'Student-centred learning, teaching and assessment,' which explicitly requires HEIs to incorporate student-centred-learning (SCL) principles into their teaching and student assessment practices. In this context, KAs clearly develop and apply SCL-related methods or explicitly refer to the SCL approach. This makes up-to-date teaching and learning activities a key instrument for KAs to develop innovative study programmes, curricula revisions, courses, and trainings between academia and industry. The specialty of KAs is the action's **openness towards experimental and novel ways** to enhance the quality of education, and thus contribute to the modernisation of HE.

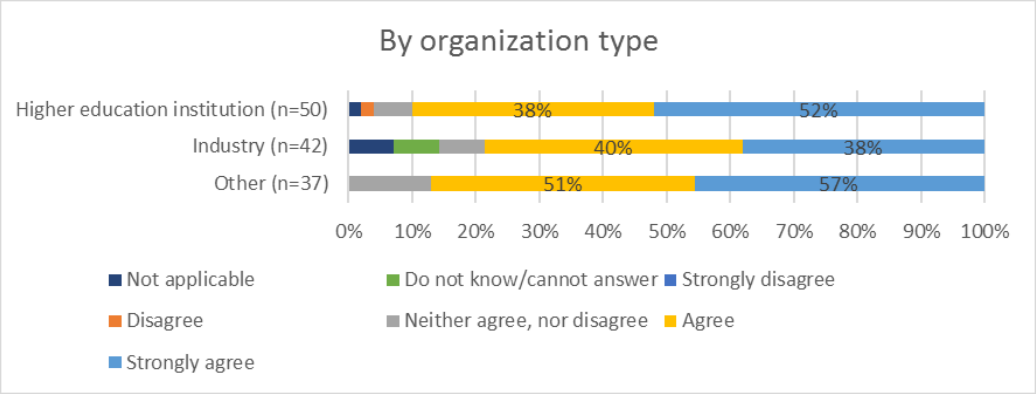
On the systemic level, however, it is too early to definitely assess how projects' teaching and learning activities have taken effect. At the time of writing only very few projects have ended. **Future longer-term monitoring** is still needed and surveys among beneficiaries (also alumni) might provide answers to the question of how the new teaching and learning approaches have benefited HEIs and HE systems as a whole. The modernisation of the European HE system requires a new model which is more flexible in terms of delivery and curricula, focuses on the needs and personal development of individual students, which then enable innovation capacity, makes use

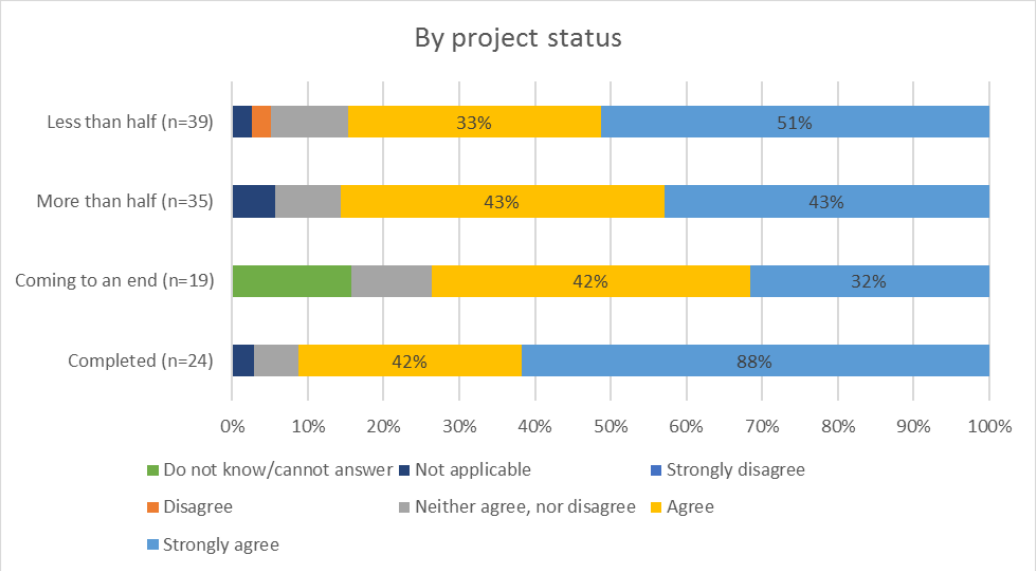
of digitalisation in order to tackle future skills mismatches and promotes excellence in skills development and supports effective and efficient higher education systems. The focus of KAs on developing new teaching and learning methods has **high potential** to improve the relevance and quality of HE curricula and contribute to the modernisation of HE systems. Evidence so far indicates that Knowledge Alliances currently contribute to more relevant and higher quality curricula through **incremental changes in the approaches and mindsets** of **individual persons** and individual course offerings, or sometimes **individual departments/HEIs**. Knowledge Alliances most likely will not be able to solve or overcome the HE systems structural barriers bottom-up without national (and/or European) policy interventions in areas such as quality assurance, changed incentive systems, and performance-based funding.

Reinforcing the response of HE systems to significant challenges

The last few decades have seen an increased awareness of human capital as one of the driving forces of economic development with policymakers having realised the importance of investing in education and training as a way of improving the existing stock of skills. Higher education institutions and systems play a key role in this process and are increasingly called to transform in order to respond to larger macroeconomic concerns such as employment and economic growth. HEIs must modernise and improve their curricula and course offerings to **equip graduates with the necessary skills and competences**, hard and soft, to be competitive on the labour market. From the survey (see Figure 17), we can conclude that KA participants overwhelmingly perceive their projects as **contributing to reinforcing the response of the HE system to macroeconomic challenges** such as employment and economic growth (85% strongly agree or agree). Looking at this result by organisation type of respondent (see Figure 17), unsurprisingly, those belonging to HEIs agree most strongly (90%), while business partners are able to see this contribution to a lesser degree (79%), but still high, in comparison. This is natural since HEI respondents are much 'closer' to any changes in HE systems than businesses. 'Oldest' and 'younger' projects tend to perceive their projects as contributing to solving macroeconomic challenges more: There is the highest degree of agreement with this statement among participants whose projects have already been completed (91%) – they also agree most strongly –, whereas there is least agreement among participants whose projects are coming to an end soon (74%). Projects with less (85%) and more than half of activities completed (86%) fall in the middle of the range. Increased awareness of one's own project's effects usually comes with time for reflection on successes as well as certain time-lags for effects to materialise (time needed for output vs outcome vs impact). These two factors explain why already completed projects agree so strongly, whereas those in the middle of the project lifecycle are still preoccupied with producing project outputs and may not have the necessary time-lag and distance for reflection.

Figure 17. Contribution to addressing macroeconomic challenges (N=129)





Source: Survey results, PPMI 2018.

Responding to labour market needs

Knowledge Alliances aim to contribute to reinforcing the response to macroeconomic challenges by ensuring their students and graduates are equipped with the skills demanded by future employers. Most projects' idea and starting point is to contribute to **tackling a perceived gap** between what is offered by HEIs and what is needed in businesses, including but not limited to skills mismatches, thus contributing to responding to larger challenges. These gaps reveal a variety of current challenges and also demonstrate the multitude and diversity of KAs' thematic coverage. This gap identification or 'needs analysis' forms the basis and start of project activities, as is required by the Knowledge Alliance application guidelines. KA projects, and specifically **university–business cooperation** within the project, contribute to identification by way of having inputs from businesses on their real needs. As interviews confirm, '*business partners offered insights from their daily work experience'* and the identification of skills to be targeted is in the majority of cases only '*successful due to the accumulation of feedback from both universities and businesses.'* Thus, university–business cooperation in KAs ensures that the projects work on **actual skills mismatches and gaps experienced by employers**. In short, the *'real cooperation between universities and businesses'* ensures that the skills and competences addressed reflect the '*real needs of the companies.'*

Although domain- or content-specific knowledge and skills is a condition *sine qua non* for success in most occupations, it is **soft or transversal skills** that are increasingly important for the future in rapidly transforming economies and labour markets[25]. Experts and research agree that social skills will be in higher demand than narrow technical skills such as programming or equipment operation and control[26]. Therefore, while technical skills will remain important, it is vital to build upon and supplement this foundation with social, creative, and collaboration capabilities. We find that virtually all KA projects developed (or aim to develop) students, researchers' and HE teachers,' and business staff's transversal skills and competences that are applicable across professions (for more on skills see sub-section 2.3.4).

In conclusion, due to the **focus on soft and transversal skills**, KA projects activities demonstrate high relevance and potential to i) contribute to **making graduates more successful on the labour market** and thus contributing to the response of higher education to macroeconomic challenges; and ii) contribute to **increased 'resilience'** of graduates by equipping them with skills that are applicable/transferable across all professions and thus ensuring relevance for future domains. This focus on soft and transversal skills and competences is one of the best ways to facilitate future relevance, since we do not yet know which professions will emerge in the future. A small number of KAs also focus on the education and training of (new) professionals in currently emerging industries and domains, where personnel shortages are already evident, to contribute to filling the gap between labour demand and supply. Knowledge Alliance projects demonstrate very successfully how to use new teaching and learning approaches to better train students and graduates in key transversal skills.

Innovation capacity in HE and businesses

KAs seek to foster innovation in HEIs, businesses and the wider economic context. According to the OECD's Oslo Manual (OECD 2004), four types of innovation can be defined:

- Product innovation: A good or service that is new or significantly improved. This includes significant improvements in technical specifications, components and materials, software in the product, user friendliness or other functional characteristics.
- Process innovation: A new or significantly improved production or delivery method. This includes significant changes in techniques, equipment and/or software.
- Marketing innovation: A new marketing method involving significant changes in product design or packaging, product placement, product promotion or pricing.
- Organisational innovation: A new organisational method in business practices, workplace organisation or external relations.

The survey results show that KA projects contributed to **several types of innovation** in HEIs, business and the wider economic context. Overall, 71% of survey respondents indicated that their **organisation's capacity for innovation has improved** due to the participation in the KA. Furthermore, the survey results indicate that participation in KA projects led to **organisational innovations**, **product/service innovations** and **process innovations** for the participating institutions:

[25] See for example Deming, David J. (2017): 'The Growing Importance of Social Skills in the Labor Market.' NBER Working Paper 21473.
[26] See for example PwC '10 skills for future employment: https://www.pwc.com.au/careers/blog/future-employment.html.

- HEIs and businesses established more effective external relations with project partners (79.8%), and 74.4% acquired knowledge/innovations from its partner organisations in other countries, hence modifying and extending their external relations (see Figure 18). Moreover, 73% indicate that they have transferred or acquired knowledge/innovations from organisations in other sectors (65% and 61%, respectively, from HEIs and businesses).
- 71.1% of survey respondents indicated that the **education and training activities offered** by participating education institutions were adapted and better reflect labour market needs because of the education–business partnerships, hence contributing to new or modified service offerings (see Figure 18).
- 51% of respondents stated that projects **jointly developed solutions** for challenging issues, product and process innovations involving students, professors and practitioners together, thereby directly contributing to product innovations.

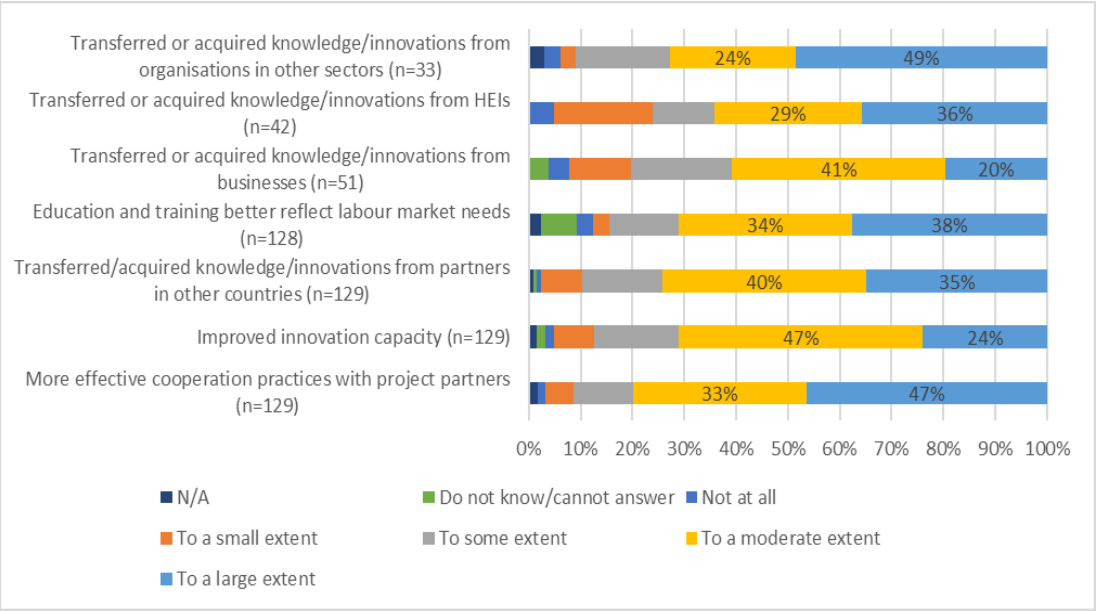
The KA case studies performed in the course of this study confirm that most innovations are related to service offerings within the HEIs. They relate to:

1. changes in the curricula – in the wider sense of the meaning as a KA evaluator put it,
2. the creation of innovative and multidisciplinary approaches to teaching and learning (see section below),
3. and to better adapt education and training activities to business needs.

For participating business partners, innovations mainly related to:

1. improving their international network of HEIs and company partners;
2. developing process (and product) innovations through implementation of real-life problem-solving projects with students and HEI staff;
3. improving companies' internal service offerings in human resources development, lifelong learning activities and innovation management practices.

Figure 18. Organisational innovation through participation in KA projects



Source: Survey results, PPMI 2018.

In conclusion, Knowledge Alliances contribute (or will contribute) to increased innovation capacities in participating organisations, and therefore, most probably to the step-wise incremental increase of Europe's innovation capacity as a whole.

2.1.5. Potential of Knowledge Alliances for evidence-based policy

Key findings

1. The **openness** of the Knowledge Alliance instrument to a multitude of topics and organisation types was its main strength.
2. The Knowledge Alliance action as a whole was effective at achieving incremental policy changes in the area of **relevance and added value of university–business cooperation** primarily through **informing the work of EC policy officers and EU policy documents**. As the critical mass within the instrument grows, this impact will likely be enhanced.
3. The majority of Knowledge Alliance projects **primarily aimed to develop new and innovative teaching and learning** methods.
4. Knowledge Alliance projects with a **strong regional focus**, demonstrated (or even achieved) highest potential for influencing policy- and decision-making. Furthermore, the **critical mass in the field of entrepreneurship** projects could also in the future contribute to policymaking.
5. There was a strong learning effect within KA projects, stemming from developed activities and outputs, but also strongly from **mutual learning between partners**.
6. There is a need to exploit **synergies among KAs** even better, especially in currently and future well-populated fields, to 1) generate more effective mutual learning between projects and 2) facilitate the positioning of ideas and good practices for evidence-based policymaking.

Thematic coverage of awarded projects

Knowledge Alliances are open to any discipline and sector as long as the projects are transnational and result-driven cooperation between HEIs and businesses. In the eyes of experts and decision-makers, the **openness of the KA instrument** to a multitude of topics is its main strength. By not pre-defining the topics of (potential) projects, it allows for diversity and creativity for HEIs and businesses to develop projects of mutual interest and benefit. Thus, it may well facilitate the reflection of heterogenous concerns and ambitions of European HEIs and businesses. Since the goal of Knowledge Alliances is to promote university–business cooperation throughout Europe, it is especially important to allow for participation across sectors and academic disciplines, as well as enable participation of organisations typically less used to working on European projects and/or less used to university–business cooperation (e.g. civil society or arts and cultural organisations).

This **heterogeneity of topics** is evident in the projects that have been funded. KAs demonstrate that complete bottom-up determination of thematic focuses leads to a multitude of thematic areas covered: projects work on topics ranging from audience development in the cultural sector (CONNECT), urbanism and urban challenges (KAAU and KAUC), better connecting food sector industry and academia (FOODLAB and FOOD-STA), increasing future literacy (foresight skills) of students, HE teachers, and entrepreneurs (beFORE), to increasing start-ups' resilience and overcoming the 'valley of death'(ENDuRE). That is not to say that more 'classical' topics with a stronger STEM focus do not exist: There are projects that work on reducing skills mismatches in STEM fields (SCIENT for entrepreneurship skills of STEM PhD students and PREFER for empowering engineering students), strengthening European software innovation

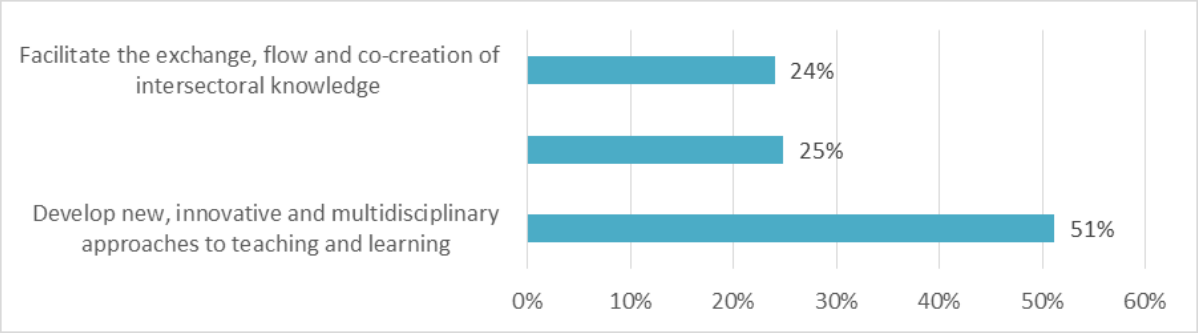
capacity and developing software innovator graduates able to work in any sector (HubLink), developing a Master programme to educate much needed additive manufacturing engineers (ADMIRE), and cloud-based solutions for sharing infrastructure, educational resources, and software in the field of microelectronics (MECA). This wide distribution of KAs across thematic areas and disciplines, suggests that KA findings and outputs have the potential to contribute to many areas of evidence-based policymaking not just regarding HE policy but possibly also sectoral policies.

One way to cluster KA projects is to look at the distribution of projects according to their adherence to the intentions of the instrument according to the programme guidelines. The guidelines specify that projects should intend to:

- develop new, innovative and multidisciplinary approaches to teaching and learning, and/or;
- stimulate entrepreneurship and entrepreneurial skills of higher education teaching staff and company staff, and/or
- facilitate the exchange, flow and co-creation of knowledge.

In our survey, we find that approximately half (51%) of KA projects **primarily aim to develop new and innovative teaching and learning methods**, while roughly a quarter each intend to **stimulate entrepreneurship** and entrepreneurial skills (25%) and **facilitate intersectoral knowledge exchange** and co-creation (24%). Although it cannot be said that a project developing teaching and learning approaches may not also stimulate entrepreneurship and/or increase knowledge flows from one sector to another, it is, however, a good indication of what project participants themselves see as their project's major outcome. Indeed, many projects cover two or even all three of these objectives simultaneously (see e.g. case studies on TACIT or SCIENT).

Figure 19. Purpose of KA projects (N=129)



Source: Survey results, PPMI 2018.

Potential for evidence-based policy

Thematic clusters with highest potential for evidence-based policy

In terms of thematic clusters, one such cluster identified are projects with a strong **regional focus**, oftentimes aiming to contribute to regional innovation and stimulate economic development, growth, and employment. This 'regional cluster' of projects also demonstrates (or even achieved) highest potential for influencing policy- and decision-making on regional economic development. SHIP built four regional innovation alliances that bring together HEIs, businesses, and other key stakeholders in regional innovation (depending on regional contexts and needs that could include development agencies, regional authorities, technology transfer organisations, etc.) for innovation transfer. One of its innovation alliances focused on cross-border

innovation by empowering SMEs to access HEI research and innovation in the Republic of Ireland–Northern Ireland (UK) area, with involvement of local HEIs, SMEs, innovation support organisations, and regional authorities. This collaboration network model found much success and was able to contribute to the development, management, and implementation of the Irish Department of Jobs, Enterprise and Innovation's 'Regional Action Plan for Jobs'[27] on how to drive economic development and employment growth in regional ecosystems. It also contributed to the increased awareness of policymakers of the need for a mainstream innovation development programme for SMEs, which resulted in an Ireland, Northern Ireland, and western Scotland SME support programme[28]. Another project that could have the potential to impact regional decision- and policymaking is TWL-The Wine Lab which aims to generate and accelerate innovation in the wine sector and small wineries that may often be located in disadvantaged areas. Its regional focus is evident in its approach to establishing regional hubs of all relevant actors (producers, researchers, policymakers, tourism organisations, etc.) and means that activities are appropriate for each regional context. According to interviews, TWL is already included in the smart specialisation strategy of one of the regions and since it is a relatively 'young' project funded in 2016, moving forward, there is potential for it to achieve even broader impacts on regional policymaking processes. Other projects with strong regional dimensions include ERDI (increasing competitiveness of regional economies increasing bio-economy business), KAUC (addressing urban challenges and sustainability issues through cooperation between HEIs, corporations, and municipalities). Notably, projects with regional dimensions oftentimes have **local/regional authorities** as project partners or found suitable ways to involve regional and/or national policymakers in project activities or discussion, events, and dialogue. Another success factor (or signal of high potential) is that through tailoring project objectives and activities to suit **regional contexts, priorities, and concerns** – thus limited in scope-, a project is in a better position to provide evidence for policymaking.

Another cluster with high potential for evidence-based policy is the rather large portfolio of KA projects working on different aspects of **entrepreneurship** and start-up support. Our analysis of project applications reveals that roughly one **third to half of all funded projects** between 2014 and 2016 have explicit objectives to either 1) improve entrepreneurship skills and mindsets (e.g. SCIENT, ECOSTAR, EUFood-STA, FOODLAB, CASE, etc.); or 2) support entrepreneurs and start-ups in resilience or upscaling (e.g. ENDURE, GL-SPIN). The results and good practices of this cluster demonstrate potential for policies aimed at making entrepreneurship more attractive (even in traditionally less entrepreneurial fields such as SSH) and how to teach entrepreneurial skills, as these are increasingly important for (future) employers. The population of entrepreneurship projects could potentially produce learnings and good practices not only for **policymaking**, but also for **other KAs** working in the field. However, our findings suggest that there are currently barriers to this knowledge transfer specifically applicable in this cluster: A number of interviewees indicated that their projects would have benefited from earlier/more active cooperation with other projects. This signals the need to **exploit synergies among KAs** even better, especially in currently and future well-populated fields, to 1) **generate more effective mutual learning** between projects, ideally at early stages and 2) **facilitate the positioning** of ideas and good practices for evidence-based policymaking. Project participants and applicants should become more active in establishing cross-KA cooperation and find ways to make such collaboration mutually possible and beneficial. The yearly Cluster Meetings and kick-off meetings with all selected projects as well as

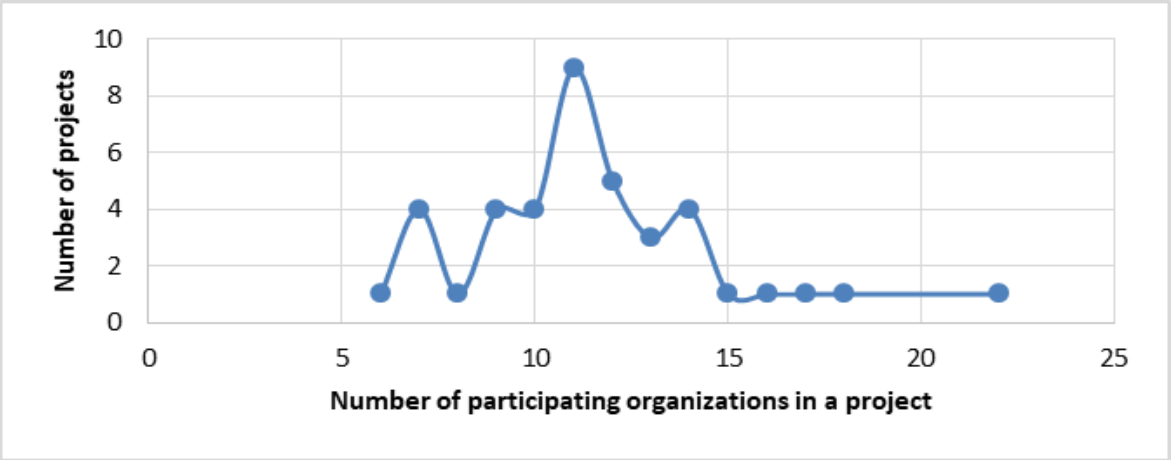
[27] https://dbei.gov.ie/en/What-We-Do/Business-Sectoral-Initiatives/Regional-Action-Plans-for-Jobs.
[28] Co-Innovate, a INTERREG VA programme.

the online Yammer platform for KAs[29] are existing central support formats. Continued active promotion and support for cross-KA cooperation on specific issues could also facilitate more effective mutual learning.

Potential for evidence-based policy through developing and spreading good practices across different countries

The Erasmus+ programme guide requires applying projects to involve at least 6 organisations and be from at least three countries, out of which at least two HEIs and two enterprises. Due to this requirement, there is the expectation that Knowledge Alliance projects contribute to the development and spreading of good practices across organisations and different countries. Analysis of administrative and monitoring data reveals that the most frequent **consortium size** is a total of 11 partners – significantly more than required. Projects with 7, 9, 10, 12, and 14 partners are also very common. This analysis shows that, on average, KA project consortia are quite large – especially considering the funding amounts and project run-times (2-3 years).

Figure 20. Number of organisations per project

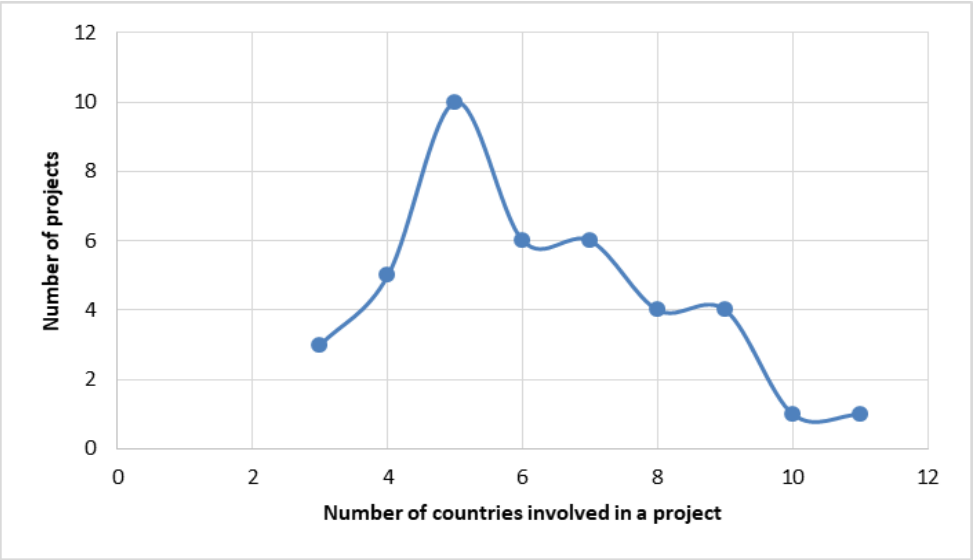


Calculations: AIT, based on data by EACEA.

Analysis of the **number of countries involved** in a project highlights that most frequently, projects are cooperations between organisations in 5 to 7 countries – significantly more than strictly required. This finding highlights the **high potential** of the KA action to contribute to spreading good practices across countries: The rather large number of countries involved in any given project signals that the sharing of good practices among the project consortium potentially reaches quite a lot of countries at once.

[29] A platform on university–business cooperation was established on Yammer. This group hosts a dedicated subgroup for all Knowledge Alliances.

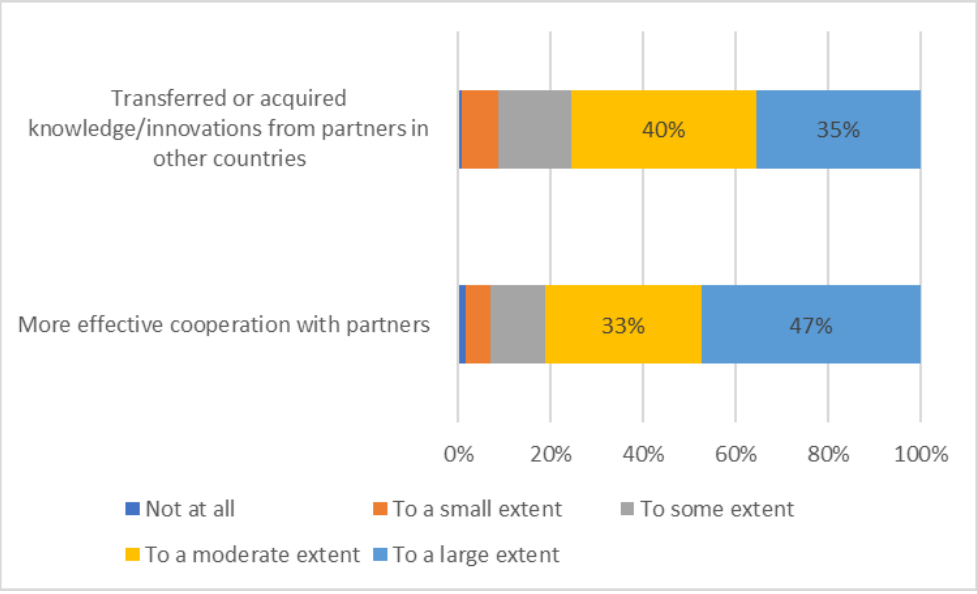
Figure 21. Number of countries per project



Calculations: AIT, based on data by EACEA.

Among survey respondents, we find that Knowledge Alliance projects strongly contribute to the spread of knowledge and innovations across different countries: More than 75% perceive that they have either **transferred and/or acquired knowledge and innovations** from partners in other countries. The key to the effective spreading of knowledge within project consortia is the establishment of good or better **cooperation practices** with all partners – here we find that 80% of respondents indicate that this was one of the effects/outcomes of their KA project.

Figure 22. Benefits to organisation due to participation in KA



Source: Survey results, PPMI 2018.

From interviews with KA project coordinators and participants we find that virtually all of them highlight the **immense learnings from participation**. The majority of interview partners find that sharing knowledge and good practices across borders are essential and a major benefit from participation in E+ Knowledge Alliances ('(…) *Knowledge sharing across borders is hugely important and it also brings wider commitment to the ideas behind the European Union…*'). The learning effects stem not

only from the **developed activities/outputs**, but most importantly **mutual learning from partners in other countries and other sectors**. Most feel that project participation gave them opportunities to work with and learn from the expertise each partner brings to the table, be it thematic (`(*Learned a lot from organisations) with deep expertise in certain new teaching methods'*) or general (`*The consortium had very smart people (…) and I gained huge amounts of knowledge (from them)'*).

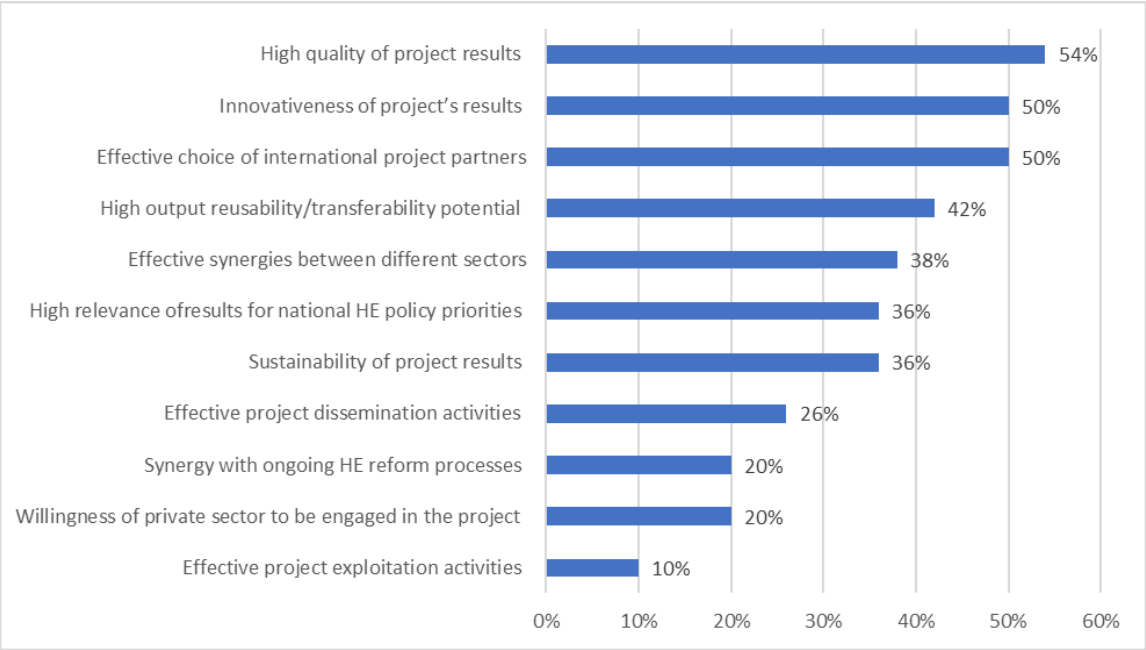
During the course of project implementation, effective project management and communication within the consortium contributes to the effective sharing of good or best practices across partners and countries. Furthermore, several interviewees indicated that the project sharpened their understanding of the needs, challenges, and solutions of other countries (or regions) regarding innovation, university–business cooperation, curricula and trainings, etc. and the realisation that *`one size does not fit all.'* Moreover, some also report tangible outcomes of shared good practices from other countries: *`(Partner organisation in another country) used certain multimedia technology during our work, which I was very impressed by. My organisation is now using this technology as well (…)'*).

Most of the spreading of good practices is thus inherent and happens naturally during the course of the project. However, several projects also have the explicit aim to spread best practices from countries more experienced/with more expertise or history in a certain field to countries with less experience through basing the development of project outputs on the synthesis of existing best practices. Two KA case studies provide examples of how project activities directly foster international exchange and mutual learning. The KA SCIENT provides an example of how to overcome disparities in northern and southern European countries. The KA aims at transferring best practices from northern European countries in teaching, learning, and knowledge exchange to southern European countries. Another example is the KA SHIP that contributed to the establishment and implementation of territorial innovation alliances by 'champions who obtain the role of experts or ambassadors in their region.'

