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SME VIEW: PARTICIPATING IN EU FUNDED R&I PROJECTS

Biggest barriers, pains and gains

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European Union (EU) has recognised that research and innovation (R&I) are critical for finding solutions to global challenges, from climate change to cancer, and has been providing funding for strategic R&I since the 1980's. In the Horizon Europe Framework programme over €95 billion has been pledged to support research organisations and industries in this quest during 2021–2027. At the same time, recurring crises have made the world volatile in recent years, and especially small and medium-sized companies (SMEs) struggle. EU recognises that SMEs are the backbone of the European economy, representing over 99% of all businesses, and their contribution in the R&I is vital to both enhance their own resilience to change and to facilitate the green and digital transition across Europe.

This thesis was commissioned by Spinverse Oy, a Finnish consultancy company, to explore how SMEs experience the EU funding system for R&I, particularly participation in large consortium projects under Horizon Europe. Those views were studied via a survey conducted among SMEs in ongoing EU projects in the bio and agricultural industries. The aim was to find out what is preventing SMEs from applying for funding or joining projects, what are the biggest pain points during project implementation, and what are the gains and benefits from taking part in an EU funded project. The goal was, through these insights, to find ways to attract new SME partners into projects, through potential new support services, but also by sharing information about the gains from the projects and the extensive support available from the EU. Background information was provided through an overview of the evolution of EU funding for R&I, what the current Horizon Europe Framework Programme focuses on, and what the EU is doing to help SMEs prosper in Europe. Brief look at the current status of SMEs in Europe is also provided; their impact on the economy and the issues affecting their growth and innovation capacity.

A qualitative thematic analysis of the survey results, combined with empirical observations, revealed that the issues causing barriers or problems during projects are very similar to those reported by SMEs as in their normal operations: Lack of personnel and administrative burden. Both are clearly size-related issues, and in EU projects the issue is having to find and use resources for something that most of the time is not the company's core business. However, the survey also revealed that the benefits from participating in projects are far more numerous than the problems, as majority of respondents reported new cross-border networks, increased production, and new markets, in addition to the actual funding received.

Some recommendations were provided for Spinverse in terms of potential support services and materials to attract and engage new SME partners into projects. The question remaining to be answered in further studies would be how to identify those SMEs that are both willing and able to innovate on a level required by the EU.

Keywords EU funding, Horizon Europe, SME, research and innovation, R&I
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Euroopan unioni (EU) katsoo, että tutkimus- ja innovaatiotoiminta (T&I) ovat avainasemassa maailmanlaajuisten haasteiden ratkaisemisessa ilmastonmuutoksesta syöpään ja on rahoittanut strategista T&I:aa 1980-luvulta lähtien. Nykyinen Horizon Europe -kehysohjelma tukee tutkimusorganisaatioita ja teollisuutta näissä tavoitteissa yli 95 miljardilla eurolla vuosina 2021–2027. Samanaikaisesti, viime vuosien kriisit ovat tehneet maailmasta epävakaan, ja erityisesti pienet ja keskisuuret yritykset (pk-yritykset) ovat kärsineet. EU tunnistaa, että pk-yritykset ovat Euroopan talouden selkäranka, edustaen yli 99 % kaikista yrityksistä, ja niiden panos T&I:ssä on elintärkeää sekä niiden oman muutosresilienssin parantamiseksi, että vihreän ja digitaalisen siirtymän edistämiseksi koko Euroopassa.

Tämän opinnäytetyön tilasi suomalainen konsulttiyritys Spinverse Oy tutkimaan, millaisena pk-yritykset kokevat EU:n T&I-rahoitusjärjestelmän, ja erityisesti osallistumisen suuriin konsortiohankkeisiin Horizon Europe -ohjelman puitteissa. Näitä näkemyksiä selvitettiin kyselytutkimuksella, johon osallistui käynnissä olevissa bio- ja maatalousalojen EU-hankkeissa mukana olevia pk-yrityksiä. Tavoitteena oli selvittää, mikä estää pk-yrityksiä hakemasta rahoitusta, mitkä ovat suurimmat ongelmat hankkeiden toteutuksen aikana ja mitä hyötyjä yritys voi saada osallistumalla EU-hankkeeseen. Tarkoituksena oli siten löytää Spinverselle keinoja houkutella uusia pk-yrityskumppaneita hankkeisiin. Taustaksi esitetään katsaus EU:n T&I-rahoituksen kehitykseen, mihin nykyinen Horizon Europe -kehysohjelma keskittyy ja mitä EU tekee auttaakseen pk-yrityksiä menestymään Euroopassa. Pk-yritysten nykytilaa Euroopassa tarkastellaan myös lyhyesti; niiden vaikutusta EU:n talouteen ja toisaalta mikä vaikuttaa niiden kasvuun ja innovaatiokykyyn.

Kyselytulosten laadullinen teema-analyysi yhdistettynä empiirisiin havaintoihin paljasti, että ongelmat, jotka aiheuttavat esteitä tai ongelmia hankkeiden aikana, ovat hyvin samanlaisia kuin pk-yritysten normaalissa toiminnassa: Henkilöstön puute ja hallinnollinen taakka. Molemmat selkeästi kokoon liittyviä kysymyksiä, ja EU-hankkeissa kyse on nimenomaan resurssien löytämisestä ja käyttämisestä johonkin, mikä ei ole yrityksen ydinliiketoimintaa. Kuitenkin kysely paljasti myös, että hankkeisiin osallistumisen hyödyt ovat paljon lukuisammat kuin ongelmat, sillä suurin osa vastaajista kertoi hyötyneensä kasvaneista verkostoista, lisääntyneestä tuotannosta ja uusista markkinoista, itse rahoituksen lisäksi.

Opinnäytetyön tuloksena Spinverselle annettiin suosituksia mahdollisista uusista keinoista, tukipalveluista ja materiaaleista, joilla houkutella uusia pk-yrityskumppaneita hankkeisiin. Jäljellä oleva kysymys jatkotutkimusta varten onkin, kuinka tunnistaa ne pk-yritykset, joilta löytyy sekä halua että kykyä innovoida EU:n vaatimalla tasolla.

Avainsanat EU-rahoitus, Horizon Europe, pk-yritys, tutkimus ja innovaatio, T&I
Sivut 57 sivua ja liitteitä 3 sivua

Table of Contents

Figures, tables

Appendices

1 Introduction

European Union (EU) has recognised and acknowledged that climate change and environmental degradation are an existential threat to Europe and the world. European Commission (EC) has pledged to combat climate change and support a transition to a more sustainable society, within the Union as well as globally. The current strategic programme period from 2021 to 2027, aims to do that via the Green Deal programme launched in 2020, by “reducing greenhouse gas emissions to net zero by 2050, decoupling economic growth from resource use, and ensuring that no person or place is left behind in the transition”. (European Commission, n.d.-g) Such a transition requires substantial efforts in research and innovation (R&I) in the fields of clean technologies and social transitions. The pace of research and innovation will determine the speed at which the transition can take place, with many direct impacts and co-benefits, such as increased employment, social inclusion, sustainable resource management, and reduced dependency on fossil fuels. (European Commission, Directorate-General for Research and Innovation, 2021)

Research and innovation are therefore, arguably, the main enablers in making the future sustainable on our planet. There are also many other challenges, economic, societal, technological and cultural, that the EU is currently hoping to find solutions for with the most substantial funding package to date, with over €95 billion available under the Horizon Europe Framework Programme for funding research, development and innovation (RDI) action by universities, research organisations and industry actors in the strategy period 2021–2027.

At the same time, the current decade has been turbulent in many ways, impacting the economy, society, and cohesion of the Union. EU recognises that small and medium sized enterprises (SMEs) are the backbone of European economy, representing over 99% of all businesses in the EU and employing two thirds of the workforce. They generate profits and innovation in every industry sector, from services to clean tech, and are in a key role in EU’s twin transition towards a green and digital economy. However, SMEs face many challenges due to their size, making them more vulnerable to the many crises of the past years, and are struggling to keep up with the demands of increasing digitalisation, sustainability requirements and simply managing sufficient cashflows. According to the EU, innovation is the key, making also SMEs more resilient to the constant volatility. But do SMEs have the time and resources to innovate, or properly utilise the funding opportunities offered by EU? How does EU support the SMEs ability to grow through innovation?

This thesis has been commissioned by Spinverse Oy, a Finnish consultancy firm specialising in providing professional services to companies, research organisations, NGOs and cities in building innovation ecosystems, finding partners for projects, and strengthening their research, development and innovation activities through public funding. Spinverse's aim is to "help organisations to collaborate, get funding and achieve impact with their innovative projects". This is done via two business units, Sustainable Industries and Digital Industries, where projects are built and managed in segments such as bioeconomy, built environments, defence, electronics, energy, health, ICT, manufacturing, maritime, smart cities & mobility, space and robotics. (Spinverse, n.d.)

While building consortia for EU funding calls, it is often the case that SME partners are difficult to find and convince to join the projects. However, they are in some cases necessary for the project to be accepted, as the EU has built SME quotas into some of the funding instruments, to promote and ensure SME participation. For example, in the case of projects managed by the Chips Joint Undertaking, an EU partnership agency, the aim is to "promote the active involvement of SMEs, which, for all research and innovation activities, shall represent at least one third of the total number of participants and at least 20 % of public funding should go to them" (Chips JU, n.d.). On the other hand, as discussed later in section 3.3.3, many funding calls leave SME inclusion almost fully optional, which may lead to project consortiums consisting mainly of large companies and research organizations, for whom it is much easier to invest the required resources into the application process. But, as it has been shown by studies that innovation leads to growth and resilience, not to mention the other benefits arising from an EU funded project, it could be assumed that any SME engaged in innovation would relish the opportunity to join a consortium of ambitious peers and research organizations. Why is it then, that some SMEs hesitate to participate in an EU funding call, while some welcome the chance? What is the SME view – what are the barriers, pains, and gains of participating in an EU funded project?

Based on empirical evidence observed in several large consortium projects, there are certain areas in which SME companies seem to struggle more than their larger industry or research counterparts. Firstly, especially in the case of micro and small companies, there seems to be a lack of personnel resources to handle the administrative burden of the projects, i.e. reporting on both the technical and financial progress of the project, as well as additional company related data and statistics required by the EU. Secondly, it often appears that delays in project work are caused by lack of suitable skilled staff, due to difficulties hiring planned members of staff or certain key personnel suddenly leaving. Thirdly, as the project structure and timeline are quite rigidly planned, it seems that SMEs may have more difficulty

in coping with or absorbing the impact of changes within the project, both financially and in terms of other resources.

This thesis focuses on the difficulties faced by SMEs in handling the EU bureaucracy, while also trying to shed light on the benefits of EU funding, both for individual SMEs and on EU and global scale. It aims to find answers to three questions, which seem to be the key for finding potential new SME participants in EU projects and promoting participation among them. The first question focuses on what is preventing SMEs from applying, what are the barriers to participation? Is it lack of knowledge of the options, or some other more internal reasons? Secondly, when a company has decided to join a consortium or apply for individual funding, what are the biggest pain points during the actual project implementation? And thirdly, the aim is to find out the positives of the process, which hopefully outweigh the negatives – what are the gains and benefits from taking part in an EU funded project, aside from the obvious, i.e. the funding received? The assumption is that what is gained from the project, especially for smaller SME companies, extends far beyond the mere financial compensation for the contribution that the SME makes in the project. In addition to seeking solutions to the global problems they wish to solve, the EU aims to promote collaboration between industry and academic institutions, and provide especially SMEs opportunities to find partners and widen their networks across the Union. Is this a reality, do SME companies feel they are getting these benefits from the projects?

Data for the study has been collected from SMEs via a thematic survey, to get some direct qualitative evidence of the views and opinions of persons working in selected ongoing EU projects in the biobased and agricultural industries. Some background is provided on the evolution of the EU funding mechanism, mainly with reference to funding programmes for research and innovation, and a brief look at SMEs' status in current-day Europe. And finally, some new and perhaps innovative ways are proposed for Spinverse to find, attract and engage new SME partners into projects, through potential support services that can be provided to ease the pains, but also by sharing information about the gains from the projects and the extensive support available from the EU, when you know where to look for it.

2 EU funding overview

The EU manages funding for its policy priorities, among them research and innovation (R&I), through a myriad of strategies, missions, programmes, headings, funds, instruments, clusters and partnerships. The Framework Programmes (FP) are the main instrument used by the EU

to implement its common science and technology policy and they manifest the priorities of the European Commission in each strategy period. This chapter gives an overview of the history of EU funding and the past Framework Programmes, as well as a more detailed description of the current 9th Framework Programme, Horizon Europe.

2.1 Short history of EU funding

The origin of EU level research funded by the European Commission, or its predecessors, can be considered to go all the way back to the establishment of the European Coal and Steel Community (ECSC) in 1951 and the European Atomic Energy Community (Euratom) in 1958 for the purpose of conducting research in nuclear fission. The treaties establishing these communities included the development of the first research and technology programmes at Community level, although they in reality were set up to advance the very practical goals of developing steel for weapons production and coal and nuclear energies for industry use. However, when the Treaty of Rome, establishing the European Economic Community (EEC), was signed in 1957, it did not contain any provisions for research activities, focusing instead on a common market and a customs union, and aiming to develop common policies for trade, transport and agriculture. (EPRS, European Parliamentary Research Service, 2016)

It wasn't until 1971 that 19 countries and the EEC established the Cooperation in Science and Technology (COST) programme, to promote networks of researchers throughout Europe, and in 1974, European Council made decisions to start officially coordinating national research policies and implementing joint research projects, thus planting the seed for a European programme in the field of science and technology. In 1981, the then Commissioner for Industry promoted the idea of an overarching European programme that would fund all European research activities, and in 1982 the European Parliament finally stated it "insists on a Treaty amendment that will break with the existing ad hoc basis and anchor research policy firmly in the EEC Treaty with a clear allocation of responsibilities between the institutions". It was a 1983 Council Decision, which subsequently established the first Framework Programme (FP) for Community Research for the period 1984–1987. (EPRS, European Parliamentary Research Service, 2015) Since then, EU funding for research and innovation has increased from the initial €3.3 billion to €95.5 billion in the current 2021–2027 Horizon Europe funding programme, as illustrated below by Figure 1. At the same time, the priorities of funding have changed, from the energy and industry focus in the early programmes to the current broad spectrum of topics, including fundamental

research as one of the key areas, as evidenced by Figure 2. (State Secretariat for Education, Research and Innovation SERI, n.d.)