Success factors and barriers to policy and systemic impact

The survey found that the most important factors that support maximising a project's impact at policy/systemic level are the high quality of project results (54%), innovativeness of project results (50%), effective choice of project partners (50%), the project output's reusability and transferability potential (42%), and effective synergies between sectors involved in the project (38%).

Figure 23. Success factors for achieving systemic/policy impact (N=50)

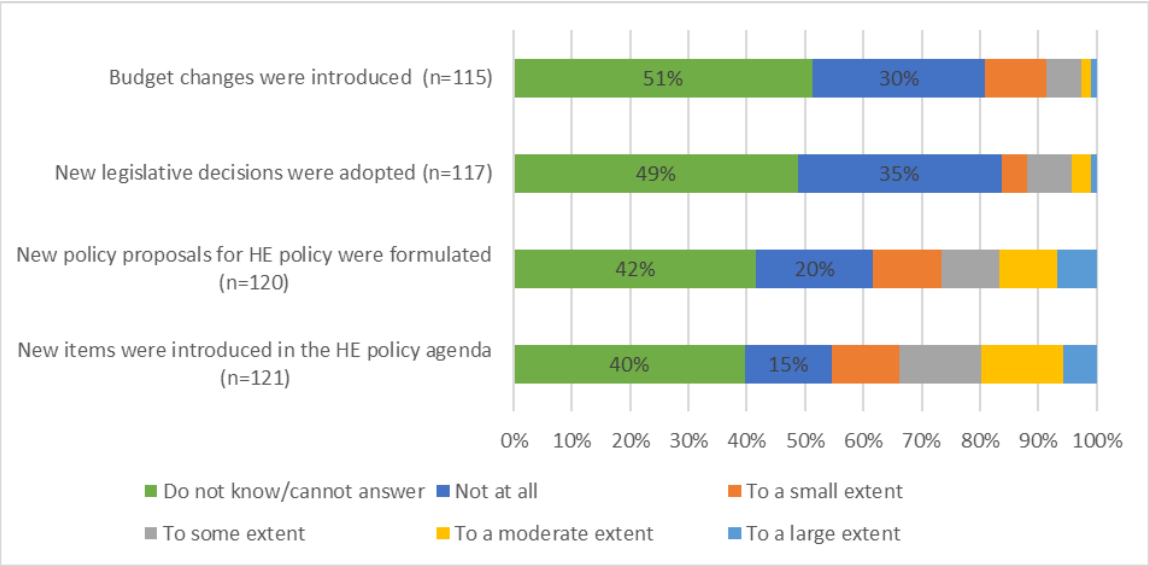


Source: Survey results, PPMI 2018.

Through our interviews we found additional **key underlying success factors** for influencing policymaking. One such factor is to have project coordinators or partners that are **aware of the potential** of their project to contribute to policymaking. In interviews we found that having such persons as part of the consortium facilitates the project's **early orientation** towards aiming to achieve impacts on policymakers and policies. This may be through project partners that are either policy experts and analysts or persons in policymaking functions, such as regional or local governments. In turn, this promotes activities that address decision-makers directly in a strategic manner or collaborating with strategic partners that have better reach among policymakers such as large intermediary organisations. SHIP's strategic outreach to and engagement with Intertrade Ireland is a good practice example in this regard. For policymaking and reaching policymakers on national/regional/local levels, our interviews confirm a pattern where many projects do not necessarily aim at influencing policymakers and policies, not because their results are of low quality, but because they are 1) not aware of the potential their project results may have for evidence-based policies, and/or 2) not familiar enough with policymaking processes to strategically address decision-makers in an effective manner or search for strategic partners that are able to spread their message to decision-makers.

Furthermore, findings by external expert reviewers of projects indicate, as mentioned in several expert reviews of individual projects, that the research produced by KAs might improve evidence-based policymaking of local/regional/National Authorities if used by those stakeholders as a basis for developing interventions, policies, and instruments. However, our interviews suggest that despite high potential, the difficulty lies in **sufficiently reaching national/regional/local policymakers directly** so that results may be used. Even though projects may demonstrate potential to contribute to evidence-based policies, in most cases it is quite difficult for one KA project to effectively reach relevant policymakers at various levels of government. This is to be expected given that it is not realistic or feasible to expect each individual project to achieve policy changes.

Figure 24. Contribution to national and/or European higher education policy developments



Source: Survey results, PPMI 2018.

This finding is supported by the survey respondents' subjective assessment of their project's contribution to national or European HE policy developments (Figure 24). Between 40-50% of survey respondents **did not know or could not answer** whether their project contributed to the **introduction of new items to the HE policy agenda**, to the **formulation of new policy proposals, new legislative decisions** or **budget changes**. Nevertheless, 45% of respondents indicated that they influenced the policy agenda at least to a small extent. Interviews indicate that the perception of having influenced policy agenda at least somewhat, is due to many projects hoping to have affected or to affect agendas in the future through informing and engaging policymakers in discussions. Many interview partners have attempted to engage policymakers especially through opportunities organised by the EC such as the University Business Forum, Thematic University Business Fora in MS. However, most project participants are not aware of direct effects of, for example, their discussion with certain officials, and there are usually no follow-up activities.

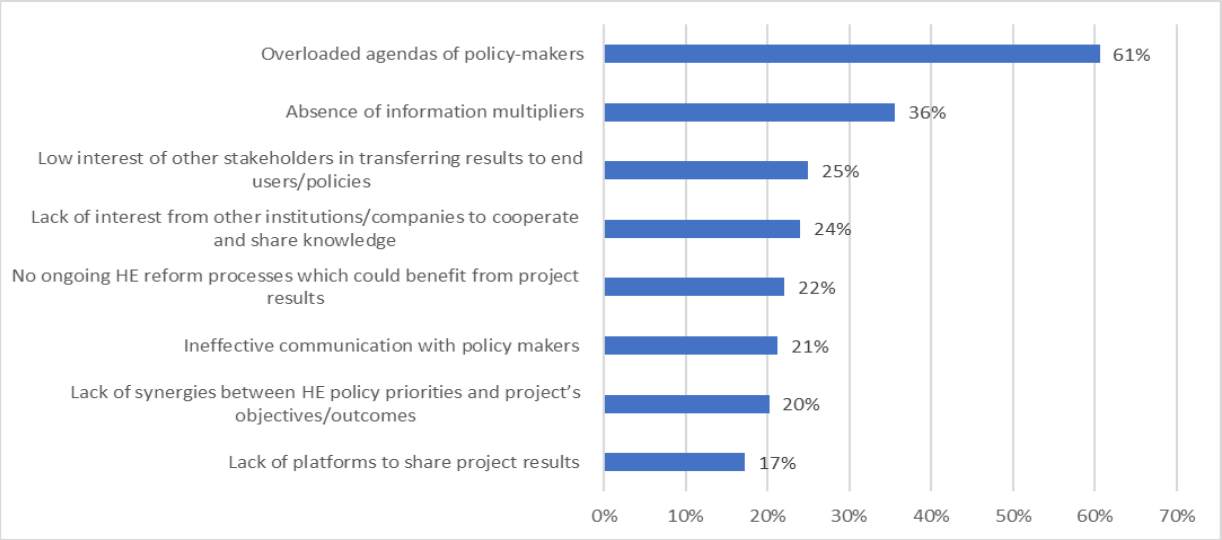
Interviews with the European Commission suggest that in the European Commission (DG EAC) there is awareness of the successes and challenges of KAs, policy officers use KA results for their work, and try to promote the university–business cooperation concept of KAs to other DGs and national/regional authorities. Therefore, the apparent primary mechanism by which the KA action may influence policymaking lies in **step-wise change**: through **informing the work of EC** policy officers who may then try to spread the KA concept on national and regional levels. This has become evident in recent EC policy documents where an increased emphasis on strengthening university–business cooperation as well as the commitment to 'step up EU support for university–business cooperation, making the biannual University–Business Forum a focal point (…) and promoting the establishment of regional and national university–business fora across the EU'[30] can be seen.

The respondents' reasoning for the perceived lack of influence on a policy level varied. The primary **external obstacle** for spreading project results to policymakers is the **overloaded agenda of these decision-makers**. Six out of 10 respondents identified the overloaded agenda as the main impediment. One third of respondents indicated that the **absence of information multipliers** such as journalists is the main reason

[30] 2017 EC Communication on a renewed EU agenda for higher education https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2017%3A247%3AFIN.

that project results do not reach relevant stakeholders. Low interest from other stakeholders and institutions to cooperate or transfer results to end-users was listed by one quarter of survey participants as main obstacles. KAs' project lifecycle was mentioned by several respondents, confirmed through interviews, as an additional external obstacle in spreading project results.

Figure 25. Barriers to policy impact (N=103)



Source: Survey results, PPMI 2018.

There is hope among project participants that effects on policymakers and policymaking can be achieved through 'critical mass' and the KA action as a whole. In light of the broad thematic spectrum of Knowledge Alliances particularly, there is a rather **high potential** for the KA action as a whole to contribute to a range of evidence-based policy on the benefits of university–business cooperation on effective knowledge/innovation transfer and better integration of the knowledge triangle but probably also thematic areas such regional growth. A positive signal toward 'critical mass' is the increasing budget allocated to the KA action since its inception in 2014, allowing it to fund more projects per call (from approx. EUR 8 million in 2014 to EUR 30 million for 2019). Despite this potential, there are also relatively high barriers for individual projects to actually achieve policy effects. Therefore, although some projects and project clusters demonstrate high potential, due to the small number of completed projects and challenges for individual KAs to reach national/regional/local policy-makers, there are only sporadic and isolated highlights and successes of KA projects already effectively contributing to evidence-based policy on national/regional levels to date. Most likely, the policy effects will continue to be evident only for the **KA action as a whole** (rather than achievements of individual projects) whose increasing 'critical mass' will continue to contribute to policy changes through **informing the work of EC** policy officers and EU policy documents.

2.1.6. Dissemination of project results in Knowledge Alliances

Key findings

1. The **requirement** for Knowledge Alliance applications to contain **dissemination and sustainability strategies** ensured that projects by and large have feasible ideas of dissemination plans at early stages.
2. The **most common project dissemination measures** in Knowledge Alliances were project websites, conferences and workshops at local, national, and European level, specific information sessions, seminars and training courses targeted at end-users of projects, as well as meetings with key stakeholders, and social media.
3. The **primary target groups** included scientific experts and practitioners working in the field, end-users of project results as well as policymakers and decision makers at HEIs.
4. A **stakeholder analysis** identifying different relevant stakeholders and **planning dissemination measures, accordingly**, was crucial for setting up a dissemination strategy and also ensuring uptake of knowledge. In this regard, **multiplier effects** through the involvement of existing networks and associations in dissemination efforts proved to be successful. **Train-the-trainer concepts** were also effective at achieving better uptake in business and HEI communities. In this regard, **regional** workshops with practitioners working in the field and the inclusion of **local cluster organisations** seemed to be effective at ensuring benefits beyond the core/project partners.
5. **Key success factors** for maximising the impact of dissemination activities included a **well-managed consortium** and a clear and **strong interest** in the project and the results, as well as the **active engagement** of all project partners in dissemination activities and a **clear distribution of responsibilities**.

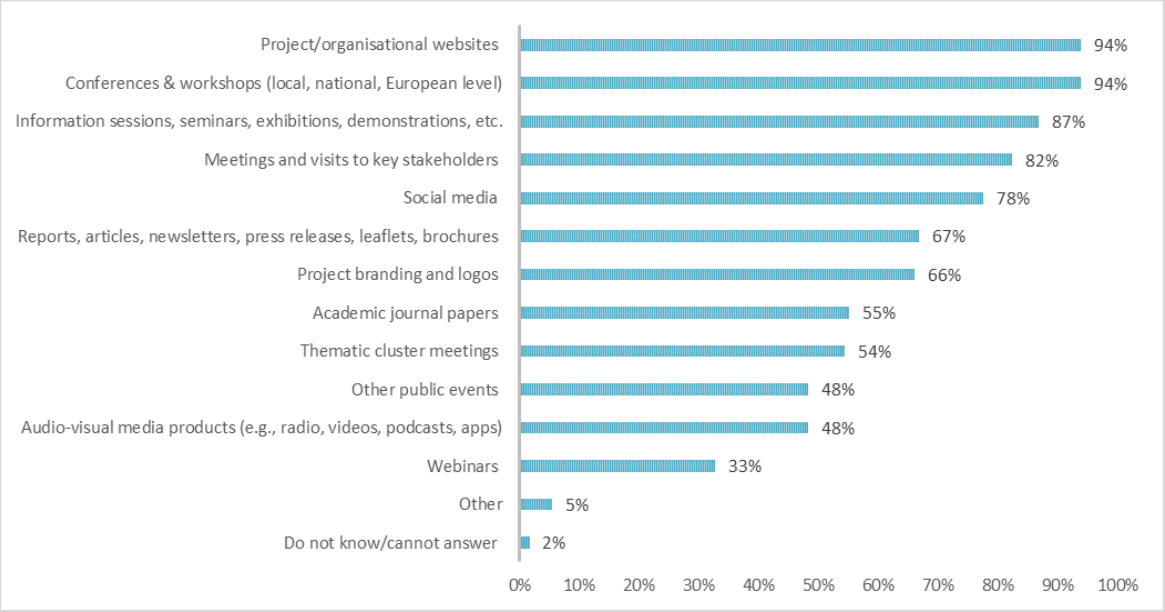
Targeted dissemination measures should serve to facilitate knowledge exchange between project participants and relevant stakeholder groups that could profit from the project's results and hence increase the respective impacts. KAs should actively pursue dissemination measures to raise awareness and visibility among relevant stakeholder groups such as other HE institutions working in similar areas, companies, intermediaries, and policymakers.

Already in the proposal stage, dissemination and sustainability strategies have to be laid down by the KA projects, thereby ensuring feasible ideas at proposal development stage and in the review process the following criteria concerning dissemination is applied[31]: The proposal provides a clear plan for the dissemination of results, and includes appropriate activities, tools and channels to ensure that the results and benefits will be spread effectively to the stakeholders and non-participating audience within and after the project's lifetime.

According to the survey results (see Figure 26) the most common project dissemination measures are project websites, conferences and workshops at local, national, and European level, specific information sessions, seminars and training courses targeted at end-users of projects, as well as meetings with key stakeholders. In addition, also the use of social media ranked outstandingly high (77.5%). Furthermore, more than 60% of KAs publish targeted printed materials such as reports, articles in specialised press, newsletters, etc. and around half of respondents revealed in their project's plans that they would use academic journal papers as a means of communicating project results.

[31] See: ERASMUS+ programme guide: https://ec.europa.eu/programmes/erasmus-plus/programme-guide/introduction/how-to-read-programme-guide.

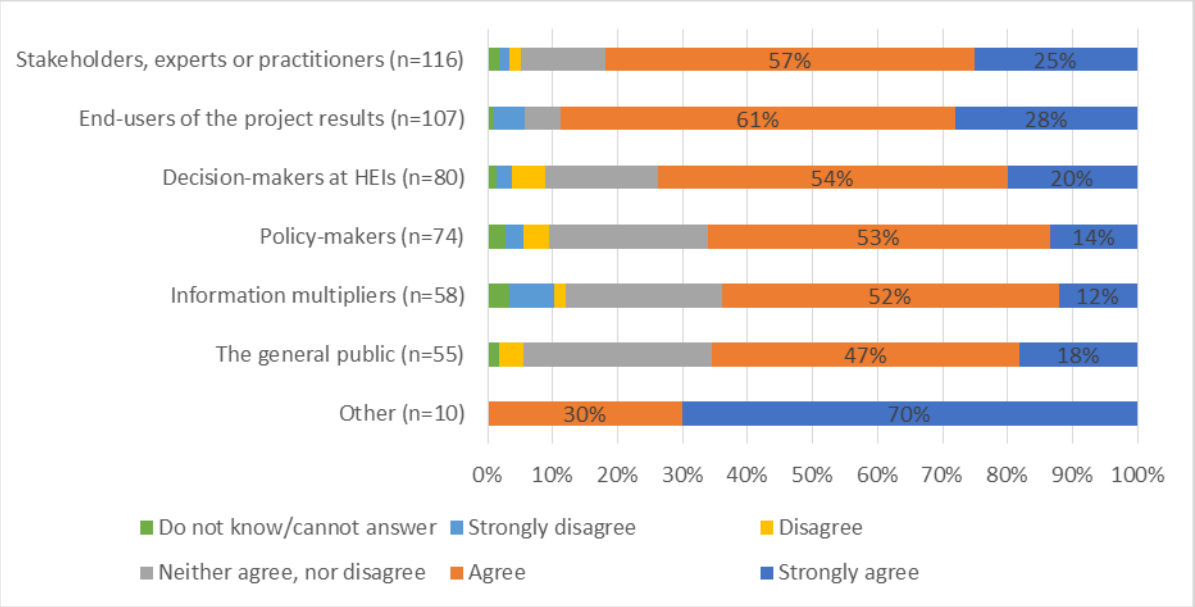
Figure 26. Key dissemination measures of KA projects



Source: Survey results, PPMI 2018.

The key targeted stakeholders are scientific experts and practitioners working in the field (92%) and end-users of project results, which indicates that dissemination activities are also targeted at those groups that are key to the sustainability and exploitation of project results. Most of the KAs also direct their attention to policymakers (59%) and decision-makers within higher education systems (62%). Almost 42% of respondents also indicated that dissemination methods targeted the wider public.

Figure 27. Effectiveness in engaging stakeholders in knowledge dissemination activities



Source: Survey results, AIT 2018.

The survey findings furthermore indicate that the majority of KAs are very confident about the success of their dissemination activities in terms of engaging end-users of project results (89% agree or strongly agree), experts, or practitioners in the field (82%), decision-makers at higher education institutions (74%), and even

policymakers at local, regional, national and/or European level (66%) and the wider public (65%).

The interviews confirm that massive online communication, web-presence, newsletter, and social media engagement along with the organisation of dedicated dissemination events are the most frequently used dissemination measures for spreading the news. Actively managing social media platforms such as Facebook and Twitter and finding ways to grow these networks and interaction therein have proven to be effective approaches toward dissemination, indicating that using social media for dissemination purposes very successfully engages intended audiences. Interviews also indicate that using already established social media sites and accounts (e.g. social media sites of expert/professional networks and communities) in particular are quite effective at spreading information beyond the consortium.

Ensuring benefits from cooperation beyond project participants

The case studies and interviews performed indicated that a stakeholder analysis identifying different relevant stakeholders and plan dissemination measures accordingly, is crucial for setting up a dissemination strategy while also ensuring uptake of knowledge. Different roles, characteristics, needs and interests of stakeholders need to be analysed and then the most relevant and appropriate dissemination strategies developed. For doing so, the involvement of existing networks and associations was deemed to be already helpful at stage of proposal writing and needs analysis. If they provide manpower and resources for dissemination, it is key for successful dissemination of results – due to their tremendous multiplier effect to help spread to their members.

The performance of a needs analysis, that ensured the integration of diverse stakeholder groups was seen to be an effective means to ensure benefits from the university–business cooperation by reaching out to potential users from the beginning. For example, skill gap analysis of managers, students and trainers allowed respective needs from relevant user groups to be analysed by means of online-surveys and Delphi surveys reaching hundreds of participants (e.g. Le@d, WineLab).

During project performance, the provision of piloting exercises involving students, teachers and employees of firms allowed learning offerings to be spread and adapted. Train-the-trainer concepts were also frequently mentioned in this regard, in order to allow for a better uptake in the relevant business and higher education communities. In this regard also regional workshops including practitioners working in the field (e.g. WineLab) and the inclusion of local cluster organisations seemed to be effective means for ensuring benefits beyond core-project partners. And also, in this phase of the projects, the use of existing research and innovation networks were frequently mentioned as success factors for bridging the gap between the community of researchers, practitioners and students and the business communities. Furthermore, open access to and availability of course material in several languages and dedicated communication and training can be stated to be of vital importance for effective knowledge circulation.

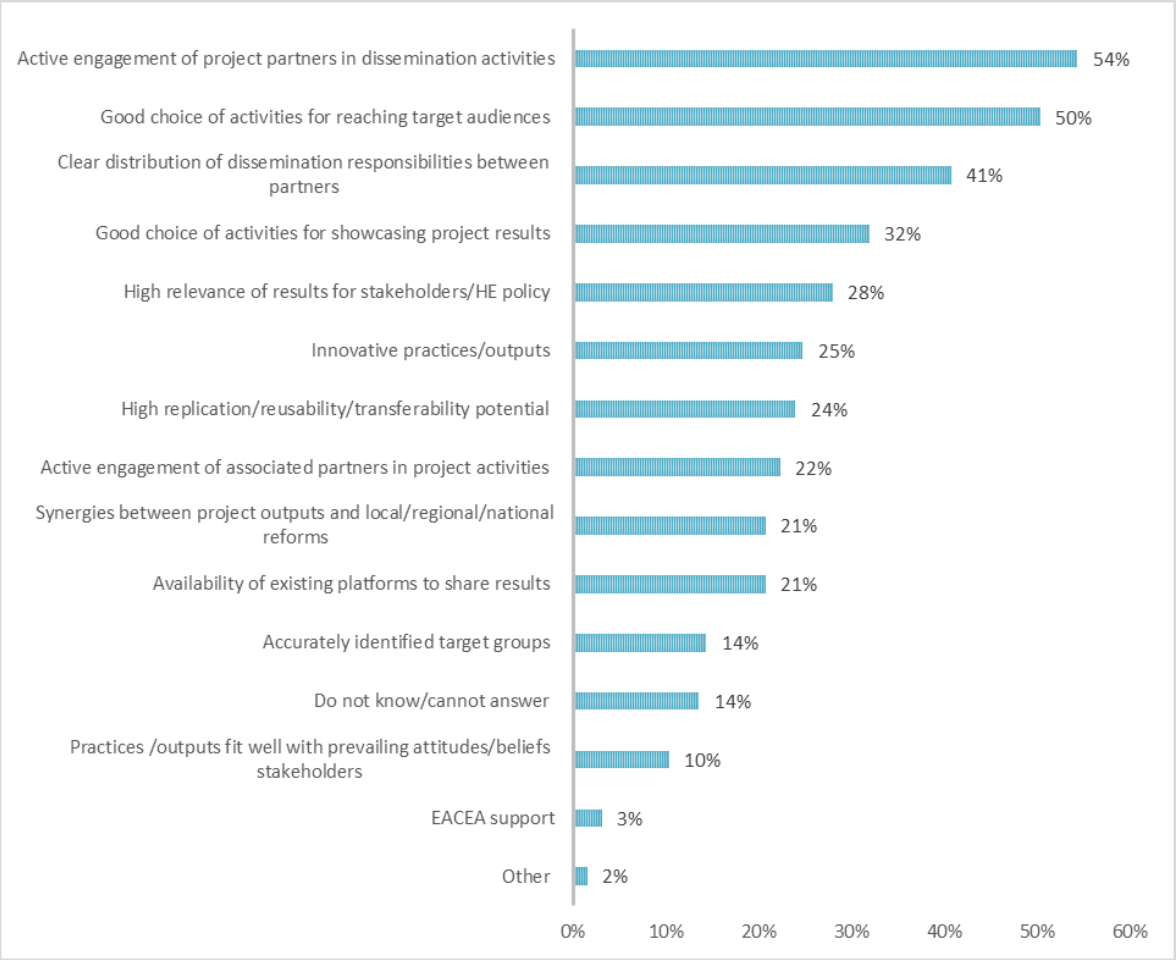
Success factors and barriers

An important overall factor contributing to a KA's success in dissemination seems to be a well-managed consortium and a clear and strong interest in the project and the results, which in turn requires attention to be paid to particular exploitation-related activities. The active engagement of all project partners in dissemination activities was most frequently cited as a key factor that contributed to maximising the impact of such activities (54.4% of survey respondents agree). This seems to be supported by interview findings, where some interviewees have stressed that the active contribution

of all project partners to developing and maintaining a prominent social media presence is key to success. Survey participants also indicate that a clear distribution of responsibilities for specific dissemination activities between project partners is important (40.8%).

Deliberately choosing and applying dissemination and/or exploitation measures that are the most appropriate and that are targeted at intended audiences is another factor that maximises the positive effects of such measures, as are well-chosen dissemination measures that optimally showcase project results (50.4% and 32% of survey respondents, respectively, agree).

Figure 28. Success factors for effective dissemination



Source: Survey results, AIT 2018.

Neither the survey nor the interviews highlighted major barriers concerning the implementation of knowledge transfer and dissemination measures. Many survey respondents either did not know any barriers or were not able to answer the question (34.3%). A possible reason could be that the project is not yet sufficiently mature to give a qualified response. This seems to be supported by the status of projects that tended to choose this answer: They are mostly projects that still have a significant portion of activities to be implemented. Some survey respondents also indicate a lack of time or budget/funding for dissemination activities, but also a lack of time or interest on the target audience side. Interview findings support these statements to some extent. Some interviewees raised the issue that engaging certain key stakeholders, such as high-level politicians and policymakers, or the academic community, is essential to ensuring a project's visibility, sustainability, and impact.

The experience of these interviewees, however, suggests that it is very difficult to capture and maintain their interest.

Complementarities, synergies and gaps at systemic/policy level

In this sub-chapter we compare our findings on impacts of HE SPs and KAs at systemic/policy level. The main purpose of this analysis is to identify the complementarities, synergies and gaps within the approach of the Erasmus+ transnational cooperation actions in higher education. The analysis is structured along the three main themes considered in sub-sections 2.1.1-2.1.6: contribution of HE SPs and KAs to reinforcing the response of higher education systems to significant challenges; thematic coverage and potential for evidence-based policy; and dissemination and exploitation of project results.

Challenges addressed by Strategic Partnerships and Knowledge Alliances

HE SPs and KAs awarded in 2014-2016 aimed to contribute to the modernisation of Europe's higher education systems and were expected to support higher education institutions as they respond to challenges identified in the 2011 EU Modernisation Agenda. Hence, the most prominent impacts attributable to HE SPs and KAs should be evident in at least one of the following priority areas: 1) increasing attainment levels; 2) improving the quality and relevance of higher education; 3) strengthening quality through mobility and cross-border cooperation; 4) making the knowledge triangle work; and 5) improving governance and funding. In the case of Knowledge Alliances, an additional emphasis was placed on its contribution to strengthening Europe's innovation capacity; fostering innovation in higher education, business and the broader socioeconomic environment; and strengthening the cooperation between HE and business.

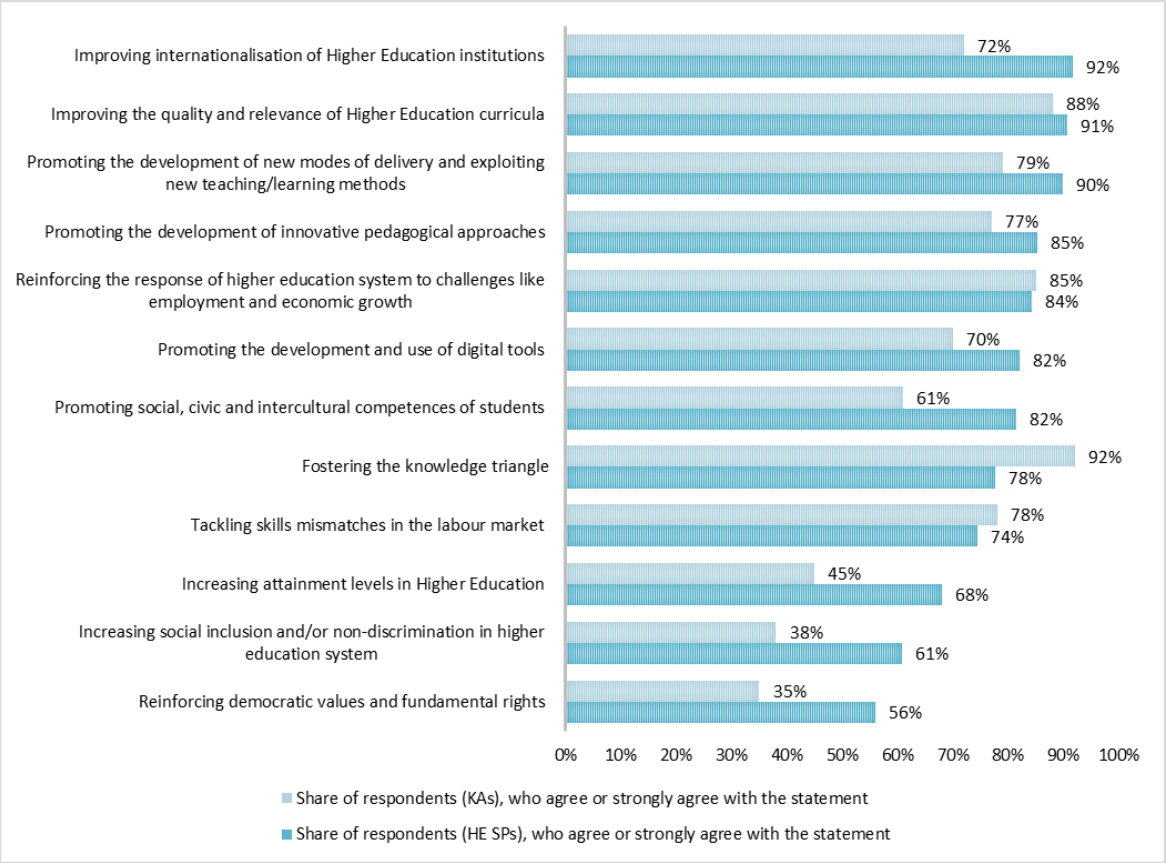
Overall, study results show that both actions were **highly relevant and instrumental** to responding to significant challenges faced by higher education and addressing most of the objectives defined in the 2011 EU Modernisation Agenda and the 2013 Communication on Opening Up Education. Whether considered individually or as a whole, HE SPs and KAs were characterised by a strong potential to act as the driver in the modernisation process of higher education institutions and higher education in general. Furthermore, despite the risk of overlaps resulting from the fact that both HE SPs and KAs contribute to a similar set of EU policy objectives, these actions acted **in a highly complementary mode**. This outcome was enabled by slight differences in the thematic focus and structural capacities (i.e. size and composition of partnerships, budget size per action and per project, etc.) of HE SPs and KAs.

As demonstrated in Figure 29 and in our analysis presented in sub-sections 1.1.1 and 1.1.4, both actions were perceived as equally important for improving the quality and relevance of Higher Education curricula and reinforcing the response of higher education systems to challenges like employment and economic growth. In terms of all other areas, KAs were perceived as clearly prevailing in fostering the knowledge triangle, while HE SPs were viewed as more relevant to addressing the remaining challenges. In particular, HE SPs were complementary to KAs in addressing priorities such as increased internationalisation of higher education institutions, improving the quality and relevance of higher education curricula, promoting the development of innovative pedagogical approaches, promotion of social, civic and intercultural competences of students, increasing social inclusion and/or non-discrimination in higher education. Such distribution is very rational, as the overall budget allocated (per action) and the number of funded HE SPs in 2014-2016 was significantly higher. In comparison to KAs, HE SPs are more likely to trigger systemic level changes

through a 'critical mass' of projects implemented in multiple areas without spreading the resources or dispersing the achieved results too much.

In the same notion, due to their stronger focus on fostering the knowledge triangle, KAs succeeded in raising the level of integration between higher education, research and business sectors.

Figure 29. Relevance of HE SP and KA projects to addressing various challenges, as perceived by the participating organisations



Source: Surveys of participating organisations in HE SPs and KAs. Answers to the survey question "Overall, do you agree or disagree that your project contributes to addressing the following challenges?"

Even though HE SPs and KAs rather thoroughly address all priority areas identified in the 2011 EU Modernisation Agenda and strongly complement each other, a few of these areas could be considered as **gaps** deserving more attention in the future. In particular, all key stakeholders seemed to agree that it is less evident how HE SPs and KAs contribute to increasing attainment levels and reinforcing democratic values and fundamental rights in higher education.

Thematic coverage

In terms of their thematic focus, the bottom-up principle applies to projects of both actions. Our analysis revealed that it leads to a multitude of thematic areas being covered by the awarded projects. Despite this diversity of themes covered in HE SP projects, these topics were found to be strongly interconnected with each other (i.e. strong clusterisation patterns were observed). This evidence of a single and integrated network of topics developed through HE SPs shows that in general projects awarded in the period 2014-2016 created a good framework and a favourable environment for a decentralised and uniquely diverse, but at the same time coherent response to challenges faced by higher education. A typical HE SP focused on a mix of several

dominant topics, in some cases complementing it or substituting one of the dominant topics with a different, narrower and more specific topic (e.g. teaching of foreign languages, disabilities/special needs, etc.). The dominant topics in HE SPs were: new innovative curricula/educational methods/development of training courses; ICT – new technologies digital competences; open and distance learning; entrepreneurial learning – entrepreneurship education.

The analysis of KA projects also revealed the apparent heterogeneity of topics being covered. Around a half of all respondents indicated that the primary aim of their project was to develop new and innovative teaching and learning methods, which was also a prevailing theme in HE SP projects, whereas roughly a quarter intended to stimulate entrepreneurship and entrepreneurial skills and facilitate intersectoral knowledge exchange and co-creation. The conclusion that the entrepreneurship theme dominates in KA projects was also supported by our analysis of project applications, which revealed that even a larger share, roughly one third to half of all funded projects between 2014 and 2016 had explicit objectives to either improve entrepreneurship skills and mindsets or support entrepreneurs and start-ups in resilience or upscaling. HE SP projects also covered the entrepreneurial learning and entrepreneurship education theme, however, more as a complementary, rather than as the main topic. This difference between KA and SP projects indicates a potential synergy that could be exploited between the two actions in terms of impact if some interactivity between these sets of projects (in addition to interactivity between KAs within this action as part of the Cluster Meetings) occurs in the future.