Figure 1 Annual budgets of the EU Framework programmes (in EUR billion, at current prices). (State Secretariat for Education, Research and Innovation SERI, n.d.)

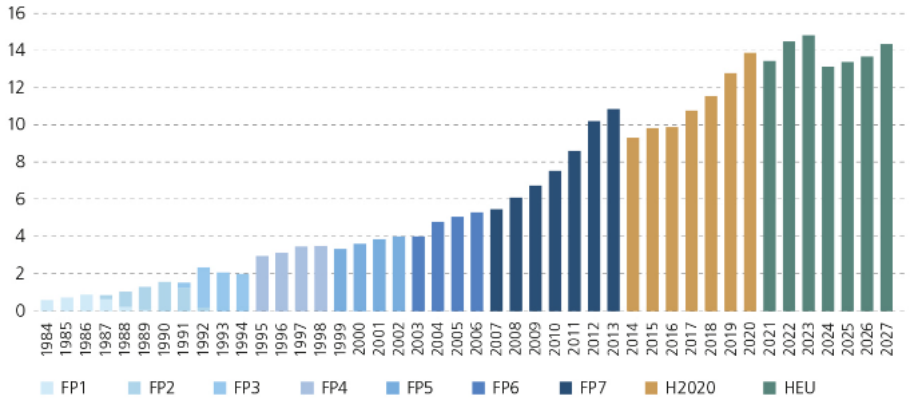
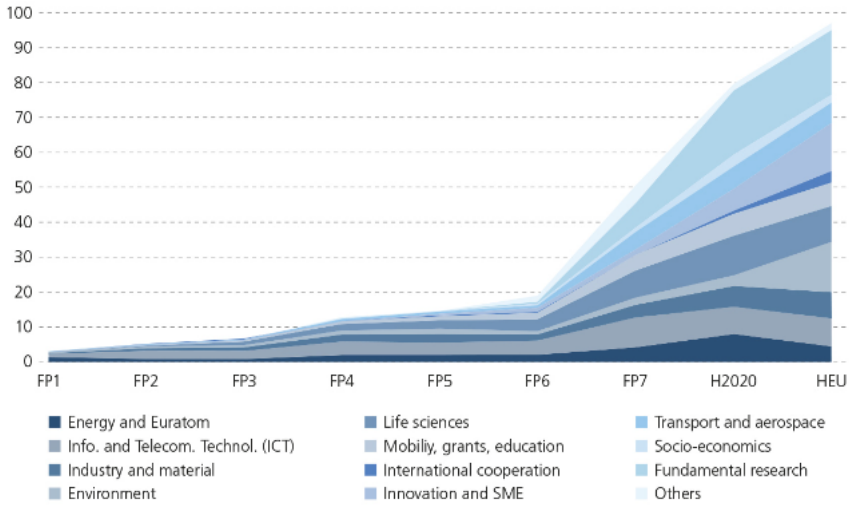


Figure 2 Breakdown and evolution over time of the budgets (in € billion) allocated to the different thematic priorities of the FPs. (State Secretariat for Education, Research and Innovation SERI, n.d.)



2.2 Past framework programmes, FP1–FP7 in 1985–2013

The first seven framework programmes (FP) for research and innovation are summarised below briefly, with an overview of the focus areas of each programme. Over the years the programmes evolved from collections of individual budgets per theme to fully synchronised financial instruments. The scope of the programmes also changed from the initial RTD

(research, technological development and demonstrations) to the R&I (research and innovation) that we know today.

FP1 1984–1987: Support for Member States' competitiveness. The Commission adopted FP1 in 1983 as a tool to address the economic crisis and support the competitiveness of the Member States. FP1 had six thematic priorities; agriculture, industrial competitiveness, raw materials, energy, development aid and living conditions, and one transversal priority, Community research potential. It aimed to modernise public research structures and limit competition and duplication in research activities within the Community. Its implementation process helped to create the guidelines to decide which activities could be supported by the Community and how to make a choice between national and Community action: the benefits of the results should be higher than the cost of coordination, the research should be done on a large scale that would be beneficial across Europe, and the activities should support the establishment of the European single market and help create a unified European research area (ERA).

FP2 1987–1991, European Technology Community: The Commission proposed FP2 in 1985 with the aim of creating a European technology community and coordinating research activities with national authorities. The main objectives of the programme were to support access to research infrastructure, researcher mobility, innovation, SMEs, and non-Community countries' involvement in the programme.

FP3 1990–1994, aimed to support competitiveness and improve the quality of life of the citizens. As the importance of new technologies such as ICT, biotechnologies and new materials was increasing, the EC saw a need for better coordination of skills and expertise, and more interaction between basic and applied research and the producers and users of the novel technologies. FP3 thus introduced the idea of multidisciplinarity and the concept of addressing technological challenges. While completion of the single market was a major goal in this FP, others were also added, such as boosting economic and social cohesion, and including aspects regarding environmental protection and quality of life.

FP4 1994–1998, was the first FP to be adopted after the treaty of Maastricht, which entered into force on 1 November 1993. The updated Article 130f broadened the scope of Community activities in research beyond simply strengthening the competitiveness of European industry and into all research activities supporting any goal pursued by the Union. This made research policy fully horizontal and allowed it to cover research in the fields of e.g. health, environment or social sciences, in addition to basic research. The actual topics of

FP4 still remained similar to those of the previous FPs: ICT, industrial technologies, environment, life sciences, agriculture and fisheries, non- nuclear energy and transport. The novelty was the introduction of targeted socio-economic research.

FP5 1998–2002, was guided by the idea of extending the scope of Community research policy and the FP, and putting it at the service of society, towards meeting basic social and economic needs. The funding programmes were organised under seven challenges: quality of life and management of living resources, user-friendly information society, competitive and sustainable growth, energy, environment and sustainable development, confirming the international role of European research, innovation and participation of SMEs, and improving human potential.

FP6 2002–2006: The European research area (ERA) was launched as part of the Lisbon strategy, adopted by the European Council in March 2000 and aiming to make the European Union 'the most competitive and dynamic knowledge-based economy in the world'. The objective of the common research policy was to reduce the fragmentation and isolation of separate national research systems and to enhance the coordination between national and European research policies. This concept formed a strong base for research policy at European level, and the FP was to become the main tool to implement it. A new structure of three programmes was established; ‘Focusing and integrating Community research’, including support for SMEs and for international cooperation, 'Structuring the ERA' covering support for innovation, human resources and research infrastructure, and 'Strengthening the foundation of the ERA', which gathered together actions to coordinate activities and promote the coherent development of research and innovation policies in Europe. Various public and private partnerships were launched with national programmes and industry sectors, to coordinate the implementation of funding.

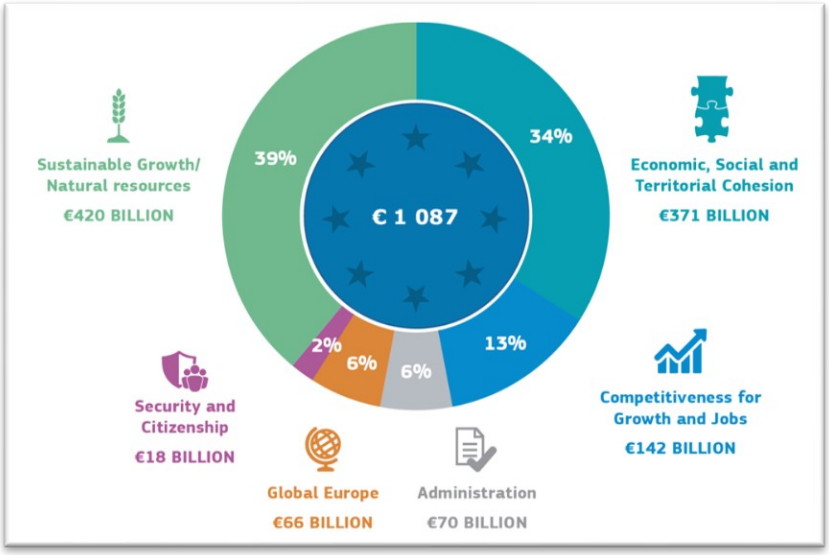
FP7 2007–2013: At the time, the growing size of the Union was seen as a challenge to making sure that all the new Member States could 'take the road to excellence', and the Commission pointed out the need to identify topics of major European interest and the need to support the Union's political objectives. The issue of security was added as a new topic to the programme. The structure of the programme was renewed and organised around four objectives; ‘Cooperation’, support for transnational research projects in 10 thematic areas, ‘Ideas’, supporting bottom-up research projects via the establishment of the European Research Council (ERC), ‘People’, strengthening human capital in research and supporting mobility; and ‘Capacities’, supporting key aspects of European research and innovation capacities, i.e. infrastructures, regional clusters, SMEs, and international cooperation.

(European Parliament. Directorate General for Parliamentary Research Services., 2017; State Secretariat for Education, Research and Innovation SERI, n.d.)

2.3 2014–2020 Multiannual Financial Framework and Horizon 2020

The total EU Multiannual Financial Framework budget of just over €1 trillion for the 2014–2020 policy period provided support for the Europe 2020 strategy and was divided into four main policy areas or “headings”, as illustrated below by Figure 3.

Figure 3 EU Funding programmes 2014–2020, divided by Heading. (European Commission, n.d.-b)



The funding programme focusing on research and innovation, Horizon 2020, was included under heading 1a, Competitiveness for Growth and Jobs. With the thus far biggest budget of €80 billion, it reflected the policy priorities of the Europe 2020 strategy, launched after the economic crises in 2010. The strategy emphasized smart, sustainable and inclusive growth as a way to overcome the structural weaknesses in Europe’s economy and improve its competitiveness and productivity, with targets relating to employment and education levels and reductions in poverty and emissions. It also included the target of 3% of GDP spent on research and development to be reached by 2020, as part of the Europe 2020 strategy. (Eurostat, 2012)

Horizon 2020 included seven Societal Challenges as the guiding principles of the funding programme, complemented by Focus Areas, which cut across the Challenges (e.g. circular economy, digitisation). The Societal Challenges covered the topics of health, food security,

energy, transport, climate, society, and security as priorities for targeted R&I investment. Structurally, the funding was implemented under three Pillars; excellent science, industrial leadership, and societal challenges. (European Commission, 2014) However, as pointed out by Mazzucato in her 2018 report on the impact of R&I funding, the Societal Challenges were too broad to be actionable, leading to the research and innovation projects under Horizon 2020 being isolated in their impacts as they were not clearly linked to the challenges they were trying to solve. (European Commission, Directorate-General for Research and Innovation, Mazzucato, M., 2018)

All in all, Horizon 2020 provided funding for over 35 000 projects, with nearly 300 000 applications submitted from 177 countries. There were more than 40 000 different participating organizations, of which 15 000 were SMEs and 66% newcomers to EU funding. As some projects under Horizon 2020 are still active, the direct impacts will continue until 2026 and beyond, and in the long term the programme is estimated to contribute €421–€789 billion to EU GDP. Additionally, Horizon 2020 grants, on average, increased participating companies' employment levels by 20%, and by 30% of turnover and total assets, compared to comparable non-funded companies, and close to 4 000 IPR applications have been reported. (European Court of Auditors, 2020)

2.4 Current strategy for 2021–2027

EU's 2021–2027 long-term budget of €1.2 trillion, together with the temporary recovery instrument NextGenerationEU of €807 billion, represent a combined effort of over €2 trillion to help repair the economic and social damage caused by the COVID-19 pandemic and to support the transition towards a modern and more sustainable Europe. (European Commission, 2021)

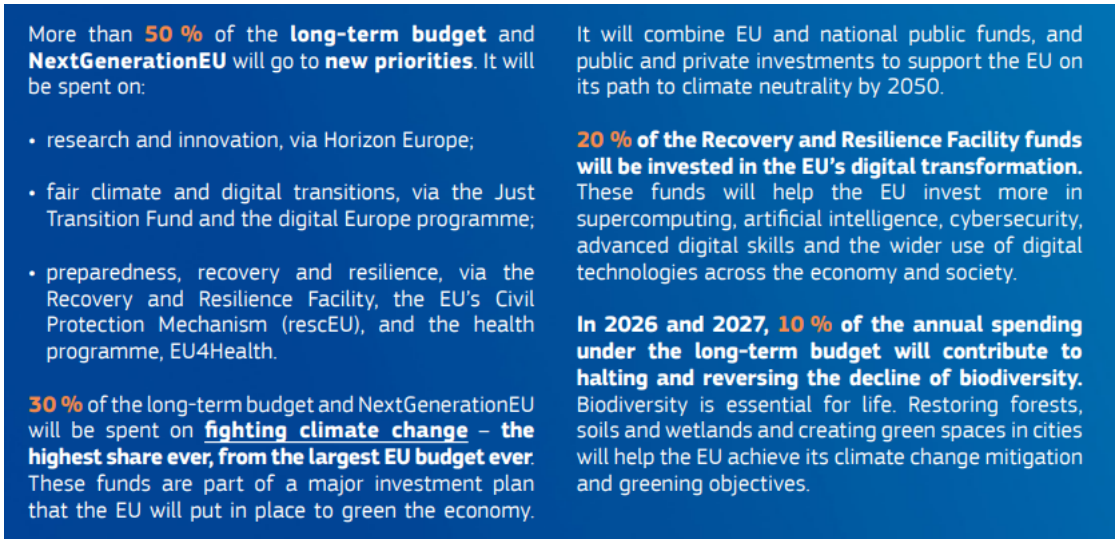
As usual, the budget is organised under headings, of which there are seven for the current strategy period, as seen in Figure 4. There is significantly more funding in this budget directed towards the cohesion, recovery and resilience of the Union, as a response to the impacts of the COVID-19 pandemic and the geopolitical unrest. The second biggest funding topic is natural resources and environment, with significant focus on biodiversity. An overview of priorities of the current budget can be seen in Figure 5 below. Altogether there are an impressive 42 different funding programmes and funds under the seven headings. The funding for research and innovation is included under Heading 1, 'Single market, Innovation and Digital', where €95.5 billion is reserved for the Horizon Europe framework programme. (European Commission, n.d.-e)

Figure 4 MFF 2021-2027 budget allocations per heading (in € billion). (European Commission, n.d.-e)

Allocations per heading (all amounts in € billion):

	MFF	NGEU	TOTAL
1. Single Market, Innovation and Digital	149.5	11.5	161.0
2. Cohesion, Resilience and Values	426.7	776.5	1 203.2
3. Natural Resources and Environment	401.0	18.9	419.9
4. Migration and Border Management	25.7	-	25.7
5. Security and Defence	14.9	-	14.9
6. Neighbourhood and the World	110.6	-	110.6
7. European Public Administration	82.5	-	82.5
TOTAL	**1 210.9**	**806.9**	**2 017.8**

Figure 5 EU 2021–2027 budget priorities. (Directorate-General for Budget (European Commission), 2021)



2.4.1 Horizon Europe and missions

Horizon Europe, the 9th framework programme, is the EU's main instrument for investments into research and innovation for the period 2021–2027. It follows in the footsteps of Horizon 2020 in terms of structure and implementation, with the highest R&I budget so far of €95.5 billion. Some improvements were however deemed necessary, to maximise the impact of EU research and innovation.

> "Horizon Europe is the EU's research and innovation support programme in a system of European and national funding programmes that shares policy

> objectives. Through the programme, special attention will be given to ensuring cooperation between universities, scientific communities and industry, including small and medium enterprises, and citizens and their representatives, in order to bridge gaps between territories, generations and regional cultures, especially caring for the needs of the young in shaping Europe's future." (European Commission, Directorate-General for Research and Innovation, n.d.)

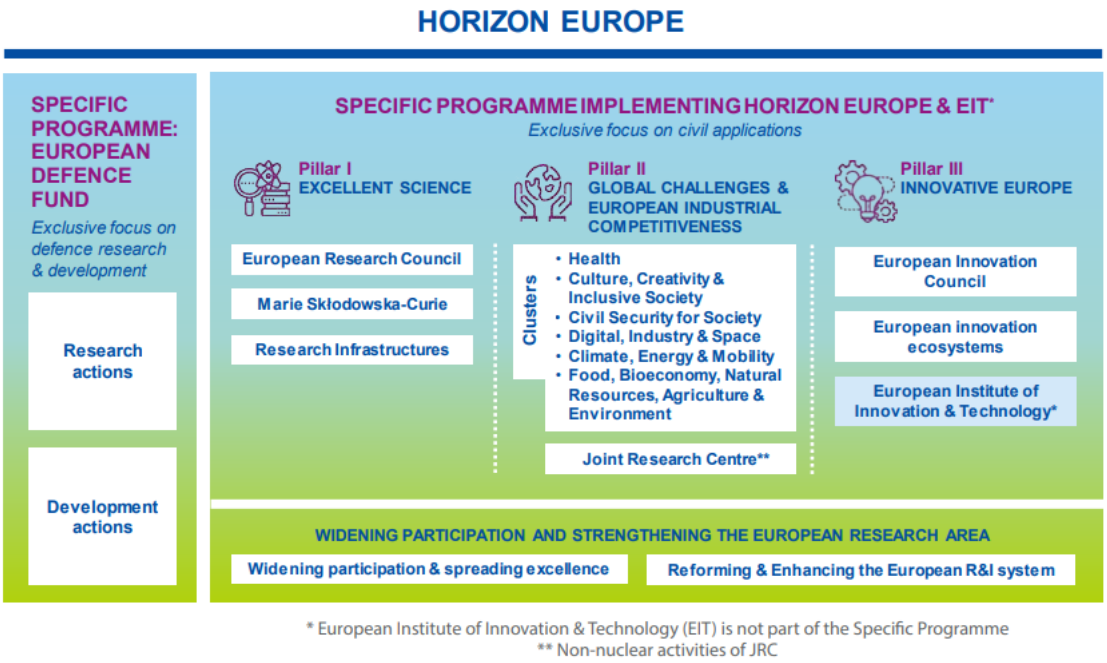
The strategy of Horizon Europe is to move from the broader challenges of Horizon 2020 to specific missions, each of which sets clear goals to be achieved within a certain period. These so called EU Missions are a novelty of the Horizon Europe programme, and are directly derived from the Commission's strategic priorities, such as the European Green Deal, Europe fit for the Digital Age, or Beating Cancer. Each mission operates as a portfolio of actions, combining research projects with policy measures and legislative initiatives, to reach a measurable target that could not be achieved through individual actions. The research and innovation projects related to the missions are implemented under Pillar II as part of the Global Challenges programmes, see Figure 6 below.

There are five missions, centred around the following themes: 'Adaptation to Climate Change', linked to European Green Deal and the EU's Adaptation Strategy, aiming to support at least 150 European regions and communities to become climate resilient by 2030; 'Cancer', linked to Europe's Beating Cancer Plan, to improve the lives of more than 3 million people by 2030 through prevention, cure and solutions to live longer and better; 'Restore our Ocean and Waters by 2030', linked to EU Biodiversity Strategy and Sustainable Blue Economy Strategy, aiming to protect and restore the health of oceans and waters through research and innovation, citizen engagement and blue investments; '100 Climate-Neutral and Smart Cities by 2030', linked to European Green Deal, to support cities in accelerating their green and digital transformation; and 'A Soil Deal for Europe', linked to European Green deal, aiming to establish 100 living labs and lighthouses to lead the transition towards healthy soils by 2030. (European Commission, n.d.-c)

Horizon Europe continues to operate through Pillars, much like Horizon 2020, but they will be become more interdisciplinary in order to combine the efforts of countries, researchers and technologies more effectively. Pillar I, Excellent Science, aims to increase the EU's global scientific competitiveness by supporting frontier research projects driven by top researchers through the European Research Council. Pillar II, Global Challenges and European Industrial Competitiveness, will support research relating to societal challenges and reinforce technological and industrial capacities through six thematic clusters, as shown below in

Figure 6. It also provides funds for the EU missions, targeting the Commission's strategic priorities. Pillar III, Innovative Europe, aims to make Europe a frontrunner in market-creating innovation via the European Innovation Council (EIC), with 70% of the funding targeted to startups and innovative SMEs. The full structure of the Horizon Europe programme can be seen below in Figure 6. (Directorate-General for Research and Innovation (European Commission), 2021)

Figure 6 Horizon Europe structure. (Directorate-General for Research and Innovation (European Commission), 2021)



In the first two years of Horizon Europe, 2021–2022, a total of 44 832 eligible proposals were submitted under the 236 calls launched, closed, and fully evaluated. Of these proposals 15.9% have been accepted, which means that the success rate of proposals has been higher for Horizon Europe than the 11.9% for Horizon 2020. Horizon Europe is almost on track in terms of the commitment to spend at least 35% of Horizon Europe funding on climate action, with the preliminary figures at the end of 2022 indicating that Horizon Europe has contributed 34% on climate change from the budgets of 2021 and 2022. However, only 7.3% of Horizon Europe spending have been allocated to address biodiversity, which is behind the target of 10%. In terms of SME participation in projects, the status in Horizon Europe was on average 19% SMEs of the total project partners at the end of 2022, with Pillar II naturally being the most popular with 22% of partners being SMEs.

2.5 Why does EU fund research and innovation?

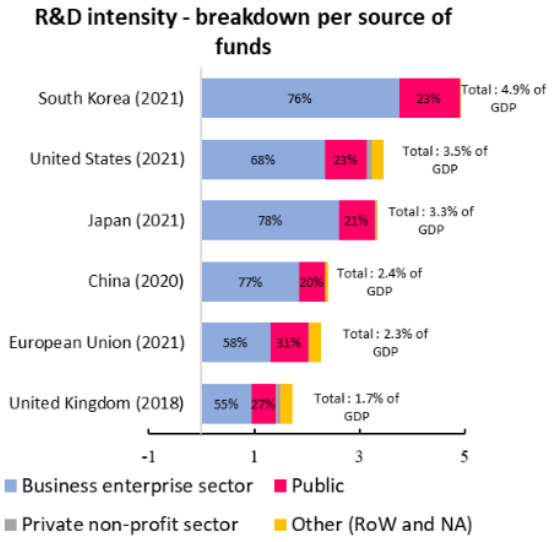
In a policy brief published by the European Commission Directorate General for Research and Innovation in March 2024, the authors state that building a competitive, green and fair Europe is not an option, but an absolute necessity. Factors such as rising geopolitical tensions, aging population and subsequent shrinking workforce, vulnerability to economic or societal shocks, such as the COVID pandemic, and the ongoing environmental emergency have made the future seem uncertain. Research and innovation have a pivotal role in generating the required sustainable solutions to these challenges. (European Commission, Directorate-General for Research and Innovation et al., 2024)

EU lacks access to natural resources, such as oil and minerals, and global competition in strategic technological sectors push EU to invest in research and innovation to reach technological sovereignty as well as higher levels of productivity and growth. New technologies can also provide ways to substitute critical materials, such as those needed for the green transition, where important dependencies on single countries exist at the moment. In the last 20 years, science and innovation have generated two thirds of economic growth in industrialised countries, and given the aging EU population, efficiency gains through innovation are the only way Europe can keep up the growth. (European Commission, Directorate-General for Research and Innovation, 2017)

2.5.1 Global competition

Despite the compelling reasons, on a global level, EU is continuously lacking behind the other main players, United States, Japan and China, when it comes to investments into research and development (R&D). The EU target level of R&D spending is 3% of GDP, while in 2021 it was only 2.2%, with private sector investment being below 60% of the total, as shown by Figure 7Figure 7 below. Public funding is therefore important in stimulating research in strategic areas and providing initial funding for experimental early-stage research and innovation, sometimes seen too risky by other investors. (European Commission, Directorate-General for Research and Innovation et al., 2024)

Figure 7 R&D investment as percentage of GDP in 2021.(European Commission, Directorate-General for Research and Innovation et al., 2024)



At the same time, the global competitors benefit from more centralized approaches to innovation, both geographically and politically, while Europe is more fragmented and diverse. This is why a strong R&I policy and European Union level investment and funding are important in both harnessing and enabling the best resources and innovation potential from each separate EU country. (European Commission, Directorate-General for Research and Innovation, Mazzucato, M., 2018) Similarly, it is only possible to pool intellectual and financial resources to facilitate the development and scale-up of large-scale solutions under the coordination and pan-European approach of the EU funding programmes. (European Commission, Directorate-General for Research and Innovation et al., 2024)

2.5.2 European Union Added Value (EAV)

In 2017, the EC commissioned an extensive report to assess the Union added value in the completed FP7 and ongoing Horizon 2020 programmes. The Union added value, or EU added value (EAV), is a key concept in EU policymaking and relates to the subsidiarity principle, which states that in areas of shared competence, the EU shall act only if it adds value and can achieve proposed objectives better than the Member States.

The assessment found that the mechanisms creating impact, i.e. the added value, can be triggered on two levels: already at the stage of project preparation and initial concentration of resources, though reduction of commercial and research risks, increase of research competition (at the top EU level) and leverage of private and public funds for project activities, or at the level of actual project activities and outputs, via pooling and building a

critical mass of resources that could not be reached on national level, increased international and cross-sectoral mobility of researchers and dissemination of research data, and research policy coordination and strategic target setting activities on EU level. In other words, not only the actual funding granted to the successful projects creates value, but the building of consortiums and preparing the project proposals in themselves create some of the same impacts and contribute to EAV across the EU. (European Commission. Directorate General for Research and Innovation. & PPMI., 2017)

3 SME impact on economy and innovation in Europe

As stated by the Commission on the release of the SME Relief Package in 2023, small and medium-sized enterprises (SMEs) are an essential part of the economic and social fabric in Europe, especially in rural areas, where they provide employment opportunities and keep the local communities alive. Overall, there are 24 million SMEs in Europe, representing 99% of all businesses in the EU, providing two thirds of jobs, and generating more than half of the profits in the non-financial business sector. They foster innovation, diversity and equality through their operations and are essential to the green and digital transitions and the long-term prosperity across Europe. (European Commission, 2023)

Naturally, while most companies aim to develop their businesses and products, only a small number of the 24 million SMEs in Europe are doing research and innovation in the way that is relevant in the context of EU funding and this thesis. The data provided in this chapter is, however, relevant in illustrating the importance of SMEs to the European economy and describing the difficulties experienced by them in their daily operations, which may also be reflected in the problems they face in their EU project participation.

This chapter aims to explore the status of SMEs in Europe, via statistics and studies conducted about their economic and operating environments. It also provides information about services provided by the EU to support the growth and development of SME businesses.

3.1 SME definition and statistics

EU offers many types of support for small and medium sized businesses, including reduced taxation rates and administrative requirements, in addition to specific funding instruments targeted to SMEs. In order to qualify for these, companies must fulfil the EU definition for

SMEs in terms of the company's size. To be considered an SME, a company must meet the following criteria based on number of employees and either turnover or balance sheet total:

Medium-sized: < 250 employees, ≤ €50 million turnover or ≤ €43 million balance sheet total
Small: < 50 employees, ≤ €10 million turnover or balance sheet total
Micro: < 10 employees, ≤ €2 million turnover or balance sheet total
(General Secretariat of the Council, n.d.)

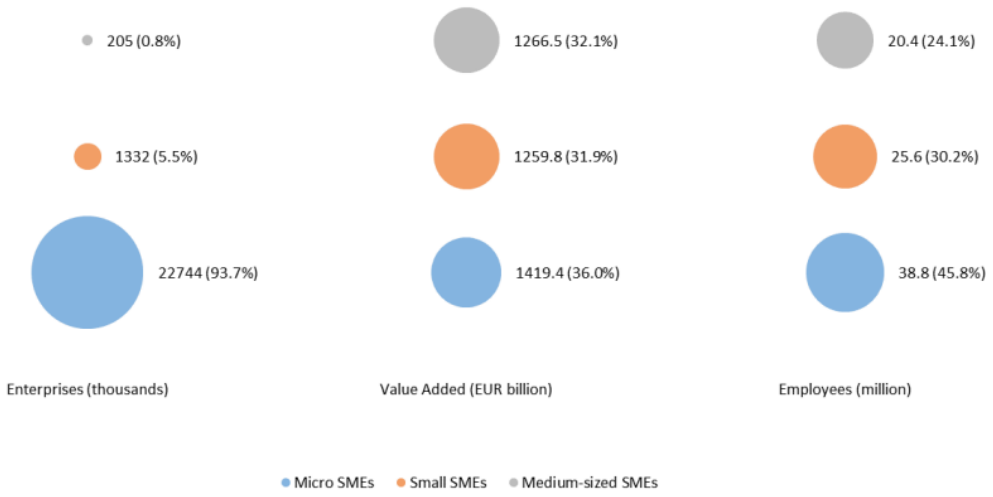
In 2022, there were over 24 million SMEs in Europe, accounting for more than 99% of registered companies. The provided 2 out of 3 jobs in Europe and made more than 50% of the total revenues, compared to large enterprises, as shown in the summary below in Figure 8Figure 8. (European Commission, Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs, 2023).