Contribution to evidence-based policy

The results of this study allow concluding that the beneficiaries of HE SPs and KAs take active measures and frequently succeed at increasing the awareness of issues tackled by their projects among policymakers. However, they have no (or very limited) direct impact on concrete, tangible political decisions. Instead, their efforts usually contribute to cognitive shifts at the policymaking level, e.g. by introducing new items on the higher education policy agenda). This observation is based on findings that:

- at national level there is little interest in using HE SP and/or KA results for policy learning;
- HE SPs are lacking support from policymakers both at national and EU levels for knowledge sharing and largely depend on the capacity of individuals projects, which in turn does not allow the policymakers to see a full picture of innovations and positive developments in higher education resulting from individual HE SPs.
- a significant share of HE SP and KA projects awarded in 2014-2016 are still ongoing/ended very recently and it might be too early for impacts at policy level to materialise.

Taking into account the evidence discussed above, we can conclude that HE SPs awarded in 2014-2016 were not suited for and are not likely to result in programmatic shifts at national or European levels, such as adoption and implementation of new legislative decisions or budget changes. Due to their limited capacities to trigger policy changes directly, HE SPs largely relied on the critical mass and snowball effects to contribute to incremental modernisation of European and national higher education systems. This is illustrated clearly by the strong conviction of organisations participating in HE SP projects that their projects contributed to improving knowledge exchange within higher education networks (88%), widening the application of innovative teaching methods (85%), producing evidence needed to develop higher education system (74%), etc. To empower a more direct contribution to evidence-based policy, HE SPs need more opportunities for cross-project and cross-action (HE

SP–KA) knowledge exchange. An event/platform that brings together otherwise scattered knowledge would attract more attention from and bring more value to policymakers willing to learn from HE SPs.

In comparison to HE SPs, KA projects are in a slightly better position to inform policy decisions and to contribute to policy changes in a more direct manner. The potential of KA projects comes from the fact that it has a one-stop source for information about KAs (EACEA), already benefits from thematic Cluster Meetings, university–business cooperation network platform on Yammer and, therefore, are more visible and easier accessible to policymakers at the EU level. The potential of KAs also comes from the regional focus of some KA projects. Notably, KA projects with regional dimensions often had local/regional authorities as project partners or found suitable ways of involving regional and/or national policymakers in project activities or discussion, events, and dialogue, which can produce tangible results in the future.

Dissemination and exploitation of project results

There were no evident differences neither in the ways the HE SP and KA projects disseminated their results nor regarding their main target groups. The most common strategies for dissemination of project results involved publishing them on a project website, organising conferences, workshops and other events involving participatory activities and reaching out to followers and the general public through social media. A combination of these and several other types of dissemination measures/activities can be described as the standard approach followed by both HE SPs and KAs for sharing the results of their project with audiences beyond the project team. Among the more evident differences regarding dissemination activities, we have observed that the use of various social media channels is much more widespread among the KA projects. Another visible difference is that KA project representatives claimed to be organising meetings with and visits to key stakeholders much more actively than was done in HE SP projects.

The key target groups of dissemination activities were also very similar under both actions. Projects mostly used dissemination activities to reach the end-users of resources produced in the course of a project, as well as stakeholders, experts and/or practitioners in the field. In contrast, information multipliers, the general public and policymakers, although defined as key target groups in multiple projects, rarely received the same attention.

The success factors of effective dissemination activities were also perceived the same. Building on the experience of HE SPs and KAs awarded in the period 2014-2016, the future HE actions should focus on the following success factors if they aim to disseminate their project projects successfully: 1) active engagement of their project partners in project dissemination activities; 2) consideration given to choosing dissemination activities that are the most appropriate for reaching their target audiences; and 3) clear agreement on the roles and responsibilities of each partner for implementing the individual dissemination activities.

2.2. Findings on institutional/organisational level impacts

2.2.1. Institutional strategy and alignment of project objectives in Strategic Partnership projects

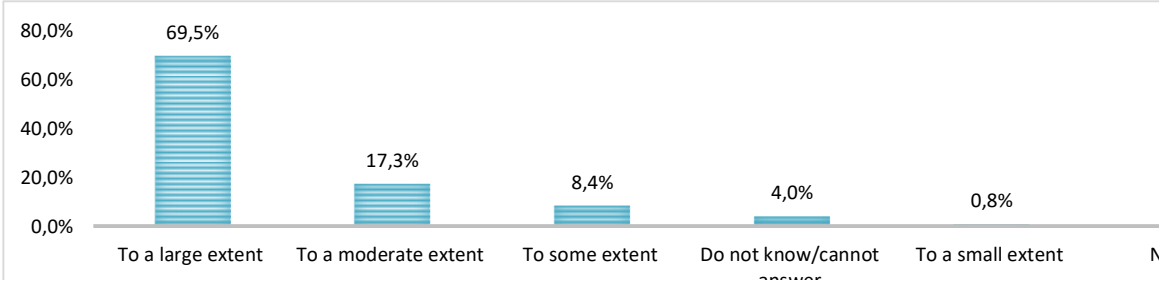
Key findings

1. Strategic Partnerships proved to be not only **strongly aligned with the institutional strategies** of participating organisations, but they were also highly relevant to the achievement of their organisation's strategic objectives.
2. Participating organisations **actively integrated project outputs** developed in their Strategic Partnership projects into their long-term activities and/or actively used these outputs after the project had ended.
3. The prerequisites for a successful integration of results achieved in Strategic Partnership projects included the **active involvement and awareness among various organisations within the consortium**.
4. Active involvement of and awareness among high-level key staff members (such as head of the department, dean, board, rector, etc.) were identified as some of the key measures to guarantee high impact of the project at institutional level.
5. Strategic Partnerships have created sustainable cooperation both between **newly formed consortia** and **strengthening the already existing networks** and enabled continuity of previous collaborations in the form of **follow-up projects** within the framework of Erasmus+. Among the key reasons for stronger cooperation links were the **geographical proximity** and **similarity of research fields** between the partners.

Quantitative and qualitative evidence confirms that planning of HE SPs was an integral part of the institutional strategies of participating organisations. Study evidence also strongly confirms that project outputs developed by HE SPs were integrated into the everyday work of the participating organisations, whereas the main instruments to ensure this sustainability of project results identified by beneficiaries were the active involvement and awareness among various organisations' staff members. Finally, the study found that the project partners usually maintained their cooperation ties even after completion of the project, either though informal exchange of knowledge or through establishment of follow-up projects, which were based on the results of previous HE SP projects. Geographical proximity and similarity of the field/area of work were identified as the key factors for sustainability of cooperation ties between partners.

Almost 87% of the respondents to the survey of participating organisations indicated that the Erasmus+ programme priorities **for HE SPs were to a large or moderate extent relevant and matched their organisational priorities**. (see Figure 30). Similarly, the survey also confirmed that in an overwhelming majority of cases not only the Erasmus+ Strategic Partnerships as an action, but also the **individual projects were highly relevant and corresponded to the strategic objectives and priorities of participating organisations**. Around 90% of the surveyed project coordinators and partners agreed or strongly agreed with the statement that their 'project outputs are/will be contributing to the achievement of their organisation's/department's strategic objectives' (see Figure 31). This evidence was further confirmed by the results of the National Agencies' survey, where 41% of respondents indicated that strong links between project activities and organisational priorities of participating organisations was the most important success factor of the finalised HE SPs.

Figure 30. Overall, to what extent, if any, are the Erasmus+ programme priorities for Strategic Partnerships in Higher Education relevant to your organisation and match your organisation's priorities?



Source: Quantitative HE Strategic Partnerships coordinators/partners survey.

The qualitative evidence drawn from project case studies and interviews strongly confirmed the above findings that participation in HE SPs was highly relevant and corresponded to the strategic priorities of the participating organisations. In a number of cases the organisations confirmed that their project goals directly corresponded to their institutional strategy, which explicitly urged for closer collaboration with organisations from other sectors and countries to improve the education offer/services. For instance, participating organisations referred to their internationalisation strategies that encourage partnerships and international mobility of students in order to broaden their horizon and strengthen the sense of European citizenship. Also, a few other cases were identified of participating organisations driven by the changing circumstances/national context and the urgent need to renew the educational offer and adapt to the changing environment.

Box 4. The motive of participating organisations to participate in the Erasmus+ eTransFair project

As disclosed by the Project Coordinator, part of the motivation to set up the Strategic Partnership was related to changes in the management of the Centre of Modern Languages (CML), which prompted the need to renew the training programmes and focus on learning outcomes, as well as to increase the internationalisation efforts. The coordinating institution also took notice of the decreasing inflow of students and recognised that innovation was a crucial measure to ensure the Centre's stability. Another partner also spoke of a similar motive – the need to renew the training scheme and adapt it to the changes that have taken place in the labour market over 10 years.

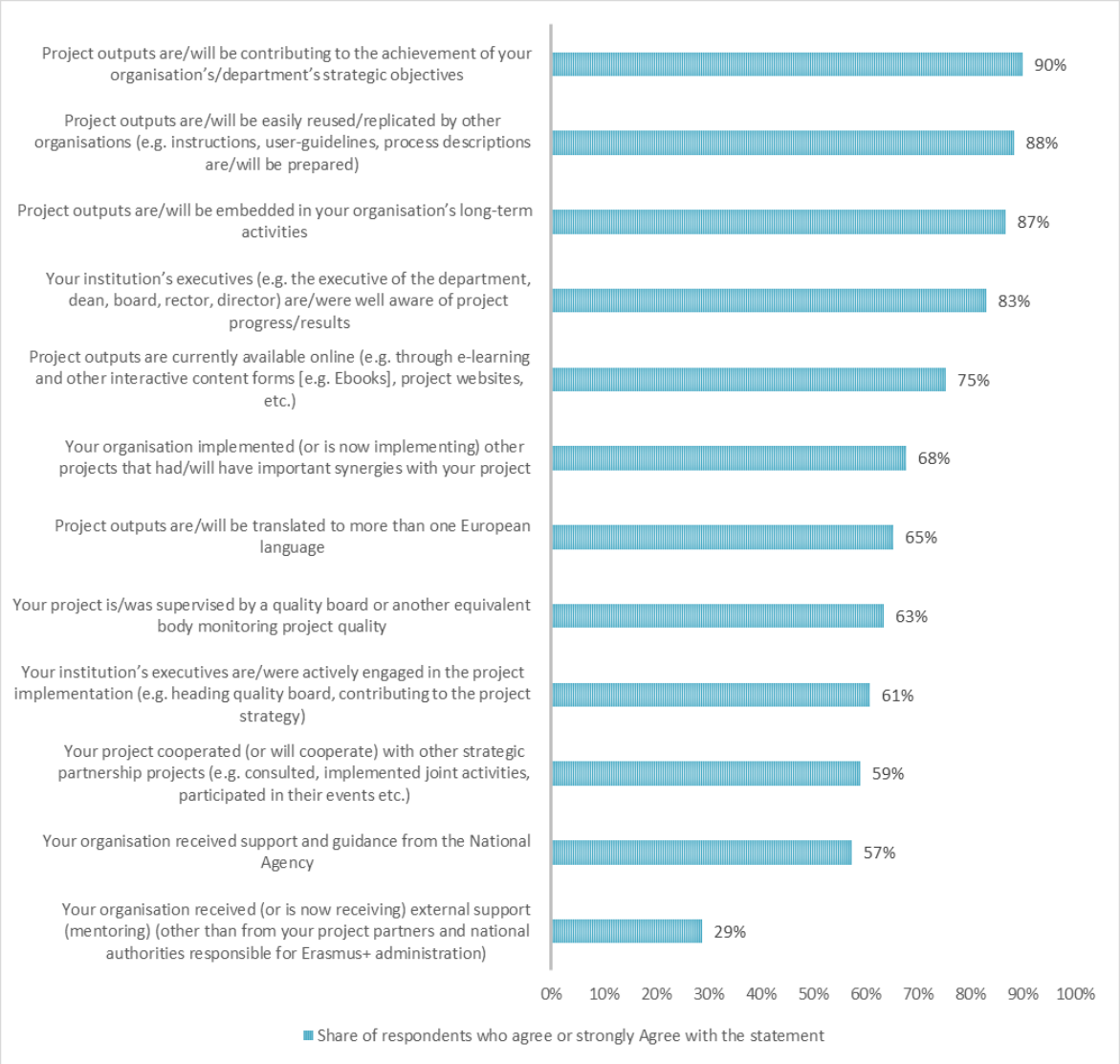
Source: Case study on the *eTransFair* project.

The evidence also shows that the results of HE SP projects **were well-integrated inside the participating organisations** through a number of instruments. Generally, around 88% of respondents agreed or strongly agreed that project outputs are/will be embedded in their organisation's long-term activities (see Figure 31). Similarly, around 91% of survey respondents agreed or strongly agreed that their organisation is continuing to use the project outputs following the end of the project, whereas another 73% agreed/strongly agreed that "their organisation ensured organisation-wide take-up of project outputs." At the same time, around 83% of surveyed beneficiaries denied the statement that 'Project results are not useful for our organisation after the end of the project' (for more details see Figure 31).

According to the survey results, project results were usually integrated into the everyday work of participating organisations through the **active involvement and awareness raising** among its key staff members. For example, an overwhelming majority of around 83% of survey respondents agreed or strongly agreed that 'their institution's executives (e.g. the executive of the department, dean, board, rector, director) are/were well aware of project progress/results.' Similarly, around 61% of

surveyed participating organisations agreed or strongly agreed that their 'institution's executives are/were actively engaged in the project implementation (e.g. heading quality board, contributing to the project strategy)'(Figure 31). Moreover, more than 89% of surveyed participating organisations agreed or strongly agreed that their organisation 'took measures to ensure that a project's outputs and outcomes have impact on the target groups,' with another 85% indicating that they 'ensured organisation-wide awareness and acknowledgement of the project's outputs.' Furthermore, according to the results of the same survey, 48% of participating organisations actively sought to embed their HE SP project results in their organisation and secured additional funding for the use and further development of project outputs (Figure 32).

Figure 31. Overall, do you agree or disagree with the following statements regarding your project implementation and its outputs?



Source: Quantitative HE Strategic Partnerships coordinators/partners survey.

In addition, the collected data indicates that the **participating organisations undertook measures to facilitate the (re)-use and integration of project results not only by their project partners but also by other stakeholders in the field**: 88% of surveyed participating organisations agreed or strongly agreed that "project outputs are/will be easily reused/replicated by other organisations (e.g.

instructions, user-guidelines, process descriptions are/will be prepared)", whereas 75% of respondents agreed or strongly agreed that 'project outputs are currently available online (e.g. through e-learning and other interactive content forms [e.g. Ebooks], project websites, etc.)' Moreover, around 65% agreed/strongly agreed that 'project outputs are/will be translated into more than one European language' (Figure 31).

Formation and sustainability of co-operation

Both qualitative and quantitative evidence provided important findings regarding the accompanying projects and the sustainability of HE SPs. First, the evidence showed that **HE SPs were sustainable in terms of maintaining the cooperation ties developed between project partners**. Based on the results of the participating organisations' survey, 91% of respondents continued their cooperation with their project partners following the end of the project. Similarly, the evidence also showed that a lot of HE SPs resulted in follow-up projects: 68% of respondents agreed or strongly agreed that their 'organisation implemented (or is now implementing) other projects that had/will have important synergies with their project.' Similarly, 59% of surveyed participating organisations agreed/strongly agreed that their project cooperated (or will cooperate) with other HE SPs (e.g. consulted, implemented joint activities, participated in their events etc.) (see Figure 32). Other sources of evidence also confirmed that HE SPs were sustainable and long-lasting: 21% of respondents in the survey of National Authorities indicated that the statement 'Organisations have established/joined networks/partnerships lasting beyond project lifecycle' is applicable to all HE SPs, with another 57% agreeing that it is applicable to most projects.

Figure 32. Which of the following measures/processes, if any, have been undertaken in your organisation to ensure the sustainability of your project's results?

Source: Quantitative HE Strategic Partnerships coordinators/partners survey.

The network analysis revealed that **organisations participating in HE SPs managed to maintain their cooperation ties across different HE SP projects**. It was found that in 191 cases, a pair of the same two organisations cooperated in 2 different HE SP projects, in 13 cases the same two organisations cooperated in 3 different HE SP projects, whereas in 8 cases the same two organisations cooperated in 4 different HE SP projects. In addition, there was one case when a pair of participating organisations cooperated in 5 different HE SPs and another case when the same pair

of organisations cooperated in 6 different HE SP projects. A more in-depth analysis of the organisations maintaining their cooperation though different HE SPs showed that there were several potential factors influencing organisations to sustain their partnership in future projects:

1. Organisations that specialised in similar fields/areas of activity were likely to form sustainable partnerships though HE SP projects. For example, the Erasmus Student Network AISBL and European University Foundation-Campus Europae – two organisations working in the area of student mobility – cooperated in five different HE SPs between 2014 and 2016. The University of the Arts The Hague (Stichting Hogeschool Der Kunsten Den Haag) and the Association Européenne des Conservatoires, Académies de Musique et Musikhochschulen (AEC) – two organisations working in the field of art education – cooperated in six different HE SPs. The Norwegian Academy of Music (Norges musikkhøgskole) and the Association Européenne des Conservatoires, Académies de Musique et Musikhochschulen (AEC) cooperated in four different projects.
2. Similarly, organisations from neighbouring countries/same region also tended to sustain their cooperation ties through a number of partnerships. For example, the University of Graz from Austria and the University of Ljubljana from Slovenia together cooperated in four different HE SPs. Similarly, the University of Vilnius in Lithuania and Tallinn University of Technology from Estonia cooperated in four different projects, whereas the Polytechnic Institute of Porto in Portugal and the University of Vigo in Spain cooperated in three different projects.

The evidence drawn from case studies and interviews confirmed that project partners usually maintained their cooperation ties after the project completion. Whereas in some cases the cooperation was maintained though informal ties between the former project partners, in other cases the follow-up projects and partnerships were initiated on the basis of their HE SP project results. As explained in more detail in sub-section 2.3.2, geographical proximity between the partners was one of the deciding factors for sustained cooperation ties and follow-up partnerships.

Box 5. Project sustainability in the Blended Learning In Radiation Protection and Radioecology project

In terms of the project sustainability, the project participating organisations indicated the partnership between certain organisations will definitely continue and probably will be strengthened in the future. After the project completion, a number of regional partnerships were started between the universities that are geographically proximate, including:

- The partnership between the University of Hasselt and Haute Ecole Paul-Henri Spaak (ISIB), which focused on common classes for students of both universities. In addition, a former student of ISIB started a doctorate at the University of Hasselt.
- Similarly, Haute Ecole Paul-Henri Spaak and FH Aachen sustained their cooperation by developing common Master degree courses.

Source: Case study on the Blended Learning in Radiation Protection and Radioecology project.

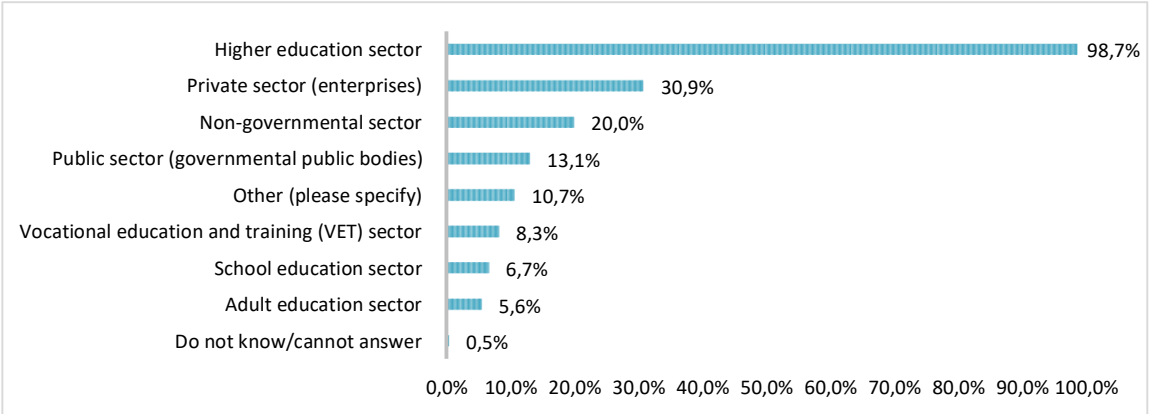
2.2.2. Knowledge and innovation transfer between organisations participating in Strategic Partnerships

Key findings

1. Analysis of Strategic Partnership projects provided evidence that these projects are capable of contributing to **knowledge transfer between different sectors and partners**, as well sharing of knowledge and good practices **between different types of participating organisations, from different sectors, regions and countries**.
2. Analysis also showed that participating in a Strategic Partnership project has improved the participating organisation's capacity for innovation.
3. Among the organisations that developed the highest number of ties with other organisations in the framework of Strategic Partnership projects, the most common by far were **higher education institutions**.
4. The involvement of the private sector in HE SPs contributed to aligning the education programmes to **market needs**, **employability of students**, and improved **their entrepreneurial skills**.

Study findings indicate that HE SPs created a favourable framework for cooperation between organisations from different sectors, regions and countries, which resulted in an effective transfer of knowledge and innovation between them. The results of social network analysis suggest that HE SPs were successful in creating a single integrated network (as opposed to multiple groups of isolated sub-networks) interconnected through organisations participating in multiple projects. This single network facilitates and enables the knowledge flow, cooperation and good practice exchange in higher education between different stakeholder organisations and sectors in Europe. Close cooperation and exchange of knowledge between different sectors and partners have resulted in innovation transfer in participating organisations, whereas involvement of the private sector especially contributed to aligning education programmes to market needs, employability of students, and the development of their entrepreneurial skills.

Figure 33. Please indicate the sectors of all organisations that participated in this project (including the sector of your organisation)

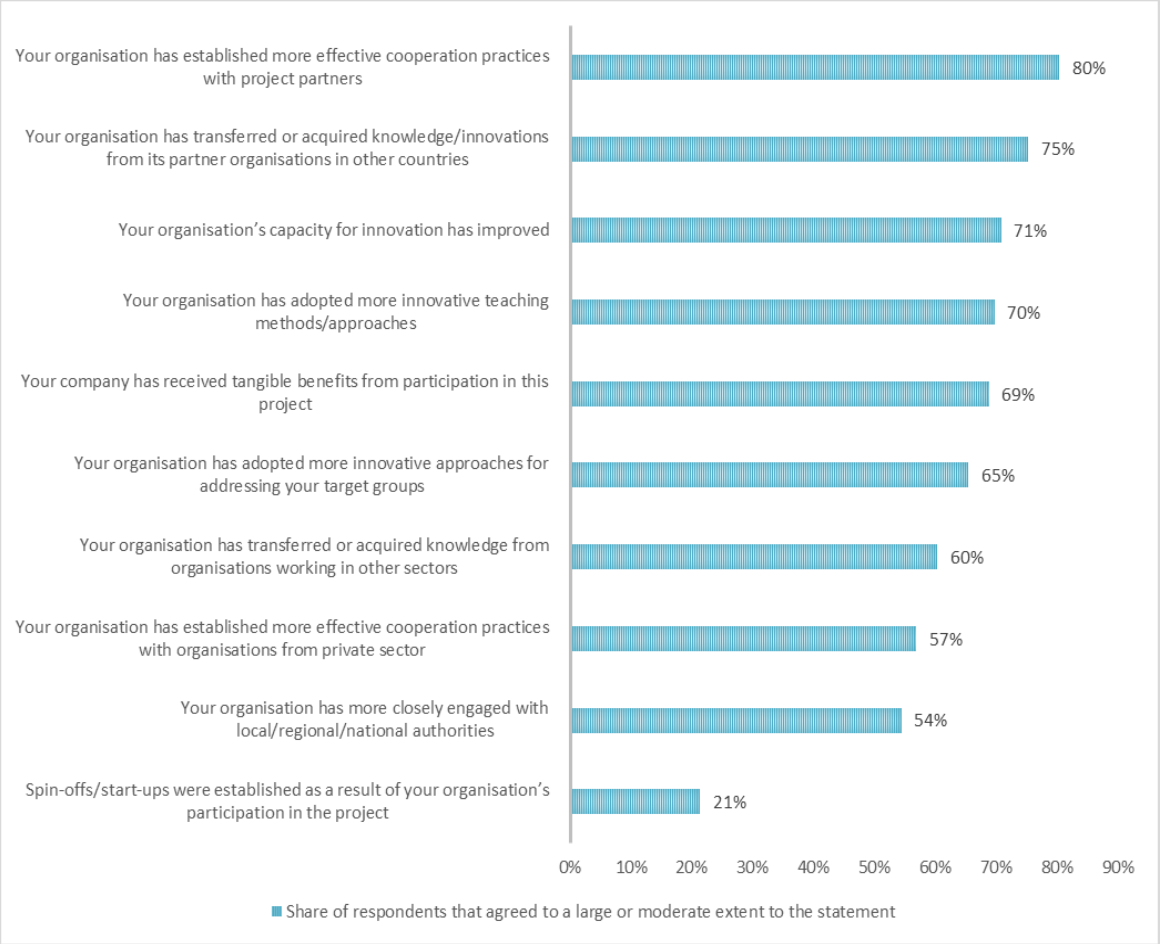


Source: Quantitative survey of project coordinators and partners.

The statistical analysis of administrative data on HE SPs shows that **overall enterprises were rather actively involved in HE SPs as one of the key project partners**. This was confirmed by the survey of participating organisations, where around 31% of respondents indicated that private sector (enterprises) participated in their project.

The evidence collected during the study also strongly indicates that **HE SPs contributed to improved knowledge transfer between the private and public sectors, as well as between different participating organisations in general**. More than 79% of surveyed participating organisations indicated that their organisation has either transferred or acquired knowledge from organisations working in other sectors. Similarly, around 79% of surveyed participating organisations indicated that their organisation has established more effective cooperation practices with organisations from the private sector. In general, the overwhelming majority of 97% of organisations indicated that their organisation has established more effective cooperation practices with project partners as a result of their HE SP project. The cooperation ties were strengthened not only with the private sector: 72% of organisations also indicated that as a result of their project their organisation has more closely engaged with local/regional/National Authorities (see Figure 34).

Figure 34. To what extent, if any, has participation in the Strategic Partnership led to the following changes/improvements in your organisation?



Source: Quantitative survey of project coordinators and partners.

The evidence also strongly suggests that **closer cooperation and exchange of knowledge between different sectors and partners have resulted in innovation transfer**: 88% of surveyed organisations indicated that their organisation has either transferred, or acquired knowledge/innovations from its international partners, with another 84% indicating that as a result of their project their organisation's capacity for innovations has improved. In terms of the specific innovations transferred, 82% of the surveyed participating organisations confirmed that their organisation has adopted more innovative teaching methods/approaches,

with another 87% indicating that their organisation has adopted more innovative approaches for addressing their target groups. It must also be noted that the cooperation was mutually beneficial for participating organisations from all sectors: 75% of surveyed companies indicated that they have received tangible benefits from participation in their project (see Figure 34). The evidence of the knowledge and innovation transfer between different sectors in HE SP projects was similarly confirmed by the survey of the National Agencies, where 44% of respondents agreed that he statement 'cross-sectoral cooperation has resulted in knowledge/innovations transfer between organisations from different sectors' is applicable to some projects, with another 19% said it was applicable to most projects. Moreover, around 71% of the surveyed National Agencies indicated that statement 'capacity and skills of organisations to create innovations has increased' is applicable to most projects.

The qualitative evidence drawn from project case studies and interviews confirmed that HE SPs encouraged knowledge and innovation transfer between project partners. In nearly all projects studied in the cases studies, the participating organisations indicated that they strengthened their ties with their partners and reported innovations adopted by their organisation as a result of the partnership. Moreover, in all case studies where projects involved collaboration with private sector organisations/enterprises, project partners emphasised the importance and the benefits of their involvement in the project consortium, as it 'broadened their horizons' and helped to improve the educational offer of participating HEIs. More specifically, **involvement of the private sector in HE SPs contributed to the development of education programmes better aligned to market needs, improved employability of students, and more opportunities to develop their entrepreneurial skills**.

For instance, it was found (based on the qualitative case study data) that companies contributed to achievement of project goals with their expertise by filling out surveys or taking part in in interviews, which informed further development of a project's intellectual outputs. Private sector partners also shared their real-life experience by preparing exercises for project activities, e.g. in the *CRITHINKEDU* project students were challenged to solve real-life workplace problems, developed in partnership with enterprises and NGOs. HE SPs also employed the innovative practices of game-based learning: the *ICT Entrepreneur* project employed role-playing games[32], *APInno* employed business environment simulations, while *Spationomy* found 'simulation game-based learning' useful in facilitating a more playful experience through modelling real-life scenarios[33]. According to the project report on *Spationomy*, this particular activity was especially well received by students and was extended at their request.

To further assess the overall cooperation and knowledge transfer between participating organisations under the Strategic Partnerships, we conducted social network analysis (SNA) focusing on the project calls of 2014, 2015 and 2016. The basic assumption of the SNA was that by participating in a HE SP project, each organisation developed cooperation ties with all other organisations involved in the same project.

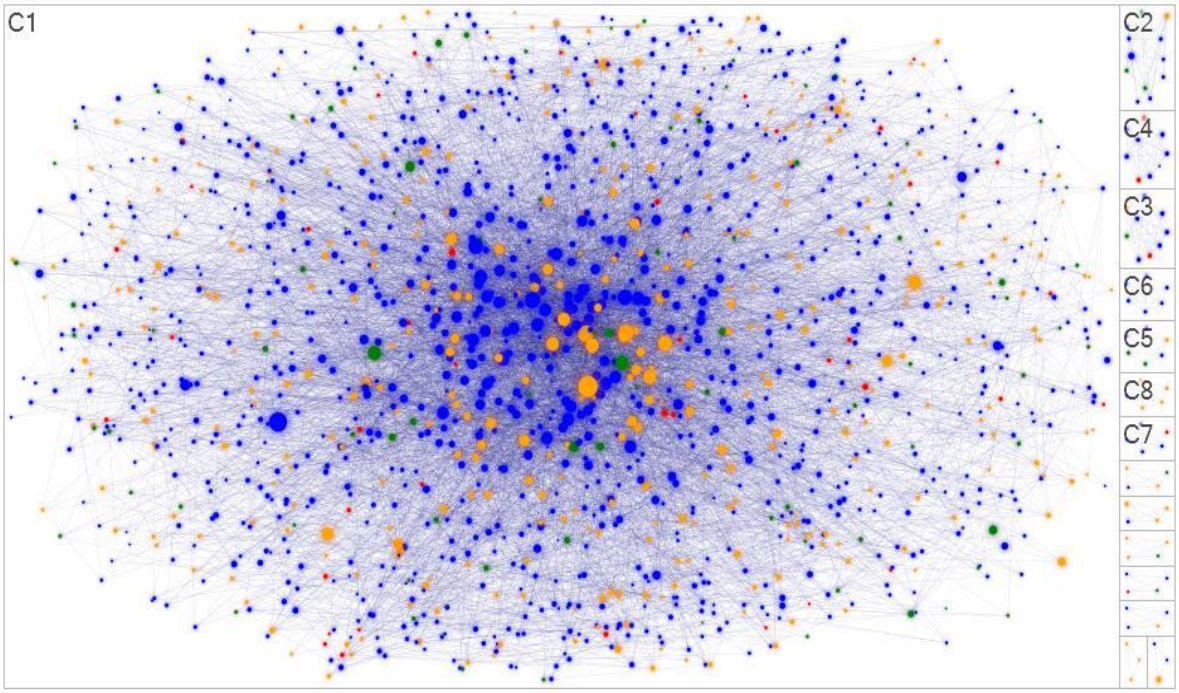
First, the study team assessed a number of key social network analysis structural indicators that describe the overall network structure and show the overall integration and interconnectedness between the organisations that participated in HE SPs between 2014 and 2016. One of the key indicators showing close interconnectedness and efficient flow of information within a network is the presence of "giant

[32] A European University–Business Alliance aiming to foster the entrepreneurial spirit of ICT students, http://www.ictentrepreneur.com.
[33] Spatial exploration of economic data – methods of interdisciplinary analytics, http://spationomy.mvso.cz.

component"[34]. The analysis of the present network of participating organisations showed that the network of organisations includes 15 components, however the largest or the 'giant' component encompasses and interconnects the overwhelming majority of more than 95% of all the unique participating organisations that participated in HE SP projects between 2014 and 2016 (see Figure 35). Thus, it can be stated that between **2014 and 2016 a single network connecting almost all participating Links organisations was developed**. The presence of such a 'giant component' indicates that the action was successful in creating a single integrated network (as opposed to multiple groups of isolated sub-networks) interconnected through organisations participating in multiple projects. This single network facilitates and enables knowledge flow, cooperation and good practice exchange in higher education between different stakeholder organisations in Europe and increases the impact of HE SPs at systemic and organisational levels.

Close interconnectedness and efficient flow of information within the network were also confirmed by the analysis of the network fragmentation structural indicator that shows the proportion of pairs of network actors unreachable from each other. In the present network this proportion was less than 9.2%. This means that the absolute majority of the pairs of HE SP participating organisations (90.8%) had either direct cooperation ties or could reach each other through a mutual acquaintance(s).

Figure 35. Network of organisations participating in the Erasmus+ Higher Education Strategic Partnership



Source: Social Network Analysis.

Note: C1 indicates the largest 'giant component.' The size of the discs indicates the aggregate sum of the number and strength of cooperation ties developed by a participant organisation (i.e. degree centrality). Blue discs are EU-15 organisations, orange – EU-13 organisations, green – organisations from non-EU Programme Countries, red – organisations from partner countries.

Table 6 summarises the TOP-30 most central countries in terms of the number of collaboration ties developed in the framework of HE SP projects between 2014 and

[34] In SNA theory, network components are understood as sub-networks of network actors that are (directly or indirectly) interconnected with each other but have no ties with other sub-networks.

2016. Participating organisations from Italy and Spain developed the highest number of cooperation ties with other organisations though HE SP projects, with the United Kingdom, Germany and Belgium in third, fourth and fifth place respectively. The analysis also showed that in some cases **organisations from certain countries tended to cooperate more often with organisations from the same language group or neighbouring countries**: for instance, most of the project cooperation ties developed by the Austrian participating organisations were with German organisations, whereas Estonia's – with Finnish partner organisations.