Figure 8 SMEs in the EU 2022 (estimates produced by JRC, based on 2008–2020 figures from national and Eurostat databases) (European Commission, Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs, 2023).

	ENTERPRISES		PERSONS EMPLOYED		VALUE ADDED	
	NUMBER	SHARE	NUMBER	SHARE	€ BILLION	SHARE
SMEs (0 -249 persons employed)	24 281 159	99.8%	84 886 407	64.4%	3 946	51.8%
LARGE ENTERPRISES (250+ persons employed)	43 112	0.2%	46 918 978	35.6%	3 674	48.2%

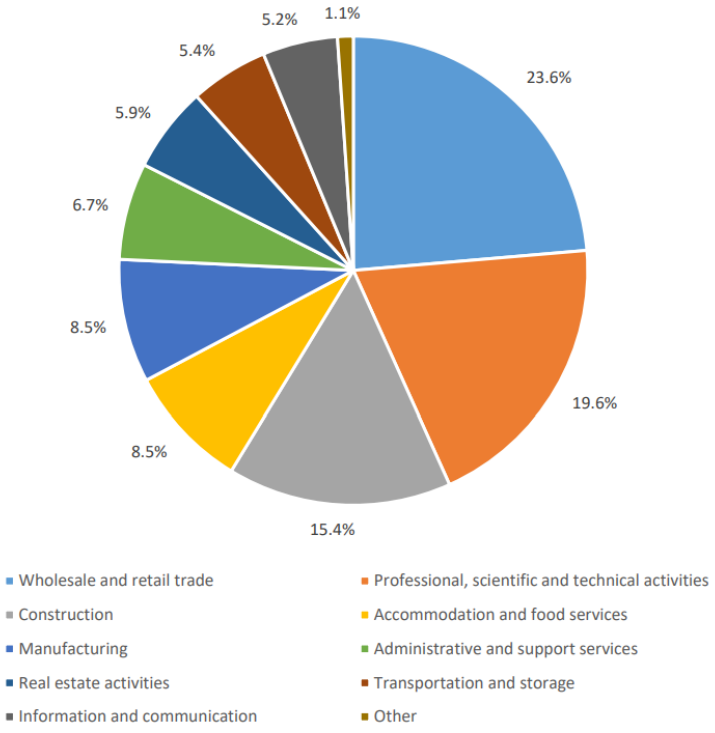
When looking at the numbers of companies, revenues and employees per SME category in Figure 9, it becomes even clearer how numerous the micro SMEs, employing less than 10 people, are in Europe. Considering the total workforce in Europe, every third person is working in a micro SME. (European Commission. Directorate General for Internal Market, Industry, Entrepreneurship and SMEs., 2023)

Figure 9 Share of different EU-27 SME size classes in the number of enterprises, employment and value added in 2022. (European Commission. Directorate General for Internal Market, Industry, Entrepreneurship and SMEs., 2023)



In terms of operating industries, the split of SMEs is shown below in Figure 10. For the purposes of this thesis, it could be estimated that companies most active in innovation would be in the category of Professional, scientific and technical activities, with some perhaps also in Information and communication. Those would amount to approximately 25% of the companies in Europe, where innovation potential could be identified.

Figure 10 Distribution of EU-27 SMEs across industry sectors in 2022. (European Commission. Directorate General for Internal Market, Industry, Entrepreneurship and SMEs., 2023)



3.2 Current status of SMEs in European economic and R&I landscape

SMEs in Europe, and across the world, have had to deal with high economic uncertainty in recent years. The COVID pandemic caused a sharp downturn in demand in certain industries, while also causing issues with availability of materials and components in others. Since 2021 SMEs have struggled with hiring enough new staff to respond to an unexpectedly strong rebound in demand and simultaneous sharp increases in the prices of many of their inputs, such as energy and raw materials. In the past few years, while economic recovery has started, new risks impacting SMEs have emerged in the form of historically high inflation and rising interest rates. Studies have shown that rising costs increase the probability of delayed payments, which, coupled with enhanced difficulty in accessing finance and higher interest rates, can make bankruptcies somewhat more likely. At the same time, the effect of high inflation may be delayed and indirect: rising interest rates and worsening economic outlook are associated with lower investment expectations, especially for SMEs, which could again slow the pace of innovation. (European Commission. Directorate General for Internal Market, Industry, Entrepreneurship and SMEs., 2023)

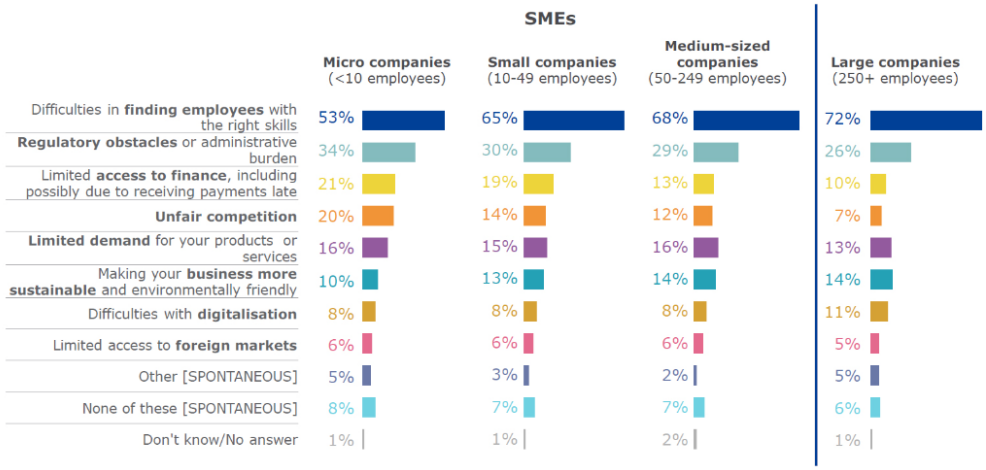
Innovation, however, is important as it has been proven to increase resilience towards external shocks and changes in operating environment. Those companies that report innovations seem to be nearly four times more resilient economically, than those with low innovation capacity. The ability to innovate as market conditions change also represents a key determinant of a company's survival, as it enables a company to respond to external pressures with more agility and speed. (European Commission, Directorate-General for Research and Innovation et al., 2024)

3.2.1 Problems faced by SMEs

The 24 million European SMEs represent 99% of all businesses in the EU. SMEs are central to Europe's economic and social fabric, drive Europe's green and digital transitions and support long-term prosperity.

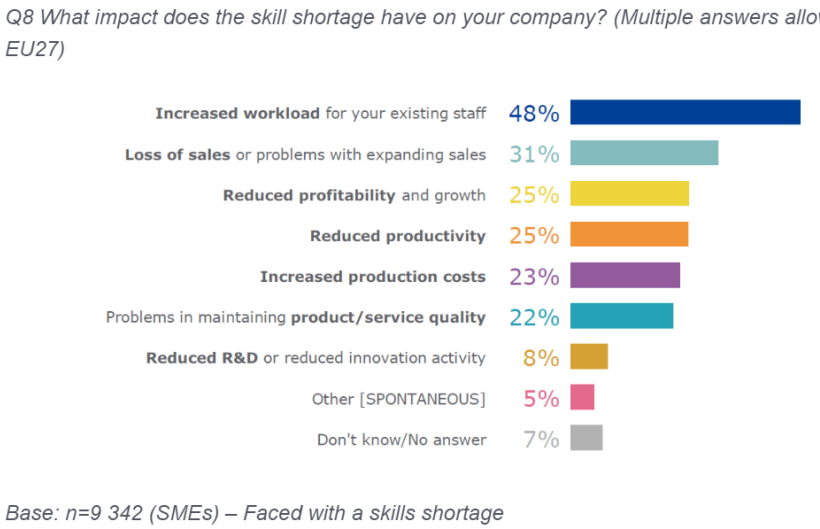
According to a Eurobarometer survey published in November 2023, finding skilled staff is by far the biggest problem faced by SME companies in Europe at the moment, see Figure 11 below. Skill shortage is reported by 53% of micro companies, and up to 68% of medium-sized companies, presenting this as one of the main barriers of growth. (Ipsos European Public Affairs, 2023)

Figure 11 Eurobarometer: Main problems for companies in Europe. (Ipsos European Public Affairs, 2023)



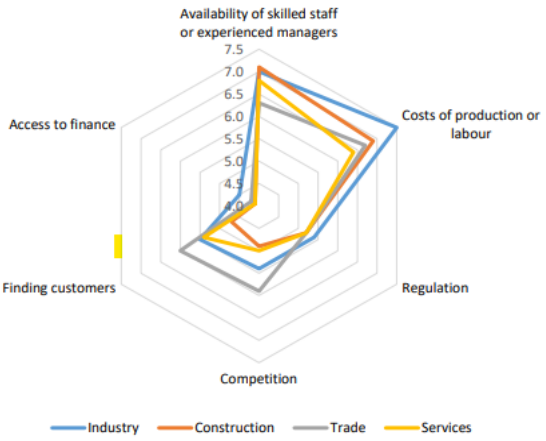
Increased workload for existing staff is identified by the overall largest share of SMEs (48%) as a consequence of skill shortages in their company. The proportion selecting this impact is higher in medium-sized companies (55%) than in smaller SMEs (47%–49%). However, only 8% of SMEs report this as reason for reduced RDI activity, as shown in Figure 12Figure 12, which could be interpreted as a sign of the SME innovation potential and responsibility resting on the shoulders of the SME owners and a few key employees.

Figure 12 Eurobarometer study: Impact of skill shortages on SME companies. (Ipsos European Public Affairs, 2023)



Similar findings were made in the 2023 EU industrial R&D investment scoreboard study, where availability of skilled staff and costs of production or labour were identified as the two most critical issues impacting SMEs in Europe, as shown by Figure 13Figure 13 (Joint Research Centre (European Commission) et al., 2023).

Figure 13 Assessment by EU SMEs in different industries of importance of various challenges and issues - Sept–Oct 2022. (Joint Research Centre (European Commission) et al., 2023)



Mobility of workers within the EU could help alleviate skills shortages, but so far that concerns only 3.8% of EU workers. Only 14% of EU SMEs, compared to 30% of large firms, have tried to recruit staff from other EU Member States. The Commission recognises that regulatory or administrative requirements often prevent labour mobility and simplification is needed when it comes to differences in registration practices with local authorities and access to national IT systems. To this end, the Commission is planning to implement an Action Plan to address labour and skills shortages, by spring 2024. (European Commission, 2024) Regulatory and administrative burden was identified as the second biggest issue for SMEs in general, being reported by approximately 30%, see Figure 11. This is something the EU has been trying to alleviate for many years now, as discussed below in EU support for SMEs, 3.3, with hopefully digitalisation now providing some relief.

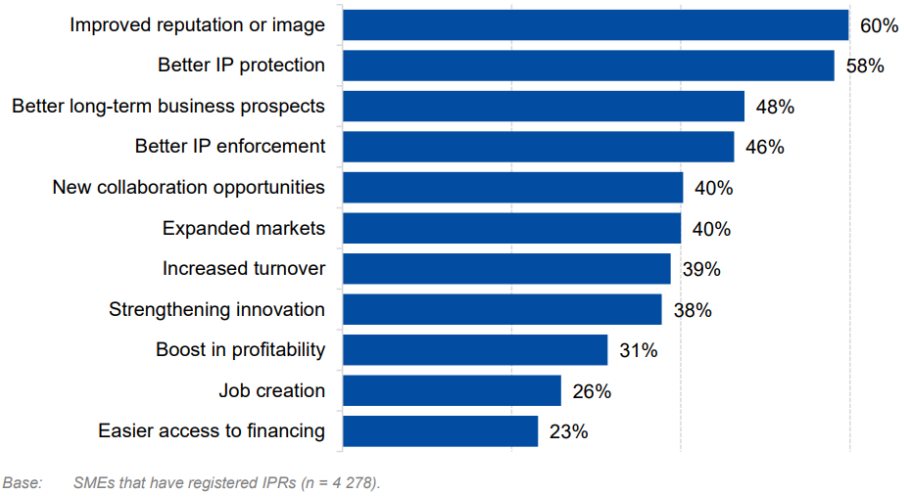
3.2.2 Protecting SME innovations

While global R&I collaboration is vital in solving the numerous global challenges we face, EU is also aiming to gain or maintain global leadership and competitive advantage over US and China in many areas of technical, technological and digital development, in order to increase its independence of foreign imports of raw materials, components and innovation themselves. One way of ensuring that is protecting the innovations and solutions with registered intellectual property rights (IPR) in terms of patents, trademarks, designs etc. This is something that EU is trying to advance through the projects they fund, where IP registration is one of the deliverables closely monitored in project planning and results. There are specific requirements relating to IP management, especially relevant to many SMEs,

whose objective in the project often is to commercially exploit the results of the project. (European IP Helpdesk, 2022)

As found by the 2022 Intellectual Property SME Scoreboard commissioned by European Union Intellectual Property Office (EUIPO)(2022), a large majority of SMEs may not know how to best profit from their intellectual assets or where to find support for the development of their IP business strategies, and only 10% of SMEs in EU had registered intellectual property (IP) rights in the form of trade marks, designs, or patents. Yet 93% of those who had registered IP, reported that it had had a positive impact on their business in terms of improving company reputation, increasing market value, attracting investors and providing revenue from licensing, as shown in Figure 14Figure 14. (European Union Intellectual Property Office, 2022)

Figure 14 Types of positive impacts experienced (overall). (European Union Intellectual Property Office, 2022)

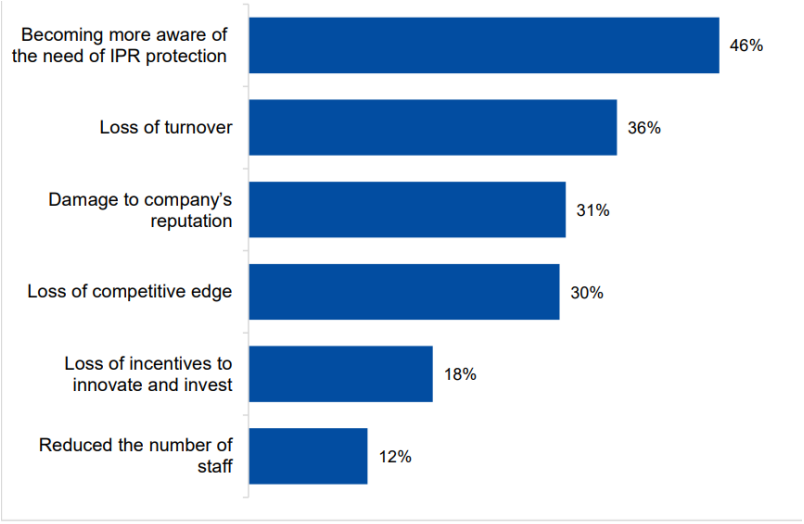


The main reason why SMEs did not register IPRs is that they did not see additional benefits from doing so: 35% of SMEs gave this as a reason not to register IPRs. Just over half (54%) of SMEs that registered IPRs reported having faced difficulties with the registration process. SMEs most frequently referred to the high cost of the registration, in both high IP office fees as well as high IP agent fees were reported by 20% of SMEs.