Table 6. Participant countries in the Erasmus+ HE SPs awarded in 2014-2016 according to the degree centrality measure

PARTICIPANT COUNTRY NAME	DEGREE CENTRALITY
Italy	**1 657**
Spain	**1 613**
United Kingdom	**1 273**
Germany	**1 256**
Belgium	**1 005**
France	**913**
Portugal	**877**
Netherlands	**873**
Poland	**741**
Romania	**691**
Greece	**606**
Finland	**592**
Lithuania	**515**
Austria	**471**
Czech Republic	**424**
Hungary	**396**
Slovenia	**394**
Turkey	**391**
Sweden	**387**
Norway	**306**

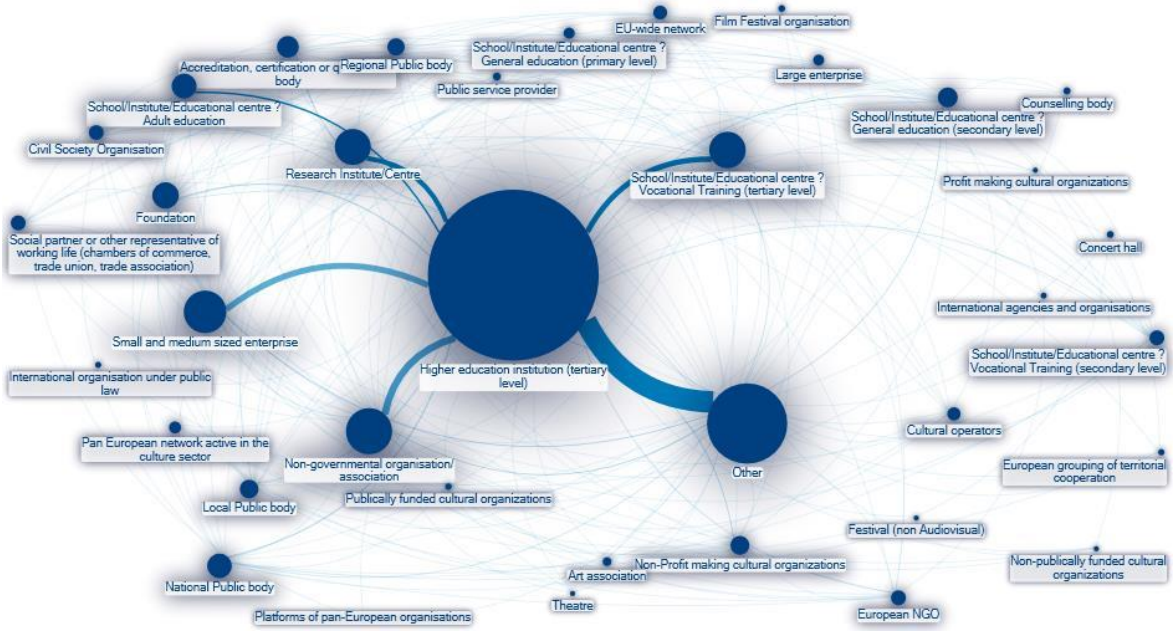
Source: composed by the authors.

Higher education institutions (HEIs) constituted more than 50% of all the unique participants in Erasmus+ SP projects 2014-2016 (841 organisations out of a total 1 662 unique organisations). The second largest category of organisations were the organisations that in the administrative database were attributed to the group of 'Other' organisations – around 18% or 297 organisations (a more in-depth analysis showed that the majority of the organisations attributed to the category of 'others' belonged to one of the specific types of organisations – mostly HEIs, research centres, SMEs, NGOs/associations, foundations etc.). This group of organisations was followed by non-governmental organisation/association, SMEs and research institutes/centres, which constituted approximately 6%, 5% and 3% of all the unique participating organisations respectively.

Overall, SNA at the level of organisation type confirmed that HE SPs created an effective platform for the exchange of knowledge and good practices first and foremost, between different higher education institutions and, secondly, between higher education institutions and other relevant stakeholders in the field – including business, NGOs, civil society actors, research centres and others (see Figure 36).

Table 7 provides a list of the **TOP 25 organisations that developed the highest number of ties with other organisations in the framework of HE SP projects which was dominated by higher education institutions, mostly from EU-13, southern European and non-EU Programme Countries** (mainly Norway and Iceland). The fact that all 25 most central participating organisations were all higher education institutions further confirmed that HE SPs were the foremost platform for developing innovative outputs, collaboration and good practice exchange between HEIs, directly contributing to the improvement and innovativeness of higher education offer in Europe.

Figure 36. Erasmus+ Strategic Partnerships 2014-2016 network at the level of organisation type



Source: Social Network Analysis.

Note: the size of discs indicates the centrality of organisation type in terms of the overall number of cooperation ties developed, whereas the size of the lines indicates the strength of cooperation ties between two types of organisations in terms of the number of mutual cooperation ties developed.

Table 7. TOP-25 Erasmus+ Strategic Partnership participating organisations by degree centrality

ORGANISATION LEGAL NAME	DEGREE CENTRALITY	TYPE OF ORGANISATION	COUNTRY
UNIVERZA V LJUBLJANI	144	Higher education institution (tertiary level)	Slovenia
KATHOLIEKE UNIVERSITEIT LEUVEN	125	Higher education institution (tertiary level)	Belgium
ALMA MATER STUDIORUM - UNIVERSITA DI BOLOGNA	90	Higher education institution (tertiary level)	Italy
VILNIAUS UNIVERSITETAS	89	Higher education institution (tertiary level)	Lithuania
UNIVERSITA TA MALTA	85	Higher education institution (tertiary level)	Malta
UNIVERSITA DEGLI STUDI DI PADOVA	78	Higher education institution (tertiary level)	Italy
UNIVERSIDADE DO PORTO	77	Higher education institution (tertiary level)	Portugal
VYTAUTO DIDZIOJO UNIVERSITETAS	71	Higher education institution (tertiary level)	Lithuania
HASKOLI ISLANDS	68	Higher education institution (tertiary level)	Iceland
UNIVERZITA KARLOVA	66	Higher education institution (tertiary level)	Czech Republic
NORGES TEKNISK-NATURVITENSKAPELIGE UNIVERSITET NTNU	66	Higher education institution (tertiary level)	Norway
TARTU ULIKOOL	66	Higher education institution (tertiary level)	Estonia
UNIVERSIDADE DE AVEIRO	65	Higher education institution (tertiary level)	Portugal
UNIVERSITAT POLITECNICA DE CATALUNYA	64	Higher education institution (tertiary level)	Spain
SZEGEDI TUDOMANYEGYETEM	62	Higher education institution (tertiary level)	Hungary
TURUN AMMATTIKORKEAKOULU OY	60	Higher education institution (tertiary level)	Finland
UNIVERSITATEA ALEXANDRU IOAN CUZA DIN IASI	58	Higher education institution (tertiary level)	Romania
UNIVERZA V MARIBORU	57	Higher education institution (tertiary level)	Slovenia
UNIVERSITAT WIEN	57	Higher education institution (tertiary level)	Austria
UNIVERSITAET GRAZ	56	Higher education institution (tertiary level)	Austria
UNIVERSITEIT UTRECHT	56	Higher education institution (tertiary level)	Netherlands

ORGANISATION LEGAL NAME	DEGREE CENTRALITY	TYPE OF ORGANISATION	COUNTRY
STICHTING HOGESCHOOL DER KUNSTEN DEN HAAG	56	Higher education institution (tertiary level)	Netherlands
INSTITUTO POLITECNICO DO PORTO	55	Higher education institution (tertiary level)	Portugal
UNIVERSITAT AUTONOMA DE BARCELONA	55	Higher education institution (tertiary level)	Spain
UNIVERSITAT DE BARCELONA	55	Higher education institution (tertiary level)	Spain

Source: network analysis.

2.2.3. Intellectual outputs developed by Strategic Partnerships

Key findings

1. Strategic Partnerships mostly produced several innovative and **distinct types of intellectual outputs (key results)**, such as updated or new courses/curricula, innovative teaching materials and digital platforms/e-learning tools**.**
2. Intellectual outputs that were created by Strategic Partnerships proved to be relevant to **achievement of the overarching higher education modernisation objectives**, particularly the enhancement of the employability of graduates, improving the quality of teaching by developing innovative pedagogical methods and tools in higher education, exploiting the unique benefits of ICT-based outputs and facilitation of multidisciplinarity.
3. Strategic Partnerships have extensively used ICT-based outputs in order to **digitalise the learning process**.
4. Outputs created by Strategic Partnerships proved to be relevant to achievement of broader Erasmus+ Key Action 2 goals**,** one of which being the **promotion of innovative practices**. Different stakeholders agreed that these outputs are innovative either for the entire Higher Education sector in Europe, or for participating organisations and participant countries.

In order to find out what kind of intellectual outputs have been/will be developed by HE SPs awarded in 2014-2016, 450 project summaries of HE SP projects were analysed by the study team. Throughout the process four broad categories of innovative intellectual outputs emerged (see also Figure 37):

1. **Updated or new curricula/syllabi/courses/modules**. Based on our estimation, 249 projects (55% of analysed project summaries) produced/will produce outputs falling into this category:

- updated or new curricula/syllabi/courses/modules – mentioned by 162 (36%) projects;
- online courses and MOOCs – mentioned by 90 (20%) projects;
- joint study programmes or joint curricula – mentioned by 37 (8%) projects.

2. **Intellectual outputs used in teaching**. 182 projects (40% of analysed project summaries) were involved in development of outputs falling into this category:

- new teaching materials – mentioned by 140 (31%) projects;
- new pedagogical approaches and methodologies – mentioned by 66 (15%) projects.

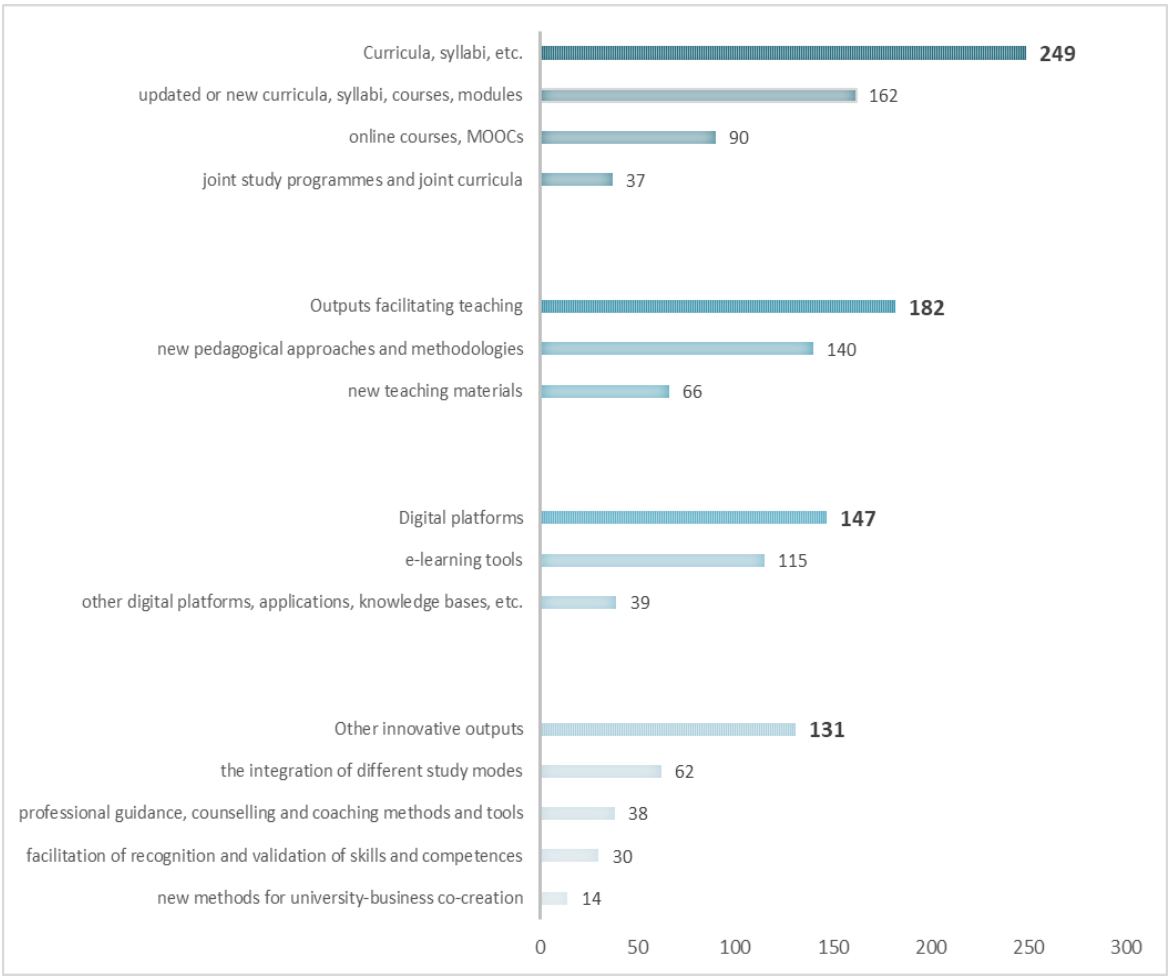
3. **Digital platforms**. Our analysis indicates that 147 projects (33% of analysed project summaries) produced/will produce intellectual outputs which can be defined as a digital platform:

- e-learning tools ("virtual laboratories'" online learning platforms, etc.) – mentioned by 115 (26%) projects;
- other digital platforms (online networks, applications, knowledge bases, etc.) – mentioned by 39 (9%) projects.

4. **Other innovative outputs**. 131 projects (29% of analysed project summaries) delivered/will deliver innovative outputs that do not fit in any of the previous categories:

- integration of different study modes – mentioned by 62 (14%) projects;
- professional guidance and coaching material – mentioned by 38 (8%) projects;
- outputs facilitating recognition of prior knowledge – mentioned by 30 (7%) projects;
- new methods of university–business co-creation – mentioned by 14 (4%) projects.

*Figure 37. Innovative outputs (distribution by category)**



*Note that one project can have more than innovative output from the same category.

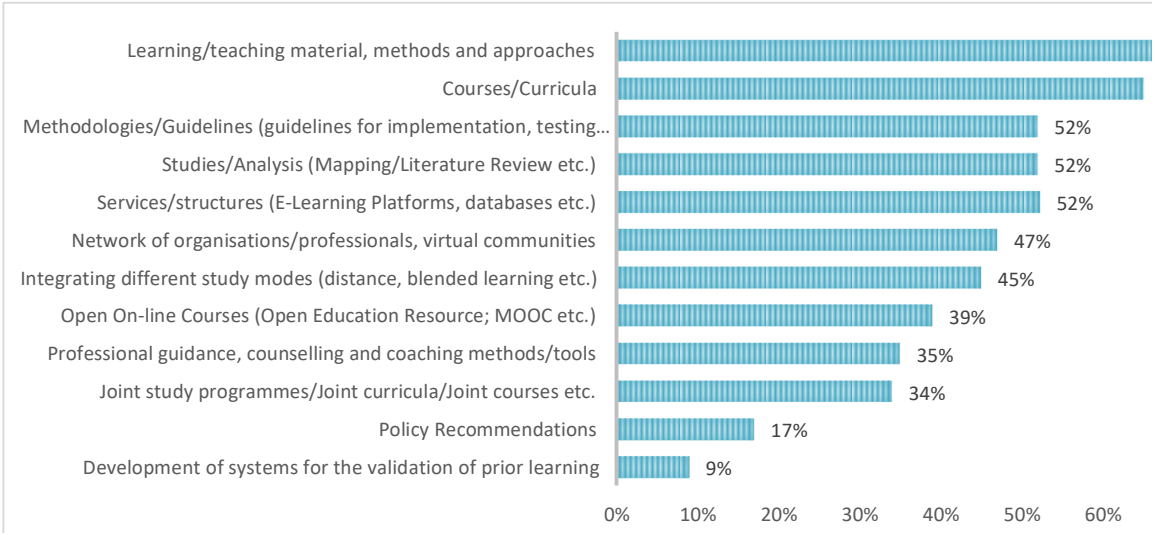
Source: Synthesis of Erasmus+ HE Strategic Partnerships project summaries, Erasmus+ Results platform, 2018.participating organisations.

The prevalence of new or updated curricula and outputs used in teaching over all other kinds of innovative intellectual outputs produced by HE SPs was also confirmed by

survey findings (see Figure 38). Learning/teaching material, methods and approaches were the most commonly mentioned types of intellectual outputs by participating organisations (selected by 73% of respondents). A similar share of respondents (65%) mentioned that new or updated courses/curricula were developed in their project.

In addition, survey findings revealed that HE SPs generated a few other types of intellectual outputs not covered by categorisation presented in Figure 37, namely studies and analyses, and policy recommendations produced by teams implementing HE SPs. Studies and analyses were mentioned by 52% of respondents, while policy recommendations – by 17%.

Figure 38. Outputs produced by HE SP projects



Source: HE SP survey results report (HE SP Q11), PPMI, 2018.

A few important characteristics of intellectual outputs developed by HE SPs should be emphasised, as these characteristics are important indicators of **modernisation** happening in HEIs involved in HE SP projects and their increased **innovativeness** as a result of their collaboration with project partners.

First, as a result of their strong focus on development of open educational resources (OERs), massive online open courses (MOOCs) and development of e-learning platforms, HE SPs ensure that participating organisations **better exploit the transformational benefits of ICT**. As shown in Figure 38, 39% of participating organisations surveyed for this study indicated that OERs, MOOCs, webinars or other kinds of online courses have been developed in their project. For instance, this happened in projects *CHERNE* and *New Faces*, i.e. projects analysed in our case studies. Other examples are the *EMC2* and *GSEBS* projects, whose interdisciplinary nature were enabled by ICT solutions.

Box 6. Exploitation of ICT solutions in Strategic Partnerships

In the *CHERNE* project a course module was implemented on an e-learning platform. The output consisted of 6 different course modules, each of them were uploaded on a Moodle platform and were openly available for learners beyond the project itself. Also, for the *New Faces* project, a pivotal of the preparation for the intellectual outputs were the creation of the Moodle platform, which served as an intellectual output itself. Unique teaching materials, which incorporated an innovative project-based teaching approach, were created by the project participants and made accessible online to the students and, for some of it, available in open access therefore having a positive impact on higher education institutions.

In *EMC2*, students and teachers worked on 21 activities in five different fields of knowledge.

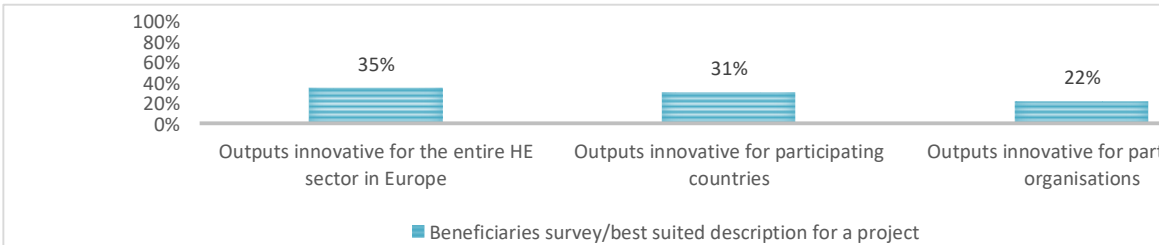
The consortium of the project tested, selected, customised and implemented different cloud-based and open source ICT tools to build up the digital learning environment. For the *GSEBS* project, the interdisciplinary approach of the intellectual outputs and the usage of ICT tools and OERs, provided the teachers and students with a wider perspective over the field of energetic and ballistic systems (EBSs), which are widely used in the extractive industry, automotive safety, space, security and defence sectors.

Source: Case studies on *CHERNE and New Faces* projects, PPMI 2018. Project summaries of *EMC2* and *GSEBS* projects.

Second, as a result of analysis and research undertaken by HE SPs into the development of new methodologies, learning/teaching methods and approaches, the traditional approaches to pedagogy in participating organisations is being replaced or complemented by **student-centred teaching and learning**. As shown in Figure 38, 73% of participating organisations surveyed for this study indicated that new teaching and learning methods and approaches were developed in their project.

Third, time and efforts invested in development of innovative outputs have a positive impact on the overall innovation capacity of participating organisations. As shown in Figure 39, 35% of surveyed participating organisations claimed that at least one of the multiple outputs developed in their project was **innovative for the entire HE sector in Europe**, with another 31% claiming their outputs were **innovative for the countries of the project consortium**. Some respondents, who chose to insert their own answer, indicated their project outputs were **innovative outside Europe** and innovative when applied **for commercial use**.

Figure 39. The level of innovativeness of HE SP project outputs (HE SP participating organisations survey) (N=373)



Source: HE SP survey results report (HE SP Q13), PPMI, 2018.

As these characteristics of the innovative intellectual outputs developed and later adopted/embedded by the participating HEIs contribute to modernisation of these institutions, they also contribute to incremental **modernisation of all European higher education**, i.e. to gradual achievement of an overarching objective of all Erasmus+ transnational cooperation projects. Furthermore, they contribute to realisation of a broader goal of the Erasmus+ Key Action 2 action – to promote cooperation for innovation in the fields of education, training and youth.

2.2.4. Mobility activities in Strategic Partnerships

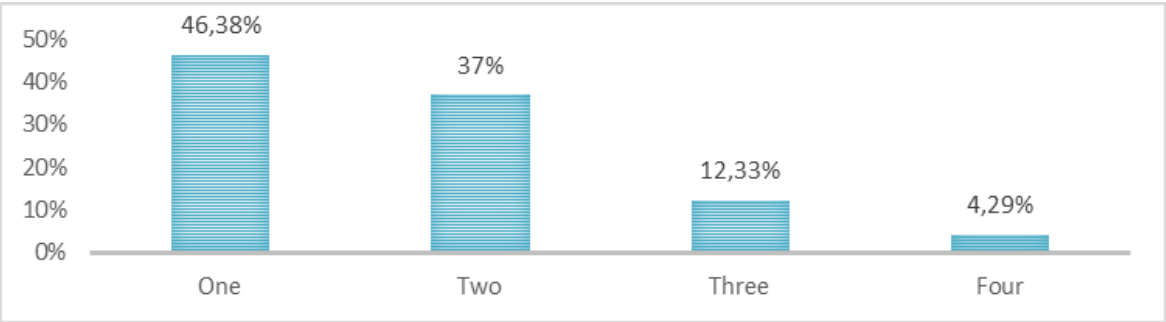
Key findings

1. Strategic Partnerships actively exploited the **different mobility formats** available in these transnational cooperation projects, especially short-term joint staff training events, intensive study programmes and blended student mobilities.
2. Strategic Partnerships actively exploited **synergy effects of combining different types of mobility activities** and often implemented more than one type of mobility/LTT activities in their projects.
3. Mobility activities were highly **instrumental in development of innovative outputs** produced by Strategic Partnerships, often serving as a "testbed" for experimentation and their piloting.
4. Strategic Partnerships actively sought for ways to **embed blended learning** techniques into other project activities and higher education curriculum in general.
5. Mobility activities in Strategic Partnership projects contributed to **further internationalisation of HEIs** by opening up **new collaboration avenues to less-internationalised organisations** and by enabling **intercultural learning and cross-border cooperation**.

Mobility in HE SPs takes the form in one of the training, teaching and learning (*hereinafter – LTT*) activities: blended mobility of students, intensive study programmes, long-term teaching or training assignment and short-term staff training events. Based on data available about their embedding in the overall project framework of HE SPs, 53% of projects awarded in 2014-2016 involved intensive study programmes, 28% made use of short-term joint staff training events and 15% benefited from blended mobility of students[35]. According to 90% of respondents in the survey of participating organisations, at least one type of LTT activities was organised in their project.

The results of the survey also indicate that HE SP rather frequently used a **combination of different LTT activities** (see Figure 40). Almost 54% of respondents suggested that their projects benefited from a combination of two to four LTT activities. This finding indicates that different types of LTT activities were not only important for achieving project objectives (a necessary condition for inclusion of LTT activities in a HE SP project), but also proved to be highly complementary.

Figure 40. Number of LTT activities implemented in HE SP projects (N=375)



Source: Quantitative analysis of HE SP survey results report (HE SP Q18-21), PPMI, 2018.
Note: Due to multiple responses (i.e. from coordinating and partner organisations) received per project, perceptions data drawn from the survey of participating organisations is not representative of and should not be interpreted as the number of projects benefiting from LTT activities.

[35] Reliable data on long term training and teaching assignments is not available due to a misunderstanding of the activity in the first years of the Erasmus+ programme.

Based on frequency of different pairs of LTT activities mentioned in the survey, the combination consisting of blended mobility of students and intensive study programmes seemed to synergise better than all other LTT activities (Table 8). This combination was mentioned by 21% of survey respondents. As shown by the example of the *NAIP* project, this combination can be used to test how innovative teaching and learning approaches, such as creative collaborative learning can be applied in different formats and settings.

Box 7. Example of a combined use of intensive study programmes and blended mobility activities

Application of intensive study programme (IP) activities. IPs were held in different place each time. Around 25-30 students and around 20 teachers met for 9 days to work – hands on – both on selected themes and carried out projects based on the ideology of the creative collaborative learning methods, such as community engagement, cross arts/cross genre experiments, performance and communication, improvisation and collaborative composition laboratories etc. The students and staff explored subjects, such as workshop practices, performance and communication practices, project management, mentoring and practice-based research. Students and staff had workshops, lectures, seminars, open space discussions and peer reflection sessions as well as documentation in various forms, that resulted in presentations, performances and other events created by the students and staff in collaboration with the local community in each place. At the second IP, held in Austria in August 2016 a special focus was put on working with refugees living in the area, resulting in both workshops with children, involvement of the refugees in the concerts and creating bonds between them and the local community, which has been greatly lacking in the area.

Application of blended mobility activities. Students met for a shorter period and initiated collaborative projects which were developed through virtual mobility, utilising online technique. The KC in The Hague hosted and arranged the physical meeting of the students, who took part in an intensive course on improvisation. A total of 22 students from 5 different conservatoires participated and then took part in the follow-up component of the course, which was implemented online.

Source: Final project report of the *NAIP* project.

Another useful combination of LTT activities involved pairing intensive study programmes with short-term joint staff training events. This combination was mentioned by almost 17% of survey respondents.

Table 8. LTT activity synergies

TYPES OF LTT ACTIVITY SYNERGIES	FREQUENCY
Blended student mobilities/Intensive study programmes	21.10%
Intensive study programmes/Short-term joint staff training events	16.90%
Blended student mobilities/Short-term joint staff training events	16.40%
Long-term LTT assignments/Short-term joint staff training events	9.40%
Blended student mobilities/Long-term LTT assignments	6.60%
Intensive study programmes/Long-term LTT assignments	6.60%

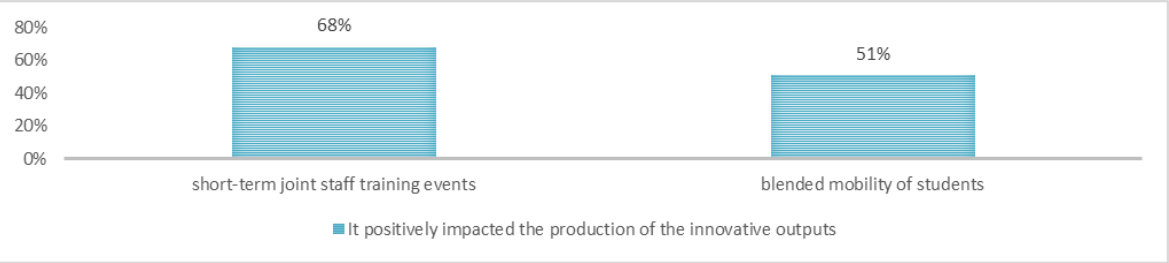
Source: Quantitative analysis of HE SP survey results report (HE SP Q6), PPMI, 2018.

Impact of blended student mobility and other LTT activities

According to the Erasmus+ programme guide, LLT/mobility activities may be organised in HE SPs only if they bring added value in the achievement of the project's objectives. As a result, mobility activities in HE SP project were often used as a **'testbed' for developing and experimenting with the intellectual outputs** afterwards produced by HE SPs. As shown in Figure 41, 68% of participating

organisations whose projects involved short-term joint staff training events and 51% of participating organisations involved in HE SPs with blended student mobility considered that these mobility activities had been instrumental in the development of intellectual outputs. For example, the *FOODCOST* project used the blended learning method to prepare students for an international summer school, which increased the quality of debates during this event and facilitated the group work of students involved. Blended learning was also an integral part of the sustainability leadership courses in the project *Joint Programme for Sustainability Leadership*. These courses were developed and taught having in mind the needs, experiences and interests of the teachers and learners, mostly through innovative blended learning methods.

Figure 41. Perceived utility of LTT activities on production of project outputs



Source: Quantitative survey results report (HE SP Q6), PPMI, 2018.

Furthermore, as evidenced by our case studies, **blended learning itself was often one of the intended outputs or desired features of intellectual outputs produced by HE SPs**. For instance, creation and piloting of an international course in urban agriculture entrepreneurship implemented in blended modality was one the project objectives in the case of the *UGT* project (see Box 8 for more details).

Box 8. The Urban Green Train project example

Urban Green Train

The international curriculum was tested and revised throughout the project and was created to serve as a prototype for collaborative creation of further courses/curricula in urban agriculture entrepreneurship. Modules and Resources have been tested within an international pilot course (150h) with 120 participants from different countries and professional backgrounds. The course was available in two versions: **fully online (through the Moodle platform) and in a blended modality (combining distance learning and a 12-day course in Bologna)**. Third output – **a curriculum of an international blended course** included the main training actions and elements that set out the URBAN GREEN TRAIN curriculum, e.g. the course structure, methodology, teaching methods, learning objectives, content and resources.

Source: Case studies on the *Urban Green Train* project, PPMI, 2018.

Similarly, in the case of the *Open Studies* project, the most important goal of the project was to develop a Strategic Partnership of universities working in a virtual mobility mode. Upon successful application and mainstreaming of the virtual mobility and open educational resources (OER), they were deemed as key innovations in higher education[36]. In the case of *OUVM (Opening Universities for Virtual Mobility),* project objectives were related to the promotion of diversity of virtual mobility scenarios, including blended mobility. Students had possibilities to choose virtual mobility courses while on Erasmus exchange, while others had possibilities to host students in their online courses from other universities. Not only did these scenarios

[36] *Open Studies* project summary report.

increase the cooperation of partnering universities, but they also facilitated continuous application of blended mobilities in future cooperation projects[37].

In the *COLIBRI* project, which was chosen as a 'success story' by the Commission, the project consortium developed a **joint course based on blended learning** to **supplement the presence of OER**, with participating teachers and students from all institutions involved; they also involved business companies in the project. *COLIBRI* spawned another Erasmus+ Strategic Partnership project (*EPIC*), which specifically focused on student projects and collaboration based on blended learning. Additionally, *COLIBRI* has inspired the 'Just-in-time problem-based learning (PBL) model'[38], which provided a digital twist to an otherwise conventional pedagogical model. This shows that blended learning-based projects have the potential to result in **successful follow-ups** and promote further improvements to the existing models of blended learning.

A significant appeal of mobility activities used in HE SPs is their ability to **facilitate interdisciplinary cooperation**. For example, in the *Uninano* project, it promoted more student-centred learning approaches, work-based learning, and blended mobility with students from different disciplines (manufacturing engineering, biomedical engineering, chemistry engineering, chemistry, nanotechnology, etc.)[39].

Box 9. Interdisciplinary cooperation: the Spationomy project example

First SciLab was devoted to introduction of team members and to finding common research interests. Second SciLab was focused on developing novel scientific papers in order to strengthen **interdisciplinary cooperation** and further facilitate joint research agenda. Two full iterations of Interdisciplinary Learning Blocks (IntLeBs) have also been completed. These included drills, virtual learning parts, summer schools, and **intensive programmes for teaching staff in the form of short-term joint staff training**. Using the results of the two iterations, project partners are updating the Spationomy Methodology. Final output – the methodology in the form of a book – will be available during the final conference of the project in August 2019 (Multiplier Event).

Source: Case study report on the Spationomy project, PPMI, 2018.

Blended mobility was also employed in HE SPs as a way to **increase cooperation among institutions** and **provide more opportunities to students**. Projects, such as *OERCO2* allowed students to enrol in virtual mobility courses while also on a physical Erasmus exchange[40]. Meanwhile in the *e-MOTIVE* project, the promotion of blended mobility of higher education students and teachers was crucial for the project's overall success and its main goal – to help the above groups in acquiring knowledge and skills necessary for carrying out **ICT-enhanced vocational education and training**. This approach helped to better disseminate the working methodology, which was operationalised as a simulation of a real work situation through the blended mobility activities[41].

Finally, mobilities used in HE SPs proved to be pivotal in **enabling intercultural learning and cross-border cooperation.** For example, the *IncluSME* project promoted student mobility, in particular by offering two international summer schools. Activities within the project aimed to strengthen transnational cooperation between

[37] Opening Universities for Virtual Mobility project summary report.
[38] COLIBRI project qualitative survey response.
[39] Uninano project summary report.
[40] Centro de recursos online para el estudio innovador del ciclo de vida de los materiales de construcción, http://oerco2.eu.
[41] E-motive project summary report. Accessed: https://ec.europa.eu/programmes/erasmus-plus/projects/eplus-project-details/#project/2015-1-ES01-KA203-015974.

universities and to establish relevant mobility programmes for maths and science students, who are one of the least mobile groups of higher education students. By doing so, the project aims at strengthening quality through mobility and cross-border cooperation[42]. In the *EQUiiP* project, seven partners were taking part in the project and have developed training materials that can improve internationalisation at their respective HEIs. The project included workshops for international academics all around Turkey, the country of the leading organisation, which allowed them to interact closely with the non-Turkish members of the project team. As a result of the mobility activities, the project developed a network of Turkish and international links that can eventually **open up new avenues of collaboration** initiated by different institutions, independent of the original team membership[43].

2.2.5. Alignment to institutional strategy in Knowledge Alliances

Key findings

1. The institutional strategy of organisations participating in Knowledge Alliances is usually a **precondition and driver** for their participation.
2. Knowledge Alliance projects contribute to the achievement of participating organisations' **organisational/departmental strategic objectives** and fit well into existing **project portfolios**.
3. There are a variety of **organisational drivers** for KA participation for **HEI participants**. Those include: 1) strengthening university profiles and recognition in certain fields, 2) reputational improvements by increasing employability of students, 3) using KA funding to further exploit outputs of past projects, 4) learning and exchange of best practices, 5) aligning HEI strategies in the area of novel teaching and learning approaches.
4. Motivators for **business participation** in KAs are usually more specific and related to **concrete expectations** on outputs/outcomes. A project's contribution to a business's specific current or future needs is usually a precondition for participation. Main drivers include: 1) increasing innovation capacity through accessing state-of-the-art HEI research and fresh ideas from students, and 2) strengthening international and cross-sectoral cooperation networks.

The **institutional strategy** of participating partners was usually a precondition and the driver for their participation. The survey results show that a large share of respondents (87% Q 16) agree or strongly agree that the KA project's outputs contribute 'to the achievement of your organisation's/department's strategic objectives.' A slightly higher share affirms that their 'institution's executives are/were actively engaged in the project implementation (e.g. heading quality board, contributing to the project strategy)'. According to all the interview partners, the KA project usually matches well with their project portfolios and is supposed to strengthen strategically a cluster of projects. The participation is usually part of a funding strategy, where strategy/motivation to participate in a KA differs between organisation types (HEIs vs businesses).

For **HEIs,** organisational motivation to participate in a KA project with respect to their institutional strategy is:

1. HEIs aim at **strengthening their university profiles and their name recognition** in particular research fields (KA CASE, Katch_E). This seems particularly relevant in research fields confronted with systemic challenges

[42] InclusME case study report.
[43] *EQUiiP* project summary report https://ec.europa.eu/programmes/erasmus-plus/projects/#search/keyword=EQUiiP&matchAllCountries=false.

and dynamic workplace development (e.g. circular economy) and for small universities active in the field of applied sciences.

2. HEIs are also interested in improving their **reputation** by improved employability of their students (often being part of the organisational monitoring). In this context, the motivation is to increase the number and quality of publications and thereby improve organisational KPIs.

3. The KA projects serve as a **funding opportunity** to further exploit outputs of past projects; in turn, after the run-time of KAs the project members typically plan to apply for the Erasmus+ or other funding again where they can further use produced project outputs. In this context, interviewees typically value new contacts with business partners (but also other HEIs) that may lead to new project opportunities in the future.

4. Stay or become a known HEI for **excellence in a specific research field** by learning about best practices from other EU countries (which is strongly related to individual career development).

5. **Align HEI strategies** in the field of novel teaching and learning approaches such as SCL is a motivation in a few cases (e.g. KA CASE).

The motivation for **business partners** with respect to their institutional strategy to participate in a KA is usually quite specific and from the beginning defined by more concrete expectations. More details of the main motivation on the organisational level is provided by the following:

1. A precondition for participation is usually that the KA project can **contribute to the business's specific current and future needs**.

2. SMEs and large companies usually aspire to closer cooperation with universities and network opportunities in general in order to **increase innovation capacity** by co-production of knowledge, become knowledgeable about state-of-the-art research, realise recruiting opportunities and contribute to a well-trained workforce in the longer term. KAs can test **new cooperation modes** with added value for the involved business partners, for instance initiatives such as service-learning projects bringing in fresh ideas of students.

3. KAs are expected to build or strengthen the business's **international and cross-sectoral networks**. Also, recruiting and meeting start-up founders is of interest for some businesses for investing seed capital and future cooperation.

4. Some business partners reported in the interviews that they consider this advanced knowledge as a relevant **competitive advantage** in the future (time horizon of about 10 years) which now feeds into their R&D units (e.g. Katch_E, case of a traditional family-owned business). In this context, interview partners frequently mention advanced skills for workforce, information sets and working methods are required to co-create the solutions for systemic pressing challenges. Quite a number of business partners are private research institutes, (partially publicly funded) RTOs and consultancy firms that are, according to the interviews, even more aware of systemic challenges and also aim at a **contribution to long-term transition and impact** by their participation.

The case studies indicate that **initiating organisations of KAs already feature a heterogeneous network** of university and business partners in many cases (e.g. the KAs Katch_e, SCIENT). Often the initiating organisations are HEIs for applied science

or private and (partially) public research institutes that are already established network hubs in their research field (or they aspire to become one). Hence, the **cross-sectoral exchange and projects are an inherent part of their institutional strategy**. The interviews provide a number of examples that their representatives in KAs are usually familiar with heterogeneous networks and differing rationales. They partly obtain the role as a 'facilitator'/'bridge-builder' between these worlds.

2.2.6. University–Business cooperation in Knowledge Alliances

Key findings

1. Knowledge Alliances **very effectively improve cross-sectoral cooperation** practices for both HEI and business participants.
2. **Trust and previous acquaintance** between partner organisations are important facilitators for cooperation formation in Knowledge Alliances.
3. Knowledge Alliances **very effectively engage businesses as project partners and as a target group** of project activities. Most importantly, they offer businesses **new and strengthened interactions** as well as **new trainings** offered in cooperation with HEIs.
4. KAs are an **effective instrument for facilitating cross-sectoral knowledge and innovation transfer** as well as **individual capability increases** for HE and business staff to engage in cross-sectoral cooperation.
5. University–Business **interaction approaches** include: 1) twinning of enterprises and HEIs for joint development of specific education and training material based on a joint need analysis 2) international co-creation making use of intermediaries/regional innovation hubs, which also served the purpose of disseminating and transferring the results to a wider audience and 3) facilitation via jointly available open-access course material in a number of different languages.

The KA instrument was introduced as a measure to promote cooperation between higher education institutions and business enterprises in order to contribute to the modernisation of the European higher education system. Participation in KAs are supposed to facilitate and make university–business cooperation more common and widespread, and should particularly serve to enhance such capacities in countries where it is not yet happening by itself. The EC sees KA funding as an opportunity to allow HEIs to experiment with modes of university–business cooperation and jointly develop new teaching and learning methods and tools and thereby demonstrate the value of the cooperation between the two sectors and in turn facilitate a large-scale roll out and adoption of developed outputs after the project, with other sources of funding.

Formation and sustainability of cooperation

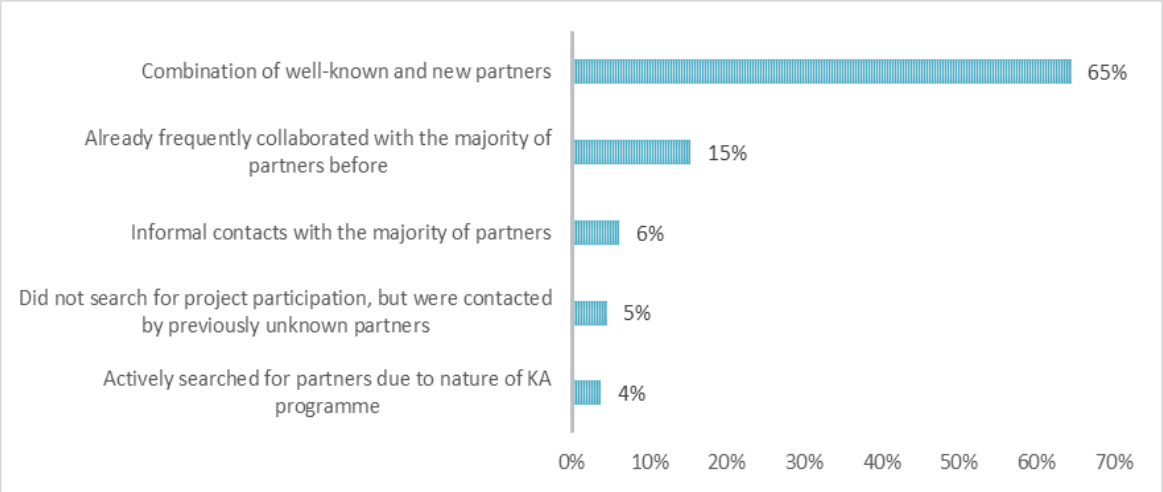
An important finding from previous research on knowledge partnerships is the importance of trust and previous acquaintance as a facilitator for their formation[44] (Paier and Scherngell 2010, Wit-de Vries et al., 2018). This is also the case for organisations in KAs. The vast majority of organisations in KAs say that the network is a combination of old and new partners, or that they have already cooperated frequently with their project partners (Q 7). Only a small fraction indicate that they had only informal contacts or no cooperation with the partners prior to the KA.

Creating these linkages also seems to be an important output from KAs. Almost 70.6% of all participants which already finished their projects say that their

[44] Paier, M., and T. Scherngell (2010). Determinants of Collaboration in European R&D Networks: Empirical Evidence from a Discrete Choice Model. Industry and Innovation, 18(1): 89-104.
De Wit-de Vries, E., W. A. Dolfsma, H. J. van der Windt, and M. P. Gerkema (2018). Knowledge transfer in university–industry research partnerships: a review. *The Journal of Technology Transfer*.

organisation will continue to cooperate with most project partners after the end of the project (Q 18). This is the highest share of agreement in all items presented by Q 23. A lack of funding is identified as the main barrier for continuing such cooperations (48.7%, Q 25), followed by a lack of common interest and shared visions (43.4%).

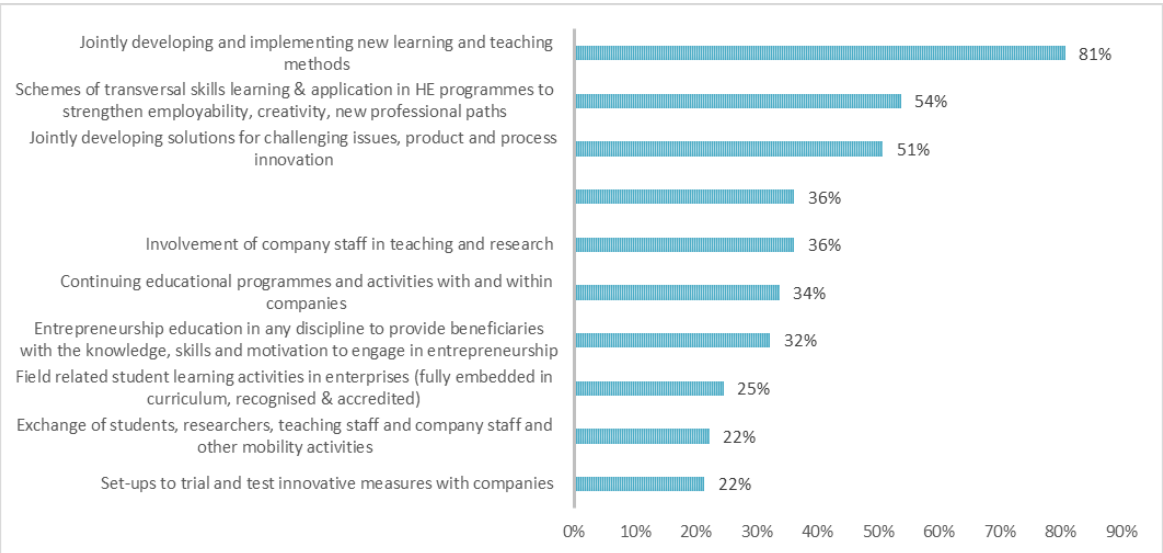
Figure 42. How did you form your network of project partners for this specific project?



Source: Survey results, PPMI 2018.

The survey results further indicate that the KA are very effective in engaging private sector enterprises. A total of 90% of survey respondents indicated that business enterprises were engaged as project partners (Q 5) and 85% indicated that professional from companies are a specific target group of project activities (Q 9).

Figure 43. Main project activities engaging business enterprises



Source: Survey results, PPMI 2018.

In addition, a quarter of projects see the core purpose as facilitating the exchange, flow and co-creation of intersectoral knowledge (24%, Q 6) and another quarter as stimulating entrepreneurship and entrepreneurship skills of higher education teaching staff and company staff.

The activities performed within the projects, show how and by which means cooperation between HEIs and business enterprises take place. While a shared common feature of the projects (80% Q 8) is to develop and implement new learning

and teaching methods, the joint development of solutions for product and process innovation (50.8%) is a core feature in which practitioners from enterprises are engaged and companies are actively engaged in (e.g. WineLab). In addition, engagement of companies was achieved by involvement of company staff in teaching and research (36.2%), organising continuing educational programmes and activities with and within companies (33.8%), field-related student learning activities in enterprises (24.6%) and exchange of students, researchers, teaching staff and company staff and other mobility activities (22.3%) and set-ups to trial and test innovative measures with companies (21.5%).

The KA projects have, according to the survey results (see Figure 46), **improved the cross-sectoral cooperation**, particularly the **quality of cooperation practices**. Against the backdrop that a very high share of respondents agrees to a large extent that their 'organisation established more effective cooperation practices with project partners' (46%; second rank in item Q 17), their KA projects also improved cross-sectoral cooperation. Respondent rates show that their organisations have established better and effective cooperation with universities (48% to a large extent) and businesses (36% to a large extent; Q 17).

These improved cooperation practices seem to be **based on cross-sectoral knowledge and innovation transfer**. The survey respondents show strongest consent on the statement that their 'organisation transferred or acquired knowledge/innovations from organisations working in other sectors' (49% agree to a large extent; second rank in item battery Q 17). This is supported by one quarter of survey respondents who state that the main purpose of their project is to facilitate the exchange and co-creation of intersectoral knowledge (Q 6). Also, for individual participating and beneficiary business owners and employees, the most important contribution of KAs is, matching the finding for academics, the increased capability for intersectoral collaboration on personal levels (81% strongly agree or agree), including the generation of new project ideas. Furthermore, KAs offer businesses new and strengthened interactions (69% strongly agree or agree; Q 22) and new trainings offered in cooperation with HEIs (64% strongly agree or agree).

The case studies coherently demonstrate that all KAs have developed better working and cooperation practices in intersectoral configurations. Virtually all interview partners mentioned that the **cooperation within the KA project** has helped to overcome "silos" of information and to become aware of the necessity to work with a suite of cross-sectoral actors. The KA approaches have successfully experimented how to align the languages between academia and business with KAs being a meaningful driver both within KA project management and by project outputs aiming at cross-sectoral cooperation.

KA projects also developed **outputs that contribute to cross-sectoral collaboration beyond the consortium.** The KA SHIP helped to establish better cooperation practices of HEI/SMEs/companies/other organisations with local/regional authorities – and vice versa. The KA therefore directly addressed cross-sectoral cooperation by having developed, piloted, and delivered an innovation transfer training programme for SMEs to train them in the skills needed to effectively engage with HE research and make them knowledgeable about H2020 funding modalities. This training is an example of bridging the different rationales by becoming familiar with cross-sector language and funding logics which can build trust and understanding. Another example is the KA FoodSTA that piloted a joint academia-business tutoring and supervision programme as well as work and training experiences through industrial and university placement. The possible impact by new organisations that have developed as spin-offs or start-ups through KA activities (e.g. by sparking entrepreneurship) should also be noted. In these cases, a rather high degree of cross-sectoral cooperation and innovation capacity is expected in the future.

Mechanisms of university–business cooperation

The KA projects contributed to strengthening cooperation between the world of work and higher education through a number of various mechanisms, as the survey among KA project shows:

1. 51% of respondents stated that projects jointly developed solutions for challenging issues, product and process innovations involving students, professors and practitioners together;
2. 36% of respondents indicated that company staff was involved in teaching and research;
3. 34% organised continuing educational programmes and activities with and within companies;
4. 25% provided field and student-centred learning activities in enterprises which are fully embedded in the curriculum, recognised and credited;
5. 22% allowed for an exchange of students, researchers, teaching staff and company staff for a limited period and other mobility activities;
6. 22% set up trials and test innovative measures with companies.

The review of case studies clearly shows that the knowledge creation and transfer process within the KA projects was largely a process of co-creation between business partners and higher education institutions. For example, in a number of projects core activities such as the development of training plans were developed jointly in a very close collaboration between business enterprises and higher education institutions. Examples on the diversity of approaches are given below:

1. The project TACIT – Teaching and Coaching Innovation and Entrepreneurship Innovatively developed and prototyped eight approaches to teaching innovation management in joint teams each led by one industry representative and one HEI. The collaborative group work included prototyping and training workshops with external stakeholders so that the material produced was fit for the purpose of also informing participating companies about new innovation management possibilities.
2. SHIP – SME and Higher Education Institutes and Innovation Partnerships formed 4 cross-border innovation alliances, in which SMEs together with HEIs and technology transfer organisations built the ground for intersectoral cooperation and the development of an international SME training programme focusing on intersectoral cooperation (understanding academia, presenting needs, growing collaborative competences), an innovation alliance toolkit for sharing best practices across regions comprising 114 tools, and the development of concrete micro projects and project proposals between participating SMEs and HEIs.
3. European Food Studies and Training Alliance, developed demand-based training by inclusion and further elaboration of collected needs and holistic involvement of the European Food Industry, making use of essential multiplier organisations (food industry associations, EU-wide networks). By targeting these multipliers/intermediaries it was possible to work within stakeholder cooperation networks and provide them with information about the state-of-the-art in academic work, so that they can more effectively support their industrial members. Industry partners were directly involved in trainings for company staff and students based on needs analysis, and jointly a knowledge

platform/hub was developed and implemented, whose main tasks and purposes were to:

- establish close and permanent contact between national stakeholders and HEIs, food companies, associations;
- set up a mobility database and coordinate internships/student exchange/staff exchange at European level;
- continuous needs identification of the food industry, including skill requirements through web questionnaires that registered stakeholders can fill in.

4. Local Hubs use the material provided by the platform and interact with local stakeholders on a face-to-face basis. These tasks included in particular 1) qualification/certification of study programmes, CPD trainings and 2) Trainings for company staff and HE staff (CPD) and students.

The examples show that the interaction approaches included 1) **twinning of enterprises and HEIs** for joint development of specific education and training material based upon a joint need analysis 2) **international co-creation** making use of intermediaries/regional innovation hubs, which also served the purpose of disseminating and transferring the results to a wider audience and 3) **facilitation** via jointly available open-access course material in a number of different languages.

In addition to these holistic approaches individual exchange of knowledge between participating companies, HEIs and individual students/teachers was achieved for instance by short-term placements of students, teachers etc. in companies (see survey) which allowed participating organisations and their individuals to better grasp company needs and innovation challenges, and the capabilities of innovative methods from academia.

Examples of good practices of university–business cooperation

Participation in the KA action itself may also lead project participants to reach conclusions on factors that made (will make) cooperations between universities and businesses (across borders) successful. This hypothesis is supported by our finding where all interviewees seem to be aware of which good practices they have developed in regard to successful EU-project management and how to **work effectively in university–business cooperation** projects. Most commonly cited good practices in this regard are quickly establishing trust within the consortium, finding a "common language" and appropriate rhythm of work, actively working to ensure commitment of all partners by developing activities that are relevant for all, clear definition of roles and responsibilities while ensuring collaboration and iterative processes within the consortium. These reported success factors and good practices were mentioned by a wide variety of KA projects. Specific **good practices** mentioned are for example:

- SHIP's collaborative approach to project implementation within the consortium and joint decision-making, where each WP had a formal lead, but each partner was expected to contribute to all WPs in some form;
- TACIT's way of pairing HEIs and businesses (usually 1-2 HEIs with 1-2 businesses) to develop and prototype specific teaching methods before presenting to the whole consortium for further development as well as splitting responsibilities between academic lead and project manager at coordinating organisation;
- SCIENT's clear role delineation between partners with complementary skills and expertise in certain areas, e.g. internal QA, communication, professional dissemination, etc.;

- CASE's expectation management within the consortium and devoting more time to group formation as well as the clarification of joint goals.

In this regard, several interviewees also indicated that increased **sharing of good practices and mutual learning between KAs** might be beneficial (not just on cooperation practices but also administrative/PM topics of mutual interest in areas such as dissemination practices, reporting, etc.). The **know-how on how to approach university–business cooperation** developed through applying and implementing a project could i) **facilitate the collaboration** of "newer" KAs if spread effectively through the KA community; ii) could **benefit a wide range of HEIs and businesses** if spread effectively outside the KA community; and iii) **support participating organisations in future cross-sectoral cooperation** efforts within and outside the Erasmus+ actions. Currently, the yearly Cluster meetings are a first step towards mutual exchange of good practices and concerns among KA participants. Large-scale events for the broader community with KA participation such as the University–Business Fora or the European Week of Regions and Cities are also a first step towards spreading the benefits and added value of university–business cooperation to a larger range of actors.

2.2.7. Outputs developed in Knowledge Alliance projects

Key findings

1. Knowledge Alliances develop a **wide variety of outputs**. Most commonly, they are related to the **development of new, innovative and multidisciplinary approaches to teaching and learning** – new methods, guidelines, courses, curricula, integrating different study modes. Other outputs commonly cited include the establishment of a network of organisations/professionals/virtual communities as well as complementary outputs such as studies and analyses.
2. KA project activities and outputs pursued are typically at the heart of a project and thus **highly relevant to its objectives**.
3. Generally, most KAs use **ICT** as a means to an end and **complement other activities** and are **well-aligned with project objectives**.
4. Knowledge Alliance outputs are **highly relevant for the broader goals of the KA2 action**. They are by and large **highly innovative**.
5. KA project outputs are also **highly relevant** for producing the **intended organisational outcomes of the KA2 action**: 1) innovative approaches for addressing target groups, 2) more modern, dynamic, committed and professional environment inside the organisation, 3) increased capacity and professionalism to work at EU/international level.

Output variety

Knowledge Alliance projects produce a variety of primary outputs. The most commonly cited output in the beneficiary survey (72%) is the development of new teaching/learning material, methods, and approaches. This matches well with the findings on the orientation of the KA action, where more than half of survey respondents identified the development of new, innovative and multidisciplinary approaches to teaching and learning as the primary purpose of the project. Closely related to this output are 1) the production of methodologies and guidelines, which 60% of survey respondents cite as a project output, and 2) the integration of different study modes for more flexible learning pathways, including distance and part-time learning, modular learning, blended learning, etc. which finds agreement among roughly half of respondents.

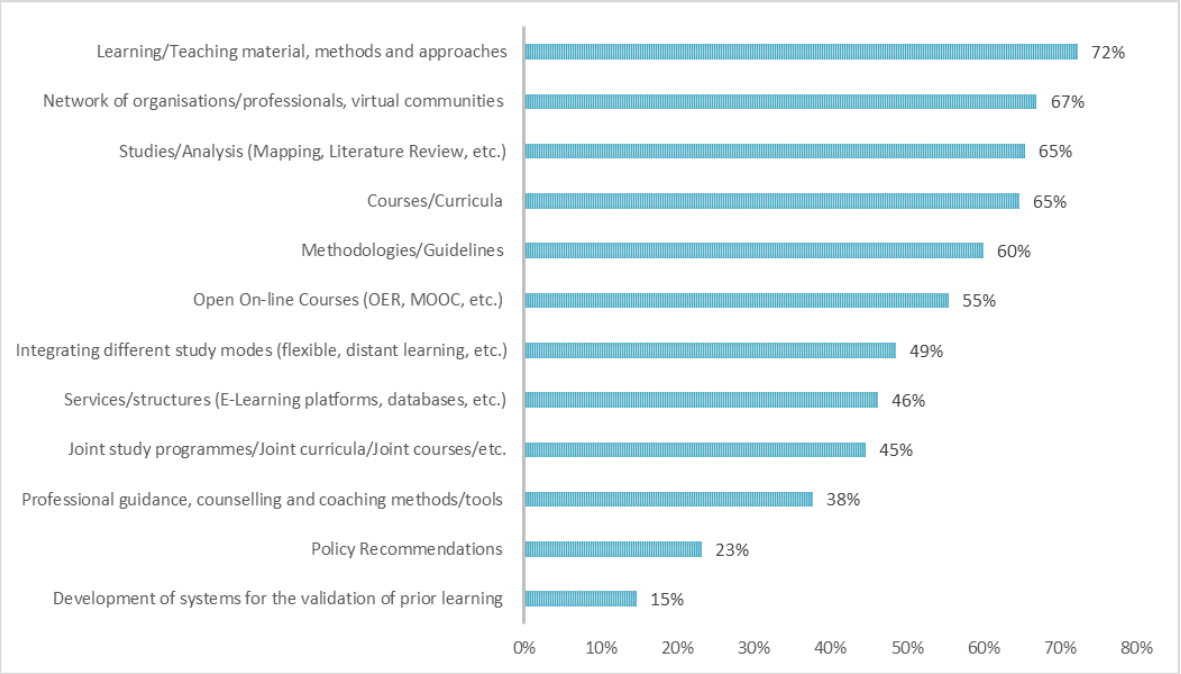
The second most common outputs are the establishment of a network of organisations/professionals and/or virtual communities (67%). This finding reflects that many KAs fulfil the expectation of contributing to the development and

implementation of (more effective) organisational and expert networks as well as (virtual) communities of practice.

More than two third of respondents also stated that their project produced studies and analyses such as literature reviews, mappings, etc. Our interviews suggest that such research and background analysis is usually used to support in-depth needs analyses during project implementation.

Courses and curricula of various types also belong to the most common outputs of KA projects. Almost 65% of survey respondents mention the development of courses, curricula, and syllabi as a project output; 45% also indicate that their project produced joint curricula, joint study programmes, joint courses, etc. with other HEIs and or businesses. A further 55% indicate that their project produced open online courses such as OERs, MOOCs, webinars, etc. More than 46% also indicated that the project resulted in the development of various online services and structures such as e-learning platforms, online collaborative platforms, databases, etc.

Figure 44. Type of outputs produced (N=130)



Source: Survey results, PPMI 2018.

Relevance of project outputs to project objectives

Outputs related to new and innovative teaching methods and approaches are the most commonly produced type of outputs among KA projects. In this regard, we find that the **activities and outputs pursued are typically at the heart of a project and thus highly relevant to its objectives**. In this respect, our interviews and case studies show that most such outputs **aim at innovative pedagogics and are in line with the recent development trends in HE** such as SCL**,** problem-based/project based/scenario-based learning, collaborative and agile learning, entrepreneurship, and building transversal skills. The case studies provide exemplary insights into the variety and prevalence of these outputs.

1. All KAs examined have generated **training materials that follow SCL-related approaches** to a certain degree. For instance, the KA CASE puts forward their didactic work and the SCL approach by providing an easy-to-use online platform with appealing training material for teaching staff. Many KAs

improve teaching and learning material in rather new course topics with systemic challenges which requires novel forms of teaching and learning. The KA KATCH_e strives for a curriculum that accounts for inter- and transdisciplinary needs for pressing challenges in a circular economy and the KA KAUU in the field of urban planning.

2. Many KAs focus on the **development of (pilot) trainings** that facilitate intersectoral work between academia and industry. For example, the KA SHIP developed a training course that provides SMEs with skills necessary to effectively engage with HEI research, KA CASE tested and refined a service-learning framework for students, and ENDuRE showed a successful interplay between teaching and mobility that demonstrated the stimulation of the entrepreneurs work and progress.

3. Some KAs made use of **attractive creative formats and methods**. TACIT applied innovation games ("serious play"), storytelling, design making, and innovation theatre. BEFORE had good experiences with foresight training and the design thinking approach evolving from business enabled learners to understand the needs of the target groups - but also to overcome language barriers between academia and business. Some KAs focus on innovative materials and activities that fostered the entrepreneurial development of students with teaching and learning materials that focused on transversal skills and agile learning (e.g. CASE, GL-SPIN, ENDuRE, TACIT) but also creative methods and events. SCIENT organised a competition for PhD students to ideate and showcase their business ideas and evoke their entrepreneurial mindset. WAVES promoted and implemented scenario-based learning within the wider educational community.

Furthermore, all KAs apply ICT-based technologies with a varying set of objectives and outputs. In general, ICT-based methodologies usually serve as a **means to an end** and **complement** other activities and are **well-aligned with project objectives.** Accordingly, figures on ICT integration in projects show that most KAs contributed to objectives by promoting the development and use of digital tools (70% strongly agree or agree; Q 12). The case studies indicate that the significance of the ICT-based methodologies used differs largely, varying from simple websites (obligatory) to extensive digital platforms being at the heart of a KA. They usually feature a high degree of transferability which make them interesting tools for the dissemination/upscaling of project outputs.

Main objectives of ICT-based methodology and **exemplary outputs** are:

1. The most common objective of more extensive ICT-based outputs is to enable **new study modes** such as part-time studies, distance learning or lifelong learning. The accessibility of materials, the institutionalisation and standardisation of e-learning is a focus of these KAs.

- The KA CASE provides a **platform-based teaching and learning environment.** A professional easy-to-use teaching and learning platform with practical guidelines featuring a great usability. In order to improve visibility, awareness, uptake and dissemination of the training material, the project's communication strategy (including inspiring and activating language and teaching videos) was implemented by experienced business partners.
- For instance, the KA bizMOOC considers ongoing changes in Europe's (**virtual) teaching and learning environment** with respect to quality standards, certification, sustainability, teaching, delivery and learning with the objective is to teach lifelong learning key competences for business employees and students relevant for the labour market.

- The KA FoodSTA has developed an extensive and **professional digital education database** including a digital library consisting of tutorials, recorded webinars, online courses, etc., a multilingual database and an e-learning platform.

2. In a few cases, ICT-based technology is primarily used in innovative (and often stand-alone) **digital learning formats that also raise awareness through gamification approaches,** cooperative/competitive set-ups or creative tasks.

- For example, the KA FoodSTA tested a virtual student competition game ('FoodFactory-4-Us') where teams of students presented and developed projects that aimed to identify, design and develop solutions and ideas for real-life food industry problems.

3. Some KAs experimented with **new dissemination channels**. Usually with the support of business partners, they reached other target groups. The quality of the material and professionality of the communication strategy seem to be a decisive success factor.

- The KA SCIENT uses dissemination channels such as social media, TV, and radio in order to reach target audiences to a large and professional degree.

Relevance of project outputs to broader goals of the KA2 action

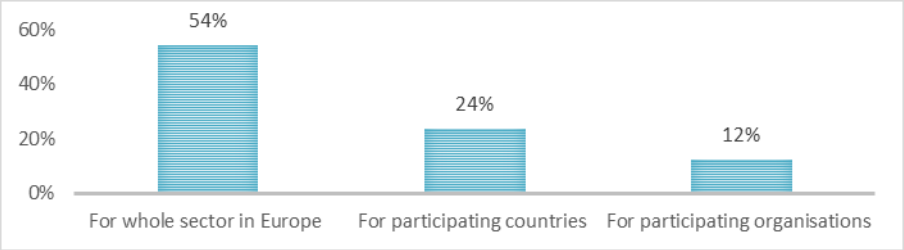
The Erasmus+ programme guide[45], under the actions of Key Action 2 aim make it possible for organisations from different participating countries to work together, to develop, share and transfer best practices and innovative approaches in the fields of education, training and youth. More specifically, projects under KA2 are intended to produce the following outcomes for participating organisations: 1) innovative approaches for addressing their target groups, including more attractive education and training, 2) a more modern, dynamic, committed and professional environment inside the organisations, and 3) increased capacity and professionalism to work at EU level. Therefore, our analysis in this sub-section will focus on the question of innovativeness of outputs as well address the three specific organisational outcomes.

Innovativeness of outputs

The overarching objective of Key Action 2 is to support the development and transfer of best practices and innovative approaches. Analysing the innovativeness of Knowledge Alliance project outputs, we find that not only do KAs produce a wide variety of outputs, the outputs are typically also **highly innovative**. According to the survey, more than 5 out of 10 respondents indicate that their project has produced **state-of-the art** outputs that are innovative for the whole sector in Europe and not used anywhere else. A quarter agree that their output is highly **innovative for the participating countries**, i.e. analogous outputs are used elsewhere but introduction in the participating country constitutes an innovation for the country. A further 12% indicate that their project has resulted in **innovation for the participating organisation** in question.

[45] Available online: http://ec.europa.eu/programmes/erasmus-plus/sites/erasmusplus2/files/erasmus-plus-programme-guide3_en.pdf, p 106 ff (retrieved 2018/10/23).

Figure 45. Innovativeness of outputs (N=129)



Source: Survey results, PPMI 2018.

Innovative approaches for addressing target groups

Regarding the expectation that projects result in innovative approaches to address their target groups, we find that 6 in 10 survey respondents indicate that participation in a Knowledge Alliance project has led to the **adoption of more innovative approaches for addressing target groups** (Figure 46). Furthermore, another main expected outcome is the adoption of more innovative and attractive teaching and training. A total 71% of survey respondents agree to a large or moderate extent that their project has or will lead to their organisation adopting **more innovative teaching methods and approaches**. This result signals that Knowledge Alliance projects produce outputs and outcomes that are **highly relevant** to this specific KA2 goal.

Our finding is also fully in line with the objectives of the KA action as well as the main types of project outputs which emphasise the development of new, innovative, multidisciplinary approaches to teaching and learning. KA projects have **successfully designed and implemented various outputs aiming at project objectives –** most prominently, innovative applications of new methods, tools, courses, and curricula that usually embrace SCL methodologies. We find that KA projects support various new and partly experimental forms of teaching and learning. These novel forms usually aim at **integrating innovative pedagogics** and are in line with the recent development trends in HE such as SCL, problem-based/project-based/scenario-based learning, collaborative and agile learning, entrepreneurship, and multidisciplinarity, and building transversal skills. Key characteristics of the teaching and learning concepts encompass the **facilitation of cross-sectoral and multidisciplinary integration**. Furthermore, they develop more flexible study programmes and professionalise them. To varying degrees, the KAs develop new teaching and learning activities in an experimental way. The **recognition and accreditation** of the KAs' outputs are **optional activities**, according to the Erasmus+ Programme Guide (p. 131 f). In fact, the survey shows that a moderate proportion of respondents agree that their KA has improved the assessment, recognition and certification of informal and non-formal learning in their organisation (45% to a large or moderate extent; Q 17). This is to some extent to be expected, since the objective of Knowledge Alliances is to produce new and innovative outputs. Those sometimes cannot be assessed by established accreditation or recognition systems. Proposals and reports show that most KAs hence **have not aimed at recognition or accreditation**.

Modern, dynamic, committed and professional environment

Half of survey respondents agree that participation has led to a **more modern, dynamic and/or professional environment** (Figure 46). Closely related to the concept of a more modern environment inside the organisation is that of a more entrepreneurial mindset as well as a 'de-siloing' of the approach to work: More than half of survey respondents indicate that project participation has/will lead to a more

entrepreneurial mindset in their organisations and **closer engagement** with policy- and decision-makers at local, regional, and/or national levels (Figure 46). Additionally, we find that the most important outcome of KA participation on individual levels among HEI and business staff is the increased skill and capability to work in **cross-sectoral settings** (see sub-section 2.3.4). Taken together, these findings demonstrate that Knowledge Alliance projects produce activities and outputs that are **highly relevant** for this sub-goal of KA2.