While only 15% of SMEs report having suffered from an infringement of an IPR that they own, the impact can be concretely detrimental to the business, causing loss of turnover, damage to the company's reputation, or loss of competitive edge, as shown by Figure 15Figure 15 below. Encouragingly, 89% of SMEs with registered IPRs that experienced an infringement have used some kind of procedures to enforce their IPRs, such as direct

negotiations with the infringing party, submitting a takedown notice, or initiating a court procedure.

Figure 15 Impact of IP infringements. (European Union Intellectual Property Office, 2022)



Base: SMEs with registered IPRs that experienced an infringement (n Micro = 314, n Small = 577, n Medium = 335).

As stated by EUIPO in the report, the goal is not for every SME to register IP rights, but every SME that does create IP that needs to be protected from infringement should be able to do so as easily and cost-effectively as possible. For this purpose, EUIPO runs the *Ideas Powered for business SME Fund*, which is a grant scheme designed to help EU-based small and medium-sized enterprises (SMEs) protect their intellectual property (IP) rights. The SME Fund offers 4 different vouchers that can be used to claim reimbursement for various IP-related activities, including applications for trademarks, designs, patents, and plant varieties, and IP Scan services. (EUIPO, n.d.)

3.3 EU support for SMEs

As stated above, EU has recognised the importance of SMEs in reaching its targets of growth and future sustainability. There are many types of support available for SMEs, but on the EU level it is mostly perhaps aimed at those operating in the industries, which EU has deemed strategically important. Below is an overview of just some of the support mechanisms offered in connection with Horizon Europe or by one of the many research and innovation instances or partnership organisations operating under the European Commission.

3.3.1 SME strategy 2020

In 2020 the EU launched its *SMEs Strategy for a sustainable and digital Europe*, to support European SMEs of all sizes (Directorate-General for Communications Networks, Content and Technology, 2020). The strategy aims to “empower SMEs across all sectors to achieve a climate-neutral, resource-efficient, and digitally agile economy”.

Many of the measures in the strategy were proposals or plans, not yet concrete actions. It included proposals such as reducing administrative burden of SMEs via tax simplification and a head office tax system to reduce compliance costs and the risk of double-taxation, promoting cross-border expansion, improving access to finance and skilled staff, and helping SMEs in digital transformation. Many of these were finally implemented as part of the SME Relief Package as mentioned in the next subchapter 3.1.2 below.

The more concrete measures of the strategy, that in fact already existed, included the Late Payment Directive, which has been in force since 2013, but was updated as part of the SME Relief Package in 2023. Also the SME Test, which the Commission uses to assess the impact of any new legislation on SMEs and ensure that regulatory measures are SME friendly, has been in use since 2017.

The SME strategy was seemingly a combination of old and new policies, that are “designed to create a supportive environment for SMEs, helping them to thrive and contribute to the EU’s transition to a sustainable and digital economy.”

3.3.2 SME relief package

In September 2023, the EU launched an SME relief package, to provide short-term relief, boost SMEs' long-term competitiveness, and strengthen fairness in the business environment across the EU Single Market. As stated in the Commission press release, SMEs are essential drivers of Europe's green and digital transitions but continue to face unpredictability and volatility as a result of a number of crises in recent years.

The new measures of the relief package included an updated *Regulation on combatting late payments* in commercial transactions, to tackle payment delays, which jeopardise the cash flow of SMEs and heavily impact their competitiveness and resilience. Another measure is the *Head Office Tax System for SMEs*, which will give SMEs operating in several EU countries the option to interact with only one tax administration – that of the Head Office –

instead of having to comply with multiple tax systems, leading to tax certainty and fairness, and reducing compliance costs, while minimising the risk of double and over taxation and tax disputes. (European Commission, n.d.-h)

The relief package also proposes several other initiatives, such as improving the current regulatory environment for SMEs, by appointing an EU SME Envoy to provide guidance and advice to the Commission on SME issues, and advocate SME interests externally. It also aims to simplify administrative procedures and reporting requirements for SMEs by launching the Once-Only Technical System (part of the Single Digital Gateway) by the end of 2023, allowing SMEs to complete administrative procedures across the Single Market without the need to re-submit documents. (European Commission, n.d.)

3.3.3 SME quota in funding programmes

As discussed earlier, EU aims to enhance the participation of SMEs in funded projects. The introduction to the all the Horizon Europe work programmes states the following:

> Through the programme, special attention will be given to ensuring cooperation between universities, scientific communities and industry, *including small and medium enterprises*, and citizens and their representatives, in order to bridge gaps between territories, generations and regional cultures…

Based on a review of those 2023–2025 work programmes and funding calls (European Commission, Directorate-General for Research and Innovation, n.d.), this special attention is in some cases merely implied, or given as a recommendation, and only a few calls for proposals contain an explicit requirement for SME inclusion in the project consortium. Below are some examples of the wording used in Cluster 3 and Cluster 6 calls, where SMEs are in fact mentioned far more frequently than in most other clusters:

- “Participation of SMEs is strongly encouraged.” (Cluster 3)
- “Consortia must include, as beneficiaries: At least 2 SMEs from 2 different Member States.” (Cluster 3)
- “Consortia must include, as beneficiaries: At least 50% of the budget must be allocated to SMEs.” (Cluster 3)
- “The involvement of big industries in the projects should not focus on technology development but on supporting the SMEs in bringing their innovations to the market.” (Cluster 3)

- “Proposals must implement the 'multi-actor approach' and ensure adequate involvement of small and medium-sized enterprises (SMEs) and industrial clusters, start-ups, universities/research centres, public authorities and civil society organisations and other relevant actors of the value chain.” (Cluster 6)
- “Proposals shall apply the concept of the 'multi-actor approach’ and ensure adequate involvement of the farming sector, SMEs and other actors active in rural areas” (Cluster 6)
- “The participation of industry and particularly SMEs is strongly encouraged.” (Cluster 6)

In some cases, SMEs are mentioned in the scope or the expected outcome of the project:

- “Increasing engagement and competitiveness of the European environmental services sector, such as the SMEs and industry operators, including the digital sector actors, supporting the convergence between bio-based and digital sectors” (Cluster 6)
- “Support to the implementation of the relevant targets as outlined in the revised packaging and packaging waste directive and the directive on single-use plastics and support to operators, especially SMEs, in meeting the requirements of the relevant EU legislation.” (Cluster 6)

All in all, it appears that including SMEs in large consortium projects under Horizon Europe is not, at least implicitly, very strongly supported or enforced by the EU. Considering the finding of the survey (chapter 5.1), that most SMEs have been invited to participate in project consortiums by one of the other (larger) organizations, it appears that in many cases the consortiums are still trying to follow the recommendation, at least in cases where it is known to have a positive influence on project evaluation.

3.3.4 SME specific funding instruments

Under Horizon 2020, support to SMEs was provided by COSME, the EU programme for the Competitiveness of Enterprises and SMEs, which ran from 2014 to 2020, with a budget of €2.3 billion. COSME supported SMEs by facilitating access to finance, supporting internationalisation and access to markets, creating an environment favourable to competitiveness and encouraging an entrepreneurial culture. It implemented the Small Business Act (SBA), which reflected the Commission’s political will to recognise the central role of SMEs in the EU economy. (European Commission, n.d.-a)

Horizon 2020 also included a specific SME instrument, which provided €1.3 billion in grants to support exploring and assessing the technical feasibility and commercial potential of a breakthrough innovation in a certain industry, and the subsequent development of the innovation for demonstration and scale-up purposes. However, the instrument did not fund the final phase of commercialisation, leading to problems in market access.

Under Horizon Europe, the European Innovation Council (EIC) was established as a response to the identified lack of support to innovative SMEs and aims to place the EU in the lead for breakthrough market-creating innovations. It was started as a pilot programme in the last three years of Horizon 2020, and officially launched in 2021, as part of the new EU SME Agency European Innovation Council and SMEs Executive Agency (EISMEA). It focuses on individual innovators with high growth potential; researchers, entrepreneurs, start-ups, SMEs and mid-caps. Its purpose is to fund innovations all the way up to product commercialisation, market deployment and scale up, in other words until the company is able to either make profit from its innovation or find more traditional commercial funding to support its growth. It will operate mainly under two instruments; the Pathfinder for advance research is meant for nurturing early-stage research on transformational technological ideas, spin-offs and potential market-creating innovations, and the Accelerator to support the innovation deployment and scale-up activities of SMEs, particularly of those innovations and start-ups coming out of the Pathfinder or other Horizon Europe funded programmes. (European Commission, Directorate-General for Research and Innovation, 2018, p. 52-53)

3.3.5 Other support for SMEs

EU provides a multitude of support for SMEs in various forms, from simple practical online tools and guides for specific purposes, such as GDPR, to organisations, networks and platforms to help SMEs find resources and support for their business needs. Below are some examples of the instances providing such services.

Enterprise Europe Network (EEN): The EEN is the world's largest support network for SMEs, launched by the EC in 2008, bringing together experts from national member organisations providing business support to SMEs. Member organisations include chambers of commerce and industry, regional development organisations, universities and research institutes and innovation agencies. They help businesses innovate and grow on an international scale, help companies increase their resilience and offer support to SMEs in their transition to more sustainable and digital business models. (Enterprise Europe Network, n.d.)

European Startup Nations Alliance (ESNA): Set up to promote an innovative and supportive environment for startups through eight Startup Nation Standards (SNS) across EU member states, which reflect the proposed actions of the 2020 SME strategy. Aiming to implement an open and up-to-date digital platform with essential data and information on the EU entrepreneurship ecosystem, and tools for digitalising startup businesses. (ESNA, n.d.)

European SME week: Coordinated by the European Commission every year since 2012, this campaign consists of events throughout the whole year, with the main event of European SME week organised every autumn together with the SME Assembly and the European enterprise promotion awards ceremony. It is a pan-European campaign that aims to promote entrepreneurship in Europe by helping existing entrepreneurs find information on available support and encouraging more people to set up their own businesses. It gives a chance to organisations providing business support services to promote them to entrepreneurs in Europe. (European Commission, n.d.-d)

ECCP European Cluster Collaboration Platform: This platform is an initiative of the European Commission funded by the EU programme for the Competitiveness of Enterprises and SMEs (COSME) since 2015, ultimately seeking to strengthen the competitiveness and sustainability of Europe's economy and industry, particularly SMEs, improving their performance in terms of productivity, innovation, internationalisation and resource efficiency. It is a service facility aiming to provide cluster organisations, cluster partnerships, initiatives, networks, cluster associations and resource efficiency support actors with a variety of modern tools, such as organising matchmaking and other events and providing latest news about EU key policy areas and open calls for funding. (European Union, n.d.)

EIC Community: The European Innovation Council and SMEs Executive Agency (EISMEA), established in 2021, provides a platform for all EIC-funded organisations, and other innovation stakeholders, which includes different services to address SME needs and support their scale-up efforts, such as exclusive matchmaking events with corporates and investors, trainings, bootcamps and workshops, and access to the most relevant stakeholders in the European innovation ecosystem. (European Innovation Council, n.d.)

The European Digital Hubs (EDIH) Network: The EDIH Network is a community of technology experts, set up to guide European businesses on their path to digital transformation. It brings together EDIHs, SMEs, and public sector organisations to equip companies with the essential digital tools to improve their competitiveness, upgrade their infrastructure, and boost their overall success. The network includes 228 EDIHs, which help

companies to upgrade their processes, products, and services using cutting-edge digital technologies. The EDIHs allow companies to test new technologies, before committing to the investment, in addition to offering general technical expertise, financial guidance, and training to businesses. (European Digital Innovation Hubs Network, n.d.)

4 Research materials and methods

4.1 Materials

The background material collected for this thesis consists of information related to EU funding and SME related data and statistics, collected mainly from various official EU sources and certain other related publications.

The main body of the study consists of structured surveys conducted among small and medium sized companies participating in EU funded RDI projects, to gain insights into how the SME companies themselves experience the mechanisms of EU funding.

4.1.1 Survey participants

The participants were selected from five Horizon 2020 and Horizon Europe R&I projects focusing on bio, circular and agricultural technologies, such as establishing a globally first-of-a-kind, industrial scale biorefinery flagship plant producing bio-based chemicals and materials from fructose, demonstrating novel biotechnological and non-biotechnological technologies for providing and valorising low value sugar waste streams from pulp mills, and developing microelectronics for agricultural use and forestry to create automated agricultural tools.

The selected projects are all supported by Spinverse in project management related activities; administration, reporting, dissemination and communication, thus the contact persons in each organisation were known in advance. The positions and roles of contacted persons within the companies ranged from company owners to chief scientific officers and grant coordinators. The companies were all small or medium-sized enterprises, no micro-SMEs were included.