The case studies indicate that KA projects are partly **eye-openers for HE staff**. Academia learns to move out of the 'ivory tower' and gains new insights into industry needs and practical knowledge about issues, management, and processes (e.g. FoodSTA). In particular, HE staff seem interested in **good practices** such as professional co-creation and ideation formats, modern project management, evaluation designs and entrepreneurial perspectives.

Interviews with **business partners** suggest that the implementation of project results works well in their organisations as long as they are considered effective and efficient by the involved individuals and management. For instance, businesses have learned how to **apply new dynamic approaches and formats**, for example delivering a webinar. By being put into the teacher role, it allowed company staff to look at work responsibilities/issues with 'fresh eyes' and to ask new questions. This makes businesses more open to ultimately enrich/enhance knowledge and competences, especially innovation skills such as problem-solving, out-of-the-box thinking, and creativity. KAs can also foster dynamism in the sense of **technology, knowledge, and innovation transfer**.

Capacity and professionalism to work at EU level

Aside from the benefits for organisations resulting from cross-sectoral cooperation, survey respondents strongly indicated that the KA participation led to **increased capacities and professionalism** for their organisation to work at **EU and/or international levels** (78% agree to a moderate or large extent, Figure 46). This result matches qualitative data from interviews, where some interview partners from organisations with less or no previous experience in European funded projects indicate that KAs led to their **increased awareness** of funding opportunities and capability to take part in such transnational cooperation. This result also reveals that KAs display **high relevance** toward this specific KA2 outcome goal.

In terms of success factors for increased project management capabilities, most case studies show that **good management of the project team is a key success factor**. Most common and outstanding lessons learned that have improved management capacities are:

1. **A clear definition of roles and expectation management at the start of a KA project** as well as dedicating time for group formation are important first steps to building mutual understanding, trust, creating ownership, and commitment among project members. Creative methods such as 'personas' can help to illustrate expectations of stakeholders (KA CASE). Many interview partners pointed to the importance of finding a common language as early as possible. For instance, by defining a shared terminology or developing guiding questions.

2. **For most efficient on-site teamwork**, the meetings optimally apply interactive formats and team building methods. Additionally, interview partners reported that visualisation of agendas, active breaks, room changes, and a guideline on rules for a successful collaboration were useful. An external facilitator can improve the effectiveness and the efficiency of meetings

remarkably by setting priorities, reflecting on expectation management, and identifying a shared objective within the heterogeneous project team.

3. **ICT-based methodology can support the project management and quality assurance**. According to the interview partners (KA SCIENT), the online software 'Trello' improved the work of the project team and made it more efficient.

The KA projects provide some evidence that they can contribute to **increased quality in implementation and monitoring of projects**. Although KAs usually feature a rather basic quality assurance or monitoring framework with simple indicators (e.g. website visits), few KAs provide interesting examples:

1. The KA SCIENT (with one project partner dedicated to quality assurance) implemented **professional methods for quality assurance** that complemented the project management. Methods applied were a continuous internal review, in-depth quality assurance studies, a piloting procedure, five qualitative surveys, and an 'improvement table' tool.

2. The KA PEOPLE seems to be an intriguing **good practice example for a fully-fledged and flexible impact assessment of a teaching and learning intervention**. The KA developed at the very beginning an evaluation strategy which incorporates different measures to assess the outcomes and impact of the new learning approach. The strategy revolves around four specific indicators to measure aims for 1) students, 2) industry professionals, 3) faculty educators and 4) the collaboration between HEI and industry partners on a national level. The strategy takes on a formative and a summative approach, involves the gathering of quantitative as well as qualitative data and involves internal and external stakeholders at the start, during, and after learning activities. A comparative evaluation has been conducted and it compares the results of all 4 university–business cooperation case studies (in 4 involved partner countries).

3. BizMOOC **evaluated its MOOCs *ex-ante* (in terms of expectations) and ex-post** which provided a framework to assess the needs of the target groups and impacts of the course. (Experts of the quality assurance board evaluated this framework.)

4. The KA ODEdu is another good practice example of a **well-planned impact assessment focusing on educational data.** New methods such as Learning Analytics provide some initial insights as to if and how much new learning and teaching approaches have the intended impact. The exploitation of educational data that is generated in online environments from students' interactions during learning activities can provide informative feedback.

5. The KA CASE implemented a **formative evaluation** and significantly improved the quality of a new service-learning course.

6. The KA SCIENT also gives an interesting example of **a developmental evaluation**[46] as an alternative to formative assessment. The developmental evaluation focuses on learning within project teams and supports the development of innovation and adaptation in dynamic work environments.

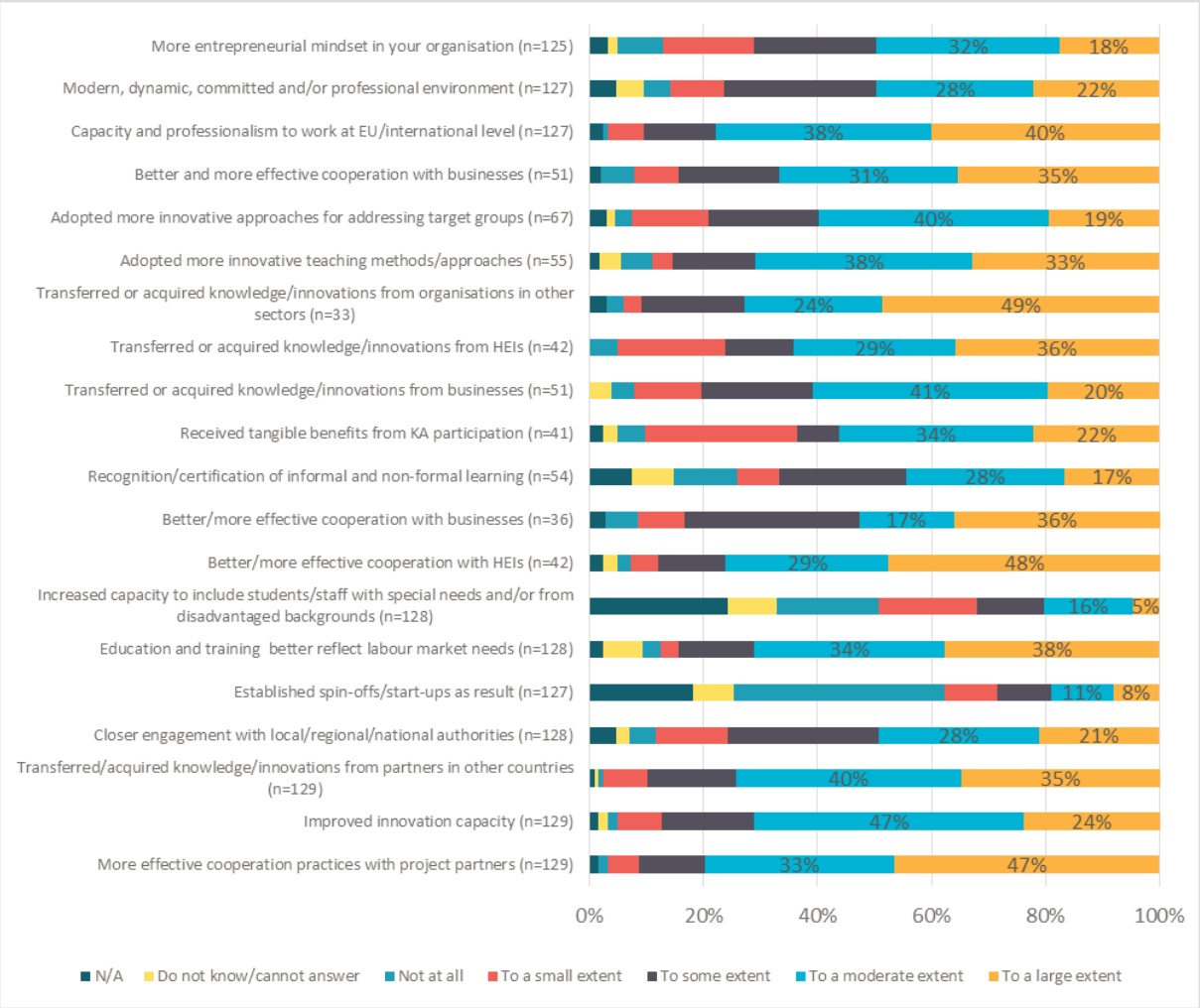
7. KA TACIT provides an example of how an **internal impact case study** helped to understand the effects of the projects on partner organisations. It

[46] Patton, M. Q. (2010). Developmental evaluation: Applying complexity concepts to enhance innovation and use. Guilford Press.

hereby improved corporate legitimacy for rolling out and embedding KA methods within companies after the end of a grant.

The findings of the survey and the case studies provide evidence that KA projects can significantly contribute to the participating organisations' capacity and professionalism to work at EU/international level. The KA project teams seem to gain significant implicit and explicit management capacities during the project run-time. KAs have partly contributed to the organisations' capability to provide quality assurance and monitor projects; some KAs provide innovative and well-implemented examples that can serve as role models for future KA projects. KA projects seem to significantly increase the organisational capacity and professionalism to work at EU/international level (among project members' organisations and towards beneficiaries by project outputs). HE project members usually plan to apply for follow-up funding to further exploit their KA project's outputs (many of within Erasmus+ programme).

Figure 46. Organisational changes/improvements due to KA participation



Source: Survey results, PPMI 2018.

2.2.8. Implementation of project outputs in Knowledge Alliances

Key findings

1. The action's focus on innovative teaching methods and approaches as well as innovations in courses and curricula are **highly relevant for the development of HE systems**.
2. The **key strength** of KA projects are their **highly transferable outputs** that are usually well-designed for institutional implementation. **Innovative formats with multiplier effect** have also proven to be effective in supporting uptake (e.g. through 'train-the-trainer' approaches).
3. Other strengths of activities and outputs include aspects of **multi-disciplinary learning and collaboration**; **cross-sectoral learning and collaboration**; and increasing course variety through **multi-disciplinary and study mode integration**.
4. Overall, the majority of completed Knowledge Alliance projects seem to have **embedded their project outputs** in their organisations to some or full extent. Almost all indicate that they have achieved **organisation-wide awareness and acknowledgment** among non-involved colleagues and management to some or full extent.
5. Generally, **organisational uptake seems to be faster in businesses**. The implementation of project results works well in businesses, as long as outputs are deemed effective and efficient by the involved individuals and their management.
6. In HEIs, the situation is slightly more mixed. Often, it seems **more difficult for HEIs** to ensure take-up of project outputs as well as to effectively engage colleagues not directly involved in the project.

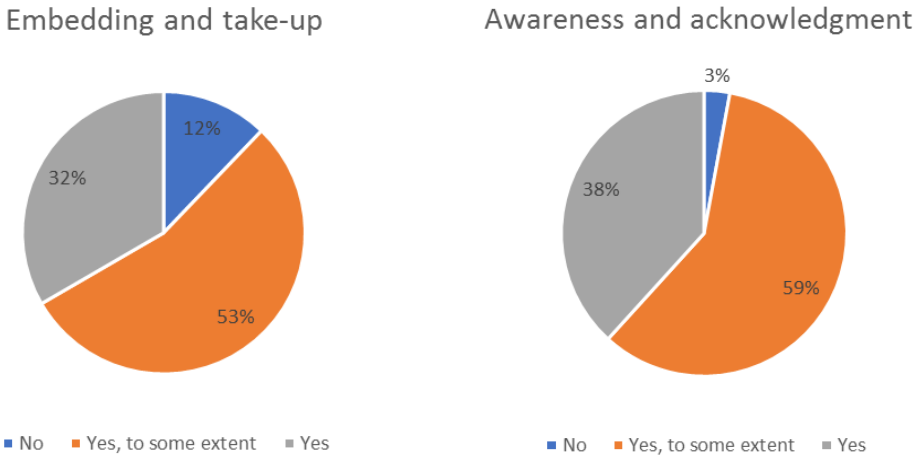
The analysis of the implementation of the project outputs in the consortium's organisation reveals a slightly mixed picture depending on project status and type of organisation. The survey shows that the vast majority (90%; Q 16) of respondents agree or largely agree that their institution's executives are/were actively engaged in the project implementation. However, our interview and case studies suggest that among HEIs, the institutions' rectorship and management mostly support the institutional implementation of the outputs moderately or poorly. Interview partners, if at all, refer to HE management, usually at institute or faculty level, only being informed about the existence of the project and/or funding support offices playing an active role. The moderate numbers in the organisational mentoring (8% strongly agree) and monitoring activities (36% strongly agree; Q 16) may indicate **missing links in HEIs' management structures**.

Altogether 85% of survey respondents involved in already completed projects indicate that their project has achieved organisation-wide embedding and take-up fully or to some extent (Figure 47). Almost all (97%) indicate that they have achieved organisation-wide awareness and acknowledgement among management and non-involved colleagues to some or full extent. Looking at these results more closely, approximately half indicate that such embedding and spreading throughout the organisation has taken place only to some or small extent. Similarly, almost 4 out of 10 respondents indicate that organisation-wide awareness and acknowledgement of project outputs have been achieved, while 6 out of 10 pointed out that this has been achieved only to some or small extent.

Interviews with KA beneficiaries shed some further light: Interviews with **business partners** suggest that the implementation of project results works well in their organisations as long as they are considered effective and efficient by the involved individuals and management. Although some interviews showed that businesses experience the uncertainty that the outputs do not match their expectation, most have implemented the outputs as planned from the beginning. This also indicates that organisational uptake is faster in businesses that usually aim at integrating

knowledge, outputs and new formats, as long as they are deemed to be useful, that ultimately improve their innovation capacity. However, in many interviews with **HEI beneficiaries**, we find that the embedding of courses and modules into the curricula of HEIs is rather difficult and oftentimes *'a task for the long-term.'* Project results and the decision whether or not they are used often remain at the individual level, usually the involved HE staff/department.

Figure 47. Ensuring organisation-wide embedding and awareness, respondents from completed projects only (N=34)



Note: This question was only posed to respondents who indicated that their project was completed. N=34 is the number of respondents, not the number of completed projects, which is significantly lower. A total of 5 coordinators and 29 partners answered this question, representing all 10 (at that time) completed projects.

Source: Survey results, PPMI 2018.

Project outputs are typically highly **relevant for the HEIs' portfolio and follow-up projects**, as evidenced by the fact that respondents indicate that outputs are still being used in some way after the end of the project (94% agree to some or full extent, Q18). But in many cases, as the survey and interviews reveal, although completed KAs already display successes in spreading results widely in their organisations and ensuring organisation-wide take-up and awareness, they also signal that there might exist some **potential for improvement in translating outputs into institutional adoptions at HEI level** even more fully. Particularly since the sample size of completed projects at the time of analysis is rather small, much of future KA impact on change at HEI level will depend on ongoing KAs building on already achieved successes in organisational uptake and increasing them. Given the innovative and relevant outputs produced by KAs as well as the benefits on the immediate consortium, more effective institutional adoption could contribute to KA projects and the action overall to achieve even higher impacts on institutional and HE system levels. Ensuring embedding and awareness of non-involved HE staff is especially important since most KAs develop outputs related to new teaching and training methods that are essential to contributing to modernising HEIs and European HE systems.

Strengths, success factors, and barriers

KAs exhibit high potential to contribute to higher quality and relevance of curricula even beyond the immediate project consortium. This is evidenced by more than four fifths of KA survey respondents indicating that their project has produced evidence for the further development of HE systems, and positive impacts on immediate project participants are high. Furthermore, the KA focus on innovative teaching methods and

approaches as well as innovations in courses and curricula are highly relevant for the development of HE systems. For this reason, improving the long-term embedding of outputs into HEIs as well as increased spreading of innovative teaching methods to non-involved HE staff could contribute to making KAs more significant drivers for change and modernisation of HEs. To this end, building on the strengths of KAs is key, as is paying attention to more general success factors and barriers.

The **strength** of KA projects is their transferable outputs that are usually **well-designed for institutional implementation**. The high transferability of KA projects' outputs also allows for the uptake by other organisations beyond the project consortium. The **transferability/replicability** of these results is regarded by beneficiaries as one of the major characteristics of the project outputs (90% strongly agree or agree; Q 19). Established international and national **networks** of the heterogeneous project partners have been an impactful way to distribute the outputs widely among targeted organisations. Some KAs have developed **innovative formats with multiplier effect** to improve uptake (e.g. through 'train-the-trainer' approaches; KA TACIT). The various competences and expertise of cross-sectoral KA project teams showcased successful and innovative dissemination activities that improved organisational uptake, e.g. the expertise of business partners in communication strategies, use of business networks, ICT capabilities improved largely the presentation of the project output.

Key characteristics of the teaching and learning outputs that largely contribute to translation into impact on organisational level are the facilitation of cross-sectoral and multidisciplinary integration as well as the development of more flexible study programmes.

1. All KAs considered aspects of **multidisciplinary learning and collaboration**. Finding a common language and developing transversal skills are fundamental to achieving this aim. Either KAs explicitly aimed at multidisciplinary settings and skills or as a means to an end, in particular for complex field-specific systemic challenges. An illustrative example is the KA Katch_e that provides teaching and learning material in the field of circular economy. Transversal skills and methods facilitating mutual learning, teamwork, and problem-solving skills are of utmost importance when addressing complex multidisciplinary challenges. The KA SCIENT organised an Entrepreneurship Academy and Business Competition: in which participants pitched their business ideas, in order to receive funding to help them realise their business idea through the creation of their own start-up.

2. All KAs initiated activities or developed outputs that facilitate **cross-sectoral learning and collaboration**, particularly developing and piloting trainings in order to facilitate exchange and work between academia and industry. Finding a common language and developing transversal skills are crucial to achieving this objective. Furthermore, cooperation between universities and business is essential for the design of new learning and teaching approaches by providing insights into required changes in HE. Good practice examples in this respect are: KA SHIP which developed a training course that provides SMEs with the skills necessary to effectively engage with HEI research; KA CASE designed a service-learning framework for students; FoodSTA piloted joint academic/company tutoring and supervision as well as work and training experiences through industrial and university placement.

3. With respect to the role of **increasing course variety**, KAs develop different forms of course designs such as curricula, modules, single trainings. They also test and implement them thereby increasing flexibility of study modes, for instance face-to-face or online courses as well as full-time, part-time or

lifelong learning modes. The development of digital platforms and well-designed training material are enablers for improved transferability and high-quality study sources.

Given the positive impacts of KAs on the immediate project consortium as well as its innovative and relevant outputs, it is worthwhile looking at success factors and barriers to translating outputs into institutional adoption at HEI level. In this regard, the survey and interviews with beneficiaries reveal that projects already achieve institutional adoption to full or some extent. In order to continue and increase the embedding of outputs in HEIs as well as spreading awareness of developed outputs, especially innovative teaching approaches, to non-involved HE staff and leadership, certain overall success factors are important. Most important is more effective involvement of HE leadership. Although the survey suggests that this already happens for the most part, our interviews reveal that HE management might not be involved closely/actively enough. An interview with an evaluator supports the importance of leadership involvement and indicates that sustainability strategies, the co-development of a theory of change (including its monitoring), and **involvement of HE management and rectorship,** at least in the needs analysis, are required in order to ensure their commitment after the project's run-time and to build awareness for the project's topics.

However, there also exist **systemic and organisational barriers** and challenges that might hinder the translation of benefits for the project consortium into positive impacts of novel teaching methods on an organisation's curricula. The following general HEI/HE system-level challenges might apply to KAs, they are, however not specific or limited to KAs:

- In the first place, **rigid university systems** and low flexibility of curricula and ECTS recognition might hinder change on an organisational level in HEIs and are a barrier for successfully embedding new teaching and learning approaches within an organisation's curricula. Some interviewees also mentioned accreditation processes of curricula as barriers. However, some projects (e.g. TACIT) may provide good practices regarding formal accreditation of courses and modules, such as strategically working toward accreditation from the beginning of the project and including accreditation bodies within the consortium to facilitate the process and receive quick feedback that enables course correction.
- Barriers also exist at individual level: the **reluctance of HE staff** beyond the project team to change to the SCL approach for those who have taught (and have been taught) in a conventional teacher-centred manner for a long time – these individuals often stick to traditional approaches. This means therefore that a **change in culture and mindset** of HE toward teaching learning is still needed. For KAs overall, there is evidence to suggest that projects have difficulty to sufficiently reach/involve other teaching staff and rectorship beyond the project consortium in order to affect changes in the mindset toward teaching. However, this is an overarching challenge within HEIs/HE systems that is not specific to KAs. It is rather a structural barrier in HEIs in general, where there are few incentives for other academic staff to be involved – most HE incentive systems are strongly geared toward research, while teaching often takes a second seat.

Sustainability and scaling-up of project outputs

HE project members **usually plan to apply for follow-up funding to further exploit their KA project's outputs**. Many of them plan to apply for the Erasmus+ funding again. Interview partners were either quite experienced in the acquisition of international/EU funding before or, particularly young researchers, have experienced a **steep learning curve during the Erasmus+ application phase**; 29% have already secured additional funding for the use and further development of these innovative outputs after the project will end/ended (including running projects; Q 18).

Generally, another possible source for funding are innovative business models to support continued activities and/or the maintenance of e-learning resources (such as e-learning platforms, collaborative platforms, etc.). Some KA projects provide good examples for such solutions: ECOSTAR (selected as a best practice at the university–business innovation forum) succeeded in implementing a business model in order to innovate and replicate the approach after the grant period. The business and marketing strategy was adopted to make the project attractive for a wider audience which led to a large number of investors, leading to the project being able to run with 100% funding until 2019, one year after the grant.

2.2.9. Mobility activities in Knowledge Alliance projects

Key findings

1. Since mobility activities are an **optional and complementary component** of Knowledge Alliance projects, a relatively smaller share of projects organised learning mobilities.
2. The **number of mobilities** organised in projects **varied widely**, from under 10 to above 100.
3. The beneficiaries were mostly students and HE staff, and, in some cases, business employees.
4. Mobility activities in Knowledge Alliance projects were **complementary activities aligned with the project objectives**.
5. Mobility activities contributed to the projects' objectives by **fostering co-creation, innovation capacity, and cross-sectoral collaboration** (especially KAs with focus on entrepreneurship). They can furthermore **enable multiplier effects** ('train-the-trainer' formats), and **support the development of regional, national, and international networks**.
6. Mobility activities mostly **aimed at impact on an individual level** and thereby contributed to the KA projects' overarching objectives. The activities are usually designed to **build transversal, intercultural, and communication skills** in order to enable multidisciplinary and cross-sectoral collaboration.

According to the Erasmus+ Programme Guide[47], KAs *may* organise learning mobility activities of students, researchers and staff in so far as they support or complement other activities and bring added value in the realisation of the project's objectives. Under KA2 Actions, travel expenses and substance costs are funded (ibid. p 133 f). As mobility activities do not constitute the main activities of a Knowledge Alliance, extending or scaling-up these activities would need to be supported via the KA1 Action of the Erasmus+ programme or other funding instruments.

Accordingly, only a smaller share of the survey respondents claims that the 'Exchange of students, researchers, teaching staff and company staff for a limited period and

[47] Available online: http://ec.europa.eu/programmes/erasmus-plus/sites/erasmusplus2/files/erasmus-plus-programme-guide3_en.pdf, p. 131 (retrieved 2018/10/23).

other mobility activities' were part of their KA project's activities (22%; Q 8). Administrative data provided by EACEA shows that the KAs (of which disclosed figures) on supported numbers of mobility vary largely from 7 (ECOMED) to 117 (CONNECT). Since no systematic data collection at action level has taken place regarding mobility activities, proposals, reports, and in-depth single case studies provide answers on what kind of mobility activities were offered and how they were embedded into the projects for this section.

The mobility activities' objectives, the targeted beneficiaries, and formats used feature a **large variety and some are highly innovative**. The case studies and reports indicate how ability activities contribute/have contributed to the overall project objectives. For **seven prominent activities**, see Box 10 'Examples of mobility activities in the KA funding scheme.' These mobility activities cluster thematically around **the co-creation of knowledge (a), entrepreneurship (b-e), ICT-based support of mobility (f), and international exchange & territorial innovation (g)** and are consequently **in line with KA2 objectives** (HE novel teaching & learning approaches, entrepreneurship, Regional development, and internationalisation).

Box 10. Example of mobility activities used in Knowledge Alliances

a) Facilitate co-creation of knowledge through staff and learner mobility

ECOSTAR facilitates the co-creation of knowledge through staff and learner mobility in the field of Marketing and Economics of Ecosystems and Biodiversity. The KA provides sustainable research–business cooperation opportunities and real benefits for the environment through creating a wide research–enterprise network at EU level, delivering a series of specialised entrepreneurship and innovation trainings, and facilitating the co-creation of knowledge, through staff and learner mobility. For students and staff, ECOSTAR's main outcomes are related to the mobility exchanges: Of the four mobility exchanges that have taken place so far, two of these could be said to have outcomes in terms of skills, competence and employability. One of the partners held an innovation workshop for the students in Manchester, after which the students could identify opportunities for future ideas. Indeed, by the end of the workshop, some students had business ideas ready to present to ECOSTAR. CASCADE/RICARDO held an entrepreneurship workshop, where students (PhDs) learned about the characteristics of an entrepreneur and were shown a case study. Introducing skills and competencies in business development ––concepts and opportunities – and solidifying them in the future phases of the project, are sure to benefit the employability of those same students/staff.

b) Entrepreneurship Academy and Business Competition

The KA SCIENT organised a two-day Entrepreneurship Academy followed by a day dedicated to practising their pitching and finally presenting their business ideas during the Business Idea Competition event. All partner organisations gave them the opportunity to obtain funding in order to realise their business idea with their own start-up. According to a student beneficiary, the mobility experience contributed to his capacity to communicate with the enterprise world in order to create his own company or to translate research work into products.

c) Transnational internship to stimulate entrepreneurship and innovation capacity among students

The SCIENT transnational mobility programme for internship purposes was implemented giving participants the opportunity to meet, share, and exchange ideas and knowledge. In so doing, the project aims to strengthen cross-border cooperation and promote excellence in (entrepreneurial) skills development. Mobility also supports innovation capacities by facilitating the exchange, flow and co-creation of knowledge.

d) Summer school on innovation & entrepreneurship methods for MA/PhD students; 'train-the-trainer' approach

The KA TACIT organised a one-week summer school course where MA/PhD students worked

on solving a 'real-life' challenge/problem by applying 8 innovative approaches to teaching innovation management and corresponding teaching material developed by the KA. The focus was on the use of problem-based learning and student-centred learning: students used TACIT methods to solve a real-life problem/challenges. the project activities followed a train-the-trainers approach, i.e. co-developing material and training staff from companies that are responsible for internal innovation and entrepreneurship coaching.

e) Demonstrate stimulation of entrepreneurial work through the interplay between teaching and mobility

The KA ENDuRE organised personnel mobility for three start-ups. In total, 44 students and 67 people from start-ups participated in three summer school projects. This cost was around EUR 6 000 per participant. The project included three stages, preparation, education & training, and strategic field support. In order to reach a wider audience and to select the best projects available, the partners sent calls for applications over social networks and also did some 'scouting activities' by scanning patent databases, university spin-off and start-up databases, etc. for potential applicants. Three entrepreneurs were selected from the participants of the education & training programme to take part in the mobility part of ENDuRE, which included mentoring and a stay of 30 to 60 days as a guest of one of the three enterprise partners. This extensive support implies that the number of people that benefited from the project is rather small. The small numbers, however, should not be taken as a sign for low relevance of the project: The project deals with a critical phase in the development of new firms, and the small number of participants also means that teaching contents could be tailored to the needs of the participants. Moreover, coaching and hosting is a resource-consuming activity that cannot involve a large number of people.

f) Improved education and training and a mobility database

The KA FoodSTA improved education and training at HEIs mainly through mobility activities such as internship placements. A mobility database and coordination of internships/student exchange/staff exchange at European level was established providing data for internships, short-term scientific missions, job opportunities, etc. However, mobility activities were mainly borne by HEIs themselves, not through KA funding.

g) Establishment and implementation of territorial innovation alliances by 'champions'

Mobility activities in the KA SHIP contributed to the establishment and implementation of territorial innovation alliances by 'champions' who obtain the role of experts or ambassadors in their region. They focused on spreading awareness of territorial innovation alliances and exchange of best practices on how to set up and implement such alliances successfully. An EU territorial innovation alliance (TIA) launch event in Paris in 2015 for prospective TIA coordinators and key HEI, central and local government, private sector and NGO stakeholders from each of the partner regions was organised. Those involved in mobility are to become 'champions' for the TIA methodology in their respective regions.

Source: KA project case studies.

The examples of mobility activities show that mobility activities are usually a **complementary activity aligned with the project objectives.** Mobility activities contribute to the projects' objectives by fostering co-creation, innovation capacity, and cross-sectoral collaboration (especially KAs with a focus on entrepreneurship). They can furthermore enable **multiplier effects** ('train-the-trainer' formats), and support the development of regional, national, and international **networks**. They also strengthen **innovation capacities** at organisational level. Due to the success of some activities, follow-up projects exist (e.g. Summer School; KA TACIT). The overarching aim of the mobility activities is to accelerate **technology and/or innovation transfer** and find holistic solutions for pressing challenges at system level.

Mobility activities **mostly aim at impact on an individual level** and thereby contribute to the KA project's overarching objectives. The beneficiaries are mostly students and HE staff and, in some cases, businesses. The activities are usually

designed to build **transversal, intercultural, and communication skills** in order to enable multidisciplinary and cross-sectoral collaboration. The case studies reveal that academics in particular learn during cross-sectoral mobility activities about industry needs, practical knowledge and processes in companies when moving out of the "ivory tower."

Limitations regarding the funding of mobility activities were pointed out by some interview partners. Although mobility is an optional activity of KA2 Actions, for some projects, mobility was an important complementary activity. Occasionally, some interview partners mentioned that mobility activities were funded by the organisations themselves, which proved to be a challenge for the project. In at least one case, the participants also found the organisation of the mobility part challenging due to limitations from the project administration concerning the length of stay and the usage of funds.

In conclusion, the mobility activities' objectives, the targeted beneficiaries, and formats used feature a large variety and some are highly innovative. The examples of mobility activities show that mobility activities are usually a complementary activity aligned with the project objectives by fostering co-creation, innovation capacity, and cross-sectoral collaboration primarily at individual level. Mobility activities cluster thematically around the co-creation of knowledge, entrepreneurship, ICT-based support of mobility, and international exchange & territorial innovation – and are consequently in line with KA2 objectives.

Complementarities, synergies and gaps at organisational level

The comparison of findings presented in sub-sections 2.2.1 and 2.2.5 shows that institutional strategies played an important role in the motivation of participating organisations to participate in both types of transnational cooperation projects of the Erasmus+ programme: the qualitative and quantitative evidence confirms that in both cases **activities planned in the HE SP and KA projects corresponded to the strategic priorities and objectives of organisations identified in their institutional strategies**. A more in-depth analysis of the key motives of participating organisations showed that in **both cases beneficiaries had similar motives to get involved**: in both cases organisations had prior strategic objectives of improving their international visibility/reputation through networking and cooperation with partners from other countries and sectors. Furthermore, in both cases higher education institutions saw these transnational cooperation projects as a tool to improve the educational offer to their students by better aligning it to the changing technological and market environment. In addition, consortia applying for both HE SPs and KAs were often an extension and a continuation of the already existing/previous cooperation between organisations working in the same field and having similar interests.

The analysis of business involvement across HE SP and KA projects showed that **private companies were much more widely involved in KAs**: according to the survey results, 90% of respondents in the survey of KA participating organisations indicated that business enterprises were engaged in their projects as partners, compared to just 31% in HE SP projects. Although business partners were significantly less prevalent in HE SPs, study evidence confirmed that **both HE SPs and KAs resulted in significant intersectoral knowledge transfer between participating organisations**. Whereas KAs created a framework for knowledge exchange mainly between HEIs and private enterprises, the network analysis of HE SPs showed that here the most intensive cooperation and knowledge transfer was *between* higher education institutions, which were the single most central actors in HE SPs, together with a variety of different stakeholders, such as non-governmental organisations,

local/regional governments, research centres, schools, cultural organisations and private companies. In this regard HE SPs and KAs complemented each other: whereas the latter created a framework for innovation transfer between higher education and businesses, the former contributed to improvement and modernisation of the higher education offer by involving a larger variety of stakeholders from different sectors.

At the same time, the comparative analysis also revealed a **potential source for synergies between KAs and SPs in the area of business-academia cooperation and entrepreneurship education**. Despite lower involvement of the business sector in HE SPs, study findings indicate that in these cases where businesses were involved in HE SPs, it contributed significantly to aligning the education programmes to market needs, improving the employability potential of students, and the development of their entrepreneurial skills. Moreover, as was demonstrated in the thematic case study "Entrepreneurial learning and entrepreneurship education in Erasmus+ HE Strategic Partnerships," despite the lack of explicit focus on the business sector in HE SPs, the action nevertheless significantly contributed to entrepreneurship education, bringing education closer to labour market needs and employability of students. According to the survey results, many of the HE SP projects resulted in the establishment of new businesses: around 30% of respondents indicated that their organisation's participation in a HE SP project, at least to some extent, contributed to spin-offs/start-ups being established (around 9% indicating that this happened to a large extent). **This evidence suggests that additional instruments of communication/links between KAs and SPs (those that involve the business sector and focus on entrepreneurship education/employability/bringing education closer to the labour market) could create significant synergies between projects in this area.**

The comparative analysis of project outputs produced by KAs and SPs revealed **that both actions result in very similar types of outputs**, the most popular of which usually included learning/teaching material, methods and approaches, courses/curricula, studies/analyses, methodologies/guidelines, online courses, joint curricula/joint study programmes. Similarly, the study found that the outputs resulting from both actions were relevant to the achievement of projects' objectives and broader goals of the Erasmus+ Key Action 2. More specifically, outputs in both actions addressed themes such as providing attractive education and training programmes, using ICT-based methodologies, promoting cultural diversity and dealing with differences in learning outcomes and supporting recognition and accreditation.