The survey participants were approached with a personalised introductory email message, containing an invitation for an interview and a link to a survey, giving the option to respond to

either of them. The email was sent to 26 persons from 20 different companies in April 2024. Within the first week, only three responses were received, so a follow-up email was sent the following week. To improve response rate, the introductory email contained information about how many sections the survey has, and what is the estimated time required for responding. The participants were also asked whether their responses should be used anonymously, or whether they allow their views to be quoted, and how they allowed the data to be used outside of the thesis. There was no personal data collected in the survey, therefore GDPR requirements were not applicable.

4.1.2 Survey questions

The assumptions used in formulating the survey questions are based on personal observations made during the provision of project management support on EU funding applications or ongoing EU projects, and discussions with colleagues. It is clear that SMEs struggle with certain parts of the project execution, but are there perhaps other issues too, that are not so obvious or visible to someone outside the company itself? Using these assumptions as options in multiple choice questions was aimed on one hand to evoke thinking in the respondent and on the other hand to test the predefined understanding of what the problems experienced by participants are. In addition to the multiple choices, participants were also given an opportunity to add other, freeform replies. Some questions were fully open questions, asking for the personal view of the respondent. The survey is attached as Appendix 2.

The survey questions were grouped thematically into three sections, first one asking for some background information about the company's participation in EU projects and how they first found out about EU funding. The second section contained the main questions relating to the research questions, i.e. what are the barriers to seeking EU funding or joining an EU funded project, what are the aspects during the actual project that cause difficulties to SME partners in particular, and what are the main benefits that the company has gained from their participation. The final part of the survey had four questions, seeking to get the respondents' view on the importance and impact of EU funding on the company and on the wider industry sector.

4.2 Research methods

The aim of this study was to find out how the participants experience applying for and working in an EU funded project and what the perceived issues and benefits are. The selected research method was therefore qualitative research, although some quantitative results could also be extracted from the survey material. Qualitative research is used to study how people experience the world, through collecting and analysing non-numerical data to understand concepts, opinions and experiences (Bhandari, 2023). As expressed by Hennink, Hutter and Ajay (Hennink et al., 2020, pp. 10-17), qualitative methods are used for gaining an understanding of the research issue that embraces the perspectives of the study population and the context in which they live. The main differences between qualitative and quantitative research, as presented by Hennink et al. (2020, p. 17), are shown below in Figure 16 Key differences between qualitative and quantitative research. (Hennink et al., 2020).

Figure 16 Key differences between qualitative and quantitative research. (Hennink et al., 2020)

	Qualitative research	**Quantitative research**
Objective	To gain a contextualized understanding of behaviours, beliefs, motivation.	To quantify data and extrapolate results to a broader population
Purpose	To understand why? How? What is the process? What are the influences or context?	To measure, count, or quantify a problem. To answer: How much? How often? What proportion? Which variables are correlated?
Data	Data are words (called textual data)	Data are numbers (called statistical data)
Study population	Small number of participants; selected purposively (non-probability sampling)	Large sample size of representative cases
	Referred to as participants or interviewees	Referred to as respondents or subjects
Data collection methods	In-depth interviews, observation, group discussions	Population surveys, opinion polls, exit interviews

The most common qualitative research methods are observation, interviews, focus groups, surveys and secondary research (Bhandari, 2023). The methods used for primary data collection in this thesis are observation; what the writer has personally observed of the subject matter in her daily work, and surveys; using questionnaires with open and multiple choice questions sent to a selected group of participants. The participants were also offered an option to be interviewed, but unfortunately that was not taken up by anyone.

The interpretation of results was done as a thematic analysis, following the design of the thematic groups of questions in the survey. As the data was collected in a structured manner, there was no need as such to dissect and group the data before the analysis could be done. The approach could be described as deductive, where theme development and analysis was directed by existing concepts or ideas (Braun & Clarke, n.d.).

4.3 Reliability and validity of the research

Generally, reliability is thought to refer to the consistency of a measure or study, whether the results obtained could be reproduced under the same conditions, or when performed by a different researcher. Validity on the other hand refers to the accuracy of the study, does the study really measure, or its results represent, what they are supposed to measure.

However, as discussed by Golafshani (2003) in an article about the use of reliability and validity in qualitative research, those terms are more suited to quantitative research, where emphasis is on measurable facts, data is analysed mathematically and results are expressed in statistical terms (Charles, 1995). With quantitative data, reliability is, and can be, measured by the stability and repeatability of the test or measurement, and validity by how accurately the means of measurement measure the intended target. Hence, Golafshani continues, while the credibility in quantitative research depends on instrument construction, in qualitative research, “the researcher is the instrument" (Patton, 2001, p. 14). In other words, it is accepted that qualitative research of real-life phenomena does have a certain degree of uncertainty, and the quality and credibility of the study are much more dependent on the skill and ability of the researcher, in both how the study is constructed (validity) and how it is conducted (reliability). Many consider that reliability, as it is defined in quantitative research, does not really apply to qualitative research, and instead, terms like credibility, neutrality or confirmability, consistency or dependability, and applicability or transferability should be the essential criteria for quality (Lincoln & Guba, 1985).

Regardless of the terminology, Golafshani agrees that the validity, and as a result, the reliability of a qualitative study must still be maximized or tested. For that, triangulation is accepted as a good strategy in both quantitative and qualitative research. Triangulation means using several different research methods, theories, data or data sources, or even researchers, to confirm, validate and strengthen the study and the results. “The logic of triangulation is based on the premise that no single method ever adequately solves the problem of rival explanations”, as stated by Patton (Patton, 2015).

In the case of this study, an attempt was made to increase the validity of the study by having the survey questions reviewed by colleagues who are familiar with the issues under investigation. Personal observations of the issues have also been gathered, although not in a formal document that could be used in analysis. By doing those things, it was possible to clarify how to formulate the questions to elicit relevant responses to the research questions. As for the reliability of the study, as discussed in the above paragraphs, even if the survey was repeated with the same questions and same participants, the results might be different, due to changes in the companies, the projects they have most recently participated in, or simply the state of mind of the person responding. Since the results are in a way a snapshot of the prevailing situation, the reliability of the study is indeed, at least partially, dependent on the validity of the survey, and on the other hand on how it has been supported with other relevant data, i.e. triangulation. That could be seen as achieved to some degree through the use of three different methods; observation, survey, and secondary data, i.e. studies on related themes done by EU institutions. But more reliability could certainly be added by using both qualitative and quantitative methods, for example by converting some of the survey questions into quantitative data, to reveal statistical relationships between company size, location or number of projects done, compared to experienced issues or benefits. Increasing the sample size would also significantly increase the reliability, as the current number of responses to the survey does not really provide generalisable results.

A potential risk relating to qualitative research is research bias, the distortion of the survey itself, its results, or their interpretation due to pre-existing beliefs or values. For example, as relevant in this case, confirmation bias refers to the tendency to seek out and prefer information that supports the pre-existing belief or understanding of a matter. This could happen in three ways; Selective search, where positive evidence supporting the preconceived expectation is sought, and other evidence disregarded, selective interpretation, where the results are interpreted based on pre-existing beliefs, thereby reinforcing them, or selective recall, which leads to remembering better those facts, that support the existing beliefs. (Nikolopoulou, 2024) On the other hand, according to Hennink et al. (2020, pp. 14-15), the interpretive paradigm (perspective, methodology) of qualitative research questions the notion that research is truly value-free, and that researchers have no influence on data collection or interpretation. Interpretivism highlights the inherent subjectivity of humans, both as study participants and researchers. In the case of this thesis, while any subjectivity was avoided as far as possible, the questions and response options in multiple choice questions were formulated based on empirical evidence gathered from ongoing projects. They could therefore be considered as being somewhat suggestive, as they may not have included all the possible options, thereby limiting the thinking and responses of the participants. On the

other hand, multiple choice questions were used to provide different perspectives on the issue, that the respondents may not have otherwise taken into consideration. Similarly, the interpretation of the results may be influenced by the author's personal views and experiences of the issues, which are wider than the rather limited scope of the survey questions.

5 The SME view – survey results

The survey results are presented below, grouped in similar sections as they were included in the survey. Some responses have been edited for clarity, and responses where the question has clearly been misunderstood have been left out (mainly for question 3, relating to how the company has found information relating to EU funding and calls).

The responses per question have been divided into three categories, according to how many projects the company has participated in: Group 1: Less than 5 projects, Group 2: 5-10 projects, Group 3: More than 10 projects. This was done to make similarities between similar companies and differences between the groups easier to analyse. All text and freeform responses are also presented per group. Most of the participants wished to respond anonymously, therefore no names have been provided for any of the responses.

5.1 Background information about participation

Question: In your first project, did you initiate the funding search yourself or were you approached by a consortium looking for partners?
Responses: Approached by a consortium = 9, Not known = 1

Question: Have you used the Partner search functionality in Funding&Tenders portal [EU portal for searching funding related information]?
Responses: Yes = 2, No = 8

Question: Have you taken advantage of other EU offerings or services for SMEs, such as Enterprise Europe Network (EEN), Startup Europe, EIC Forum, etc.?
Responses: Yes = 1, No = 9

Question: What are the main reasons why your company decided to apply for EU funding?

	Responses
Group 1	Gain funding for research so that we can expand our know-how base with the goal of creating new business opportunities in the future;
	Help the development of new products for new markets
	Mainly to know and create cooperation with EU partners and to transfer knowledge about our product and company.
	To improve our in house R&D
Group 2	1. Financial support 2. Collaborate with specific partners 3. Broader European networks
	Taking part to research projects like those financed by the EU, where we can contribute to the integration of LCA methodology into other methodologies, represents a great opportunity to enhance our experience, increase our expertise in new fields and interact with major research institutes, universities and companies throughout Europe.
	R&D
	EU financial support for execution our company strategy, sharing know-how in research and development, strengthening leadership of Europe's industry, supporting the transition to sustainable technologies
Group 3	When we started getting involved in EU funded projects, the maturity of **** in terms of production and integration into applications was extremely low. The main reason to be involved in European projects was to collaborate with other groups working in **** in order to increase the quality of the material, the level of maturity and get deeper insights into the various **** applications.
	New markets, new business

Question: Who initiated the search/use of EU funding in your company?

Responses: The respondent = 3, R&D manager/director = 5, Funding specialist = 1

Question: How did you/your company find out about EU funding for R&D&I projects:

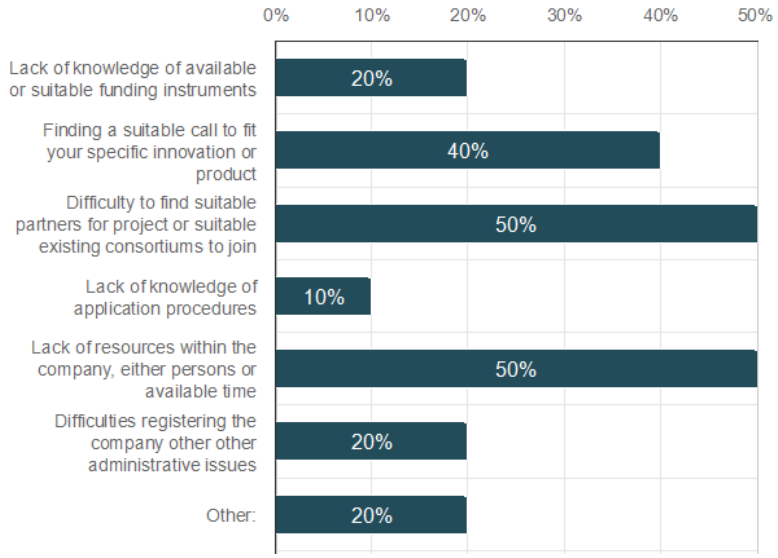
- General information about EU funding programmes and availability?
- Specific information about the call(s) you applied to?

Responses: This question appeared to have been interpreted in varying ways. All in all, many partners had originally received information from other consortium partners or business contacts and then searched for more information from the EU Funding & Tenders portal, other EU websites, national funding agencies, and conferences.

5.2 Barriers

Question: What, if any, were the barriers to starting the application process or participating in general?

Responses: Number of respondents: 10, selected answers: 21



Choices // Group	1	2	3	Total	%
Lack of knowledge of available or suitable funding instruments	1	1		2	20 %
Finding a suitable call to fit your specific innovation or product	1	1	2	4	40 %
Difficulty to find suitable partners for project or suitable existing consortiums to join	2	3		5	50 %
Lack of knowledge of application procedures	1			1	10 %
Lack of resources within the company, either persons or available time	2	3		5	50 %
Difficulties registering the company other other administrative issues		1	1	2	20 %
Other:	1[1]	1[2]		2	20 %
Other potential issues in general, e.g. among your peer companies:				0	0 %

Other reasons: 1) Question is how to find a "winning consortium", 2) High costs for the project.

Please elaborate on your selections above or provide other comments:

Group 1: “Beside finding the right partners it is often the lack of commitment of those partners.”; “Usually for an SME it is difficult to approach and conduct the application for an EU proposal, so it is important to find or be invited from a larger consortium.”

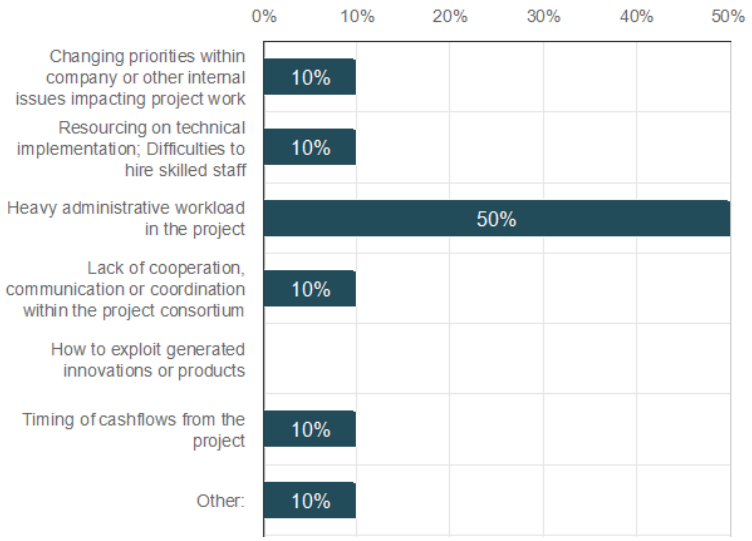
Group 2: “The application process takes so much time and a lot of it goes into talking with potential partners and making sure they provide all the required information, chasing people

to make sure everything is ready. Chasing and meetings cost a lot of resources and we always do this next to our normal work since for most people applying to grants is not their core task."; "We do research, we do not actively write proposals, look for projects or consortia, this is not our core business. We also have very high standards, so mainly we take part in proposals we think can be valuable for us and to which we can provide value."

Group 3: "Many times in a company it is about the right timing, and you do not always find a call open that suits your needs. In addition, a relatively long time is required from the moment you write the proposal to the time it gets funded and you start getting results."; "Administrative issues."

5.3 Pains

Question: What are the main issues or problems you have encountered during the actual project execution?
Responses: Number of respondents: 10, selected answers: 10



Choices // Group	1	2	3	Total	%
Changing priorities within company or other internal issues impacting project work			1	1	10 %
Resourcing on technical implementation; Difficulties to hire skilled staff	1			1	10 %
Heavy administrative workload in the project	2	3		5	50 %
Lack of cooperation, communication or coordination within the project consortium		1		1	10 %

How to exploit generated innovations or products				0	0 %
Timing of cashflows from the project	1			1	10 %
Other:			1	1	10 %
Other potential issues in general, e.g. among your peer companies:				0	0 %

Other reasons: “Administrative issues.”

Please elaborate on your selections above or provide other comments:

Group 1: “Cashflow is always a problem for SME.”

Group 2: “Depending on the project, multiple of these problems have occurred. when a key partner is not cooperating this is a big problem but also when priorities change internally and this is impacting the timelines of the project.”; “Do not underestimate the amount of work that needs to be done, especially when you are the Coordinator of the project.”

Group 3: “Changing priorities in companies including large companies could have an impact in project work.”

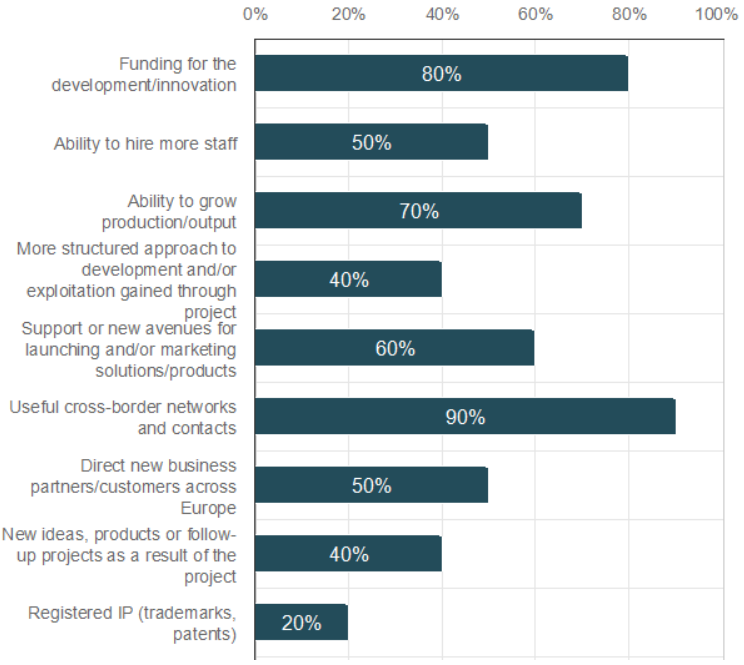
Question: What do you see as the main issues the EU should fix in terms of making the funding programmes and/or project formats work better for SMEs?

	Responses
Group 1	Develop a better EU project website; Existing is to complicated and not intuitive.
	The instruments should target SMEs. Often it is really research orientated
	I don't have really any suggestion. EU project works fine.
	Less administrative work. Better coordination with national funding agencies [when] the EU progamme is officially a co-funding programme (EU and national funding).
Group 2	I can imagine that especially the smaller SME's have problems with the availability of personnel for preparing the applications and later the administrative aspect.
	A direct contact for questions/support
Group 3	Less funding is available for higher TRL projects or for developing infrastructures that could be useful for SMEs.
	Easier administration

5.4 Gains

Question: [What are the] Gains/benefits from participating?

Responses: Number of respondents: 10, selected answers: 50



Response // Group	1	2	3	Total	%
Funding for the development/innovation	4	1	3	8	80 %
Ability to hire more staff	1	3	1	5	50 %
Ability to grow production/output	4	1	2	7	70 %
More structured approach to development and/or exploitation gained through project	2	1	1	4	40 %
Support or new avenues for launching and/or marketing solutions/products	3	2	1	6	60 %
Useful cross-border networks and contacts	4	3	2	9	90 %
Direct new business partners/customers across Europe	2	1	2	5	50 %
New ideas, products or follow-up projects as a result of the project	1	1	2	4	40 %
Registered IP (trademarks, patents)		1	1	2	20 %
Other:				0	0 %

Please elaborate on your selections above or provide other comments:

Group 1: “All the benefits mentioned are important.”

Group 2: “Funding for work that you want to do would be the main thing, otherwise development and innovation would go slower.”

Group 3: “I see many benefits from taking part in EU funded projects.”

5.5 Views on EU funding impact

Question: How important to you personally or to your company is the idea of contributing via your project participation to the wider EU goals of tackling climate change, enabling green transition or achieving the UN Sustainable Development Goals?

	Responses
Group 1	This is certainly important to us but the EU is overdoing it and destroying business competitivness in Europe.
	Very
	For our company (main business goal) and also for me personally it is very important.
Group 2	The reason to do this work is because we want to contribute to the transition of the chemical industry. In that sense our goals align very well with those of the EU.
	This is of huge importance and this is our core business (besides something I personally strongly believe in)
	not important
	Very important
Group 3	I think that it is extremely important for me, for my company and for SMEs to contribute to tackling climate change because we only have one planet.
	Very important

Question: How much resources would/could your company invest in RDI without EU or other public funding? How important do you see public funding for your company’s ability to conduct RDI?

	Responses
Group 1	Relatively few - 2 to 4% of the money we received from the EU
	50%, Very
	For us as SME it is very important to get the opportunity to get public fundings (EU or national). Only with these supports we can do R&D in a proper way.
Group 2	a lot less, some projects would not be executed
	Mostly we work with companies, where we can also do research, but with a different goal/perspective
	50%
	1) 50%. 2) very important

Group 3	For start-ups and SMEs, it is crucial to have access to this type of funding, it can help to get access to potential customers, find new applications for your material/product and even improve your product.
	very important

Question: What in your view is the importance/impact of EU funding in the development and innovation potential of your specific industry sector or field?

	Responses
	Very but as mentioned earlier it should probably be more towards SME
	It is very important for our industry sector (vertical farming). Only with these fundings we are able to make game-changing R&D.
Group 2	For SME's and for the smaller large companies this is very important, the downside is that they are then bound to the EU rules on dissemination and not making profit from the results. The really large companies can more often afford not to use this type of funding and choose for themselves when they want to communicate to the world what they are working on and what to do with the results.
	There are lots of changes in our field, mainly EU directives on climate change/circular economy etc
	Support
	Upscaling our technologies and producing new biobased products
Group 3	**** films made by chemical vapour deposition target the semiconductor industry where the entry barrier is huge. EU funding enabled us to work with **** (a reference centre for the semiconductor industry) on further advancing in the integration of **** in the semiconductor industry.
	Support SMEs for increasing markets

6 Analysis and conclusions

The results are analysed below according to the same five thematic groupings used in the survey; Background information about participation, barriers to participation, pains experienced during project implementation, gains from participation, and views on EU funding impact.

For each section, the assumptions underlying the topic and the questions are explained first, followed by an analysis of the responses. Same grouping of companies is used below as in reporting the results, i.e. Group 1 with less than five projects, Group 2 with 5-10 projects and Group 3 with more than 10 projects.

6.1 Background information about participation

The small set of background questions were designed to find out how experienced the participants were in EU projects, with the assumption that the more projects were done, the less difficulty would be experienced. Similarly, the more projects the company has participated in would be an indication that the company has found the projects highly beneficial. Another aspect of background information related to how the company got involved in EU projects, had they been active themselves in searching for suitable partners, or joined a consortium after being invited by another member of the consortium. As many Horizon Europe projects tend to be quite large and initiated or led by large companies or research organisations, the assumption was that many SMEs join after being contacted by the consortium and that that outside of the projects the companies have been invited into, they may not be very active in searching for projects themselves.

The third question asked whether the companies had used any of the other SME services provided by the EU, It was included to get some insight into how much the companies otherwise are familiar with or utilise the support EU tries to aim at SMEs. As the survey group consisted of companies in consortium projects, rather than companies who have applied as a single applicant to e.g. the EIC calls, the assumption was that they may not be very familiar with the other SME services either.

The number of projects reported ranged from one up to 36, which indicates quite a big variance in the experience levels of the companies. Despite that, all the companies reported having been invited to a project by a consortium. However, as the question specifically asked about the first project they joined, that was in line with the assumption made. Two companies responded positively to the next question of whether they have used the partner search functionality in the EU portal, which could be taken as an indication that they have subsequently been more active in searching for opportunities themselves. However, it is also possible for a company to register themselves in the EU portal as being available as a partner for projects. If this had been included as a question, it would have provided additional information about the companies' activity to find further projects, even if they are not actively searching for partners or projects themselves.

On the question of utilisation of other SME services, only one company reported having done so. The same company reported also the most EU projects, which shows that they are active in taking advantage of the support structures. Their responses to the questions on EU funding impact also confirm that they are actively seeking opportunities to develop their novel

product and advance its integration into the target industry. Such level of innovation action may not be the case for many SMEs, who might provide a specialty service to contribute to the R&I target of the project, but not necessarily in order to develop their own product or service.

The lack of SME service use is an interesting point, is it due to EU not managing to reach the companies with information about the services? Or do the companies not find the services useful? The question did not ask which of these is the reason – do the companies not know about the services, or do they just not need them? Or would the reason be more relating to the lack of resources at the companies, no time or personnel to actively search for the information? This would require more background information about the companies, how big are they, and whether they have dedicated personnel for actively trawling through the multitude of information surrounding the EU funding frameworks. And, in the end, how does EU promote the services to the SMEs?

6.2 Barriers

In terms of barriers to applying for EU funding, one of the assumptions was that there may be many SME partners in projects, who have not actively sought EU funding opportunities, but are instead participating almost “by chance”, after being invited to the project by an existing partner. The simple lack of knowledge of available funding is therefore an interesting point to investigate as a barrier. For this purpose, there were three related questions in the background information section on why, how and by whom information about funding opportunities was sought, to identify what had been the initial motivation in deciding to apply for EU funding, and whether that had any impact on what barriers were experienced. This is also related to the question of resources, do SMEs have staff and time available for the very labour intensive and time-consuming process of preparing a funding application, or in fact even looking for available opportunities.

As expected, the reported barriers were most numerous in the companies with less projects done, eight for Group 1, but also Group 2 reporting 10 barriers. The companies with most project attendance reported only 3, which could be evidence of their higher experience level in the funding system, but this Group contains only two companies, so the result may be skewed. It may also be that they have initially experienced some barriers, but that those are no longer relevant.

Lack of resources within the company was reported as a barrier by five of the eight companies with less than 10 projects. This is in line with the assumption that while an SME might be very willing to join a project, there is simply no time to actively look for one. A comment related to resourcing stated that the company does research, and it is not their core business to actively write proposals or look for projects or consortia. Another comment mentioned that the application process takes very much time and costs a lot of resources and is always done next to normal work since for most people applying to grants is not their core task.

The above finding on resources is probably at least partially related to the two other barriers with high scores, i.e. finding a suitable call (40%) and difficulties finding suitable partners or consortiums to join (50%). As commented by one of the respondents, it is important for an SME to find or be invited to a consortium, as approaching and conducting an application by themselves is very difficult. Another comment relating to finding a suitable call mentioned that “many times in a company it is about the right timing and you do not always find a call open that suits your needs. In addition, a relatively long time is required from the moment you write the proposal to the time it gets funded, and you start getting results.”

Another issue relating to available resources is of course the cost of preparing the application, which was not covered by the questions as such. The additional comments however touched on that point, with one participant mentioning the high costs of projects and another posing the question “how to find a winning consortium?”. Since the number of applications submitted for any given call can be hundreds, and the success rate in Horizon 2020 calls was 12%, it is no wonder that companies are hesitant to invest a lot of time and money into an application that may not in the end be selected for funding. It is quite a risk for a small company to take. But as discussed in chapter 2.5.2, some of the value is created already at the project application phase, especially if well conducted, so the benefits of e.g. wider networks and new business partners may be realised even for the unsuccessful consortiums.

6.3 Pains

The problems observed among SME partners during projects, and assumed to be those experienced also by themselves, would seem to mirror those generally affecting SMEs according to the Eurobarometer survey Main problems for companies in Europe (Figure 11). These include delays in keeping up with the project timetable due to losing staff or difficulties in recruiting suitable staff, struggling with the heavy reporting and administrative

requirements during the project, priorities within the company changing, or simply experiencing cashflow problems due to the project payment cycle. However, there might be other issues not that clearly visible from the outside, which the survey hoped to discover.

In the end, this was the question that elicited the least answers, only one per company. As selection was not limited to one choice, nor were the participants asked to only select the single biggest problem, the conclusion would seem to be that when the project is in action, there are not that many things that companies find problematic or painful.

The biggest issue appears to be the heavy administrative workload, as somewhat expected, but even that was only selected by half of the respondents, and one response as other “Administrative issues”. Slightly surprisingly, this was the most common problem for companies with 5-10 projects under their belts, suggesting that perhaps the increase in number of projects had not yet been matched by staffing levels or improved administrative processes. The remaining four responses were distributed among the other options, with two responses indicating issues in the cooperation within the project consortium, one mentioning problems with sufficient staffing on technical work and another issues with cashflows from the projects. The latter two are issues which SMEs potentially experience more than larger companies in general, due to their smaller size and limited resources.