According to the study findings, the outputs produced by both actions are usually highly transferrable across the project teams, while most of the outputs also include specific measures for their dissemination and uptake beyond the project consortium. This evidence suggests that **there is a high potential for synergies between both actions, especially if an effective framework for exchange of the knowledge/outputs between beneficiaries of both actions is developed**.

Finally, the comparative analysis of mobility activities under both actions showed that generally mobility was much more prevalent among HE SPs compared to KAs. At the same time, in both cases the beneficiaries of these mobility activities in both actions were most often students, whereas the most prevalent ways of including mobility into the projects were joint short-term trainings and blended mobility facilitated by various ICT tools.

2.3. Findings on individual level impacts

Key findings

1. Strategic Partnerships contributed strongly to the **improvement of skills and competences** of students and teaching staff involved in project activities.
2. Students involved in learning, teaching and training (LTT) activities enhanced their **transversal skills**, such as creativity, teamwork or digital skills. Depending on the project design and thematic focus, it also led to **improvement of cross-sectoral and sector-specific or occupation-specific skills and competences**.
3. The nature of LTT activities provided both students and teaching staff in universities with opportunities to improve their **social, civic and intercultural competences** and facilitated **collaboration** outside the frame of the Strategic Partnership project.
4. **Learning outcomes of mobility experience** in Strategic Partnerships were recognised for students and teaching staff, yet formal recognition in the case of teaching staff was rather rare.
5. The teaching staff advanced their **pedagogical skills and competences** through increased awareness on the application of the innovative blended mobility format, through learning about new and innovative ICT-facilitated teaching methods, through exposure to the benefits of working in international teams and collaboration with business, etc.

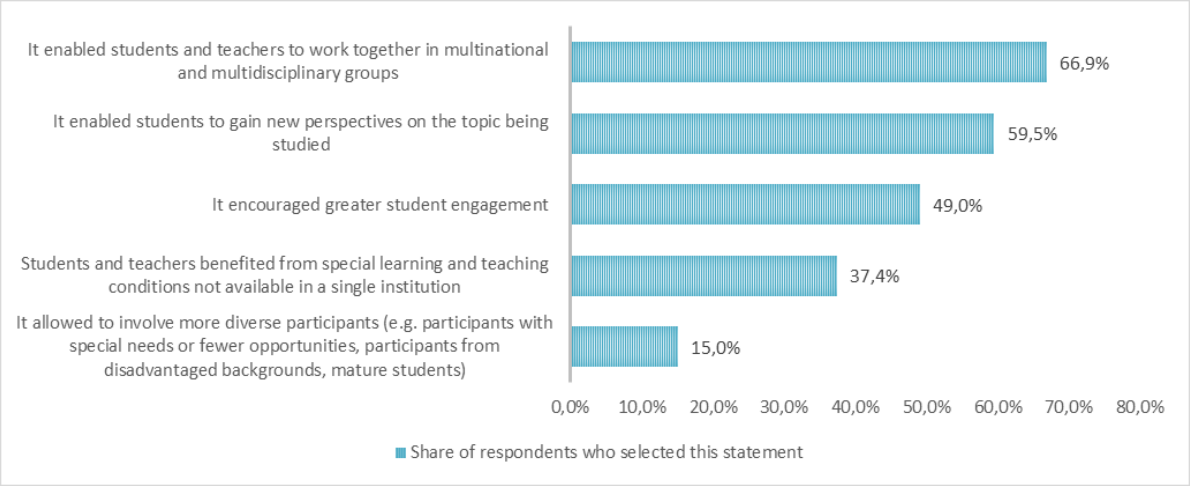
2.3.1. Impact on students involved in Strategic Partnership projects

By definition, HE SPs are primarily geared towards and focus on the development of innovative outputs and/or dissemination and exploitation activities of existing and newly produced products or innovative ideas. However, learning, teaching and training (LTT) activities incorporated in the overall project design of HE SPs create unique opportunities for both students and teaching staff in participating organisations to acquire and improve their skills and competences.

As shown in Figure 48, one the greatest benefits of participation in LTT activities for students was the opportunity to work together with their teachers in a multinational and multidisciplinary setting (answer option selected by 67% of respondents in the survey of participating organisations). It, in particular the **internationalisation aspect of mobility experience** gained in HE SP projects, was also emphasised by individual beneficiaries during interviews carried out for case studies: working in a multinational environment and staying in a foreign country exposed individual beneficiaries to different teaching practices, allowed them to experience and appreciate social diversity by interacting with other students from different backgrounds and contributed to the development of their intercultural competences and attitudes. Such impacts were said to materialise in the *NPAP*[48] project, where two summer schools in Lund were organised for European students and their counterparts from third countries. Together they had to collectively solve problems and had study visits to the MAX IV Laboratory and the European Spallation Source. Similarly, students – prospective teachers – benefited from participation in a summer school organised as part of the *IncluSME* project, which allowed discussion of intercultural diversity in the classroom in an intercultural setting[49]. Overall, 82% of participating organisations and 74% of the National Agencies agreed that participation in HE SPs contributed to development of **social, civic and intercultural competences** of students (see Figure 49).

[48] *Nordic Particle Accelerator Project,* https://npap.eu/.
[49] *IncluSME* project.

Figure 48. Benefits of participation in learning, teaching and training activities – impact of participation in Higher Education Strategic Partnerships on students



Source: Survey of HE SP participating organisations.

Based on the case study analysis, students involved in mobility activities of HE SP projects most often **improved their transversal knowledge, skills and competences**, such as critical thinking and problem-solving skills, teamwork skills (teamwork was prevalent for students in the form of their everyday project activities, such as group presentations and participation in multiplier events); they learned about ways to cultivate creative 'out-of-the-box' ideas, etc. In addition, they significantly expanded their network and **increased chances of future collaborations**. For example, summer school attendees in the *VIPSKILLS*[50] project were later invited to participate in common research activities and solve practical problems with their teachers. Participants of the *Urban Green Train* also stressed the benefits of networks established throughout the course of their project's implementation: some of them continue their collaboration with the University of Bologna in the format of new projects, while one student is now actively working with the project's private sector partner in the development of a greenhouse in The Netherlands.

Figure 49. Impacts of HE SP projects at individual level, as perceived by participating organisations, the National Agencies (NAs) and National Authorities (NAUs)

Source: Survey of HE SP participating organisations. Answers to the survey question 'Overall, do you agree or disagree that your project contributes to addressing the following challenges?'. Surveys of the National Agencies and National Authorities. Answers to the survey question 'In your opinion, have the Higher Education Strategic Partnership projects, which were awarded under 2014, 2015 and 2016 calls, helped to overcome the following challenges that Erasmus+ programme aims to address?'.

[50] Virtual and intensive course developing practical skills of future engineers, http://www.vipskills.pb.edu.pl/.

In addition to improved 'soft skills,' students in some projects also gained exclusive access to experimental devices[51] or tools used by career professionals (e.g. to computer-assisted translation tools[52]), which enabled **improvement of cross-sectoral and sector-specific or occupation-specific skills and competences**. These qualitative insights are interlinked with findings of the survey (see Figure 48), according to which students with mobility experience in HE SPs gained new perspectives on the topic studied by these projects (selected by 60% of respondents) and were given access to specific learning and teaching conditions typically unavailable in their home institution (37%).

The study also found that as a result of the experience gained in HE SP projects, students improved their **employability prospects** and abilities to perform in high-skill occupations. According to interviewees engaged for the case studies, mobility experience gained by students in HE SPs was highly relevant in that regard. It helped with transition to the labour market as a result of practical training opportunities offered to students, and acquisition of transferable, interdisciplinary skills and competences. For instance, the *eTransFair* project, whose main goal was to increase the competitiveness of HEIs offering specialised translator training, identified a skillset – for specialised translators and prepared recommendations on teaching modules to be introduced in the university curriculum to meet the changing requirements of the translation market[53]. Likewise, project *APInno* set up a pilot course on innovation management. Students of this course were tasked to create an innovation management strategy for the Sofia municipality region in Bulgaria. The ideas generated by students were later applied by businesses in Sofia, thus facilitating employability-based learning[54]. Furthermore, based on information provided by interviewees and available from project summaries and reports, HE SPs actively used the method of flipped classrooms, where students could go on a field visit to an enterprise, participate in classroom-to-workplace activities and meet established professionals in person. On-site experience, such as job-shadowing[55], helped to make the learning material more engaging, helped to illustrate how theory can be applied in practice. HE SPs also aimed to combine academic and professional experience by organising student placements in enterprises[56], allowing for deeper internationalisation of even non-mobile, local students. The individual beneficiaries of HE SP mobility activities agreed during their interviews that such experience, and international mobility experience in general, is looked positively upon by employers.

It must be pointed out that the impact on employability prospects of students who benefited from involvement in LTT activities and HE SPs in general could potentially be higher if their learning outcomes were fully and formally recognised (see for example Box 11).

Box 11. Formal recognition: the CHERNE network project example

Project 'Blended Learning in Radiation Protection and Radioecology'(CHERNE network) aimed to increase student employability through a programme that would respond to market needs. The programme included an e-learning platform, internships and focused on certification. The project also aimed to ensure that beneficiaries' activities would be recognised by the National Authorities of the partner institutions. The methods included certifications (Europass Certificate Supplement for professionals, Europass Certificate Supplement and ECTS for

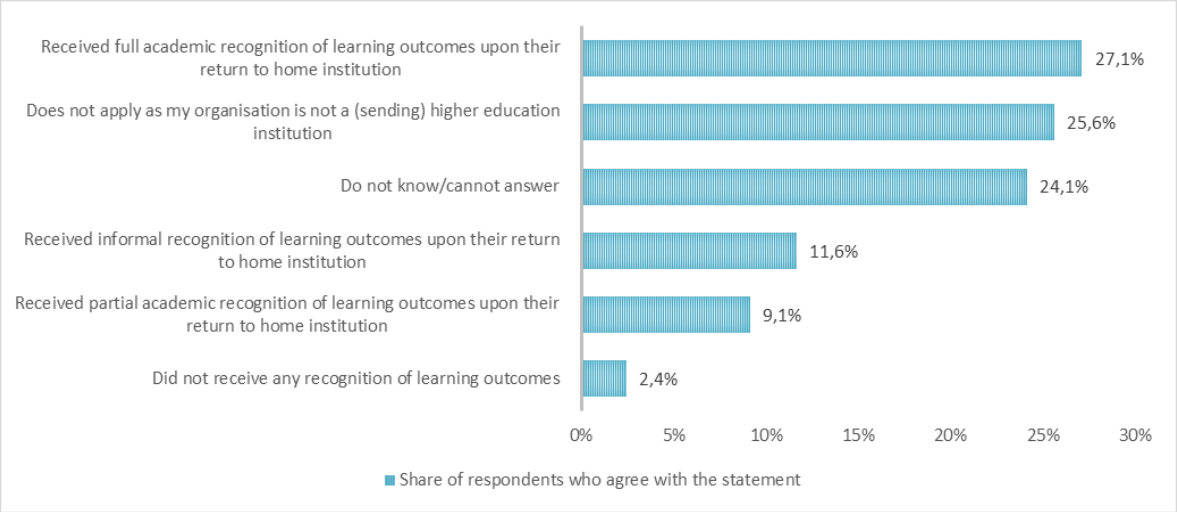
[51] *CHERNE* project.
[52] *eTransFair* project.
[53] eTransFair case study report.
[54] APInno case study report.
[55] Social Entrepreneurship For Local Change, http://www.localchange.eu/.
[56] *#EuropeHome*, http://europehome-project.eu/.

students) in the radiation protection.

Source: Case studies on the CHERNE network projects.

As it stands, 72% of relevant participating organisations confirmed that learning outcomes of students engaged in mobility activities are **fully or partially recognised** (see Figure 50 for more details). According to the interviewees, ECTS credits do not always guarantee full validation of learning outcomes. Although e-learning and mobility training modules are incorporated into official study programmes, depending on internal requirements of students' home universities, ECTS credits from LTT activities can sometimes be left out of the official graduation diplomas. Altogether 23% of respondents in the survey of relevant participating organisations indicated that students received **informal recognition** for their participation. This, for instance, happened in the *ICT Entrepreneur* project, where students received certificates recognising their participation in an entrepreneurial 'pre-accelerator' programme'[57].

Figure 50. Recognition of learning outcomes – students



Source: Survey of participating organisations, PPMI, 2018.

In conclusion, although actual benefits on individuals involved in HE SP projects inevitably vary case by case and depend on a multitude of extrinsic (e.g. project objectives, the combination of LTT activities implemented, level of individual beneficiary's involvement in project activities, etc.) and intrinsic factors (e.g. attitude and goals of the individual beneficiary), the **overall scale of HE SPs' impact at individual level was substantial**. Based on the administrative data about HE SPs awarded in 2014-2016, as many as 17 873 students and staff were involved in intensive study programmes, 5 583 students took part in blended mobility activities and 3 894 teaching staff benefited from participation in short-term joint staff training events[58].

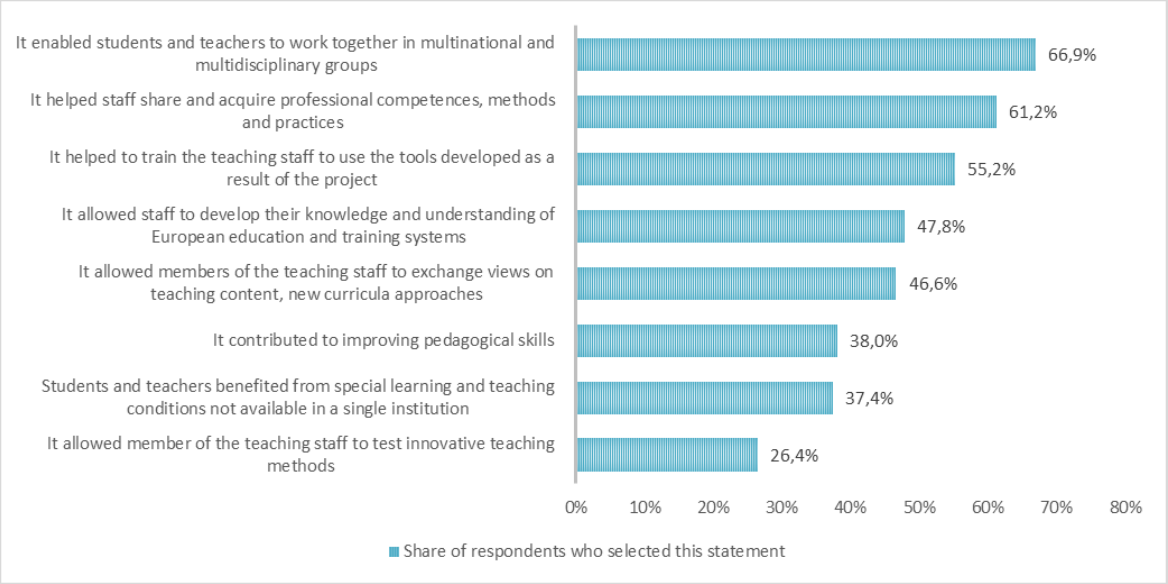
2.3.2. Impact on teaching staff involved in Strategic Partnership projects

The study found that involvement in LTT activities and activities of HE SP projects in general had a profound impact on revision and reinforcement of the teaching staff profiles. As should be expected from a transnational cooperation project involving

[57] ICT Entrepreneur project.
[58] Information retrieved from the Erasmus+ Dashboard.

international and intersectoral mobility opportunities, the teaching staff updated/improved their knowledge and sharpened their skills while working in international and multidisciplinary teams. Almost 67% respondents in the survey of participating organisations spoke of such opportunities and related impacts (see Figure 51). This finding was further confirmed and elaborated during interviews carried out for case studies, as interviewees emphasised that teaching professionals involved in project activities expanded their networks on an international level, as well as gained new experience or expanded their previous collaboration with private sector partners. The academic staff took part in simulations of a business environment or participated in work-based activities, which allowed them to make contact with other professionals in their field of expertise[59].

Figure 51. Benefits of participation in learning, teaching and training activities – impact of participation in Higher Education Strategic Partnerships on teaching staff



Source: Survey of HE SP participating organisations.

The teaching staff also gained access and were exposed to **well-structured information on innovative pedagogy tools and approaches**. Based on the case study analysis, teachers advanced their pedagogical skills by learning about alternative teaching methods, such as mock mediation sessions[60], and alternative techniques for assessment and feedback, for instance, self- and peer-assessment. Slightly more than 61% of participating organisations claimed their staff improved their professional skills and competences and/or acquired knowledge of new teaching and learning methods. In addition, participation in mobility activities was also instrumental in **training the teaching staff on how to use the tools developed as a result of the project** (55%) and **testing the innovative teaching methods** (26%).

Furthermore, around 37% of surveyed participating organisations pointed out that their teaching staff benefited from special teaching and learning conditions not available in their home institution. Based on the case study analysis, this experience, among other factors was useful for learning first-hand how integration of professional experience into the curricula (e.g. through temporary placements in companies) contributes to academic progress.

[59] eTransFair project.
[60] Mediation project.

By organising and taking part in blended mobility activities, academic staff was able to learn how to integrate information and communications technologies (ICT) into their curriculum (for example, see Box 12). Also, as HE SPs quite often targeted various vulnerable societal groups (such as the disabled, refugees, people of low socioeconomic background, etc.), the teaching staff was also exposed to methods that foster inclusiveness and make education more accessible to all.

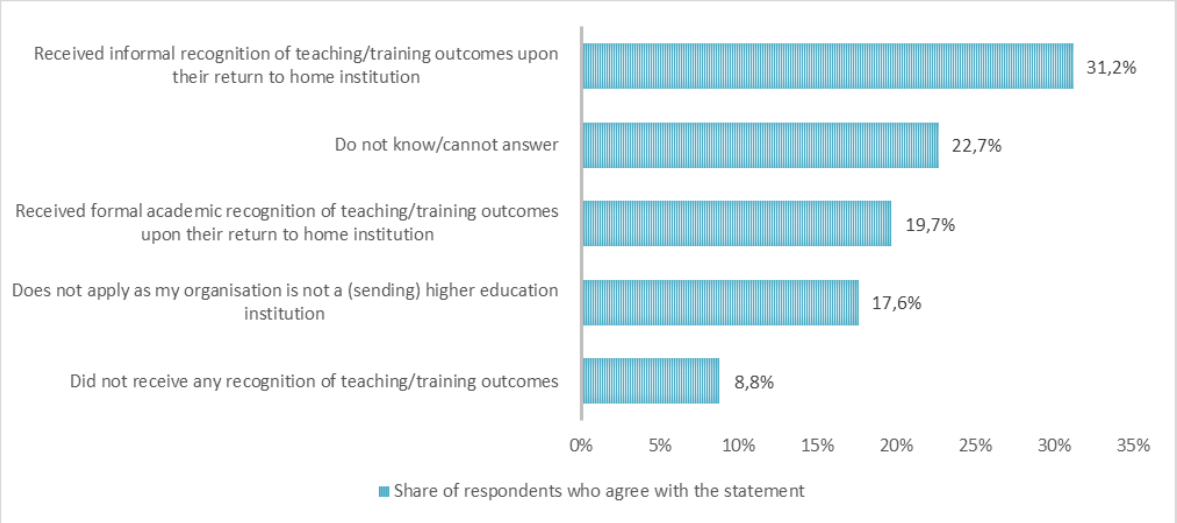
Box 12. Profiles of teaching professionals: the eTransFair project example

Project 'How to Achieve Innovative, Inclusive and Fit-for-Market Specialised Translator Training? A Transferable Model for Training Institutions' (eTransFair) aims to address the modern challenges faced by the higher education translator training institutions, and to help equip graduates with skills that fulfil market demands. During project activities, translation teachers were identified as one of the main target groups on a local level, as they prepare students for a successful transition into the labour market. Project activities included workshops in the form of "train-the-trainer" and 'train-the-trainee,' through which students and teachers were given an opportunity to develop their technological competences, language skills and gain experience in e-learning platforms. The workshops also aimed to introduce teachers to computer-assisted translation (CAT) tools and encourage them to implement 'innovative translator training' methods. According to the interim report of the project, teachers responded positively to new means of teaching and showed willingness to integrate e-modules in their courses.

Source: Case study on the eTransFair project and interim project report.

Based on the available evidence, all these positive outcomes of participation in mobility activities of HE SP projects are valuable not only to individual teachers, but also to their home institutions, who tend to recognise the reinforced profiles of their teaching staff. Around 51% of surveyed participating organisations confirmed this. However, as demonstrated in Figure 52, it was usually limited to informal recognition (as indicated by 52% of survey respondents), which resulted in increased trust, openness to ideas concerning wider application of project results within the organisation, etc.

Figure 52. Recognition of reinforced profiles of teaching staff involved in Higher Education Strategic Partnerships



Source: Survey of participating organisations, PPMI, 2018.

In terms of scale, the impact of participation in LTT activities on teaching staff was substantial. At least 3 894 teaching staff were involved in short-term joint staff

training events and 5 362 teaching staff benefited from participation in intensive study programmes organised in the framework of HE SPs awarded in 2014-2016.

2.3.3. Improving/developing skills and competences in Knowledge Alliances

Key findings

1. Knowledge Alliances have **high impacts on individuals' skills and competences**, including skills needed for better labour market outcomes such as transversal, innovation, and entrepreneurial skills.
2. The focus of Knowledge Alliances on **transversal skills development** is **highly relevant** to rapidly changing economies and labour markets and demonstrate high potential for contributing to better labour market outcomes.
3. This focus on soft and transversal skills and competences is one of the best ways to **facilitate future relevance**.
4. Soft/transversal skills development will make graduates (and staff) more successful on the labour market as well as contribute to their **increased 'resilience'** by equipping them with skills applicable across professions and future domains.
5. **University–business cooperation** is the main advantage of KA projects and the overall KA action as it promotes the **identification of skills and competences** actually **in demand** by the labour market and supports the identification of **skills gaps and mismatches**.
6. University–business cooperation within KAs also allows for HEI-business **joint development and delivery of trainings**, oftentimes in both sectors, to ensure that students, HE staff, and company employees are addressed. Cross-sectoral cooperation in KAs promotes the implementation of **real-life problem-based learning approaches** that allow for **practical experience** and development of key transversal skills such as critical thinking, cognitive flexibility, teamwork, etc.
7. Effective cross-sector collaboration increases the quality of project outputs. At the same time, the quality (including relevance of project outputs for industry needs) is also a key success factor for cooperation.

The 'New Skills Agenda for Europe' (2016)[61] highlights the need for strengthening skills to enhance human capital, employability and competitiveness. Skills and competences are seen as the pathway to employability and prosperity and will determine competitiveness and the capacity to drive innovation in the fast-changing global economy.

Typically, policymakers and employers distinguish between 'hard' and 'soft' skills, however, within the literature there is no globally accepted skills taxonomy. For the purposes of this study, the following general definitions can be made[62]:

- **Hard skills** are most often job specific, closely connected with knowledge, easily observed, measured and trained. Typically, they constitute the core occupational requirements of a job, e.g. ability to use a certain programming language to perform certain tasks.
- **Soft skills**, also called **transversal skills**[63], are non-job specific, and relate to personal competences (e.g. confidence, discipline, self-management), social competences (e.g. teamwork, communication, emotional intelligence) and other attitudes and behaviours which lead to the achievement of results in the workplace,

[61] COM(2016) 381 final.
[62] See Cedefop Skills Panorama http://euskillspanorama.cedefop.europa.eu/Glossary.
[63] For synonymous use of 'transversal skills' for 'soft skills' see European Skills, Competencies and Occupations Taxonomy (ESCO).

e.g. leadership, problem-solving, critical thinking, etc. These soft or transversal skills all include a certain level of intangibility which makes them more difficult to quantify and develop.

Knowledge Alliance partnerships could be a way to effectively **tackle skills gaps and mismatches** by ensuring that higher education institutions equip graduates with the skills deemed relevant and up-to-date by prospective employers and the labour market. The role of Knowledge Alliances in the identification and development of new skills and competences lies in its **structured university–business cooperation** opportunities. In theory, through participation of universities and businesses in a project, intersectoral cooperation should contribute to ensuring the relevance of skills and competences targeted.

Knowledge Alliances aim, *inter alia*, to offer higher education institutions the opportunity to better tailor education offerings to the skills and competences demanded by industry partners through joint development activities. According to the Erasmus+ programme guide, KAs are supposed to contribute to the development of skills and competences of students, academic staff, and/or industry staff, whereby there are no limitations set regarding the types of skills and competence nor the approaches to be used to develop and promote them.

Skills and employability

Experts and researchers have pointed out that the transversal skills are increasingly important for the future in rapidly transforming economies and labour markets[64]. There is broad agreement that social skills will be in higher demand than narrow technical skills such as programming or equipment operation and control[65]. Therefore, while technical skills will remain important, it is vital to build upon and supplement this foundation with social, creative, and collaboration capabilities. The World Economic Forum[66] identified the top 10 skills that are to be of increasing value to future workplaces. All 10 can be categorised as transversal and include problem solving, critical thinking, coordinating with others, creativity, cognitive flexibility, etc. We find that Knowledge Alliances have been very successful in developing such key skills of students, HE staff and company employees, as elaborated in the following sections. Due to this focus on soft and transversal skills, KA project activities demonstrate successes (and in cases of ongoing projects, high potential) to i) contribute to making graduates (and staff) more successful on the labour market; and ii) contribute to increased 'resilience' of graduates (and staff) by equipping them with skills that are applicable across all professions and thus ensuring relevance for future domains. This **focus on soft and transversal skills** and competences is one of the best ways to facilitate future relevance, since we do not yet know which professions will emerge in the future and aligns with research on skills needed for better (future) labour market outcomes.

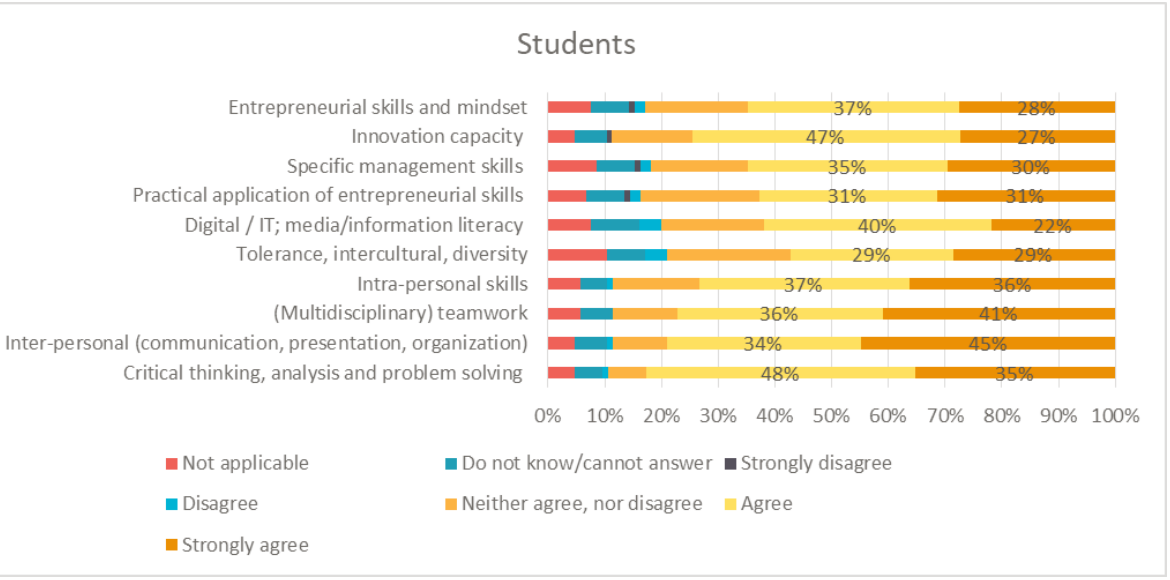
Students

For students, the focus of KAs is definitely on students' transversal skills: The improvement of **critical thinking**, **analysis and problem-solving skills** (83% strongly agree or agree), **interpersonal skills** such as communication and presentation (79% strongly agree or agree), the ability to **work collaboratively** in multidisciplinary teams and settings (77% strongly agree or agree), **innovation**

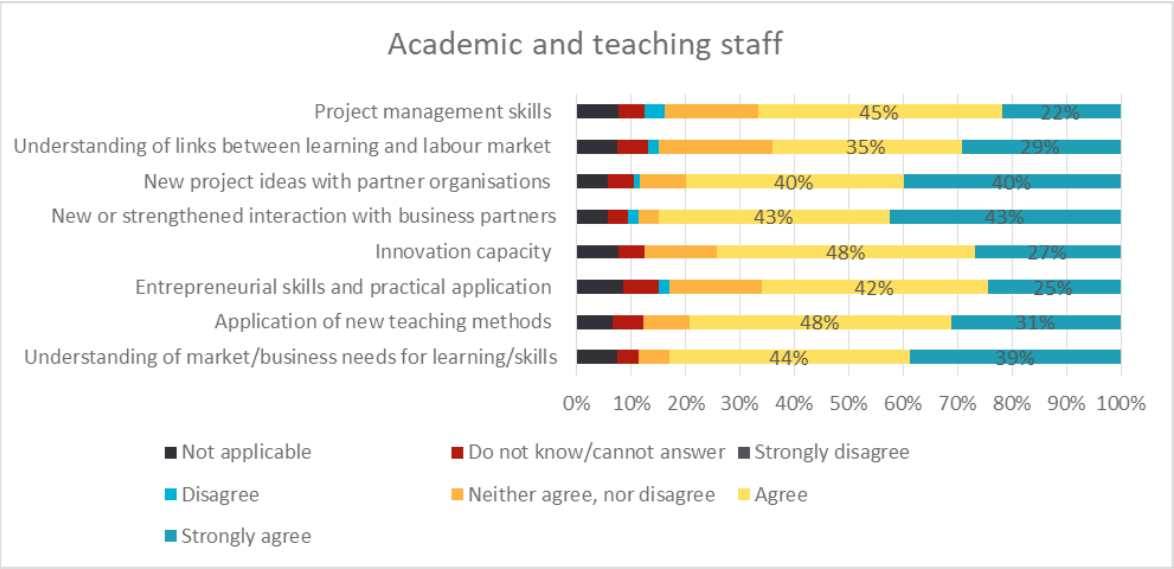
[64] See for example Deming, David J. (2017): 'The Growing Importance of Social Skills in the Labor Market.' NBER Working Paper 21473.
[65] See for example PwC '10 skills for future employment' https://www.pwc.com.au/careers/blog/future-employment.html.
[66] See World Economic Forum, 'The Future of Jobs' http://www3.weforum.org/docs/WEF_Future_of_Jobs.pdf.

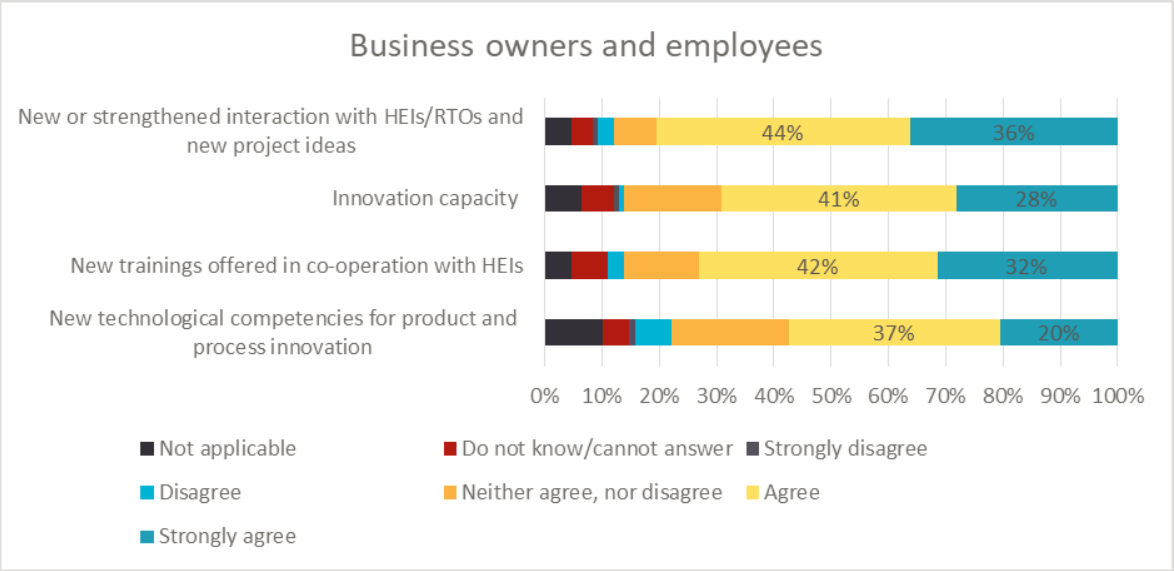
capacity (75% strongly agree or agree), and **intrapersonal skills** such as self-discipline, motivation and perseverance (73% strongly agree or agree) are the most cited intended impacts for students. Hard skills are also included; however, their improvement tends to find less agreement among KA participants: **Specific management skills** such as marketing, business plan development, and strategic planning (65% strongly agree or agree), the **practical application** of entrepreneurship skills (63% strongly agree or agree), and digital and IT skills and literacy (62% strongly agree or agree). There is least agreement for the improvement of the specific skills and values associated with tolerance, openness, respect for diversity and intercultural understanding (57% strongly agree or agree). However, given that the promotion of European values in accordance with Article 2 of the Treaty on the European Union[67], is not an explicit or primary requirement of the KA instrument, this result is not surprising. On the topic of innovation skills and entrepreneurial skills it is interesting to note here that **innovation** (75%) is slightly more common than **entrepreneurial skills** and mindset (65%) as well as their practical application (63%). This slight difference could be caused by the fact that there is no clear differentiation between 'entrepreneurship' and 'innovation' skills among KA participants (see also p.121) as well as a narrow understanding of what constitute entrepreneurship skills. Furthermore, several transversal skills key to the group of entrepreneurial and innovation skills are separate answer categories in the survey, contributing to the response pattern.

Figure 53. Improvement of skills and competences (N=129)



[67] These values include the respect for human dignity, freedom, democracy, equality, the rule of law and respect for human rights, including the rights of persons belonging to minorities. These values are common to the Member States in a society in which pluralism, non-discrimination, tolerance, justice, solidarity and equality between women and men prevail.





Source: Survey results, PPMI 2018.

Academic and business staff

The findings for academic and teaching staff reflect those for students to some extent (see

Figure 53). **Transversal skills** such as improvement of (the capability for) **intersectoral cooperation** on a personal level (85% strongly agree or agree), **understanding and identification of business/market and learning needs** (83% strongly agree or agree), **new project ideas** with partner organisations (80% strongly agree or agree) found most agreement. The hard skill that is most common is the improved ability to **apply new teaching methods** (79% strongly agree or agree), whereas others such as **project management skills** (67% strongly agree or agree) rank lower. Similar to the findings for students, increased **innovation capacities** of HE and teaching staff (74%) is more frequently cited than **entrepreneurial skills** and their practical application (66%). This survey finding

reflects the fact that entrepreneurial skills are typically only emphasised in projects whose objective relates to entrepreneurship more broadly.

For participating and beneficiary business owners and employees, the most important contribution of KAs is, matching the finding for academics, the increased (capability for) **intersectoral collaboration** on personal levels (81% strongly agree or agree), including the generation of new project ideas. The improvement of hard skills, specifically improving **new technological competences**, finds least agreement (57% strongly agree or agree) which mirrors overall results for students and academics. Similarly, the improvement of **innovation capacities** finds relatively less agreement (69%) than other transversal skills.

Perhaps unsurprisingly, the **key skill improvement among HE and business staff** is the **personal capability for intersectoral cooperation**. Although this is usually seen as a transversal skill, it is one that is becoming increasingly important for HE and company staff in many industries and occupations. Virtually all interviewees as well as participants at the cluster meeting found the different rationales of HEIs and businesses, particularly with respect to time horizons and ways of working, to be one of the key challenges a project faces. The flip-side, enhancing the ability to work together despite these differences is regarded as the **key benefit of project participation**. In the course of working together, most find approaches to align with each other, increase mutual understanding, and adjust to realities of the other sector. '*One of the key benefits (of the project) is the improved collaboration between HE staff and company staff that contribute to closing the gap in language and mindset between academia and industry.'* Finding a common language and appropriate rhythm/tempo of work for all partners is a key success factor in this regard, as well as quickly establishing trust within the consortium. The increased capabilities of individuals for intersectoral cooperation is a positive sign and **aligns with the overarching rationale of the KA instrument**: Giving HE and business staff the opportunity to find common ground and mutually acceptable ways of working together in order to reach specific goals contributes to the overall goal of promoting university–business cooperation.

In conclusion, we find that there is a stronger focus on soft, or transversal, skills, while hard skills are included, but to an overall lesser extent. For HE and company staff, the improvement of skills for intersectoral cooperation should be highlighted as one of the major individual impacts, and signals that at least on the individual level, there is higher capability to engage in intersectoral cooperation in the future.

Analysis of response patterns

The analysis of response patterns reveals that some can be attributed to the **overarching rationale of the KA action** but also to **different thematic focuses** of the distinct projects, the **project status**, and the respondents' **organisational background**. The comparison of the results **by organisation type**, i.e. the respondent's affiliation with a HEI or business (due to the low number of cases in other categories), indicates that respondents affiliated with HEIs show higher approval rates for the impact on *students'* inter- and intrapersonal, entrepreneurial and management skills as well as the ability to work collaboratively. Furthermore, the respondents affiliated with HEIs are much more positive regarding the impact on the *teaching staff's* increased intersectoral collaboration and, together with the business employees, their joint innovation capacity[68]. This contrast effect stems from 1)

[68] cf. Q 22 'New project ideas with partner organisations', 'Reinforced/increased innovation capacity', 'New or strengthened interaction with partners from business enterprises on a personal level', 'Better understanding of interconnections between formal, non-formal education', 'vocational training, other forms of learning' and labour market respectively'

academics typically finding these practical aspects and novel learning/teaching methods more remarkable than business employees since it is precisely the collaboration in KAs that allows HE staff and students to gain hands-on experience, and 2) HE staff being in a better position to judge not only their own skill increases but also those of their students and graduates. We also see that respondents whose **projects have already finished** are more likely to perceive themselves as having contributed to improved skills. This can be partially explained through mutual learning effects between HEIs and businesses and other partners during the course of the project. All interviewees point to the project having been (or being) extremely valuable opportunities to learn from each other – 2) those participants already 'seeing' their outcomes since sufficient time has passed to allow effects from project activities to materialise; and 3) time for reflection on a project's successes (and challenges) after the project has ended and/or through the final reporting phases. Furthermore, in interviews with project partners and coordinators, interviewees with ongoing projects tended to be a little more conservative and cautious in their estimation of the project's effects. This factor could also have contributed to the response patterns emerging from the analysis of project status.

The overall survey findings suggest that the majority of KA work on **improving soft and transversal skills** for their participants and beneficiaries (across all three groups), whereas hard skills (across all types, from technological and digital to occupation-specific) tend to be addressed to a lesser degree overall. This result is unsurprising since **hard skills** are most often specific to a certain sector/occupation/academic field, thus they strongly **depend on the topic, focus, scope, and orientation of the KA**. Furthermore, ICT and other digital applications are usually only used as 'enablers' or tools to reach certain other objectives, only rarely is ICT innovation a goal in itself. Findings from interviews and desk research confirm this result – some KAs work non-industry specifically on cross-cutting issues (SHIP on building regional HEI-business cooperation networks or SCIENT working on developing the entrepreneurial skills and mindsets of STEM PhD students) where the focus is naturally more on soft and transversal skills. In contrast, a number of KAs' work can be categorised as belonging to a certain industry or sector. For those projects, the improvement of hard skills is very much in line with the scope and focus of the project. The types of hard skills addressed is thus very diverse across projects: For example, KAs develop trainings for company and academic employees on tools and applications of modelling for food safety (EUFood-STA); training in soil and water bioengineering restoration techniques (ECOMED); a Master programme in Metal Additive Manufacturing (ADMIRE); and increasing digital literacy of students and managers (LEAD3.0). That is not to say that such projects only (aim to) contributed to hard skills, indeed, it is the case that key transversal skills such as teamwork, innovation, critical thinking, and problem solving are included in projects' core objectives and achievements.

The survey also revealed a perhaps slightly puzzling finding: **entrepreneurial skills and mindsets** are among the skills and competences less targeted than other skills such as critical thinking or teamwork. This is most likely largely due to a narrower understanding of entrepreneurship skills among survey respondents compared to the comprehensive definition included in documents such as the Entrepreneurship Competence Framework. The Entrepreneurship Competence Framework (JRC, 2016) provides a comprehensive definition categorised into 3 competence areas encompassing 15 competences. These 15 competences are: Spotting opportunities; creativity; vision; valuing ideas; ethical and sustainable thinking; self-awareness and self-efficacy; motivation and perseverance; mobilising resources; financial and economic literacy; mobilising others; taking the initiative; planning and management; coping with uncertainty, ambiguity and risk; working with others; learning through experience. Furthermore, our research indicates that the different scopes and thematic

orientation of KA projects themselves could also contribute to survey answer patterns. While our findings demonstrate that soft and transversal skills can and are improved through activities of almost all projects, the improvement of entrepreneurship skills and entrepreneurial mindsets rests largely on whether fostering entrepreneurship is among a **project's overarching objectives**. From desk research we can conclude that roughly **one third to half of all funded projects** in the years 2014-2016 have explicit objectives to either 1) improve entrepreneurship skills and mindsets and/or integration of entrepreneurship education; or 2) support entrepreneurs and start-ups in resilience or upscaling. Interviews with project coordinators and partners reveal that projects that do not have such an explicit focus on entrepreneurship do not believe that their project contributes to the enhancement of such skills and competences since the topic has not been on the agenda. Interviews with project coordinators and partners that do focus on entrepreneurship reveal that they develop activities and results tailored to stimulate entrepreneurship and entrepreneurial skills. Fitting into the overall objectives of the Knowledge Alliance action, these activities are new teaching offers and formats, including courses, modules, summer schools, and more novel methods such as pitching competitions and mentorship/hosting opportunities for start-ups. Overall, the 'entrepreneurship cluster' Knowledge Alliances increased (or aim to increase) the entrepreneurial skills of their beneficiaries significantly.

Innovation skills vs entrepreneurial skills vs soft, interpersonal and transversal skills

We found that there are **no clear delineations** between innovation, entrepreneurial, and transversal skills. Although we find that the improvement of innovation skills and competences are among the most common immediate achieved/targeted individual impacts, there is significant overlap with the other two categories. There is no commonly accepted definition of what 'innovation skills' are – neither in the literature nor among KA project coordinators and partners. However, our interview findings suggest that **innovation skills** are oftentimes understood as the **'umbrella' term** under which **several key transversal skills** can be grouped together. These also largely reflect the 10 skills identified by the World Economic Forum as the ones of increasing value to future workplaces[69]. The most commonly mentioned skills and competences that KA beneficiaries themselves understand as innovation skills include:

1. Critical thinking
2. Systemic thinking
3. Problem solving
4. Teamwork and collaboration skills, including in international and multi-/interdisciplinary teams and virtual environments
5. Communication and presentation skills: Convey thoughts clearly and confidently in written and oral forms
6. Judgement and decision-making
7. Cognitive flexibility
8. Creativity
9. Action-taking

[69] World Economic Forum (2016): 'The Future of Jobs' http://www3.weforum.org/docs/WEF_Future_of_Jobs.pdf.

10. Negotiation or influencing others
11. Learning to learn

KAs improve (or aim to improve in cases where project activities are ongoing) innovation skills and competences through different approaches. Some projects develop and deliver trainings/courses/modules aimed specifically at enhancing innovation skills, offline (e.g. CASE) or online training offers (e.g. LEAD 3.0). Others develop courses/trainings using new approaches, such as problem-based learning, learner-centred and real-life problem solving, that supports learners to become (more) innovative – essentially empowering learners.

The divergence in understanding of what constitute 'innovation skills' explains the different approaches chosen by projects when teaching innovation skills. Projects that mention **'learning to learn' as an innovation skill** are typically the ones that then chose to **develop real-life problem-based learning methods** and learner-centred approaches. Learning to learn among KAs can be characterised as **enabling or empowering learners** *'to apply knowledge in the future by himself* 'and allows them to *'utilise (the transversal skills) to become lifelong learners, to contribute to innovation in different sectors.'* Because the understanding of innovation skill rests on giving learners the tools for innovation, such KAs then go on to develop students' internship placement and/or courses and trainings where students, HE staff, and industry professionals are put together in international and multidisciplinary teams to work on projects and solve real-life problems. This approach relies on the understanding that work experience and practical application of theory can empower learners to 1) learn and directly apply key transversal skills in a 'learning by doing' manner; and 2) facilitate application of knowledge by him – or herself and thereby fostering the lifelong utilisation of transversal skills and the ability to apply them in different sectors and settings.

The situation for **'entrepreneurial skills'** is similar: Our interviews reveal that KAs see entrepreneurial skills as an **'umbrella' term** under which several skills may be grouped together and, to a large extent, closely match the competences identified in the Entrepreneurship Competence framework[70]. Interviews with KA participants showed that they commonly understand entrepreneurial skills to include **key transversal skills** also categorised under innovation skills: communication, teamwork, creativity, self-reflection, problem-solving, (cognitive) flexibility, etc. They also include **more specific transversal and hard skills** such as leadership, project and resource management, conflict management, project planning, networking, client orientation. Furthermore, market analysis and market/technology assessment, building and exploiting business models, as well as the ability to see market gaps and/or translate ideas into products/services, and finding investment, clients, and partners are considered key. This understanding aligns well with the Entrepreneurship Competence Framework's 15 competences listed previously.

Assessment of new learning needs in Knowledge Alliances

The benefits of Knowledge Alliances in the assessment and identification of new learning needs is usually seen to be through the **cooperation between education providers (HEIs) and labour market (businesses)**. In the beginning phases of most projects, there is usually a more thorough identification and analysis of skills and competences to be developed during the project. Interviews corroborate this pattern and see the key strength and success factor for ensuring relevance lying in strongly

[70] Bacigalupo, M., Kampylis, P., Punie, Y., Van den Brande, G. (2016). EntreComp: The Entrepreneurship Competence Framework. Luxembourg: Publication Office of the European Union; EUR 27939 EN; doi:10.2791/593884

'*involving businesses from the beginning'* of the project. Many projects kick-off project activities with **in-depth needs analyses**, involving not only all partners but often also other European HEIs and businesses in the same industry. Needs analyses usually involve literature reviews, large-scale surveys, interviews, case studies, workshops, focus groups, etc. to determine the skills needed and the gaps between demand and supply in certain industries or thematic areas. The **methodology** chosen is a result of successful university–business cooperation as both HEI and business partners agree on the approach, provide inputs in their areas of expertise (e.g. '*academic partners contributed by offering an extensive literature and case review whilst the business partners offered insights from their daily work experience, plus a test bed to validate our hypothesis.')*, and **joint development** of templates and questionnaires appropriate for both HEI and business stakeholder groups (e.g. '*templates for interviews, focus groups and questionnaires that aimed to reach stakeholders of both sectors.'*). Examples of projects that conducted extensive needs analyses include EUFood-STA, LEAD3.0, ODEdu, PROMOTE, BEFORE, PEOPLE, etc. This list is non-exhaustive and should serve to demonstrate the frequency and often **importance** of well-done skills mapping and needs analyses for a **project's later success** in terms of producing results and activities of added value, i.e. impacts on skills improvements.

KA projects, and specifically university–business cooperation within the project, contribute to identification by way of having **inputs from businesses on their real, everyday needs**. As interviews confirm, '*business partners offered insights from their daily work experience'* and the identification of skills to be targeted is in the majority of cases only '*successful due to the accumulation of feedback from both universities and businesses.'* Thus, university–business cooperation in KAs ensures that the projects work on actual skills mismatches and gaps experienced by employers. In short, the *'real cooperation between universities and businesses'* ensures that the skills and competences addressed reflect the '*real needs of the companies.'*

Several interviews confirm that not only is cooperation between HEIs and businesses key to ensuring identifying real needs and skills gaps experienced by companies – the flip-side is also true: Working to involve businesses closely from the beginning, and working on the real needs of the companies to deliver results that are actually relevant to companies are key success factors of increasing the **business partners' commitment** throughout the project and thus the project's overall success. *'(The) continued commitment of academic team, them continuously working on improving their offerings (to bring them closer to industry needs) and ensuring that (the project) matches the needs of all partners, and especially the industry partners, led to the commitment of corporate partners.'*

After the identification of skills and competences to be targeted, the work in Knowledge Alliances usually contributes to their development through **taking into account the business perspective** and ensuring that **students, HE staff, and company staff are reached**. In many cases, the **development and delivery** of trainings is the result of contributions from both HEIs and businesses. Oftentimes, the partners deliver the trainings at both their institutions, thus (aiming to) contribute to '*both the development of students' and employees' skills.'* Oftentimes, partners from businesses are put into the 'teacher' role for the first time and can gain valuable skills (e.g. creativity and out-of-the-box thinking; looking at work responsibilities and problems with 'fresh eyes') and knowledge, and, in some cases, even career outcomes (e.g. assuming new roles/responsibilities within the company).

Some KAs also use the opportunity to foster students' and staff's skills by allowing them to gain **practical experiences** of skills and competences they may have only known in theory before the project. This is often coupled with real-life problem-based learning, where students (and sometimes HE staff) work on real projects and solve real problems of business partners in internship placements and through incorporating

such contents into coursework. There are a number of KAs that feature such real-life problem-based learning approaches in different formats such as internships, work placements, blending academic and learning in practice in business contexts of company partners, different formats that allow students, academic staff, and company employees to jointly solve real-life business challenges, etc.

Interviews with projects that feature such **real-life problem-based learning** highlight several contributions of KAs: Working on real-life problems and challenges is deemed to be one of the key benefits of HEI-business cooperation since it not only allows **insights into day-to-day issues at companies**, teaches the **practical application of theory**, but also supports the **fostering of key soft skills** such as problem-solving, critical thinking, creativity, teamwork, multidisciplinary work and thinking, etc. Furthermore, KA projects typically make the implementation of such real-life, problem-based learning approaches easier to implement **since cooperation already exists** and doesn't need to be built from scratch, as well as businesses usually already being aware and convinced of the benefits and added value of such approaches.

In conclusion, Knowledge Alliances have high impacts on individuals' skills and competences, including skills needed for better labour market outcomes such as transversal, innovation, and entrepreneurial skills. While it is, in most cases, too early to determine outcomes and impacts of activities enhancing skills and competences as not enough time has passed to measure whether e.g. a student that has received a certain KA's training has higher rates of success on the labour market and a better career progression than a student that has not received such training. Nevertheless, our findings suggest that the skills and competences targeted by Knowledge Alliances are very **relevant** to rapidly changing economies and labour markets, and demonstrate **high potential** for contributing to better labour market outcomes. The focus on soft/transversal skills, particularly, will likely contribute to making graduates (and staff) more successful on the labour market as well as contribute to their increased 'resilience' by equipping them with skills applicable across professions and future domains. This **focus on soft and transversal skills** and competences is one of the best ways to facilitate future relevance, since we do not yet know which professions will emerge in the future and aligns with research on skills needed for better (future) labour market outcomes. Furthermore, we can conclude that **university–business cooperation** is the main advantage of KA projects and the overall KA action as it promotes the identification of skills and competences actually in demand by the labour market and supports the identification of skills gaps and mismatches. Moreover, KAs allow for HEI-business joint development and delivery of trainings, oftentimes in both sectors, to ensure that students, HE staff, and company employees are addressed. Cross-sectoral cooperation also promotes the implementation of real-life problem-based learning approaches that allow for practical experience and development of key transversal skills such as critical thinking, cognitive flexibility, teamwork, etc. Effective cross-sector collaboration increases the quality of project outputs, however, the quality, i.e. relevance, of project outputs for industry needs is also a key success factor for cooperation.

Complementarities, synergies and gaps at individual level

Findings on impacts of HE SP and KA projects at individual level display some variation, stemming primarily from the slightly different focuses of analysis, as well as differences in the scope and orientation of study questions. The focus of HE SPs was more on the impact of learning, teaching and training activities on students and staff and their learning outcomes, the recognition and validation of the latter, as well as their effect on the profiles of teaching staff. In contrast, the analysis of KAs centred on

the development of key skills, including innovation, entrepreneurial and other transversal skills, and on the identification and assessment of new learning needs.

Despite these differences, the essential findings were rather similar: both actions and their projects effectively contributed to the development of **key transversal skills** of students, teaching staff, and industry professionals through joint development and delivery of innovative approaches such as student-centred learning, MOOCs, student placements, or joint student-university teaching staff-business employee projects to solve real industry problems and challenges. In particular, both actions displayed a strong focus on non-job specific transversal skills (such as critical thinking, problem-solving and creativity) and **interpersonal skills**, such as effective communication, teamwork in multidisciplinary and multinational settings, and innovation and entrepreneurial skills. Similarly, both SP HEs and KAs led to **increased personal capabilities for multinational and multidisciplinary working**, and, for teaching staff, the introduction to and application of innovative teaching methods. This experience was widely perceived as contributing to better labour market outcomes and increased resilience of beneficiaries by ensuring relevance for future domains.

Both HE SPs and KAs contributed to the **reinforcement of profiles of teaching professionals**, through training received and knowledge acquired of innovative teaching and learning methods, and, especially in the case of KAs, through joint development of new teaching and learning methods with businesses, and, in the case of HE SPs, acquisition of new and innovative pedagogical skills. The latter aspect signals important synergies, which could be triggered by knowledge sharing/exchange activities between HE SP and KA actions, as only a small share of HE SPs awarded in 2014-2016 included businesses in their projects as official partners. Furthermore, to a certain degree both KAs and HE SPs contributed to developing teaching skills of business employees through project activities that placed professionals in the role of a teacher for the first time, which led to individual skill and competence increases, and career profile enhancements.

Finally, evidence was found that both actions had a positive effect on the **improvement of cross-sectoral** (and sector-specific or occupation-specific) **skills and competences** of individual beneficiaries involved in these projects. In fact, in KAs it was defined as a key achievement of KAs on individual competences and mindsets aligned with the objective of this action to, *inter alia*, promote and facilitate university–business cooperation. In HE SPs this impact manifested to a somewhat lower degree, as university–business cooperation is not mandatory in these projects.

Study conclusions and recommendations

Recommendation 1. Take active measures to facilitate policy learning and exploitation of outcomes produced by Higher Education Strategic Partnerships and Knowledge Alliances at systemic level.

The study has found that HE SPs and KAs are very relevant for addressing most of the strategic EU priorities associated with the modernisation of higher education. There is a critical mass of KA and especially of HE SP projects to facilitate policy learning and inform policy decisions, primarily in fields and topics densely populated by these transnational cooperation projects, such as new innovative curricula and educational methods, ICT, new technologies and digital competences in higher education, entrepreneurship and entrepreneurial learning, etc.

At the same time, however, a number of barriers for sharing the results of HE SP and KA projects with policymakers and influencing the policymaking process have been identified: both HE SPs and KAs rarely include public bodies in project consortia as their partners, often establish policymakers and information multipliers as their secondary target audience and do not seem to tailor their project dissemination activities sufficiently to effectively communicate their project results to policymakers. It was also found that national actors like National Agencies and National Authorities are lacking means and tools for systematically tracking the outcomes of HE SP projects once they are formally over. At European level, the potential of policy learning is also underutilised due to inadequate standards for presenting the information in project summaries valorised on the Erasmus+ project results platform and lack of actions to compile and make better use of information about HE SP project results available from project reports (e.g. to ensure their availability for studies and evaluations commissioned by DG EAC, like reports of KA projects were available from the EACEA for this study).

Based on these findings and conclusions, the following actions are recommended:

1. The info sessions and kick-off meetings/seminars offered to organisations participating in HE SPs and KAs could provide more **guidance on successfully engaging with policymakers and policymaking**.
2. **Standards for the structure and contents of project summaries** stored on the Erasmus+ project results platform should be reviewed, formalised and communicated for all newly awarded HE SP and KA projects to follow.
3. The National Agencies and National Authorities should be more systematically informed (e.g. in the form of minutes, newsletters, presentations, positions papers, etc.) about the **outcomes of cross-project and cross-action (HE SPs/KAs) knowledge sharing and mutual learning activities and events**, such as the most recent thematic cluster meeting for KAs;
4. The National Agencies and National Authorities should play a more **active role in monitoring of HE SP projects to improve awareness of project results and use it for policy learning;**
5. Active measures are necessary to utilise the HE SP project reports for evidence-based policy and to ensure their availability to inform any future

external impact assessments or studies of the Erasmus+ transnational cooperation projects in higher education.

This recommendation is addressed to the National Agencies (points 1, 2 and 4), EACEA (point 1 and 2), the Commission (points 2, 3 and 5) and the National Authorities (point 4).

Recommendation 2: Support more actively cross-project and cross-action learning.

The analysis shows that the first rounds of KA projects exhibit a number of good practices for successful project implementation and achieving impacts that are relevant for current and future KAs. At the same time, the study found that there is a high potential to better exploit synergies between projects and mutual learning among KAs to increase the impacts of the KA action as a whole and facilitate the transfer of good practices between projects to support better implementation. The study also found that unlike KAs benefiting from thematic Cluster Meetings, HE SPs receive no support for knowledge exchange and mutual learning at systemic level (aside from isolated initiatives of individual NAs). This is a significant drawback for an action implemented under shared management: the isolated and fragmented efforts of thematically related HE SP projects which otherwise could form a critical mass needed to trigger policy changes remains an untapped reserve, and the potential of synergies between HE SPs and KAs focusing on similar topics also tends to be underexploited.

Based on these findings and conclusions, the following actions are recommended:

1. The **active measures set in place to facilitate dialogue and exchange** on project objectives, activities, challenges, and good practices among KA projects (e.g. annual Cluster Meetings, the university–business cooperation network platform on Yammer) should be continued.
2. Similar **opportunities for knowledge exchange and transfer, mutual learning and exploiting synergies should be offered to HE SPs**. Specifically, HE SPs focusing thematically on entrepreneurial learning and university–business collaboration should be allowed to benefit from a joint participation in thematic Cluster Meetings offered to KAs by the EACEA/Commission. A separate event open to clusters of HE SPs focusing on prevailing topics should be organised to set in motion the critical mass of these projects.
3. The existing **platform for valorisation of Erasmus+ project results should be promoted more actively as an online knowledge platform/repository of intellectual outputs** developed by already numerous HE SPs and KAs. Also, technical possibilities to improve accessibility and simplify searchability of key information on HE SP and KA project results should be explored, e.g. by having a dedicated sub-page where HE SP and KA projects are sorted by topic, type of an intellectual output developed and other relevant criteria, such as good practice projects.

This recommendation is addressed to the EACEA (points 1 and 2), the European Commission (points 2 and 3) and the National Agencies (point 3).

Recommendation 3. Make additional efforts in both Higher Education Strategic Partnerships and Knowledge Alliances to secure higher commitment

to embedding project outputs within participating organisations and ensure organisation-wide awareness of these outputs.

The study found that both KAs and HE SPs exhibit a high potential to contribute to higher quality and relevance of curricula in higher education even beyond the immediate project consortium. This is evidenced by more than four fifths of KA and HE SP participating organisations surveyed for this study indicating that their project has produced evidence for the further development of HE systems. At the same time, it was found that there is a potential for improvement in ensuring more sustainable organisation-wide embedding of project outputs, especially regarding the adoption of innovative teaching and learning methods in HE systems and by HE teaching staff not involved in the KA or HE SP projects.

Based on these findings and conclusions, the following actions are recommended:

1. Applicants/participating organisations in HE SPs and KAs should be more strongly **encouraged to plan how to effectively involve rectorship/HEI management** (and eventually the Academic Senate) of their own HEI during project planning and implementation. For instance, this could be done while developing the project-related needs analysis or a roadmap for the HEI's teaching and learning strategy.
2. Building awareness, legitimacy and **recognition for essential teaching skills, especially in SCL formats,** is crucial for their permeability in HE and take-up of related HE SP and KA project outputs. This applies particularly for new teaching methods, facilitation, coaching, and communication skills.
3. Both KA and HE SP projects should more actively seek to involve other HEI staff and teachers (i.e. non-project members), to promote and spread innovative teaching practices. To facilitate such interactions, HE staff needs to be motivated to apply the SCL approach, for instance by **certificates, recognition for good teaching, and training courses**.
4. KAs and HE SPs should put more effort in **establishing and/or strengthening networks** around novel teaching and learning modalities. Mutual trainings, 'train-the-trainer' activities, online courses on state-of the art knowledge, placement programmes in companies could facilitate the long-term sustainable implementation and maintenance of collaboration with different kinds of partners.

This recommendation is addressed to the Commission (points 1, 2 and 4), EACEA (points 1 and 4), National Authorities (point 2) and HE SP and KA project coordinators and partners (points 1, 3-4).

Recommendation 4. Retain the defining features of both Higher Education Strategic Partnerships and Knowledge Alliances, allowing the future projects to build on the complementarities and strengths of these features.

The study has found that the thematic openness of both HE SPs and KAs, as well as their openness to a variety of organisation types were the key strengths of the Erasmus+ transnational cooperation in higher education projects. These features facilitated the creation of a highly heterogenous portfolio of projects, which closely reflected the needs and ambitions of European HEIs. If well managed and instructed, the inherent openness of HE SPs and KAs has led to significant improvements in the project partners' capacity to collaborate across sectors. Against this backdrop, the KA action functioned as a driver for novel forms of university–business cooperation in an

increasingly dynamic ecosystem, whereas HE SPs served as a trigger of educational offer improvement resulting from interdisciplinary collaboration and improved alignment to changing market needs.

Aside from analogous and unique benefits resulting from similarities in the design of HE SPs and KAs, there is also strong evidence of vital complementarities between HE SPs and KAs, resulting from their distinct and unique features: the strong business involvement in KA projects and availability of LTT activities for HE SPs. For instance, the study found that LTT activities were a crucial component for the conceptual development, and testing and dissemination of the innovative outputs developed by HE SPs, as they enabled knowledge transfer between partner organisations, created conditions for students and teachers to work in multinational and multidisciplinary groups, etc. The flexibility in selecting and combining the different types of mobility opportunities was an appreciated and actively exploited feature of the HE SP action. For KAs on the other hand, the study found that its overarching objective (promotion of university–business cooperation) has successfully set the tone and contributed to significant improvement of personal competences and intersectoral collaboration skills among HE and business staff. In addition, university–business cooperation within the KA action facilitated cross-sectoral and cross-country knowledge and innovation transfer, and also resulted in interdisciplinary project activities and outputs relevant for both sectors.

Based on these findings and conclusions, the following actions are recommended:

1. Maintain the **thematic openness and openness to different types of organisations** in both actions but take precautionary actions (see recommendation 7) to mitigate the risk of overlapping and fragmentation within and across both actions;
2. Continue offering the **possibility of organising learning, teaching and training activities** in HE SPs and keep the possibility of organising learning mobility activities that are complementary to the overall objectives of KA projects;
3. Continue to **support and promote university–business cooperation** in the KA action.
4. This recommendation is addressed to the Commission/EACEA.

Recommendation 5. Take into consideration the success factors of a successful transnational cooperation project in future Strategic Partnerships in Higher Education and Knowledge Alliances.

The study has identified a number of traits attributable to successful HE SP and KA projects. For instance, strong evidence was found that projects aiming for an organisation-wide integration of their research results and good alignment of project and institutional objectives took measures to ensure the active engagement of institution's key decision-makers in project implementation and/or application stage activities. They also made arrangements to ensure a high level of awareness of the project's progress/results in the organisation, especially among key decision-makers, but also among other teaching staff.

It was also found that effective dissemination and communication strategies designed and adopted by the project consortia are highly important for ensuring the awareness of innovative results produced by a project to broader audiences outside the direct project consortium. In its turn, the good awareness increases project's potential for impact generation.

Finally, the most important success factors for effectively establishing commitment among all partners, also the key drivers for effective cooperation between HEIs and businesses, is ensuring the quality and relevance of project outputs for all participating organisations and highlighting the value added of this cooperation.

Based on these findings and conclusions, the following actions are recommended:

1. All potential applicants and organisational beneficiaries (in particular HEIs) of future HE SPs and KAs should aim to include their top management and administration officials in the implementation of project activities (or at least in the conceptual development of the application) to ensure the strong alignment of project objectives and strategic organisational goals, as well as to **safeguard the support and commitment of key decision-makers** in their organisation to a smooth and organisation-wide integration of project results;

2. Any future transnational cooperation projects in HE should seek to closely **involve all partners from the beginning in the development of a project-level theory of change** (i.e. definition of project outputs, results and impacts at regional/local/national and EU levels) **and a (formative) self-evaluation** of project activities, as it helps to identify facilitators, enablers, barriers, and threats for developing the high quality project activities and outputs;

3. Since **transferability** of results is regarded as one of the major success factors for the dissemination and sustainability of project outputs, future HE SPs and KAs should (continue to) deliver and disseminate their project outputs in multiple languages (in case of universally usable content);

4. In order to improve their outreach, both HE SPs and KAs should follow a good practice of involving and engaging **multipliers** (organisations and networks) in their consortia, such as large organisations, chambers of commerce, and established expert networks;

5. Projects aiming for high impact should devise and implement **modern dissemination and communication strategies**, increasingly relying on social media, audio-visual formats and other ICT-exploiting solutions to engage their target groups.

This recommendation is addressed to all potential applicants and participating organisations in HE SP and KA projects.

Recommendation 6. Take measures to address the increasing demand for more active monitoring of the Erasmus+ transnational cooperation in the higher education project portfolio.

As the number of HE SP and KA projects increases, a more thorough monitoring of the project portfolio is becoming increasingly important in order to mitigate the risk of funding projects that have low added value and plan to produce intellectual outputs very similar to those developed by already funded projects. This is particularly relevant in the case of the HE SP action, which is being implemented under shared management mode, where the number of funded projects is already quite large. As both the KA and HE SP actions will continue to grow in the future, making an informed decision at the project selection phase will become increasingly difficult without easily accessible (monitoring) information about the overall project portfolio or at least about

the project portfolio in well-populated fields, such as entrepreneurship or development of new innovative curricula/educational methods and training courses.

Based on these findings and conclusions, the following actions are recommended:

1. Increased attention to tracking and **monitoring of the project portfolio in HE SP and KA actions**, paying particular attention and categorising the funded/awarded projects, for example, by main topic, intellectual outputs, success models, etc.
2. The Erasmus+ project results platform could be expanded beyond its current – project results' valorisation tool – purpose to also serve as a **project portfolio monitoring tool** used to inform project selection decisions and to reduce the potential over-reliance on applicants to analyse what has already been done/funded by the Erasmus+ transnational cooperation projects.

This recommendation is addressed to the EACEA (points 1 and 2), the Commission (point 2) and the National Agencies (points 1 and 2).

Annexes

The following deliverables are submitted as annexes to the Final Report:

- Annex 1: Thematic case studies on impacts of Higher Education Strategic Partnerships;
- Annex 2: Thematic case studies on impacts of Knowledge Alliances;
- Annex 3: Project case studies on individual Higher Education Strategic Partnerships;
- Annex 4: Project case studies on individual Knowledge Alliances;
- Annex 5: Survey data and metadata;
- Annex 6: List of interviewees.

Getting in touch with the EU

In person

All over the European Union there are hundreds of Europe Direct information centres. You can find the address of the centre nearest you at: https://europa.eu/european-union/contact_en

On the phone or by email

Europe Direct is a service that answers your questions about the European Union. You can contact this service:

– by freephone: 00 800 6 7 8 9 10 11 (certain operators may charge for these calls),

– at the following standard number: +32 22999696 or

– by email via: https://europa.eu/european-union/contact_en

Finding information about the EU

Online

Information about the European Union in all the official languages of the EU is available on the Europa website at: https://europa.eu/european-union/index_en

EU publications

You can download or order free and priced EU publications at: https://publications.europa.eu/en/publications. Multiple copies of free publications may be obtained by contacting Europe Direct or your local information centre (see https://europa.eu/european-union/contact_en).

EU law and related documents

For access to legal information from the EU, including all EU law since 1952 in all the official language versions, go to EUR-Lex at: http://eur-lex.europa.eu

Open data from the EU

The EU Open Data Portal (http://data.europa.eu/euodp/en) provides access to datasets from the EU. Data can be downloaded and reused for free, for both commercial and non-commercial purposes.

Publications Office
of the European Union