This survey section contained also an additional open question of what the participants think EU should change or fix in the funding system. Three of the replies mentioned the administrative side of the projects, as could be expected. Two would have benefitted from more or clearer information available from the EU, either via their website or through a direct contact. Two of the respondents mentioned the actual content of the funding calls as being too research oriented or not targeted at higher TRL (technological readiness level) projects. This last point is an issue that the EU has identified back in Horizon 2020 and even earlier, and has been trying to fix in Horizon Europe; how to get from the research and innovation development stage to the actual exploitation, i.e. getting the solutions commercialised and onto the markets. SMEs are even mentioned as being instrumental in getting that done, by taking the developed solutions into use. Based on this very small sample size, it seems that it still is a problem, and more could be done by the EU to help take all those great innovations across the finish line.

6.4 Gains

The assumption was that companies do get a lot more out of the projects they participate in, than purely the funding to cover the costs of their work and materials. Especially in the larger consortium projects, where up to 50 partners from across Europe work on joint research and innovation, building networks and sparring on further development ideas would seem rather unavoidable. The interesting aspect was to see whether some of the assumed more concrete benefits are realised through the projects, such as ability to increase staff or production, or registering new IP, which are reported by the EU as the main direct economic gains of project partners in Horizon 2020, for all types of entities, not just SMEs (European Commission, Directorate-General for Research and Innovation, Mitra et. al., 2024).

There were 50 benefits selected by the ten participants, with one selecting only one of the options but two participants marking all of them. Based on purely the number of responses, the gains clearly outweigh the problems experienced in the projects or hesitations in applying for funding. Gaining useful cross-border networks was the most commonly experienced benefit, selected by nine participants. This is of course one of the main aims of the EU, and it is very positive to see that it is working. It was even slightly more important to the respondents than the actual funding received, which was selected by eight persons. The direct economic benefits referred to in the previous paragraph, increased staff and output, new business partners or customers, do seem to come through as well, being selected by 50-70% of participants. IPR registrations were reported by only two of the ten respondents, but considering that only 10% of SMEs in the EU own IPR, this is not a bad result, and would perhaps indicate that participation in the projects has had an impact.

An interesting and important additional question on gains was included in the last section, asking how much resources the company could invest in RDI without EU or other public funding, and how important public funding is for the company’s ability to conduct RDI. This is perhaps the most crucial question in terms of the gains, as all of the companies stated that EU funding is very important to their ability to conduct R&I, and without it some, or even more than 50%, of the innovation work could not be done. An obvious gain from EU funding then, not just for the SMEs themselves, but to all of us benefiting from their work in one way or another.

6.5 Views on EU funding impact

The last section of the survey was included to get more insight into what value the companies place on EU funding, for themselves and their industry, and on a wider scale, to the impact the funding is trying to achieve on a global level. There were very few assumptions as such relating to this theme, other than perhaps the expectation that for at least some of the companies and their owners it could be a very personal motivating factor to be part of the quest for global solutions.

Nearly all the respondents stated that it is important or very important to them personally and to their companies to contribute towards EU goals on green transition and the UN Sustainable Development Goals. For four of the companies this was mentioned as being part of their business goals or even core business. It could be assumed that especially for those companies, whose purpose is the development of technologies, processes or products that enhance sustainability, the current clear agenda from the EU provides validation and satisfaction beyond the mere commercial business case.

The importance of EU funding to each company and their ability to do R&I was shortly discussed already in the end of chapter 6.4. It is very clear, based on this small sample, that EU funding is an important enabler for SMEs to conduct R&I, and without it many projects could not be done. An interesting additional question would be how well the company does commercially with their existing products or services, and how important innovating is to their future growth or success, i.e. what their view is on the difference between wanting and needing to do innovation. As discussed in 3.2, according to many studies, innovation is the key to resilience. So, does EU funding help them to do innovation or development that they would have to find resources to do anyway, or does the additional funding allow them to do innovation that they might not otherwise need to do, perhaps leading to unexpected gains?

The last question asked for views on EU funding importance to their field or industry sector in general. Again, the support from EU funding was seen as important or very important by most of the participants, stating that it enables game-changing R&D, upscaling technologies and producing new biobased products, increasing markets, and introducing a novel material to an industry with very high entry barrier. As downsides it was mentioned that funding should be targeted more towards the SMEs in the industry, and that certain EU rules on e.g. dissemination and exploitation are much harder to comply with for SMEs and might actually be a bit counterproductive in terms of competitiveness.

All in all, the strategic and ‘ideological’ aspirations of the EU seem to be supported by the SMEs in turn. But as mentioned by one of the participants, “It is great that this very broad funding vehicle exists. The topics however are also subject to 'fashion' and it is clear that some parties with the right network have more influence on what is going to be in the calls than those without”, pointing perhaps towards the influence of certain industry sectors in what is hot and what is not. Luckily, while the calls change every year, the overall emphasis on sustainability and green and digital transformation lasts for at least the current seven year strategy period.

6.6 Conclusions and recommendations

Based on the survey, even with its limited generalisability, it is fairly clear that there are numerous SMEs in Europe, who would be willing and able to participate in EU projects and see it as very important in terms of contributing also to the wider goals of sustainability and green transition. The benefits from participating in projects are also very clear. But the SME resources are limited, so in order to encourage them to take part, some more concrete support would be needed to make it attractive to them.

Something is being done by the EU, for example the introduction of the lump sum project template, aimed at reducing the administrative burden during the projects (European Commission, n.d.-f). Some national funding agencies, like Business Finland, have also started providing funding to companies for the preparation of funding applications, which could somewhat alleviate the pressure on financial resources (Business Finland, n.d.). But the issue still remains, that many companies do not have the resources to start the search for the information about funding that would be relevant and available to them, and are therefore ‘at the mercy’ of their existing connections to get invited into a consortium.

Another issue raised in the survey was the risk of investing time and money into preparing a project application that is not accepted. Again, the impact of this is naturally heavier on SMEs than large companies, who have more resources available. As the SMEs are rarely able to steer the direction of the application or have that much impact on the innovation target of the project, it is understandable that there is hesitation about which project to join, or whether to join at all, as the quality of the application cannot be assessed before it is actually completed.

What, then, could be done to make the application process easier for the SMEs? The funding structures and process itself, heavy as it is, are the result of 40 years of development by the EU. They must get the applications prepared with a high level of detail and to a certain

template, in order to be able to objectively assess the quality, feasibility and excellence of each proposal. That part is therefore unlikely to change. The application stage, however, seems to be the key part of the process in terms of getting more SMEs engaged.

It would therefore seem that external assistance from consultants like Spinverse can really make a difference. It can reduce the burden during the application process by making it as clear and simple as possible, thus making it easier for the SMEs to commit. It would also be beneficial to make the application building phase as cooperative and effective for the partners as possible, to create some of that EU additional value in terms of networks, new business partners and new markets, even if the proposal is not accepted by the EU. These are of course things that companies like Spinverse already aim to do, but could Spinverse do more, specifically for the SMEs? Some potential options are suggested below.

Matchmaking – organise matchmaking events within the industry sectors, inviting some of the key research organisations and larger companies to participate, but mainly focus on inviting new SMEs to network and discuss potential funding opportunities.

Webinars – organise webinars around topics such as the overall EU funding framework, which parts of it are relevant to SMEs and how to get involved. Also invite existing SME partners in projects to give first hand accounts about what has been hard and more importantly, what have been the benefits from the projects. Information about the other EU services for SMEs could also be shared, leading to a more active and engaged community.

Marketing – create marketing material around the benefits and positive impacts on company level, as mentioned in the survey, and also the prestige and sense of achievement in the company, when participating in a project proposal that gets funded, despite the fierce competition. Or indeed the positive impacts just from preparing the application.

Guides – prepare detailed sets of information on what is required at each step of the process and how to get it done. Provide realistic and detailed estimates of how much time is required for each step.

Again, some of the above is certainly already being done. But if more of the groundwork was done in advance, through building a deeper pool of potential SME partners, who already know both each other and what is expected of them if they join a consortium, or even become active in initiating proposals themselves, then at least some of the time consuming search for partners could be avoided.

7 Reflections

7.1 Success of surveys and quality of data

With the survey being the ‘meat and bones’ of the work, it would have been beneficial to do 2-3 different rounds of the survey at different times, to avoid holidays or busy periods. The sample size was quite limited in the end, due to the focus on selected bio and agricultural projects, and the limited number of SMEs as participants in them. The sample could have easily been extended to projects in health or electronics for example, but that was not done to maintain the sustainability scope of the project. With more time, the survey could have been sent also to companies that are not Spinverse customers at the moment, by searching through past and ongoing projects in the EU database. But the response rate of 40% was reasonable in the end, and quality of the responses was quite good. 10 responses were received to the survey requests, out of which all provided open responses to most of the questions, in addition to the multiple-choice questions. It is highly probable that an interview would have been a more fruitful method for discovering additional and more in-depth points of view, and as is probably natural, more questions arose when analysing the responses, and some questions could have been more clearly formulated to start with. But all in all, the survey and its results were both quite satisfactory.

Outside of the survey, most of the background and statistical data was collected from official EU sources. If the purpose of the thesis had in any way been to assess the impact or effectiveness of the funding programmes, or the results of EU policies, then obviously other sources of data should also have been used, in order to avoid bias, as the EU tends to report on their own activities in a fairly positive manner. As the focus now was more on what the programmes aimed to do, and more importantly, the SMEs’ experience of it, criticism over the data sources was not deemed that relevant.

7.2 Further study

One avenue of further study could focus on the question of ‘need vs. want’ to do R&I, as was discussed above in relation to the impact of EU funding on the company’s ability to innovate. A study into how many companies feel they need to (i.e. must) innovate amidst the recurring crises and increasing pace of technological and digital progress, vs. how many companies (or their owners and managers) want to innovate even if not required and have an innate drive to do so. What is the difference between companies where innovation is an

extracurricular activity vs. those where innovation is in the core of the business? And how much of that difference is due to external factors, e.g. which EU country the company is located in and how much that has an effect on the ease of innovating from regulatory or funding perspective. Some of the innovation need is undoubtedly related to the industry sector, but I'm sure differences can be found within sectors too. Some are happy to keep changing tires and some want to build a robot to do it for them. But perhaps this would be more suited to a study in psychology or economics.

Another, more concrete topic of study could focus on the ways to actually identify and find those companies in the EU strategic sectors, that could become potential partners in EU consortiums. That would require a lot of sectoral and industry specific investigation, to identify the cutting-edge technologies or products and those SMEs capable of providing them. It would also require an understanding of the 'trends' in EU strategy, but at least for the current period until 2027, those are clear.

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Appendix 1. Data management plan

The thesis data consists of surveys conducted via the HAMK Webropol application and other data collected from public sources. The survey responses have been exported from Webropol into PDF documents, which will be stored in a personal, restricted access folder on the Spinverse O365 cloud server for one year after the thesis has been published. The survey responses may be used to develop services and/or marketing materials by Spinverse Oy, if such use has been explicitly authorized by the respondent. No sensitive personal data was collected in the survey.

Other data collected for the thesis consists of publications, reports, web pages and other publicly available information. References to source materials have been included for all sources in line with HAMK instructions and current regulations.

Appendix 2. Survey

SURVEY QUESTIONS

Background information on EU project participation:

- Very briefly, what is your core expertise, what is the innovation or development your company is contributing to in the project(s) where you are participating?
- How many projects have you participated in?
- In your first project, did you initiate the funding search yourself or were you approached by a consortium looking for partners?
- Have you used the Partner search functionality in Funding&Tenders portal?
- Have you taken advantage of other EU offerings or services for SMEs, such as Enterprise Europe Network (EEN), Startup Europe, EIC Forum, …

Main questions:

1. What are the main reasons why your company decided to apply for EU funding?

2. Who initiated the search/use of EU funding in your company?

3. How did you/your company find out about EU funding for R&D&I projects?
   - General information about EU funding programmes and availability?
   - Specific information about the call(s) you applied to?

4. What, if any, were the barriers to starting the application process or participating in general:

- Lack of knowledge of available or suitable funding instruments
- Finding a suitable call to fit your specific innovation or product
- Difficulty to find suitable partners for project or suitable existing consortiums to join
- Lack of knowledge of application procedures
- Lack of resources within the company, either persons or available time
- Difficulties registering the company or other administrative issues
- Other: _____
- Other potential issues in general, e.g. among your peer companies: _____
- Please elaborate on your selections above or provide other comments: _____

5. What are the main issues or problems you have encountered during the actual project execution:

- Changing priorities within company or other internal issues impacting project work
- Resourcing on technical implementation / difficulties to hire skilled staff
- Heavy administrative workload in the project
- Lack of cooperation, communication or coordination within the project consortium
- How to exploit generated innovations or products
- Timing of cashflows from the project
- Other: _____
- Other potential issues in general, e.g. among your peer companies: _____
- Please elaborate on your selections above or provide other comments: _____

6. Gains/benefits from participating:
- Funding for the development/innovation
- Ability to hire more staff
- Ability to grow production/output
- More structured approach to development and/or exploitation gained through project
- Support or new avenues for launching and/or marketing solutions/products
- Useful cross-border networks and contacts
- Direct new business partners/customers across Europe
- New ideas, products or follow-up projects as a result of the project
- Registered IP (trademarks, patents)
- Other: _____
- Please elaborate on your selections above or provide other comments: _____

7. What do you see as the main issues the EU should fix in terms of making the funding programmes and/or project formats work better for SMEs?

General views on the impact of EU funding:

- How important to you personally or to your company is the idea of contributing via the project participation to the EU goals of tackling climate change, enabling green transition or achieving the UN Sustainable Development Goals?

- How much resources would/could your company invest in RDI without EU or other public funding? How important do you see public funding for your company's ability to conduct RDI?

- What in your view is the importance/impact of EU funding in the development and innovation potential of your specific industry sector or field?

- Any other comments:

Confidentiality:
Please specify below how the data, responses and opinions you provided may be used:

Within the thesis:
( ) Yes, my name and my company may be mentioned in the thesis and my responses/opinions may be quoted in the text.
( ) No, my responses and opinions may only be used anonymously for generic analytical purposes.

Subsequently:
( ) The responses I have provided may be used by Spinverse to develop their services and/or marketing materials.
( ) The responses may not be used in any other context outside this thesis.
( ) I would like to receive a copy of the thesis by email to: