



D3.1 – List of needs

Document Author(s)

Maybrit Brooksnieder (Hamburg Aviation)

Document Contributor(s)

Niklas Schilling (Hamburg Aviation), Francine Schulz (Hamburg Aviation), Angus Baigent (Hamburg Aviation), Benjamin Lopez (Aerospace Valley), Silva Kerzian (EASN), Gennaro Russo (Campania Aerospace District), Laurent PEREZ (Aerospace Valley), Fabienne DAVERAN (Aerospace Valley)

Abstract

The following deliverable presents a list of needs as identified in interviews with aeronautical stakeholders in four pilot regions in France, Italy and Germany. The analysis of the interviews shows that most needs are commonly expressed in the four pilot regions. There are universal findings for all three countries which are summarized into five funding needs and eight synergy needs. The results serve as a solid foundation for the continuation of the ECARE project, in which the synergy mechanisms will be further developed and evaluated.

Keywords

List of needs, funding, synergies, interviews with aeronautical stakeholders

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Authoring & Approval

Prepared by		
Name and Organization	Position and title	Date
Maybrit Brooksneider (HAv)	Manager International Affairs	30.10.2023

Reviewed by		
Name and Organization	Position and title	Date
Francine Schulz (HAv)	Manager International Affairs	26.09.2023
Silva Kerzian (EASN)	Project Manager	27.09.2023
Niklas Schilling (HAv)	Manager International Affairs	27.09.2023
Gennaro Russo (DAC)	Manager Space and High-speed systems	27.09.2023
Laurent PEREZ (AV)	National funding manager	27.09.2023
Fabienne DAVERAN (AV)	European funding manager	27.09.2023
Angus Baigent (HAv)	Manager Marketing & PR	05.10.2023
Benjamin LOPEZ (AV)	ECARE Project Coordinator	05.10.2023

Approved for submission by		
Name and Organization	Position and title	Date
Benjamin LOPEZ (AV)	ECARE Project Coordinator	06.11.2023

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Table of Contents

1	INTRODUCTION	8
2	METHODOLOGY	8
2.1	INTERVIEW PROCESS AND ANALYSIS	10
3	INFORMATION ABOUT THE BACKGROUND OF INTERVIEWEES	11
3.1	FRANCE	11
3.2	ITALY	13
3.3	GERMANY	15
4	FUNDING NEEDS	17
4.1	FRANCE	17
4.2	ITALY	18
4.3	GERMANY	19
5	SYNERGY NEEDS	21
5.1	FRANCE	21
5.2	ITALY	22
5.3	GERMANY	24
6	FINAL LIST OF NEEDS	26
6.1	FUNDING NEEDS	26
6.2	SYNERGY NEEDS	27
7	CONCLUSION	29
	APPENDIX A – INTERVIEW GUIDELINE	30
	APPENDIX B – INTERVIEW ASSESSMENT AEROSPACE VALLEY (AV)	36
	APPENDIX C – INTERVIEW ASSESSMENT CAMPANIA AEROSPACE DISTRICT (DAC)	46
	APPENDIX D – INTERVIEW ASSESSMENT HAMBURG AVIATION (HAV)	61

List of Tables

Table 1: Composition of interview partner types	9
Table 2: Experience of interview partners with European projects	10
Table 3: Background information about interviewees in France.....	11
Table 4: Background information about interviewees in Italy	13
Table 5: Background information about interviewees in Germany.....	15

List of Appendix Tables

Table A 1: ECARE taxonomy with first level topics	34
Table A 2: Synergy needs by actors - France	42
Table A 3: Possible links identified by actors - France	43

List of Appendix Figures

Figure A 1: Needs articulated by actor - France.....	38
Figure A 2: Management of public funding by actor - France	39
Figure A 3: Selection of public funding - France	40
Figure A 4: Synergy meaning by actor - France	41
Figure A 5: Identification of synergies by actor - France	41
Figure A 6: Level of knowledge of public funding - Italy.....	48
Figure A 7: Knowledge of public funding by actor - Italy	48
Figure A 8: Knowledge of public funding by type of funding - Italy.....	48
Figure A 9: What is missing in terms of public support - Italy	49
Figure A 10: What is missing in terms of public support by actor - Italy	49
Figure A 11: Possible links between the different public funding - Italy	50
Figure A 12: Possible links between different public funding by actor - Italy	51
Figure A 13: Existing synergies between the different public funding - Italy	52
Figure A 14: Management of different levels of funding - Italy.....	53
Figure A 15: Management of different levels of funding by actor - Italy	53
Figure A 16: Way to address different funding schemes - Italy.....	54
Figure A 17: Way to address different funding schemes by actor - Italy.....	54
Figure A 18: Meaning of synergies - Italy.....	55
Figure A 19: Meaning of synergies by actor - Italy.....	55
Figure A 20: Synergy needs to address - Italy.....	56
Figure A 21: Synergy needs to address by actor - Italy.....	57
Figure A 22: Ideal synergy scenario - Italy	57
Figure A 23: Ideal synergy scenario by actor - Italy	58
Figure A 24: Recommendations for digital platform - Italy	58
Figure A 25: Recommendations for digital platform by actor - Italy	59
Figure A 26: Knowledge of funding by actor - Germany.....	62
Figure A 27: Missing support by actor - Germany	63
Figure A 28: Ways to address funding by actor - Germany	64
Figure A 29: Meaning of synergy by actor - Germany	65
Figure A 30: Experienced synergies by actor - Germany	66
Figure A 31: Synergy needs by actor - Germany.....	67
Figure A 32: Possible links between different funding by actor - Germany	69
Figure A 33. Ideal synergy scenario by actor - Germany	70

List of Acronyms and Abbreviations

AV	Aerospace Valley
CAJU	Clean Aviation Joint Undertaking
CEO	Chief Executive Officer
COO	Chief Operating Officer
CORAC	Conseil pour la Recherche Aéronautique Civile
CTO	Chief Technology Officer
DAC	Campania Aerospace District
EASN	European Aeronautics Science Network
ECARE	European Clean Aviation Regional Ecosystem
ERDF	European Regional Development Fund
EU	European Union
HAv	Hamburg Aviation
ISE	Intermediate-sized enterprise/company
LC	Large company/companies
MoC	Memorandum of Cooperation
MoU	Memorandum of Understanding
OEM	Original Equipment Manufacturer
RTO	Research and Technology Organisations
R&D	Research and Development
SESAR	Single European Sky ATM Research Programme
SME	Small and medium-sized enterprise(s)
TRL	Technology Readiness Level
WTO	World Trade Organization

1 Introduction

The ECARE project, funded by Clean Aviation, has the primary objective of clarifying the landscape of the regional and national innovation roadmaps and the funding opportunities for aeronautical stakeholders in order to create synergies between the parties. The aim is to enable the European aeronautical industry to achieve the ambitious targets of the CAJU programme while maximising public funding impact and efficiency. As a response to these requirements, the ECARE project will develop and disseminate the methodologies to create synergy mechanisms which are applicable to all EU aeronautical regions. These methodologies are initially designed and tested on a pilot scale, involving four major regions of the European aeronautical industry, namely Occitanie and Nouvelle-Aquitaine in France, Campania in Italy and Hamburg in Germany.

This ECARE deliverable ‘List of needs’ is part of work package 3 and includes interviews with aeronautical stakeholders in the four pilot regions in France, Italy and Germany. 58 interviewees with representatives of regional SMEs, intermediate-sized enterprises, large companies, RTOs and research universities have been conducted in May 2023. This deliverable presents the funding and synergy needs of aeronautical stakeholders in the four pilot regions. It also outlines the methodology used for the interviews and highlights the most significant results. The document analyses the interview results, identifies and describes five general funding needs and eight synergy needs for the aforementioned stakeholders in the pilot regions.

2 Methodology

In this section, the methodology for the interviews and the resulting list of needs is explained. The interviews, which serve as the foundation for this deliverable, were conducted in May 2023. In the prior weeks, the consortium decided on potential stakeholders to be interviewed. Each cluster selected interviewees in such a way that their aerospace ecosystem is accurately represented. A dedicated interview guideline was validated by the consortium and used for the interviews by all consortium partners. The analysis of interview results allowed the generation of qualitative data based on the answers of each interviewee. Qualitative in this context means that the responses of each interviewee were transcribed, and their answers were used in a non-numerical fashion e.g. analysed by the respective cluster. The data is used to identify the perceived needs of aeronautical stakeholders as listed in this deliverable. **The interviews were planned to attain the following goals:**

- Collection of aeronautics actor positions on funding for R&D.
- Identification of R&D projects from aeronautics actors.
- Presentation of the ECARE taxonomy.
- Identification of correlation and gaps between R&D projects & ECARE taxonomy.
- Identification of funding needs & wishes of synergy mechanisms.

To have a balanced interview sample, the consortium jointly decided on the target composition of interview partners. **The interview partners should consist of representatives of SMEs (50%), intermediate-sized enterprises (20%), large companies (10%), RTOs (10%) and research universities (10%).** Ideally, the interviewed stakeholders have experience with European projects, especially in Clean Sky 2 and Clean Aviation. **The final composition of the interview partners is displayed in Table 1:**

Table 1: Composition of interview partner types

	Number of interviews				
	France	Italy	Germany	Total	Percent
SME	12	9	6	27	47%
Intermediate-sized enterprise	2	3	1	6	10%
Large company	4	5	2	11	19%
RTO	3	1	3	7	12%
Research university	1	3	3	7	12%
Total	22	21	15	58	

The definition of the type of organisation is the following:

- **SME:** A small or medium-sized enterprise is an enterprise that employs less than 250 persons. It has an annual turnover of up to EUR 50 million, or a balance sheet total of no more than EUR 43 million¹.
- **Intermediate-sized enterprise:** An intermediate-sized enterprise is an enterprise employing between 250 and 4,999 persons, and an annual turnover which does not exceed 1.5 billion euros or a balance sheet total which does not exceed 2 billion euros. An enterprise with fewer than 250 employees but an annual turnover greater than 50 million euros and a balance sheet exceeding 43 million euros is also considered to be of intermediate size².
- **Large company:** A large company is a profit-oriented organization that checks at least one of the following two conditions: (1) has at least 5,000 employees; (2) has an annual turnover greater than 1.5 billion euros and a balance sheet total of more than 2 billion euros.
- **RTO:** Research and Technology Organisations are regional and national actors whose core mission is to harness science and technology in the service of innovation or public bodies and industry, to improve the quality of life and build economic competitiveness in Europe. RTOs are generally non-profit organisations and their revenues are re-employed to fund new innovation cycles³.
- **Research university:** Research universities prioritize research and can be public or private institutions. By definition, research universities offer master and doctoral degrees along with bachelor degrees.⁴

¹ https://single-market-economy.ec.europa.eu/smes/sme-definition_en (last accessed 26th of October 2023)

² <https://www.insee.fr/en/metadonnees/definition/c2034> (last accessed 26th of October 2023)

³ <https://joint-research-centre.ec.europa.eu/system/files/2015-12/JRC97781.pdf> (last accessed 26th of October 2023)

⁴ <https://www.bestcolleges.com/blog/what-is-research-university/> (last accessed 26th of October 2023)

Table 2 gives an overview of the stakeholders' experience with European projects. For each country, it is listed how many of the interviewed entities have worked on one or several projects in the respective funding program. Only 19% of the interviewed entities have experience with Clean Aviation projects, compared to 38% with Clean Sky 2 projects.

Table 2: Experience of interview partners with European projects

Funding program	Number of stakeholders				
	France	Italy	Germany	Total	Percent
Clean Sky 2	14	6	2	22	38%
Clean Aviation	6	3	2	11	19%
Horizon Europe	12	6	2	20	34%
Horizon 2020	13	6	2	21	36%

Detailed information about the position of the interviewee, the type of entity and their experience with public funding can be found in Table 3 for France, Table 4 for Italy and Table 5 for Germany (see chapter 3).

2.1 Interview process and analysis

Prior to the interviews, the consortium decided on an interview guideline, which was used in all interviews in order to deliver comparable results. The interview guideline can be viewed in Appendix A. **The interview followed a certain structure to receive the desired information:**

1. **Presentation of the interviewee**, their position and their entity. Presentation of R&D Roadmap by the entity, if applicable, which served as information about funding approaches.
2. **Presentation of the ECARE taxonomy by the interviewer**, including the interviewee categorizing their main technologies/focus within the taxonomy. Feedback about the structure and content of the taxonomy was collected.
3. **General question about public funding** to identify the experiences of the interviewee with funding and possible funding gaps. Additional topics were management of funding at the entity and their strategic approach towards funding.
4. **Finally, the meaning of synergies**, according to the interviewee, was explored by the interviewer. Needs addressable by synergy mechanisms, as well as potential synergy scenarios considered as ideal by the interviewee, were an additional subject of the interview.

All questions left room for further additions by the interviewees and clarifications by the interviewer if needed. The interviews resulted in an open conversation with additional information to the answers required by the interview guideline. This information was incorporated into the analysis of results, via the template used to document the conversation.

The analysis of the interviews in France, Italy and Germany is the foundation for this document. Those assessments are presented in the appendix. For this deliverable, which includes the final list of needs by

aeronautical stakeholders, all three interview assessments were taken into account. The main takeaways from the interview assessments were analysed, summarized, and backed up with respective quotes taken directly from the interview transcripts.

3 Information about the background of interviewees

To define the list of needs as precisely as possible, it was necessary to collect information about the background of the interviewees to account for differences in funding experience. All interviewees were senior representatives of their entities, either the CEO/Managing Director, or the person responsible for research and funding. **This chapter gives an overview of the persons interviewed and the type of organisation separated by country.** Some of the information was collected/obtained prior to the interviews, and some information was given directly by the interviewees.

3.1 France

Aerospace Valley conducted 22 interviews with French entities from the Occitanie and Nouvelle-Aquitaine regions. All interviewees had experience with regional, national, and European funding, while some interviewees have more extensive knowledge than others. **The 22 entities included 12 SMEs, 2 intermediate-sized enterprises, 4 large companies, 3 RTOs and 1 research university.** The large companies have significant experience with European projects and therefore knowledge of European funding, especially with Clean Sky 1 and 2, Horizon Europe, and Clean Aviation projects. For them, participation in regional projects is less relevant compared to the European projects. Most SMEs work mainly with regional and national funding, as European funding is more difficult to acquire for them. RTOs and research universities recognized that they have a very good knowledge of all funding levels, with one of them having less experience with European funding.

Table 3: Background information about interviewees in France

Number	Position of interviewee	Type of entity	Management of funding projects	Type of public funds
1	CTO	Large company	One person dedicated to the management of public funding R&D roadmap setup internally or externally	Regional, national and European
2	R&D responsible	SME	One person dedicated to the management of public funding	Regional, national and European
3	CEO	SME	One person dedicated to the management of public funding	Regional, national and European
4	Director	RTO	One person dedicated to the management of public funding Regular meeting with a project manager from a regional or national funding body	Regional, national and European
5	R&D cooperation director	Large company	One person dedicated to the management of public funding R&D roadmap setup internally or externally	Regional, national and European
6	President	SME	One person dedicated to the management of public funding	Regional, national and European

D3.1 – List of needs

			Regular meeting with a project manager from a regional or national funding body Exchange with a national contact point	
7	President	SME	One person dedicated to the management of public funding	Regional, national and European
8	CEO	SME	One person dedicated to the management of public funding	Regional, national and European
9	President	SME	One person dedicated to the management of public funding	Regional, national and European
10	Business development manager	RTO	One person dedicated to the management of public funding Exchange with a national contact point	Regional, national and European
11	Civil aeronautics director	RTO	One person dedicated to the management of public funding R&D roadmap setup internally or externally Regular meeting with a project manager from a regional or national funding body Exchange with a national contact point	Regional, national and European
12	Innovation marketing and funding manager	SME	One person dedicated to the management of public funding R&D roadmap setup internally or externally	Regional, national and European
13	Sales senior manager innovative materials	Intermediate-sized enterprise	One person dedicated to the management of public funding R&D roadmap setup internally or externally	Regional, national and European
14	Person responsible for public funding	SME	One person dedicated to the management of public funding R&D roadmap setup internally or externally	Regional, national and European
15	CTO and CEO	SME	One person dedicated to the management of public funding R&D roadmap setup internally or externally Regular meeting with a project manager from a regional or national funding body	Regional, national and European
16	Person responsible for activities and development	SME	One person dedicated to the management of public funding	Regional, national and European

17	CEO	SME	One person dedicated to the management of public funding	Regional, national and European
18	Research director and director of hydrogen research	Research university	One person dedicated to the management of public funding Regular meeting with a project manager from a regional or national funding body	Regional, national and European
19	Partnership responsible	Intermediate-sized enterprise	One person dedicated to the management of public funding Regular meeting with a project manager from a regional or national funding body	Regional, national and European
20	Aviation program director	Large company	One person dedicated to the management of public funding R&D roadmap setup internally or externally	Regional, national and European
21	R&D director	SME	One person dedicated to the management of public funding	Regional, national and European
22	Director of external funding for Europe and International program European civil program manager	Large company	One person dedicated to the management of public funding R&D roadmap setup internally or externally	Regional, national and European

3.2 Italy

DAC conducted 21 interviews with Italian stakeholders from the Campania region. Out of the 21 entities, there were **9 SMEs, 3 intermediate-sized enterprises, 5 large companies, 1 RTO and 3 research universities.** 80 percent of the interviewed stakeholders had good or very good knowledge and experience with public funds on all three levels, with a slightly larger emphasis on national and regional levels. The most active type of stakeholders in funding were SMEs followed by large companies and intermediate-sized enterprises. The 21 interviewed entities have participated in several European projects. In particular, six of them participated in Horizon 2020, six in Horizon Europe, six in Clean Sky 2 and three in Clean Aviation.

Table 4: Background information about interviewees in Italy

Number	Position of interviewee	Type of entity	Management of funding projects	Type of public funds
23	General Manager	SME	R&D Roadmap, meetings with funding bodies	National and regional
24	COO of the Group and General Manager of Entity in Italy	Large company	External consulting company	National and regional
25	Research & Development Innovation Manager	Large company	One person dedicated to the management of funding, R&D Roadmap Setup	National and regional
26	Managing Director	SME	One person dedicated to the management of public funding	National and regional

D3.1 – List of needs

27	Engineering Manager	Large company	Internal organization dedicated to follow funding opportunities which manages coherence with internal R&D roadmap, meetings with funding bodies, exchange with national contact points	European, national and regional
28	Person responsible for Aerothermal Department, Aerospace R&D activities of regional site	Intermediate-sized enterprise	One person dedicated to the management of public funding, meetings with funding bodies	National and regional
29	Research Director	RTO	Internal partnership, different groups among universities	European, national and regional
30	COO	SME	External consultants and advisors	National and regional
31	Technical & Sales Responsible	SME	One person dedicated to the management of funding	European, national and regional
32	Institutional Relations & Funding R&D Project Coordinator	Intermediate-sized enterprise	One person dedicated to the management of funding	European, national and regional
33	Person responsible for Research & Development	SME	R&D Roadmap Setup	European, national and regional
34	Person responsible for Research & Development	Intermediate-sized enterprise	One person dedicated to the management of funding, R&D Roadmap Setup	European, national and regional
35	CEO	SME	One person dedicated to the management of funding	European, national and regional
36	EU Institutions & Bodies Focal Point	Large company	Department fully dedicated to the management of public funding, dedicated R&T structure	European, national and regional
37	R&D Manager	Intermediate-sized enterprise	One person dedicated to management of public funding, R&D roadmap	European, national and regional
38	Director of regional site and of Research & Innovation	SME	Team of senior experts chaired by head of R&D, R&D Roadmap, Meetings with funding bodies	European, national and regional
39	R&D Company Coordinator and Finance & Procurement Director	SME	Dedicated person to manage research activities and people from different functions, R&D Roadmap	National and regional
40	COO	SME	Membership of the regional aerospace cluster and interaction with other companies	European
41	Full Professor	Research university	Regular meeting with a project manager from a regional or national funding body	European, national and regional

42	Full Professor	Research university	Strong link with the industrial ecosystem for the high focus on applied research	European, national
43	Associate Professor	Research university	Two central offices are available for European and national funding opportunities	National and regional

3.3 Germany

Hamburg Aviation interviewed 15 stakeholders from Hamburg. Out of the interviewed entities, there were **6 SMEs, 1 intermediate-sized enterprise, 2 large companies, 3 RTOs and 3 research universities.** The interviewed universities have no experience with European funded projects, while most other interviewed stakeholders worked on projects on all funding levels. The two large companies have experience with Clean Aviation, Clean Sky and other Horizon 2020 projects. One RTO confirmed their participation in Horizon Europe, as well as Clean Sky 2 projects. A few of the SMEs had previously only worked on national or regional projects. Out of the SMEs, only one company has worked on aviation-related projects with European funding, in this case Horizon 2020 and Horizon Europe.

Table 5: Background information about interviewees in Germany

Number	Position of interviewee	Type of entity	Management of funding projects	Type of funding projects
44	Co-Founder, Research manager and Controller	SME	Dedicated project manager per research project	National and regional
45	Person responsible for European Funded Projects	Large company	European, cross-divisional Research & Technology Committee for funded projects	European, national and regional
46	Founder and Managing Director	SME	Managing director or someone from the team write the proposals.	European, national and regional
47	Managing Director	Intermediate-sized company	Project manager, contacts in the controlling and finance departments for administrative work	European and national
48	Director of institute	RTO	Dedicated people at various levels, responsibility of the department heads or project managers	European, national and regional
49	Director of institute	RTO	Own organizational unit, specialized staff who cover the administrative and legal aspects	European, national and regional
50	Deputy head of aviation research	Research university	Three hours a week dedicated to research as a lecturer	National and regional
51	Director of institute	Research university	Everyone in team works on funded projects	National and regional
52	Director of institute and assistant	Research university	One person dedicated to the management of public funding	National and regional
53	Program manager for all research projects	Large company	Central research department	European, national and regional
54	Managing Director and Co-Founder	SME	One person dedicated to the management of public funding, R&D Roadmap	European, national and regional

D3.1 – List of needs

55	Director Business Development	SME	One dedicated person per research project	National and regional
56	Managing Director and Co-Founder	SME	One person dedicated to the management of public funding, exchange with fundind bodies	European, national and regional
57	Managing Director and Partner	SME	One person dedicated to the management of public funding (Managing Director)	Regional
58	Managing Director	RTO	Various project managers	European, national and regional

4 Funding needs

In this chapter, the funding needs of aeronautical stakeholders are analysed and presented on all three funding levels per country. Funding needs are currently experienced in all three levels of funding (EU, national and regional). The needs encompass various aspects, including those related to financial considerations and enhancements in program participation. While funding bodies have the capacity to address these needs individually, it's worth noting that for certain areas, the introduction of synergies could prove highly advantageous. The division of needs by country allows conclusions about national and regional funding programs. Generally, most needs were mentioned in all countries, but the importance and frequency varied among interviewees. Thus, some topics are described to different extents. Overall, these answers paint a picture of the current funding landscape and deficiencies as viewed by the aeronautical stakeholders from Occitanie and Nouvelle-Aquitaine in France, Campania in Italy and Hamburg in Germany.

4.1 France

The following funding needs were identified through the interviews:

Funding requirements

Half of the interviewees expressed their need for more funding per project. Especially representatives of SMEs requested funding to cover at least 50 percent of the total cost of the project. Some regional and national funding programs have lower funding percentages, making it difficult for SMEs to participate. This problem occurs with regional and national funding, as emphasized by interviewees 4, 6, 8 and 15. Regarding national funding, interviewees also lack knowledge about the availability of funding and the exact funding rate. Interviewee 8, representative of an SME, described his experience with national funding as follows: 'Not knowing the exact financing rate is not a clear way to proceed and can lead to unpleasant surprises'. The adequacy of budgets was emphasized as well. According to interviewee 3 the budget proposed in the funding programme is often not in line with the actual needs for some projects.

Industrialization funding

Seven interviewees stated a need for more industrialization funding on all levels. There are difficulties in identifying funding that helps transitions from small-scale to industrial production, meaning projects with TRL 7 and 8. In particular, interviewees noted that for phase 2 of Clean Aviation calls, companies need to begin the industrialization phase. According to interviewee 7, 'Financing for industrialization is what is most lacking'. Interviewee 3 agreed, emphasizing the differences between research, which is generally well funded in comparison to industrialization. Interviewee 13 suggested accompanying higher TRLs with higher funding.

SME support

Another funding need identified is the need for specific SME support. In addition to the SMEs feedback, a representative from a large company also mentioned this problem. According to Interviewee 1, it is difficult for SMEs to participate in funding programs on all levels because of the administrative efforts and the lack of sufficient funding. Interviewee 16 emphasized the difficulties for SMEs with large investments needed for their projects. As already described in the previous paragraph, higher funding rates, which cover at least 50 percent of the total project cost, would be beneficial for SME participation. Generally, information about funding should be more accessible. An additional idea to support SME participation is an obligatory participation rate. Interviewee 16 noted that CORAC already implemented a mandatory rate of 30 percent SME participation. This could be applied to other funding programs too.

Help to build consortia

Regarding consortia for collaborative projects, six interviewees (three SMEs, one intermediate-sized enterprise, one large company and one RTO) expressed the need for help to build a consortium. Especially for European projects, it is more difficult to build consortia as the stakeholders do not have a sufficient network to find international partners. Interviewee 14, representative of a SME, emphasized that on the European level, ‘Assistance in setting up a consortium is currently non-existent’. To solve those problems, a matchmaking organized by funding bodies for all funding levels was proposed by an interviewee. Putting companies into contact with research laboratories, or putting small entities in contact with large companies are also options mentioned by the interviewees. It was highlighted that clusters could take over more responsibility for support in building consortia.

Reduction of administrative complexity

Several interviewees in France emphasized the administrative complexity of projects when it comes to the submission of proposals and the reporting during the project. This is particularly the case for the RTOs, as they have been trying to create synergies between European (ERDF), national and regional funding bodies. For example, interviewee 11 managed to secure funding from multiple regional and national sources for research infrastructure investment. However, they revealed that this achievement demanded ‘considerable internal effort’ due to the demanding project monitoring and reporting requirements, which had to be presented in varying formats and levels of detail to the respective funding bodies. Interviewee 10, also affiliated with an RTO, lamented that these stipulations could discourage organizations from seeking funding from multiple sources for a single project. Administrative complexity of European projects was not specifically mentioned by any interviewees in France.

4.2 Italy

The following main funding needs were identified through the interviews conducted in Italy:

Funding requirements & Industrialization funding

Most strongly articulated by the Italian interviewees is the need for industrialization funding. Eight interviewees voiced this need, more than one third of the number of total interviewees. This is a direct expression of interest towards higher TRL, as mentioned by Interviewee 36, a representative of a large company. He noted that, “It’s important to give specific support towards following industrialization aimed to shorten time to market of new and improved products”. Furthermore, Interviewee 32 expressed the necessity for support in facilitating relations with OEMs⁵ to get more knowledge about recent developments in funding programs and consortia. The relationship with OEMs would be necessary for a full involvement in product-oriented R&D projects. It becomes obvious that in their case, the focus lies on market introduction and launch of new products. This goes along with the wish for public R&D funding which could lead to greater private R&D funding, which was named by seven interviewees. Overall, six interviewees expressed that synergies should address an increased amount of available funding. These stakeholders have the need for more funding, which could be achieved by synergies.

SME support

In general, interviewed representatives of SME wish for more support in terms of participation in proposals and consortia, as also described in the next paragraph. Interviewee 23 underlined the

⁵ OEM ([Original Equipment Manufacturer](#)) refers nowadays to integrators. They may deal with (i) full aircraft as in the case of Airbus and Leonardo (for products as AW609 and C27J), or Tecnam (for general aviation a/c P2012 Traveller), or (ii) major dressed components as Leonardo (e.g. tier 1) for A220/A321 and ATR 42/72.

importance of an extensive network for finding partners for consortia and emphasized the need for more support for SMEs in building consortia.

Given their limited resource capacities, SME ask for less regulations to participate in funded projects as, for example, the value of the contribution to the project with respect to their annual turnover. Higher funding rates are also indicated as an important need, with cost coverage as nearer as possible to 100%. Interviewee 31, a SME representative, raised a crucial point regarding the need for funding support in the preparation of proposals, particularly for high-risk projects with intense competition. This underscores the importance of dedicated assistance for SMEs to navigate the challenging landscape of securing resources for innovative and risky investments. Interviewee 30, 38, 39, all SME representatives, raised concern about the extensive requirements for proposals and reporting on all levels of funding, which can be difficult to manage for SME due to their limited resources.

Help to build consortia

Another need that became evident during the interviews is the wish for support with consortia building. Ten interviewees would appreciate the help of funding bodies on all levels when it comes to building consortia. Additionally, there is a need for a legal working framework, allowing consortia to grow from one project to another independently from the type of funding. Alternatively, a more formal and recognized role of clusters could support those consortia with their development. Seven interviewees underlined the need for better mechanisms and support to set up consortia. Interviewee 32 said that good relations to OEMs were necessary for their company to be updated about the development of consortia for funding programs on all funding levels.

Reduction of administrative complexity

Interviewee 39 voiced the need for a timelier project evaluation, meaning that it would be desirable to have less waiting time for approval. This would lead to easier planning. Seven additional interviewees would like to have a simplified application process for projects as well. It was specified if this need occurs on a specific level of funding.

4.3 Germany

Funding needs identified through the interviews in Germany are presented in the following section:

Funding requirements

Financial coverage in general seems to pose a problem for five interviewees. Additionally, several interviewees identified low funding rates as an issue. Several representatives of SMEs require higher funding rates on regional and national levels. Otherwise, it is difficult for them to participate in funded projects. Specifically, interviewees stated it would be hard for them to fund research and staff hours used for administrative work. One research university noted that it is beneficial to receive 100 percent funding on regional and national level to be able to invest more money into research infrastructure.

Industrialization funding

Most interviewees named industrialization funding as the most important issue on all three levels. In general, seven interviewees commented on this issue, with an additional number of interviewees making comments in relation to this aspect. The interviewees stated the need for funding of projects with a TRL of 7 and higher. As this is not possible on a European level, national and regional funding programs could address this need. Interviewee 47 stated, ‘there is too little real application and value creation’ regarding results of funded project. The interviewee is aware of the WTO regulations regarding funding for TRL higher than 6, but expressed the desire for a solution to enable funding to further develop the projects.

Interviewee 56 emphasized that it would be necessary to increase industrialization funding to keep up with competitors outside of Europe.

SME support

In addition to financial support, interviewees wish for more support for SMEs when it comes to visibility as well as applications and proposals. Because of their limited resource capacities, it is especially difficult for SMEs to participate in funded projects. Reducing planning insecurities is another aspect. The aspects of funding requirements and consistency of funded topics are especially relevant for SMEs. Interviewees stated that they believed it necessary to simplify ways for SMEs to join funded projects. Aside from the SMEs themselves, other stakeholders also see SME participation as desirable, including research institutions, as this would provide a wider selection of available partners for cooperation. Interviewee 49, representative of a RTO, commented the following:

‘Most of the time it has to go fast and most of the time you have the problem that you can accommodate less partners than you would like and then you just look to those people you have worked well with, in the past, and bring in as many of them as you can. Such a stimulation for new partners would be something that could be improved.’

Help in building consortia

Consortia building was identified as a problem by six interviewees, especially on the European level as it seems harder to build consortia with international partners. Matchmaking events organized by funding authorities for building consortia were suggested. Interviewees stated that they required general assistance by funding authorities when building consortia on all levels of funding. For instance, interviewee 56 expressed a wish for more support from the funding bodies, for example with consortia which have several newcomers: ‘To take the companies by the hand a bit more or perhaps simply considers who else can fit into the consortium, when there are three totally new newcomers or an SME together with a university. This is often a difficult situation because the interests are different.’

One interviewee said that funding bodies should help with recommending or suggesting possible consortium partners. Two interviewees stated a need to simplify collaboration with non-German project partners in projects funded on a national level. The reason given was that it would be difficult to include the whole value chain in the consortium if only German partners are allowed. In general, expanding their network was not a priority the interviewees named when it comes to synergies but it was named as a potential benefit of the ECARE digital platform.

Reduction of administrative complexity

Eight interviewees criticised the administrative complexity of working on funded projects on all three funding levels. Both the aspects of documentation and reporting during the project, as well as exhaustive proposal and application processes were criticised. The problem seems especially prevalent for European and regional projects. According to the interviewees, there is a need to further reduce the administrative efforts on those levels. For example, interviewee 53 mentioned that in their experience, Clean Aviation projects and regional funding projects require much more extensive reporting during the project compared to the national Luftfahrtforschung (‘LuFo’) funding programme. Interviewee 54 also criticized the administrative effort required on regional projects, and positively highlighted the digitalized reporting for European projects, for example digital signatures, which are not accepted on regional level. Interviewee 47, a representative of an intermediate-sized enterprise, reported that SME partners had difficulties with the administrative effort for Horizon Europe projects, as they did not have the resources to keep up with the reporting requirements.

5 Synergy needs

The following section provides details on the identified synergy needs by the interviewees in the three countries. Synergy needs refer to indirect needs that cannot be directly solved through improvements in funding programmes.

5.1 France

Alignment of policy across regions/levels

The most often named synergy need encountered during the interviews is political alignment between the funding bodies. The importance of direct links between European, national and regional level was emphasized by three interviewees. Other important aspects were highlighted during the interviews. One important tool is using technological roadmaps. Two representatives of large companies expressed the view that there is the need for a common roadmap between European and national funding. Roadmaps would stimulate new calls and funding programs. Interviewees agreed that there is the need for more communication between funding bodies on different levels. Interviewee 12 voiced the impression that, ‘there is no communication between Europe and CORAC’. Interviewee 18 added that much transparency is lacking at all levels to see what work is already being done. It was emphasized by three interviewees, interviewee 4, 10 and 16, that the focus should be on synergies between European and regional funding bodies. On the regional level, for example, interviewee 5 suggested that the, ‘development of certain specific skills [could be] specific to each region’. Interviewee 10 names ERDF as a good example of European funding bodies working together with regions. Interviewees 1 and 5, both representatives of large companies, and interviewee 13, representing an intermediate-sized enterprise, view synergies between European and national funding bodies as particularly useful. The majority of interviewees agrees that more effort should focus on communicating in a transparent way and working towards joint roadmaps or topics.

Continuity and TRL evolution

Alongside political alignment goes the need for more continuity. A number of interviewees stated that synergies would bring more continuity to projects. Interviewee 4, representative of a research university, mentioned that if they do not see potential for continuity, they are not interested in participating in a project at low TRL. In their opinion, there would not be enough synergies between previous projects and new projects with the same topics. Continuity could be achieved alongside TRL evolution in a variety of ways. There could be a follow-up mechanism at the end of the project, as suggested by interviewee 8. According to their suggestion, at the end of the project, funding bodies could evaluate if there is the option to continue the project under the same funding program, or recommend or refer it to another funding program. To achieve these referrals, funding bodies on all levels would have to work together.

Lastly, a specific synergy mechanism could be a larger call for projects bringing together all funding bodies, each focusing on a level of TRL, with reporting periods to unlock each tranche of funding according to the level of TRL. That mechanism was favoured by eight interviewees. However, there are also doubts about this mechanism, with interviewees expressing that it may be too complicated to introduce such mechanisms with all funding bodies.

Harmonization of administrative processes

A significant number of interviewees proposed synergies on an administrative level. These include eligibility criteria, application processes and reporting. While only three interviewees chose ‘ease of submission’ as a possible link between funding, the overall topic of administration appears to be relevant to the interviewees. According to interviewee 17, homogenous regulation or a legal framework would be

beneficial to facilitate synergies. This opinion is shared by other interviewees. Additionally, homogenous eligibility criteria and the standardization of reporting was mentioned frequently by interviewees.

Cross-collaboration between consortia of different projects

Several interviewees mentioned the need for more synergies with other projects and consortia. This need has been expressed for consortia within the same funding program, a different funding program in aviation, or even funding programs in different industries. The collaboration could look like the following:

- A consortium of a Clean Aviation project collaborating with a consortium of another Clean Aviation project (same funding program)
- A consortium of a Clean Aviation project collaborating with a consortium of a CORAC project (different funding program in aviation)
- A consortium of a Clean Aviation project collaborating with a consortium of a Clean Hydrogen project (funding program in another industry)

This would necessitate a tool for more collaboration. According to interviewee 19, collaboration between different sectors could be used to find new applications for already existing technologies, and the competitive threat would be less significant and therefore easier to share. Interviewee 18 shared this opinion. Regarding collaboration between different projects or consortia within the same funding program, CORAC has already implemented this, with some companies working on several consortia with awareness of each other's roadmaps. Interviewee 19 noted that this mechanism should be applied to other funding programs too.

Joint use and funding of research infrastructure

As already referred to in the paragraph about funding needs, interviewee 11, RTO, has succeeded in receiving funding by European (ERDF), national and regional funding bodies to support investment in research infrastructure. Nevertheless, this process currently presents significant complexities, discouraging stakeholders from exploring opportunities for combining different funding sources. Similarly, Interviewee 18, affiliated to a research university, and Interviewee 10, another representative from an RTO, have encountered analogous challenges when it comes to obtaining funding for research infrastructure from different funding sources.

Their experiences suggest that while joint funding for research infrastructure has been feasible in the past, it has predominantly been restricted to regional, national and European funding bodies. To enhance the landscape of research infrastructure support, streamlining the procedures for collaborative funding and introducing mechanisms for synergies on a European level would be highly advantageous.

5.2 Italy

Alignment of policy across regions/levels

In general, fifteen interviewees wish for direct links between regional, national and European funding. Some interviewees clarified how these links could look like in terms of synergies. The overarching theme is a better alignment of topics and related funding. Many interviewees made statements highlighting their needs regarding an alignment of European and regional levels; Interviewee 23 wished for a 'better equilibrium among European, national and regional interests to better sustain regional directives and needs', while interviewee 26 voiced a preference for a 'higher level of integration between regional development plans and European ones.' Specific synergies in focus are the Seal of Excellence by European funding bodies for national and regional calls and a Memorandum of Cooperation (MoC). The following quote by interviewee 43, representative of a research university, demonstrates their opinion about these kinds of synergies: 'I see the relevance of the previous MoU between Regione Campania and Clean Sky,

soon to be renewed by the MoC between Regione Campania and Clean Aviation. Furthermore, the recognition at regional and national level of the Seal of Excellence label is already a plus with respect to the synergies among regional, national and European funding levels. This is a first step and stronger connection, this would certainly help, possibly with a two-way approach.’

Other interviewees shared this opinion. They expressed that they would like to see stronger benefits and effects of the MoC and Seal of Excellence. For example, Interviewee 28 said they would like to see ‘a stronger technical connection,’ while interviewee 39 expressed the need for a better implementation procedure of existing tools (e.g. the Seal of Excellence).

Several interviewees voiced the need for a common framework on European, national and regional levels. Generally, the interviews parties said they would like to see an easy exchange of data between different projects and funding programs. This could be achieved through a universal framework. These synergy mechanisms had to be recognized on all levels, as described by interviewee 36: ‘The main problem is the timely exchange of relevant info, data and results among related opportunities even though they are supported by different public funding opportunities. Interviewee 39 explained the need in the following way: ‘An enhanced cohesion approach should be put in place at European level in terms of assessment of technology needs, design tools, software and platforms to be developed.’ Two other interviewees had more specific wishes for a framework. Interviewee 32 suggested a shared scoring system, which offers a rating system for projects at different funding levels. Interviewee 38 suggested a compliance framework, which applies to the national and regional level. Participants clearly voiced a need for a shared framework between European, national and regional funding programs to make synergies possible. However, stakeholders seem to have different ideas about what this framework should be comprised of.

Continuity and TRL evolution

Almost all of the interviewees have the opinion that synergies should be accompanied by more continuity for research projects. 14 interviewees also expressed the need for an increase of the targeted TRL in an adequate timeframe. It links to the need for industrialization funding as described in the previous chapter. One idea is to transfer the need for industrialization funding at higher TRL in a larger call, which brings together several funding bodies, each focusing on a specific TRL, with reporting periods to unlock each tranche of funding according to the level of TRL. This potential synergy mechanism was seen as beneficial by seven interviewees. A second idea, that funding bodies should recommend projects to other funding bodies to fund higher TRLs, was supported by twelve interviewees.

Harmonization of administrative processes

Also identified as a synergy need was the application process for projects. This seems to be an issue for a majority of interviewees. Eleven interviewees supported the idea to introduce a standard for eligibility criteria among all funding bodies as a synergy mechanism. Generally, participants expressed a wish for more standardization of funding programs. For example, interviewee 30 called for ‘better harmonization of evaluation and contractual processes. Interviewee 31 focused on the deadline for proposals of different funding programs, expressing a need for better alignment. In total, this need was expressed by five interviewees, making it an important need for synergy. Interviewee 34 also expressed this wish, adding the need for a timely publication of the topics of new funding calls.

Cross-collaboration between consortia of different projects

Regarding synergy needs, eleven interviewees have the opinion that synergies should address an increased network with funding bodies, but also with other stakeholders in the funding landscape. An example for other stakeholders would be other consortia. Interviewee 38 mentioned the importance of synergies with European initiatives other than Clean Aviation, for example SESAR or Clean Hydrogen. The

interviewee suggested to replicate the methodologies already in use (e.g. with Clean Aviation), to achieve better alignment on the European level in general.

Joint use and funding of research infrastructure

Interviewees in Italy did not mention the particular topic of synergies for the use and funding for infrastructure. Nevertheless, the topic of necessary investments for new infrastructure, for example those related to new propulsion systems (e.g. hydrogen), are becoming increasingly relevant for the Italian stakeholders as discussed during the interviews.

5.3 Germany

Alignment of policy across regions/levels

For most interviewees, eight in total, important outcomes of synergies would be more focus in research, related to the funded topics. Additionally, seven interviewees expressed that they would appreciate direct links between different public funding programmes. These links could be implemented in different ways. The distribution of various topics among different funding programs is relevant for interviewees, as well as policy alignment of research topics on all three levels. To achieve this, more collaboration and transparency is requested. One interviewee specifically wished for a more open approach to funded topics without the specification for technology.

Regarding collaboration between funding bodies, which was not specifically named in the interview guideline, but was mentioned by several interviewees. One can therefore expect that it has a great significance. Different interviewees identified the need for transparency in form of more exchange between funding bodies on different levels to enable improved alignment and less competition between funding bodies. Interviewee 45 emphasized the need for more communication between funding bodies: ‘The amounts of funds and topics are different, so limited, and yet there is then the same call twice, that shouldn’t happen. If they talked to each other beforehand, they could have done things differently.’ Interviewee 47 shares this opinion: ‘Making the whole thing better and more transparent is definitely a possibility, because when we are in the European area, especially in aviation, we always have to think European in order to advance the topic and competitiveness. It is actually not good if we do too much duplicate work, but rather coordinate it better.’

Continuity and TRL evolution

For most interviewees, implementing synergies means more continuity in research. However, some interviewees note that there should be a balance between funding for extending existing projects and funding for new directions. This is demonstrated with the following quote:

‘So that's very pleasant, of course, if they can continue seamlessly. Especially with complex technical development. [...] On the other hand, it's a pity when you say okay, if someone has led a halfway decent project, then he does the next one and the next one and the next one, and in this way, at some point, you only have top dogs who follow their line and someone with a cool, new idea can't compete’ – Interviewee 56.

A few other interviewees made similar statements. One interviewee expressed the need for the option to continue a project using previous results, but with a new partner, as it would not always be possible to continue with the same consortium. The need for continuity goes hand in hand with the need for industrialization funding and TRL evolution. The latter was identified by eight interviewees as a synergy need. Interviewee 44, representative of a SME, expressed the following: ‘So if something should change in research, in funding, that would also be good, if you can actually bring something to industrial maturity.’ Other interviewees also made similar statements, emphasizing the transition of research to industry. Interviewee 53 commented the following on funding of higher TRL: ‘That's also a blind spot, you have to

say. We often get questions like that from our organization, and, at the moment, we don't have the one program that would really fit. At least it's not easy. So, I think that's definitely still a gap.'

Interviewee 49, representative of a RTO, mentioned the wish for a specialization in form of higher TRL along with increasingly regional small-scale interests that a region wants to promote. This would comprise two funding stages: a lower TRL addressed by European and national funding programs and a higher TRL addressed by regional funding programs.

Harmonization of administrative processes

According to a significant number of interviewees, an important aspect to address with synergies is the simplification of administrative processes, mainly to reduce administrative overheads. When asked about possible links between funding, interviewees selected the answer 'Ease of submission' eight times. Interviewee 53 also commented on an idea to have links between the application processes of different funding programmes: 'The best-case scenario we would apply somewhere, get a rejection and then still have an option to submit the application with the consortium in a timely manner, so that we could just submit it somewhere else. Otherwise, we would also lose all the partners at some point.' A representative of a SME added that this could also take place in form of a consultation, in which funding bodies could make referrals of proposals to other funding bodies. In this way, the partner would get assistance to find the funding call that best matches their proposal. Another approach would be the alignment of eligibility criteria, an idea supported by six interviewees. Interviewee 58 wished that funding bodies would reduce their eligibility criteria to the absolute minimum.

Regarding call issue dates, several interviewees reported problems in the past, specifically when it came to the application deadlines of European and national funding calls, which were scheduled very close to each other. Most SMEs and RTOs have only one person or a small team working on proposals to various funding calls, posing a problem when the goal is to submit proposals to several calls but do not have the required capacities. In total, ten interviewees thought that it would be beneficial to address this aspect with the help of synergies. They said it would be most helpful if the deadlines for calls with similar topics on different funding levels are spread across the year instead of following each other.

Cross-collaboration between consortia of different projects

Two interviewees emphasized the importance of cross-industrial collaboration for projects, naming the IT and energy industries as examples because they have existing ties to the aviation industry. Other suggestions to enhance collaboration were to introduce synergies to simplify the transfer of knowledge between funded projects of different programs.

Joint use and funding of research infrastructure

Interviewee 50, representative of a research university, focused specifically on collaboration for the use or establishing of research infrastructure, saying that it would be beneficial and more efficient to simplify the use of existing infrastructure even if it was initially funded by another funding program. Additionally, they suggested that funding bodies on different levels jointly fund infrastructure, which can be used for various projects. Interviewee 48 had a similar opinion and talked about his experience:

'Exactly where it gets really tricky is with infrastructure. The example from the European context, I have had infrastructure funded, then I try to use it nationally or regionally. That's really annoying. In terms of content, this usually makes no sense at all and often leads to the same thing being built up again elsewhere.'

6 Final list of needs

The final list is composed of the needs of all three countries as presented in the previous chapter. When comparing the three countries, it becomes clear that there are no large differences in views. However, there are slightly different situations and opinions about specific needs or proposed synergies. Due to the small sample size, it is not possible to determine if a significant number of stakeholders also share a need expressed by only one or a few entities. **The following summary presents an indicative global view based on the collected data.**

6.1 Funding needs

For the final list of funding needs, five topics have been identified. Those were frequently named by different types of interview partners in all three countries, making it evident that they are relevant for the ECARE project and funding bodies in the four pilot regions of the three countries. **The list does not rank the needs according to importance.**

1. Funding requirements

Most interviewees have different needs relating to funding requirements, even though the extent differs among the three countries and different types of stakeholders. The representatives of SMEs, RTOs and research universities in particular emphasized the need for higher funding rates on national and regional level, so that they can participate in projects. Because of the administrative effort and need to invest in infrastructure, those stakeholders require more funding. There is also the need for more accurate funding budgets, better aligned with the cost of the stakeholders participating in a project. In some cases, stakeholders are also looking into options to acquire more private funding in addition to public funding. This poses the need for a connection between private and public funding to support investments in research projects.

2. Industrialization funding

A need that became evident in all countries and voiced by many interviewed stakeholders is the need for more industrialization funding. Industrialization funding, i.e. public funding for projects with high TRL (like TRL 6-8), was universally identified as a gap. Aeronautical stakeholders have problems to cross the bridge from research to industry. The actual product launch including aspects like marketing and certification is often too difficult without funding, especially when it comes to new innovative technologies. This need could be addressed with synergies as it seems apparent on all levels of funding and should be prioritized as it is crucial for many stakeholders.

3. Simplification of administrative processes

A universal need is the simplification of administrative processes. While this need was expressed in all three countries by a variety of stakeholders, it appears most evident when it comes to European and regional funding. Administrative overheads include the exhaustive application and proposal processes, and the documentation and reporting requirements during the project.

4. Help with building consortia

The need for help with building consortia was expressed by stakeholders in all three countries. Particularly, stakeholders which have not yet participated in European projects expressed this need. They reported difficulty in finding international partners required for European projects, as they lack the network and knowledge required to join and build consortia. On the regional or national level, this need was mentioned less frequently.

5. Support for SMEs

Incorporating all four needs previously described, the final need is specific support for SMEs. This was not only expressed by the SMEs themselves, but also by other stakeholders who wish to collaborate with SMEs. SMEs face difficulties in acquiring appropriate funding and have limited capacities due to smaller innovation budgets and lack of qualified staff. They need more visibility when it comes to building consortia. Especially if the companies have never participated in funded projects, they have limited knowledge and contacts. Thus, it is more difficult for them to build or join consortia. One main point highlighted is the need of SMEs to participate to European funding programmes. Funding support for SMEs in the preparation of proposals is considered important by interviewees, with specific regard to high-risk projects.

6.2 Synergy needs

Eight synergy needs were identified. They are the results of concrete ideas for synergies that were discussed during the interviews. Additionally, opportunities to address the funding needs are included here. These were identified in the previous chapter. **This list of synergy needs consists of general ideas on how to apply or when to expect synergies, rather than propositions for detailed synergy mechanisms.** Detailed synergy mechanisms will be developed and evaluated with the help of various stakeholders throughout the next steps in the project. In general, the listed synergies should be able to work between the European, national and regional level. For some topics, it might be more beneficial to operate from a European to national level, and from the national level to the regional level, to benefit from less complex structures and account for country-specific characteristics. **The following list does not rank the synergy needs according to their importance but simply offers an overview. Some of the needs overlap as they are interdependent topics.**

1. Communication and transparency mechanisms

To achieve any synergies, a framework to implement them must be established. The framework must be based on communication and transparency mechanisms between European, national and regional funding bodies. To establish synergies between European and national funding bodies, national and regional funding bodies need to work together so that the national funding bodies can also represent and support the regional funding bodies. After all, the key is communication about upcoming calls, technological roadmaps and regulations before they are implemented and published. The interviewed stakeholders have the impression that there is not much communication between different funding bodies at the moment.

2. Alignment across regions/governmental levels

Communication and transparency mechanisms can also be used to create deeper policy alignment. Synergies for policy alignment across regions and governmental levels from European to regional are important when it comes to upcoming roadmaps and calls. Ideally, the funding landscape would be aligned so technology is moving forward across all governmental levels and research from former projects can continue to be used, even if it was funded by a programme at a different level. This is further explained when it comes to synergies of continuity. Different tools exist to implement synergies for alignment across regional and governmental levels. One example is a Memorandum of Cooperation (MoC), which is currently being implemented by Clean Aviation with various European regions. However, the interviewed stakeholders emphasized that there should be tangible outcomes of the MoC that have an immediate and concrete impact on funding in the respective regions, e.g. new joint funding programs. An improved balance among European, national and regional interests is needed to better sustain regional directives and needs. The present and potential role of the regional clusters is considered an asset to be better exploited.

3. Continuity

Continuity is the most expected outcome from synergies according to the interviewed stakeholders. This requires the identification of synergy mechanisms to achieve more continuity in funding. It would be beneficial to fulfil other synergy needs such as communication and transparency mechanisms, inter-regional and governmental alignment and homogenous eligibility criteria to achieve continuity.

4. Funding of high TRL

The need for industrialization funding, specifically meaning the funding of TRL higher than 6, can be addressed through synergies. As described in the previous chapter, aeronautical stakeholders identified a gap when it comes to funding for high TRL levels and funding of product launches. The gap between research and finished product is hardly addressed at all by current funding programs. With increased alignment across regions and governmental levels, synergies could offer joint funding of these kind of projects. For example, a joint funding program addressing a continuous range of increasing TRLs could be introduced. As European R&I programs only, fund projects up to TRL 6, European funding programs could address the project at a lower TRL. As the project proceeds with higher TRL, it could be funded by national and regional programs. In this way, continuity of the project is also secured.

5. Harmonisation of application processes

To harmonise application processes among funding bodies and simplify the application for projects, three suggestions were made and approved by the majority of interviewees:

First, homogenous eligibility criteria would lead to a better understanding of the funding landscape and interested stakeholders would need less assistance for their applications.

Second, because the process of drafting and submitting a project proposal requires a lot of resources, interviewees appreciate the opportunity for referrals between funding bodies. If the proposal cannot be accepted by the funding body, it could be referred to another funding program, which might be a better match for the proposal. A respective link for referrals could be established between all levels of funding and also different funding programs.

Third, to harmonise the application process, synergies could result in an improved alignment of call issue dates. Increased transparency and joint planning would allow call issue dates of European, national and regional calls to be distributed across the year. It would be easier for interested stakeholders to apply for multiple calls with more time to prepare the proposals. Simultaneously, there would be more time to make referrals if the calls have varying deadlines.

6. Building consortia

To help aeronautical stakeholders with the building of consortia for all funding levels, synergy mechanisms can be introduced. One synergy, especially relevant for the European level, could be the ECARE platform. Interested entities from all over Europe could indicate their interest in specific programs, making it easier to find international partners to build consortia for European calls, as well as national or regional partners for the respective funding programs. This platform could then also be expanded to the national and regional level.

7. Joint use and funding of research infrastructure

Synergies for both the funding and use of research infrastructure are beneficial for research continuity, which was named as one of the most important ideal outcomes from synergies. Currently, there is no collaboration for the funding or use of infrastructure. Interviewed stakeholders report that regulations would make it difficult to use infrastructure acquired or built for one programme in another programme.

This could be improved, making funding more efficient. Collaboration – also on a European level – should enable the use of infrastructure, even if located in another country. Funding bodies on different levels (e.g. European and national) could also jointly fund infrastructure. This synergy would make larger infrastructure investments possible, for example for the benefit of RTOs and research universities.

8. Cross-collaboration between consortia of different projects

More synergies with other projects and consortia were wished for by several interviewees in all three countries. This can relate to consortia within the same funding program, a different funding program in aviation, or even funding programs in different industries. Funding authorities could simplify the exchange of data between projects, and introduce regular communication mechanisms. Interviewed stakeholders noted the benefits of collaborating with industries related to aviation, for example the automobile or energy industries, as some technologies might be used in several industries.

7 Conclusion

The ECARE project, funded by Clean Aviation, aims to enhance collaboration and funding opportunities within the European aeronautical industry. It seeks to clarify regional and national innovation roadmaps, promote synergies between stakeholders, and help achieve the goals of the CA JU Programme efficiently. The project focuses on four pilot regions in France, Italy, and Germany. **By conducting 58 interviews with representatives from various aeronautical stakeholders, the consortium was able to identify five funding needs and eight synergy needs.**

Key findings include the need for higher funding rates on national and regional level, especially for SMEs. Another need is more funding for projects with TRL 6 or higher, which could be solved on the national or regional level. There's also a demand for simplified administrative processes and improved communication between funding bodies on all levels to establish synergies.

These needs will undergo validation with input from the ECARE stakeholder group and during the Transnational Workshop in November 2023. Additionally, potential synergies beyond the ones previously listed will be developed and further assessed to enhance collaboration and funding opportunities in the European aeronautical industry. **The ECARE platform can be a helpful asset to fosters collaboration, streamlines funding processes and establish synergies between European, national and regional funding bodies.**

Appendix A – Interview Guideline

INTERVIEW GUIDELINE

[WorkPackage 3 – Task 3.1]



Final version – 15/03/2023



Versions:

#	Issue	Organisation	Date
V0	Preliminary version provided to start brainstorming on the interviews process	Aerospace Valley	17/02/2023
V0.1	Internal review by Aerospace Valley before submission for comments to the ECARE consortium	Aerospace Valley	23/02/2023
V1	Internal meeting to discuss and improve the questionnaire	ALL (HAv, DAC & AV)	15/03/2023
V2	AV performed some additional modifications following the feedback of partners	Aerospace Valley	15/03/2023

Interview methodology

Three main tools will be used for interviews: Before contacting the entities to be interviewed, it is necessary to produce a set of consultation tools. A preliminary analysis to guide the production has been performed.

- ECARE Factsheet: Non-confidential presentation of the ECARE project's characteristics and benefits. ECARE' taxonomy (T2.1) will have to be provided in this factsheet. The consortium validated that the taxonomy will be sent to the company to be interviewed before the meeting and companies were requested to select the main topics of the taxonomy in relation to their R&D&I programs. If this was not performed by the company beforehand, it will be done during the interview.

- List of ECARE main targeted group of interviews: Each partner identified a list of more than 20 entities to be interviewed.

- ECARE Interview Guideline: Document describing the Mapping methodology and the main steps of the interview and listed the different key questions asked to the entity to steer the exchange.

ECARE Factsheet

Introduction needs to clearly present:

- ECARE objectives
- What synergies mean for the ECARE project
- The ECARE taxonomy

This introduction will be done by email (email + factsheets + taxonomy) to the targeted organisations, and must be formalized at the first step of each interview.

Main questions to ask

1. Presentation of the person/structure

- a. Name of the person
- b. What is your position in the entity?

Entity:

- Short presentation of the entity (type, location, year of creation, number of employees, main business)
- What are your main markets?
- What is your revenue? Growth forecast?
- What is the budget allocated to R&D? Growth forecast?
- Do you plan a diversification strategy in the future?

2. Identification of the main technology and current R&D projects

- a. Do you have a short overview of the technology roadmap? Could you please send it to us?

3. Focus on ECARE taxonomy

- a. What are your research priorities in the taxonomy?
- b. What is the main point(s) of the ECARE Taxonomy that you (may) address? And why?
- c. Does the taxonomy cover all your R&D&I topics?
 - i. Yes / No
 - 1. If not, please tell us, what is missing and what would you add?

4. Questions on the general organization of the public funding needs for the future of ECARE Taxonomy

- a. What is your level of knowledge of public funding (from 1: None to 5: very good)?

	None			Very good		
i. Regional	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ii. National	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
iii. European	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- b. What do you think is missing in terms of public support?
 - i. Technical support
 - ii. Financial coverage
 - iii. Industrialization funding
 - iv. Help to build a consortium
 - i. R&D public funding which could lead to greater private R&D funding
 - ii. Funding body which propose a list of entities to integrate to a consortium
 - iii. Other (to be specified)

.....

- c. What areas would you like to see addressed in terms of links between different public funding calls?
 - i. A larger call for projects bringing together all funding bodies, each focusing on a level of TRL, with reporting periods to unlock each tranche of funding according to the level of TRL
 - ii. Direct links between regional, national and European funding
 - iii. Ease of submission
 - iv. Each funding body recommending the one that fund the next one at a higher TRL
 - iv. Other (to be specified)

.....

- d. Do you see any synergies created between the different public funding calls?
 - i. If yes: Please specify?
 - ii. If no: What would you like to see?

5. Questions on public funding for R&D project needs on ECARE Taxonomy

a. What public funding have you received in recent years?

i. Please give us

Name of the project	Call answered
.....
.....
.....
.....

b. How do you manage different levels of funding (regional/national/European)?

- i. One person dedicated to the management of public funding
 - ii. R&D roadmap setup internally or externally
 - iii. Regular meeting with a project manager from a regional or national funding body
 - iv. Exchange with a national contact point
 - iii. Other (to be specified)
-

c. Do you have a strategic plan for addressing the different funding schemes or is it mostly organized ad hoc?

- i. Strategic plan
- ii. Ad hoc
 - 1. Invitation to integrate a consortium by another partner
 - 2. New interesting call

- d. For each project you have received public funding for, please identify in the following table **at least three items** of the ECARE Taxonomy?

Table A 1: ECARE taxonomy with first level topics

Projects	A. Flight physics - A1. Aerodynamics	A. Flight physics - A2. Thermal & Fluid dynamics	A. Flight physics - A3. Structural Mechanics & SmartMaterials	B. Manufacturing Processes/Design Tools/Techniques	C. Materials Technology - C1. Electronic	C. Materials Technology - C2. Photonic/Optical	D. Device Technology	E. Design Technologies for Platforms	F. Aerostructures	G. Propulsion - G1. Endothermic Systems	G. Propulsion - G2. Propellant & Combustion	G. Propulsion - G3. Electric Systems	H. Avionics & On-board Systems - H1. General	H. Avionics & On-board Systems - H2. Communications	H. Avionics & On-board Systems - H3. Sensor Systems	H. Avionics & On-board Systems	I. Flight Mechanics	J. Information and Signal Processing Technology	K. Integrated Design & Validation	L. Integrated Systems Technology	M. Human Factors	N. Innovative concepts & scenarios	O. Operating Environment Technology	P. Simulators, Trainers and Synthetic Environments

6. Questions on interest in synergies needs between regional, National and European funding

- a. What do synergies mean for you, assuming you get the same success rate?
- i. More funds
 - ii. More results
 - iii. More focus
 - iv. More continuity in the research
 - v. Other (to be specified)

.....

- b. What needs synergies have to address?
 - i. TRL evolution
 - ii. Funding requirements
 - iii. Expanding private and public networks
 - iv. Simultaneous bidding of one project to regional/national/European Calls
 - v. Same type of eligibility criteria
 - vi. Alignment of Calls issue dates
 - vii. Other
 -
- c. Suggest a scenario of synergy that you would like to see implemented, in terms of how national/regional scales can prepare the supply chain actors to be ready for a future Clean Aviation call?
 - i. Adequate interconnection among regional/national and European research subject
 - ii. Coherent planning among regional/national and European Calls
 - iii. Connection between research results and new Call topics
 - iv. Other
 -
- 7. Focus on ECARE platform:
 - a. Regarding the ECARE Platform, how could this platform meet your needs?
 - i. Facilitate project partnership creation
 - ii. Facilitate funding opportunities among all the Calls at European/national/regional level
 - iii. Expand networks of the business and public entities
 - iv. Other
 -
 - b. What would you like to see and have on our platform?
- 8. Questions on partnership opportunities
 - a. Are you interested in receiving our newsletter?

Appendix B – Interview Assessment Aerospace Valley (AV)

AEROSPACE VALLEY INTERVIEWS ASSESSMENT



29/05/2023



1. Focus on ECARE taxonomy

- a. Research priorities in the taxonomy?
- b. Main point(s) of the ECARE Taxonomy addressed, with motivation
- c. Suggested additional topics of the ECARE taxonomy

Potential improvement:

- On the H2 part, it's both generalist and vague, while on the electrical and electronic part it's quite complete.
- Electronic equipment and thermal management should be separated in the same way as optronic equipment because there is cooling everywhere.
- It should be clarified for which type of aircraft this taxonomy is intended.

Main points that have been identified as missing are (in bold the most redundant):

- **Maintenance**
- Help monitoring
- **Certification**
- **Environmental management (recycling, circularity, criticality of raw materials, etc...)**
- A part dedicated to the production of green hydrogen and SAF isn't included
- Storage part
- Electronic component for systems and subsystems
- **Climate impact and environmental sciences**
- Power conversion and energy management aspects are missing

2. General organization of the public funding needs for the future of ECARE Taxonomy

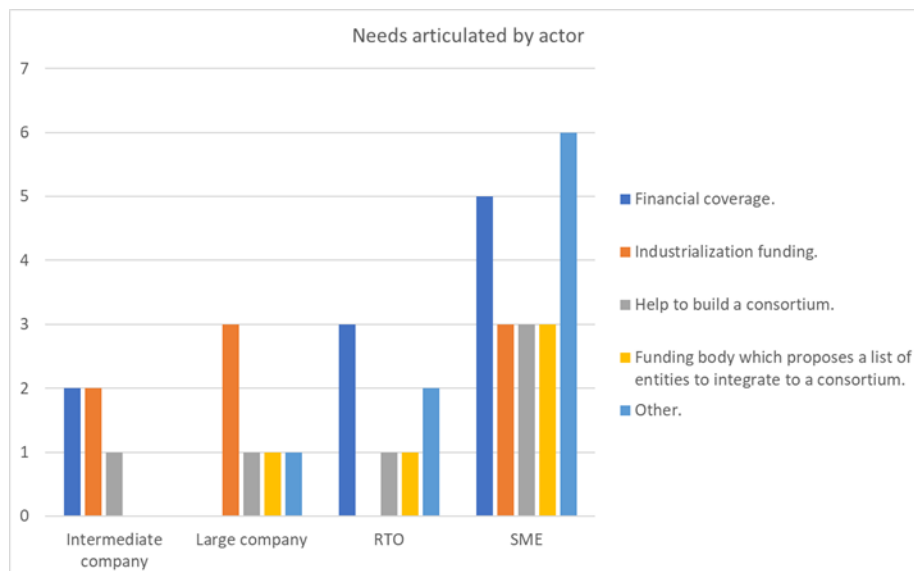
a. Level of knowledge of public funding (count of answers)

	None	A bit	Basic	Good	Very good
i. Regional	0	2	5	4	8
ii. National	1	1	4	6	7
iii. European	2	0	3	5	9

b. What is missing in terms of public support?

i. Technical support	0
ii. Funding requirements	10
iii. Industrialization funding	7
iv. Help to build a consortium	6
v. R&D public funding which could lead to greater private R&D funding	0
vi. Funding body which proposes a list of entities to integrate to a consortium	5
vii. Other (to be specified)	9

Figure A 1: Needs articulated by actor - France



Most of the interviewees are interested to have:

(1) Higher intervention rate proposed by funding bodies

- a. At least 50% of intervention rate
- b. To reduce the share of reimbursable advance.

(2) Help to build a consortium

It seems complicated for European projects, as sometimes they don't know the company they could work with.

(3) Industrialization funding.

For the Phase 2 of Clean Aviation, companies will need to begin the industrialization phase.

Nevertheless, other key expectations have been highlighted, such as:

About funding:

- Funding for fundamental research on particular topics, on water contrails for example, or other topics in relation to aviation
- More collaborative research projects
- Adequacy of budget, indeed, the budget proposed for some projects are not in line with the real needs for these projects
- Assistance in selection of some funding.
- Difficulty in identifying funding that helps the transition from small-scale to industrial production
- Public aid to keep and protect the IP.
- Finding a way to help the sector to have access to private funding more easily
- Having DGAC research projects less oriented by industrials (more open calls)

About networking:

- Matchmaking of companies by funding bodies at regional and European level
- Putting companies in contact with large research laboratories
- Putting the big companies/end-users in touch with the smaller ones

About new ways of working:

- Cluster that would be more involved in the process of companies’ selection for potential future regional/national/European funding
- Scoring of companies following project performance (submission of deliverables on time, participation to precedent projects, etc...) that could be used by companies for collaborative projects and/or funding bodies.
- Reducing the volume of requested administrative documents
- Identification of technologies by funding bodies that could be transferred to other sectors. Or to find a way of doing that would permit to identify new activities.
- To generate communication between different consortia in the same sectors
- Creation of a meta-European-structure which would have a national and European vision, and could create a real proximity link to companies at European level
- Presentation of a company’s roadmaps to European funding bodies “At European scale, it seems that only the big industrialists are heard”

3. Public funding for R&D project needs

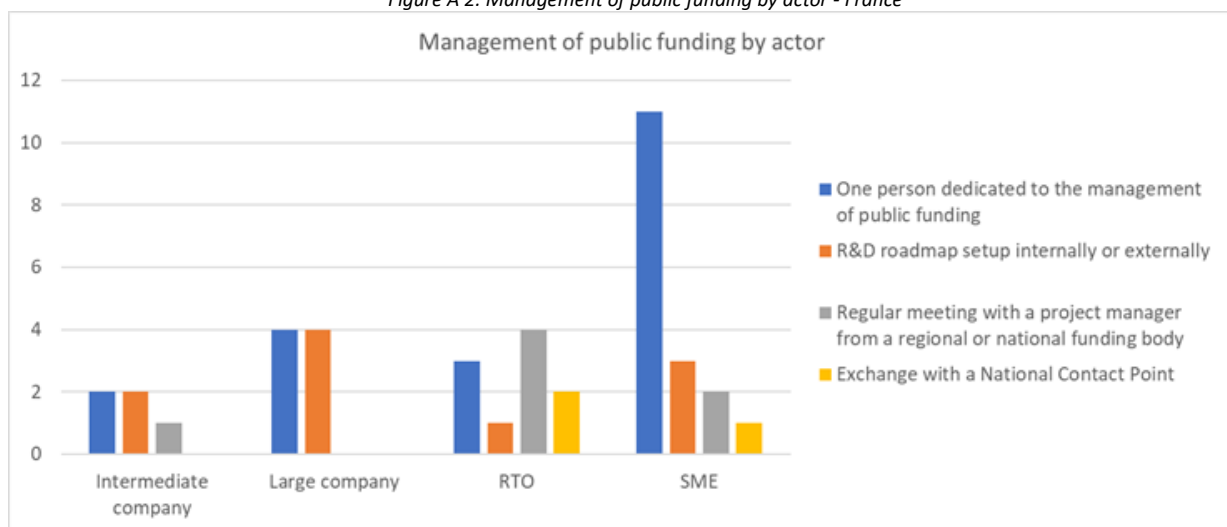
a. Main public funding received in recent years (See Appendix 5 of Deliverable 2.1)

b. Management of different levels of funding (regional/national/European)

- i. One person dedicated to the management of public funding 17
- ii. R&D roadmap setup internally or externally 7
- iii. Regular meeting with a project manager from a regional or national funding body 7
- iv. Exchange with a national contact point 3
- v. Other (to be specified) 0

Most of the interviewees have a person dedicated to the management of public funding. Most of the SMEs interviewed have someone dedicated to the management of public funding, nevertheless, only 27% of these companies have an R&D roadmap linked to public funding.

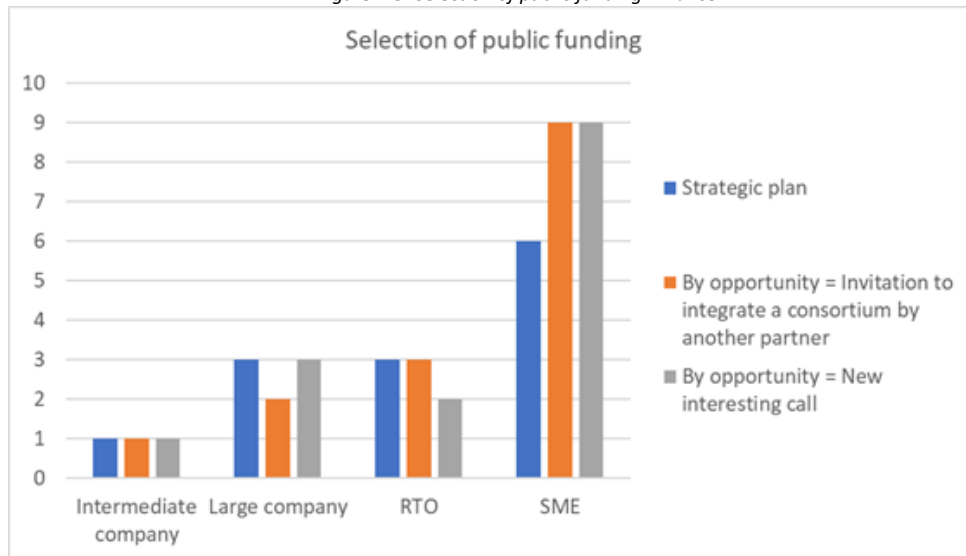
Figure A 2: Management of public funding by actor - France



- c. Way to address the different funding schemes
 - i. Strategic plan 11
 - ii. By opportunity
 - 1. Invitation to integrate a consortium by another partner 15
 - 2. New interesting call 14

SMEs are organizing their public funding activities ad hoc and only 55% of them have a strategic plan in place, while 100% of large companies, intermediate-sized enterprises and RTOs have one. This difference of their strategic plans is directly linked to the fact that SMEs don't have a roadmap for R&D linked to public funding.

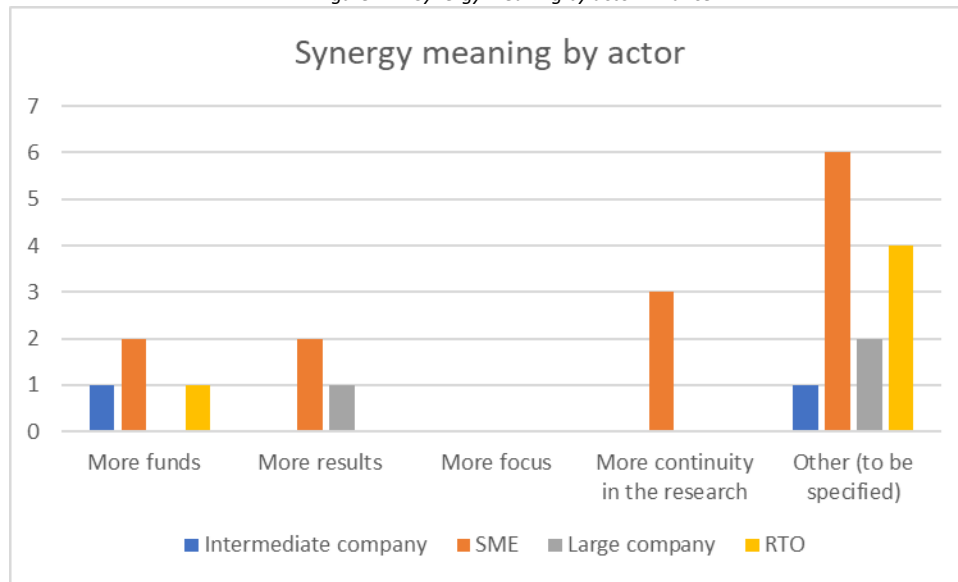
Figure A 3: Selection of public funding - France



- d. Correlation among received public funding and ECARE Taxonomy
(See Appendix 8 of Deliverable 2.1)
- 4. Synergies needs between regional, national and European funding
 - a. Meaning of synergies
 - i. More funds 4
 - ii. More results 3
 - iii. More focus 0
 - iv. More continuity in the research 3
 - v. Other (to be specified) 13

Not all interviewees recognized potential in the proposed synergies. More continuity in the research is expected from synergies. Nevertheless, some key points will be highlighted in the next section c. and d. that synergies should address.

Figure A 4: Synergy meaning by actor - France

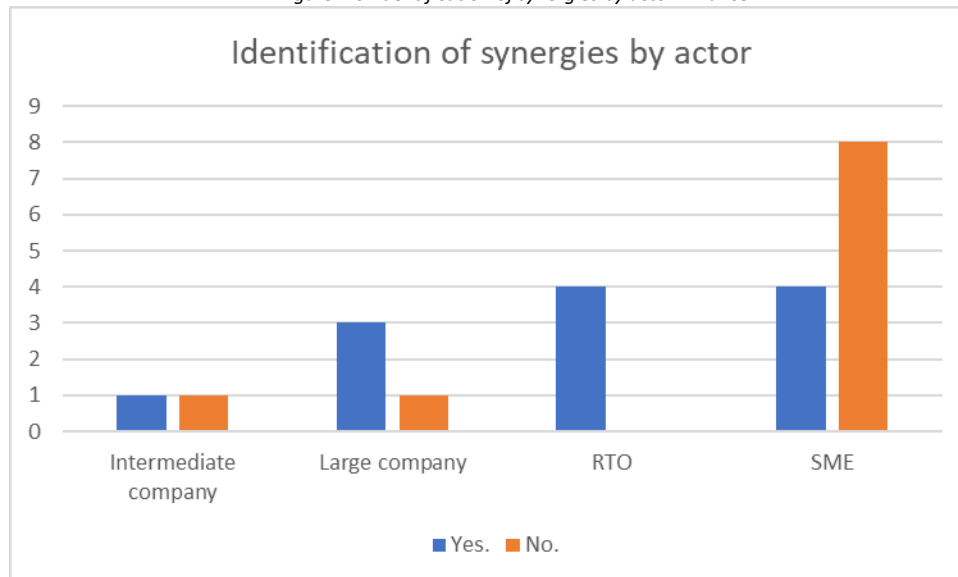


b. Existing synergies between the different public funding

- i. YES (with needs for enhancement) 10
- ii. NO 10

50% of the interviewees didn't identify any synergy. SMEs made up the largest proportion of the companies surveyed. Nevertheless, all the research centers identified at least one synergy. Indeed, interviewees highlighted that research centers tend to work toward developing funding synergies with their own efforts. Generally, they will benefit from regional funding, and they will work closely with local FEDER agencies that will provide European funding in addition to the regions.

Figure A 5: Identification of synergies by actor - France



5. Synergy needs to address

- i. TRL evolution 6
- ii. Financial coverage 7
- iii. Increase in the private and public network 0
- iv. Simultaneous bidding of one project to regional/national/European Calls 1
- v. Same type of eligibility criteria 6
- vi. Alignment of Calls issue dates 2
- vii. Other 5

Table A 2: Synergy needs by actors - France

	Financial coverage	TRL evolution	Simultaneous bidding of different arguments of one project to regional/national/European Calls	Same type of eligibility criteria	Alignment of Calls issue dates	Other
Type of company						
Intermediate company	1	1		1	1	1
Large company	1		1	1	1	
RTO	1			1		
SME	4	5		3		4
Total général	7	6	1	6	2	5

For most of the interviewees, synergies need to address three main points:

- A better financial coverage
 - More co-financing between regional and national agencies
 - To permit some funding bodies to have an intervention rate higher than it is today for national and regional funding bodies.
- More TRL evolution: Managing funding across a wide range of TRLs can be complex and lead to less agility
- And to have the same type of eligibility criteria
 - The sector expects that for synergies, homogenization should be performed at different scales:
 - Standardization of the reporting systems at regional, national and European level
 - Homogenization of eligibility criteria of calls for projects from regional to European scale
 - Introduction of proposal homogenization of the proposal between the different funding bodies
 - Regulation homogenization
 - Making regulations more similar across different jurisdictions
- b. Possible links between different public funding bodies
 - i. A larger call for projects bringing together all funding bodies, each focusing on a level of TRL, with reporting periods to unlock each tranche of funding according to the level of TRL 8
 - ii. Direct links between regional, national and European funding 3
 - iii. Ease of submission 3

- iv. Each funding body recommending one to fund the next stage at a higher TRL 1
- v. Other (to be specified) 8

Table A 3: Possible links identified by actors - France

Type of company	A larger call for projects bringing together all funders, each focusing on a level of TRL, with reporting periods to unlock each tranche of funding according to the level of TRL	Direct links between regional, national and European funding	Ease of submission	Each funding body recommending the one that fund the next one at a higher TRL	Other (to be specified)
Intermediate company	1				1
Large company					2
RTO	4	1	2		1
SME	3	2	1		5
Total général	8	3	3	1	8

Most of the organizations interested in a larger call are the research centers that are used to the complexity of preparing a proposal and following up their projects. Indeed, they often develop their own synergies from their own motivation and networks (see next section explaining their process of synergy).

Nevertheless, other interesting key points have been addressed in sections c. and d.:

- Clear discussion between the different funding bodies and presentation of their respective funding roadmaps and projects funded
 - It could lead to synchronisation of calls for proposals
 - To perform, present and communicate an inventory of all the budgets
 - Sovereignty is key for each funding body, nevertheless, a balance should be found.
 - Communication to share with the sector and show that synergies are ongoing
- Clusters could have a stronger involvement with the presentation of projects to funding bodies to generate synergies at a wider scale compared to only one level. As of today, Aerospace Valley only presents projects to regional and national funding bodies, most of the time separately.
- The idea to move easily from a regional project to a national one is very interesting; a process of simplification is expected.
- Cascade funding within the framework of clean aviation would make it possible to send the money back to SMEs in the regions and a potential agreement with regions to participate could create synergies.
- Discussion with coordinators before the end of each project to redirect them to the right funding once the project is concluded. This could create links between the different funding bodies.
- Development of a tool that would permit the creation of synergies between previous and new projects
- Multi-window calls seem complicated, nevertheless more agile calls would be more realistic and possible with links directly created between funding bodies.

c. Ideal synergy scenario

- i. Adequate interconnection among regional/national and European research subject 0
- ii. Coherent planning among regional/national and European Calls 0
- iii. Connection between research results and new Call topics 1
- iv. Other 5

Interviewees who had difficulty making proposals found this question challenging. Some potential scenarios and actions are described above, and some synergies identified for SMEs and research centers are listed below.

SME:

- The company Elixir aircraft has benefited from a synergy that has been generated from the national instance that exists today with DGAC, which exchanges monthly with the regions.
 - The project Beauthyfuel received 50% of funding from the DGAC & 25% from the Nouvelle Aquitaine region, the total budget of the project is 3 million euros. Also, the company has been awarded 13 million euros from another national project of BPI France for industrialization.
 - Before this project, Elixir was awarded an EIC Accelerator.

RTO:

- RTOs have often benefited from synergies that they create by themselves, they contact different contact points at each funding agency they used to work with (FEDER, DGA (Directorate General of Armaments), regions, cities) and they present their project. Then, they submit a different proposal to each funding agency, and follow all their requirements for project follow-up e.g. contracting and reporting.
- These synergies are independently pursued by RTOs and are not based on the initiative of funding bodies.

6. Focus on ECARE platform:

a. Specific requirements for the platform

- | | |
|----------------------------------------------------------------------------------------------|----|
| i. Facilitate project partnership creation | 6 |
| ii. Facilitate funding opportunities among all the Calls at European/national/regional level | 4 |
| iii. Increase in the private and public network | 3 |
| iv. Other | 13 |

Most interviewees are interested in the digital platform which will offer options for project partnership creation and the identification of funding opportunities.

b. Ideal additional requirement for the platform? (in alphabetic order of the originating interviewees)

- A strong focus should be placed on the security aspects of the platform as sensitive information could be exchanged
- An user friendly interface
- Newsletter with a short description of calls by topics, generated automatically according to companies' profile,
- Newsletter that informs the funding bodies of new calls for proposals
- Mappings and cartographies are expected with links to the taxonomies and also to TRL
- International visibility could be also interesting with funding and projects outside EU
- A simple breakdown of information is expected for the presentation of projects on the ECARE digital platform, as the example of the CORDIS portal shows that the information there is too detailed.
- Easy and effective keyword search engine (not like cordis which is not easy to use), something like using a world cloud which makes it easier to find funding or partners.

- The tool developed could be also used for technological and competitive intelligence (other service or product to develop easily)
- Having a space expressing the business needs of large companies when they are looking for smaller companies or subcontractors, etc...
- Tool for connecting end-users and SMEs/ETI
- To have access or a link to the results of previous projects
- To have the website link to past and current projects
- To have a tool to request an appointment with the EC to have a look to the companies' roadmaps
- Meeting place for companies that are interested in similar calls for projects
- Business model based on a subscription logic
- Easy creation of R&D roadmap linked to public funding and TRL per topic of the organization
- Alert system to be informed of new interesting funding

7. Partnership opportunities

- a. Are you interested in being part of our newsletter mailing list? All interviewees are interested in being on the mailing list.

Appendix C – Interview Assessment Campania Aerospace District (DAC)

DAC INTERVIEWS ASSESSMENT (Final)



10/07/2023



1. Focus on ECARE taxonomy

- a. Research priorities in the taxonomy?
- b. Main point(s) of the ECARE Taxonomy addressed, with motivation
- c. Suggested additional topics of the ECARE taxonomy

- **Design for Additive Manufacturing (DfAM)** [under B]. DfAM involves unique considerations and principles that are essential for optimizing designs for additive manufacturing processes, such as lattice structures, topology optimization, and part consolidation. By incorporating a dedicated point on DfAM, the taxonomy would acknowledge the importance of this specialized approach and provide a more comprehensive framework for classifying and promoting sustainable practices in additive manufacturing.
- **MRO** [new heading topic or class] with following subtopics:
 - Aircraft transformation
 - Digital management of industrial data
 - Post-processing of digitized visual inspection data [it could go under J]
 - Block chain Technology [it could go under J]
 - Maintenance technologies during the entire life cycle of an aircraft up to the end of life
- **Risk Assessment** – Technologies and Methodologies for Uncertainties Quantification [it could go under K]
- **Configuration and maintenance software tools** [it could go under K]

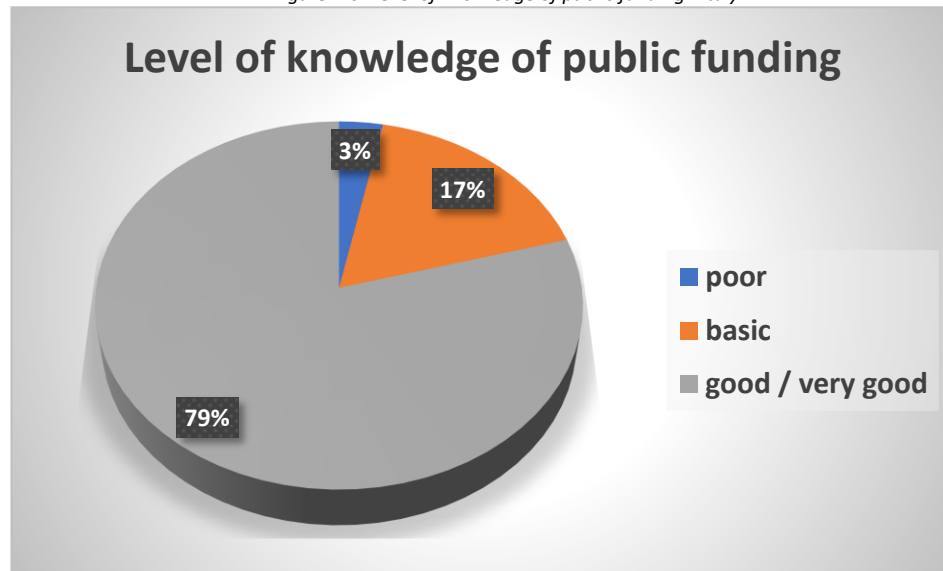
- Others:
 - Technologies related to other aviation stakeholder like **operators, airport authorities, aviation authorities, etc.**
 - Inter-sectorial technologies** like Security, Networking, Infrastructures and Data Center, Access Control, Software Integration
 - Sustainability issues** (e.g., recyclability, re-use, green materials, zero-emission production, etc.)
 - The new eco-fuels as well as the Hydrogen require a **new logistics infrastructure** (e.g., on/closed to the airport site) and new professional skills
 - The eVTOL operation in ATZ needs new/update **on-board and ground CNS technological enablers**
 - For the multimodal freight transport, it's required to pay attention to more efficient **load-unload embedded facilities**
 - Advanced Communication** means (i.e., point H2) must be compliant with the ground counterpart

2. General organization of the public funding needs for the future of ECARE Taxonomy

a. Level of knowledge of public funding (**counts of answers**)

	None	A bit	Basic	Good	Very good
i. Regional	0	0	4	9	8
ii. National	0	0	2	11	8
iii. European	0	2	5	8	6
	⏟			⏟	
	Poor		Basic	Good/VeryGood	

Figure A 6: Level of knowledge of public funding - Italy



Globally, the interviewees have a good/very good knowledge of public funding, with the following differences among the interviewees and types of fundings:

Figure A 7: Knowledge of public funding by actor - Italy

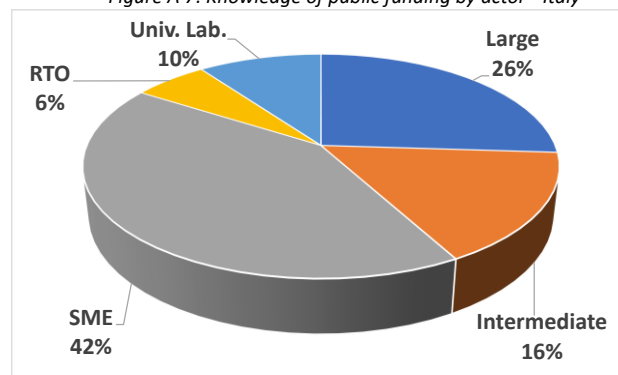
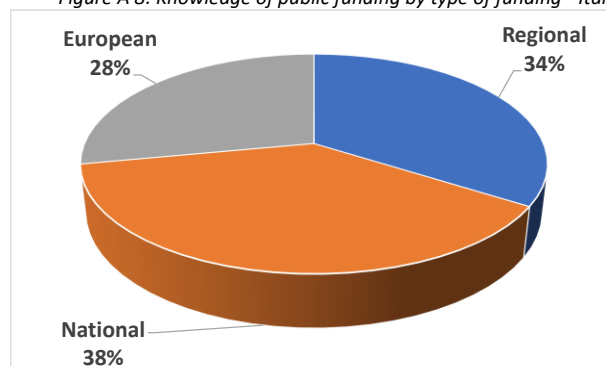


Figure A 8: Knowledge of public funding by type of funding - Italy



b. What is missing in terms of public support?

- i. Technical support 3
- ii. Financial coverage 6

- iii. Industrialization funding 8
- iv. Help to build a consortium 7
- v. R&D public funding which could lead to greater private R&D funding 7
- vi. Funding body which proposes a list of entities to integrate to a consortium 10
- vii. Other (to be specified) 7

Figure A 9: What is missing in terms of public support - Italy

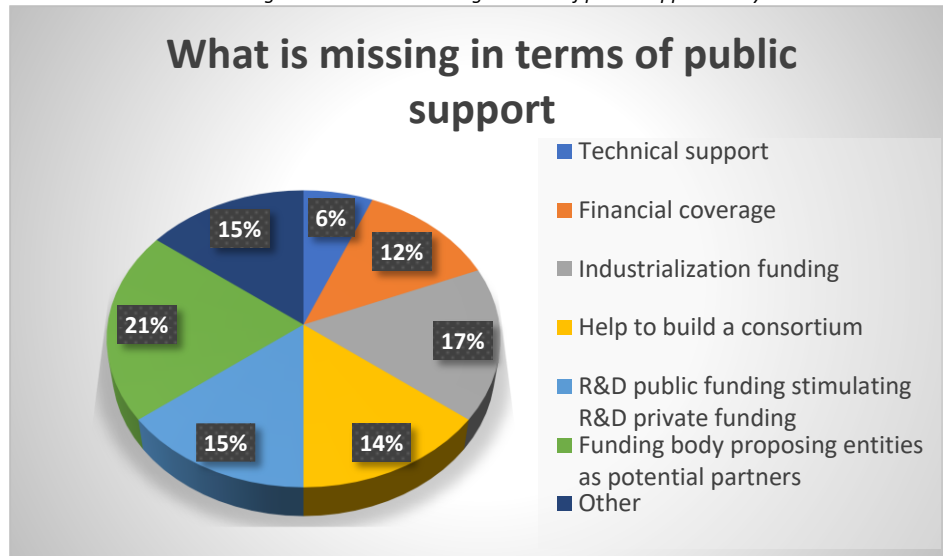
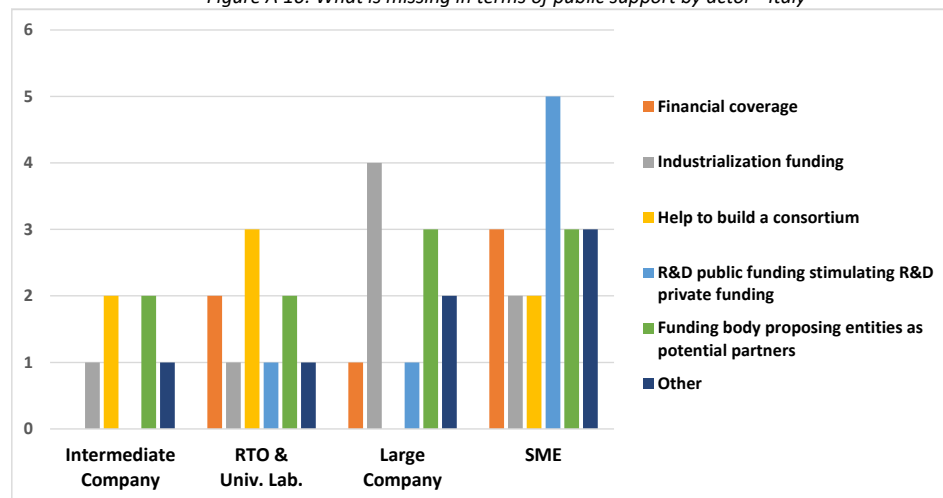


Figure A 10: What is missing in terms of public support by actor - Italy



Notable statements by the interviewees are:

- A **legal working framework** allowing implementation of synergies among projects with different consortia and types of funding
- It's important to give specific **support towards successive industrialization** aimed to shorten time to market of new/improved products
- **Funding support in the** preparation of proposals with specific regard to high-risk projects (e.g. highly competitive calls)

- Connection to OEMs for full involvement in projects and consortia. For the company, it is necessary to have support in facilitating relations with OEMs to be updated about the development of industrial programs.
- A **timelier project evaluation** and approval/rejection would be desirable

c. Possible links between different public funding

- A larger call for projects bringing together all funding bodies, each focusing on a level of TRL, with reporting periods to unlock each tranche of funding according to the level of TRL 7
- Direct links between regional, national and European funding 15
- Ease of submission 7
- Each funding body recommending the one that fund the next one at a higher TRL 12
- Other (to be specified) 3

Figure A 11: Possible links between the different public funding - Italy

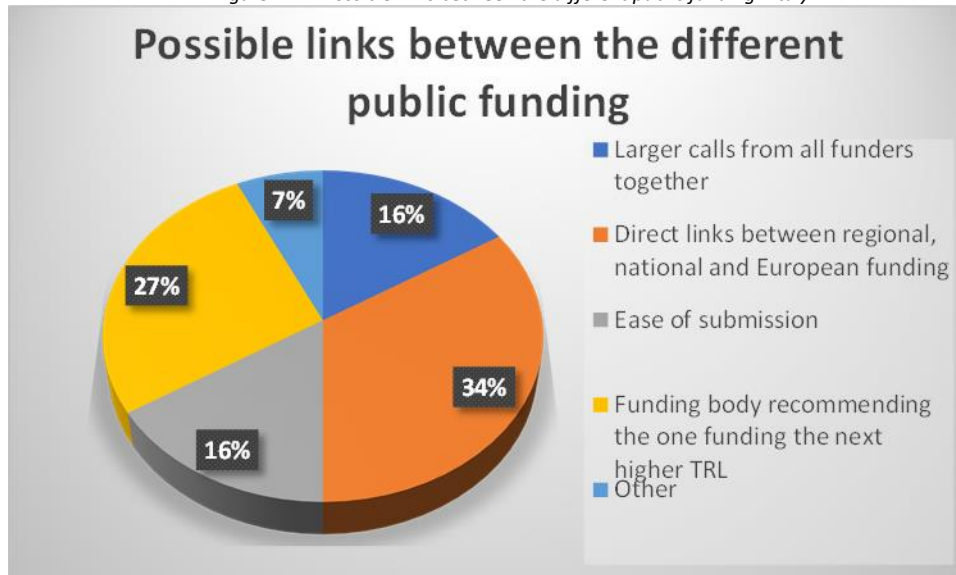
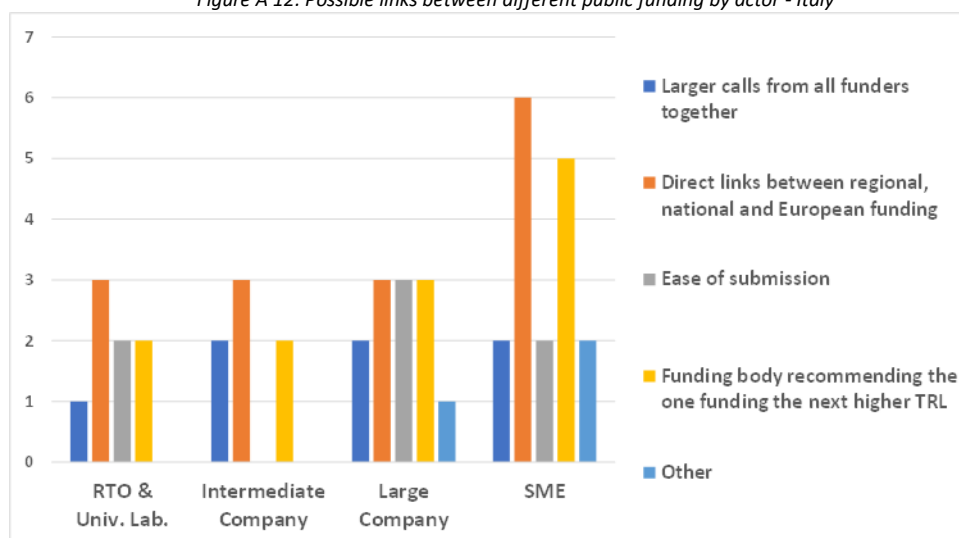


Figure A 12: Possible links between different public funding by actor - Italy



Notable statements by the interviewees are:

- **Better harmonization** of evaluation and contractual processes would help
- Potential final customers/The end user of the technology of a project should act as a **key element for the funding bodies** in the evaluation of the technology: both at the project start and at the end for assessing the results.
- The **legal working framework** of public funding mentioned in 4b shall recognize that both technology providers and end users may need to exchange data and results even if they are not project partners. They should also recognize the costs incurred in meeting the requirements and needs of others. In exchange for this support and guidance for the technology providers, especially if they are SME, the end-user could enjoy some privileges (i.e. easier access to technology) in the legal framework set out in the EIC tool which supports SMEs during the maturation of the technology.
- A **model to assess the connections among different and consecutive successful projects** in compliance with European, national and regional Innovation

d. Existing synergies between the different public funding

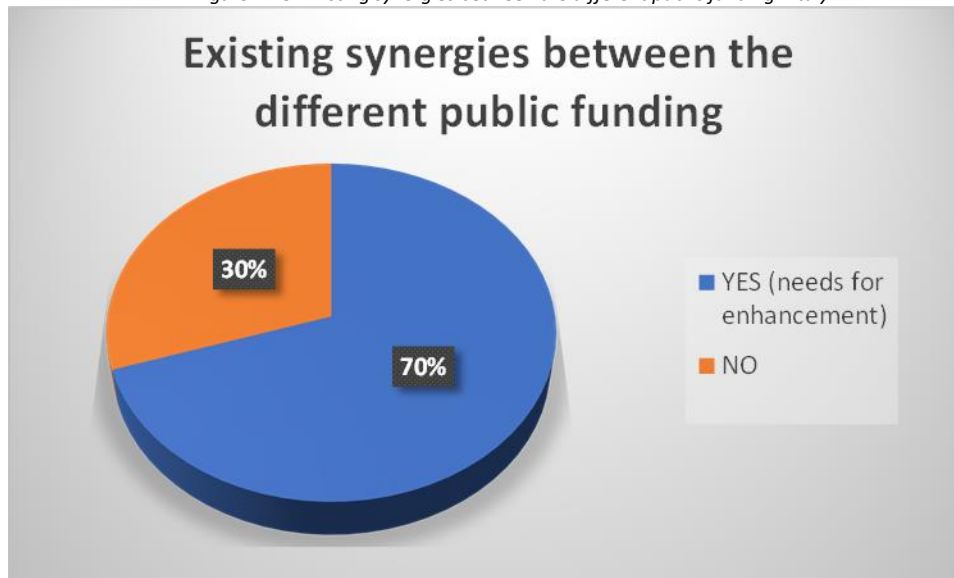
i. YES (with needs for enhancement)

14

ii. NO

6

Figure A 13: Existing synergies between the different public funding - Italy



3. Public funding for R&D project needs

- a. Main public funding received in recent years (See Appendix 5 of Deliverable 2.1)
- b. Management of different levels of funding (regional/national/European)
 - i. One person dedicated to the management of public funding 10
 - ii. R&D roadmap setup internally or externally 7
 - iii. Regular meeting with a project manager from a regional or national funding body 4
 - iv. Exchange with a national contact point 1
 - v. Other (to be specified) 9

Other:

- External consultant company, consultants and/or advisors
- Internal organization dedicated to follow all funding opportunities and managing all items from i. to iv.
- Internal partnership in the research organization with different groups inside universities
- A large company has a department fully dedicated to the management of public funding, including dedicated offices for regional, national and European opportunities both civil and military.
- The funding management structure is complemented by a dedicated R&T structure following innovation, technical content of calls and opportunity set-up in close collaboration with national and EU private partners and organizations and public bodies preparing the working frames.
- Team of senior experts chaired by the head of R&D
- Dedicated persons to manage research activities and people from different functions allocated based on the needs of the organization for a call
- Strong link with the industrial ecosystem with a high focus on applied research
- Two central offices for European and national funding opportunities.

Figure A 14: Management of different levels of funding - Italy

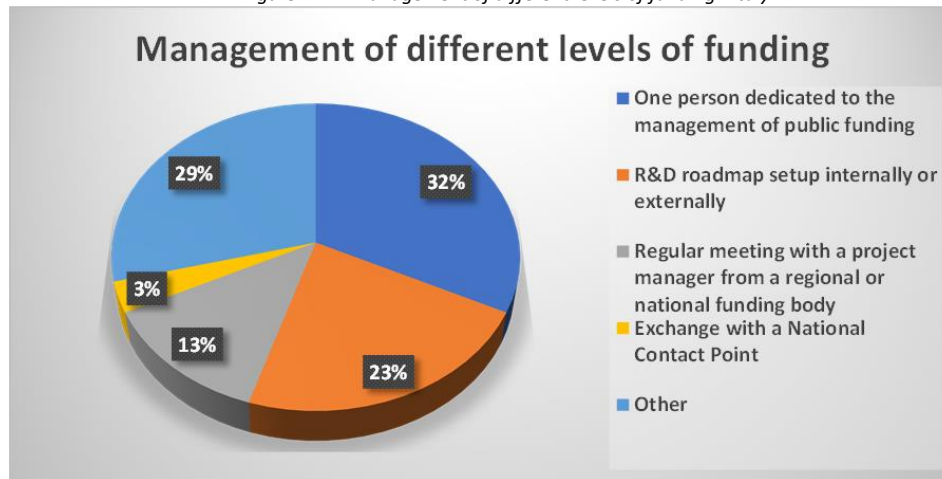
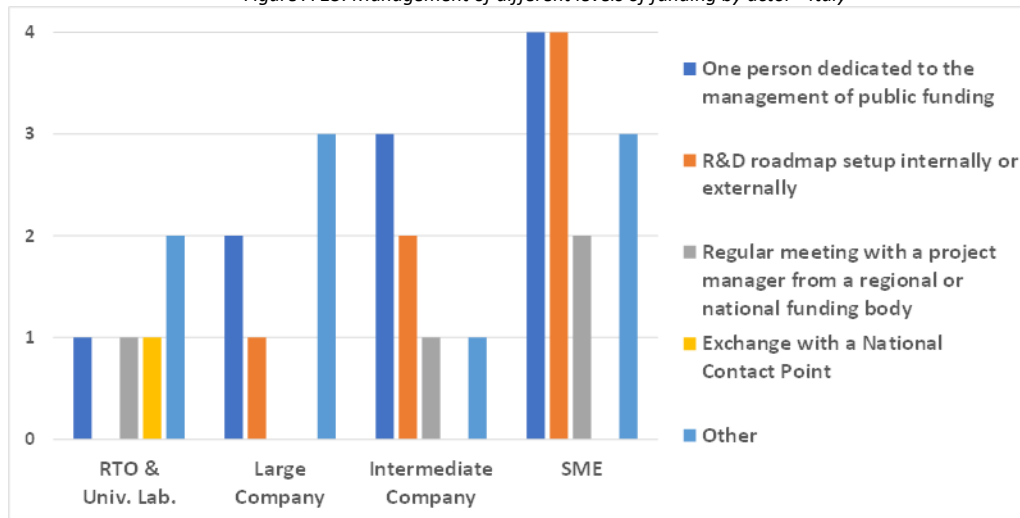


Figure A 15: Management of different levels of funding by actor - Italy



- c. Way to address the different funding schemes
 - i. Strategic plan 9
 - ii. By opportunity
 - a. Invitation to integrate a consortium by another partner 18
 - b. New interesting call 20

Figure A 16: Way to address different funding schemes - Italy

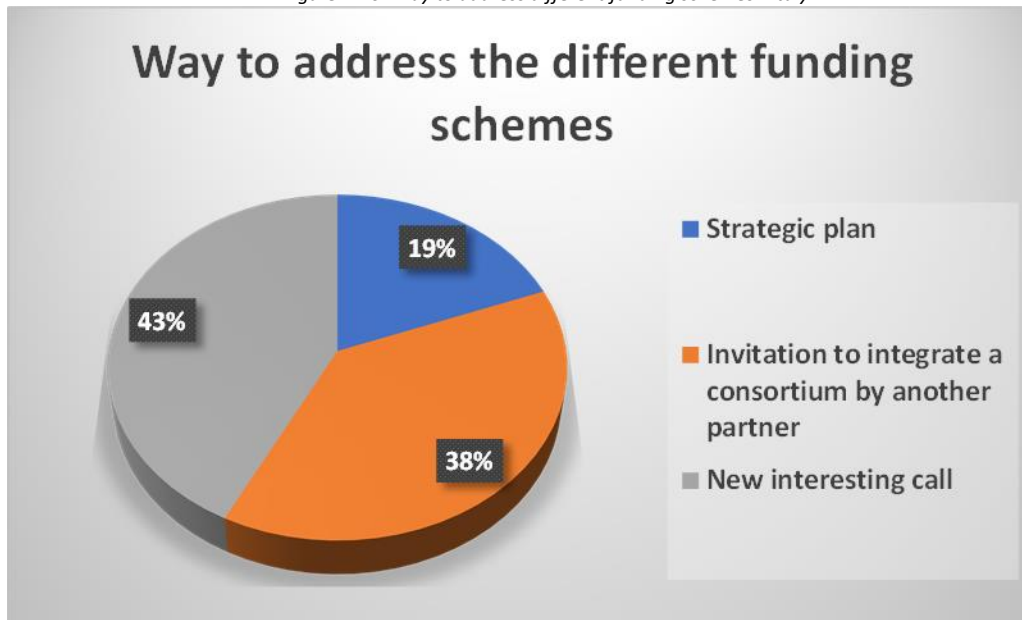
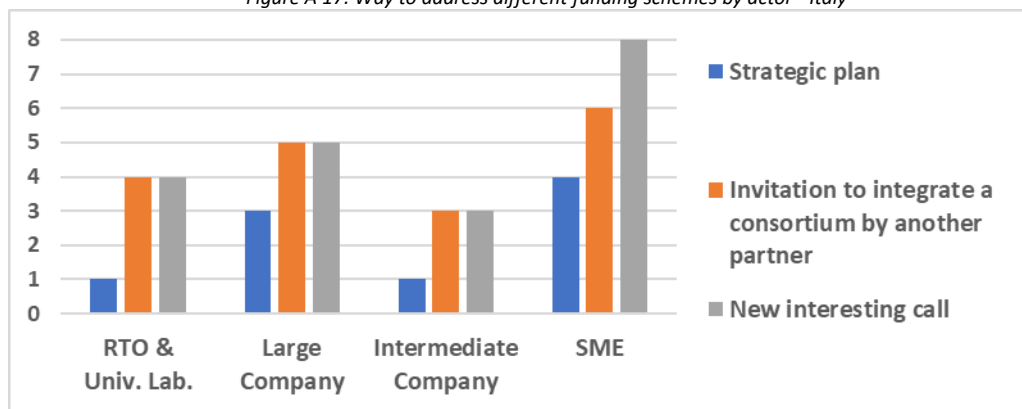


Figure A 17: Way to address different funding schemes by actor - Italy



With reference to the sample of 21 DAC members interviewed, **9 (43%) of them have a strategic plan for funding needs**. Considering the way, they normally address public funding opportunities, only 19% of the collected answers refer to the available strategic plans (see Diagram 6). Therefore, orientation for the participation to regional/national/European Calls is mostly done on an opportunity basis for all kinds of entities.

Several SMEs have expressed that they participate in research projects primarily focusing on the advancement of previous projects with the aim to get higher Technology Readiness Levels (TRLs). However, they tend to position themselves at the center of numerous opportunities even a bit outside their primary perimeter, with the scope to take advantage of entering larger consortia where innovation has a central role.

- d. Correlation among received public funding and ECARE Taxonomy (See Appendix 8 of Deliverable 2.1)

4. Synergies needs between regional, national and European funding

a. Meaning of synergies

- i. More funds 9
- ii. More results 6
- iii. More focus 5
- iv. More continuity in the research 18
- v. Other (to be specified) 2

Figure A 18: Meaning of synergies - Italy

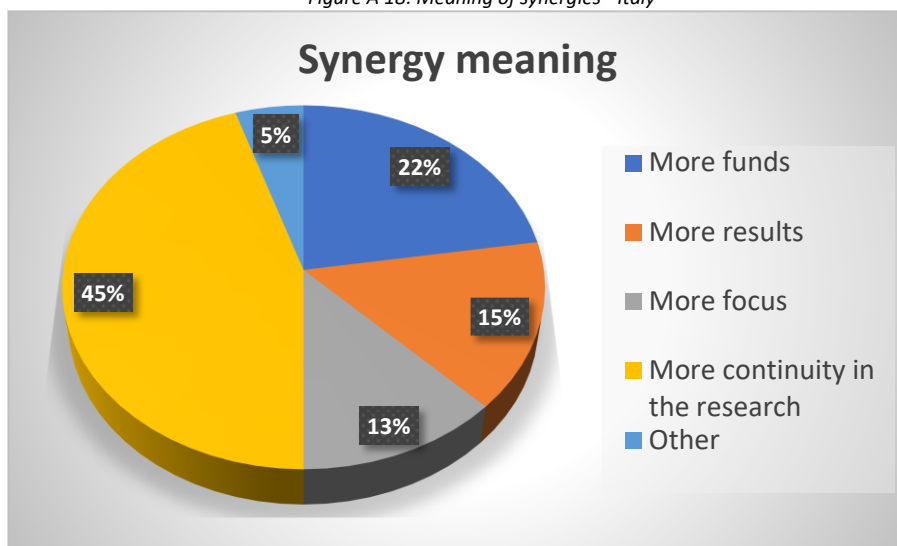
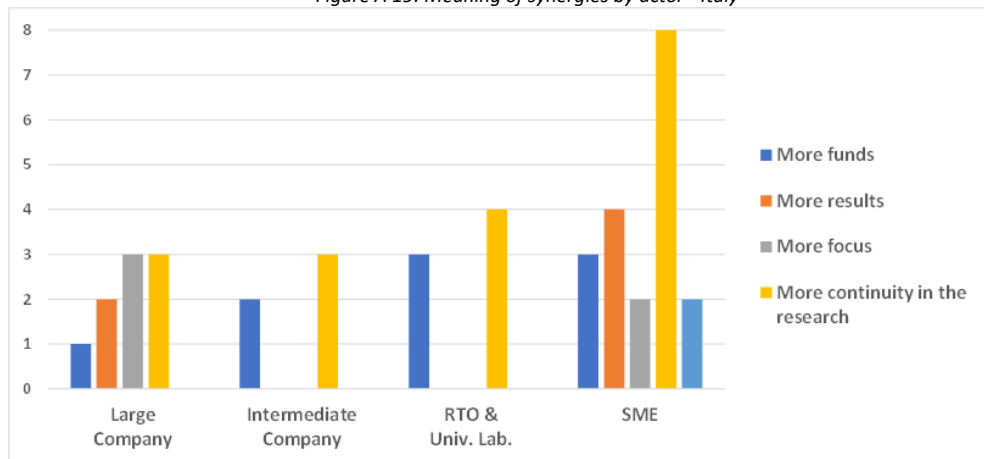


Figure A 19: Meaning of synergies by actor - Italy



It is evident that ALL types of entity look at more continuity in the research for an increase of the target TRL (45% of the answers). This is particularly true for SMEs. The interest in getting more funds is also well distributed among the organizations interviewed. Notably, research organizations and intermediate companies do not mention more results and focus. Complementary notes by the interviewed organizations:

- Better equilibrium among European, national and regional interests/choices to better sustain regional directives and needs
- An enhanced cohesion approach should be put in place at European level to assess technology needs, design tools, software and platforms to be developed. This can raise awareness of existing weaknesses versus the global market and can identify more appropriate directives on research and development.

b. Synergy needs to address

viii. TRL evolution	14
ix. Financial coverage	6
x. Increase in the private and public network	11
xi. Simultaneous bidding of one project to regional/national/European Calls	7
xii. Same type of eligibility criteria	11
xiii. Alignment of Calls issue dates	5
xiv. Other	2

Figure A 20: Synergy needs to address - Italy

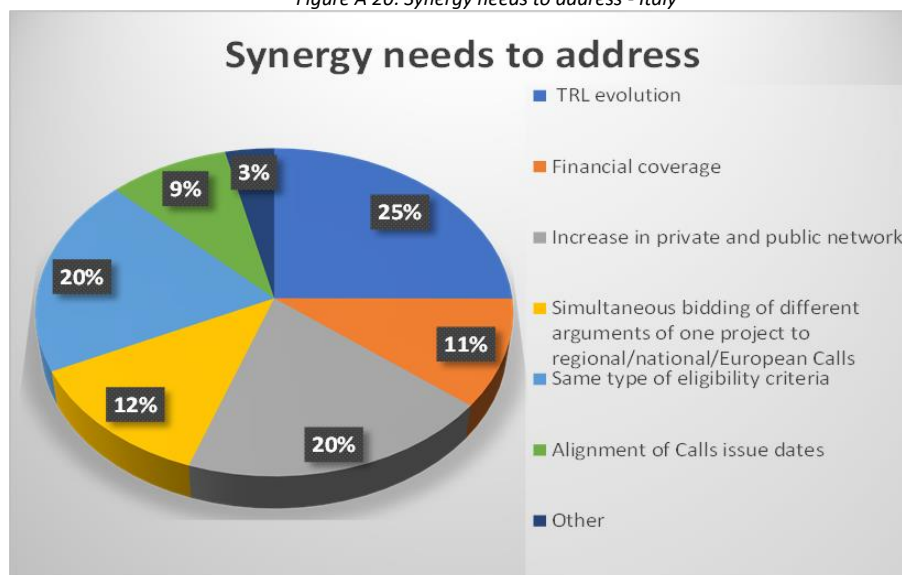
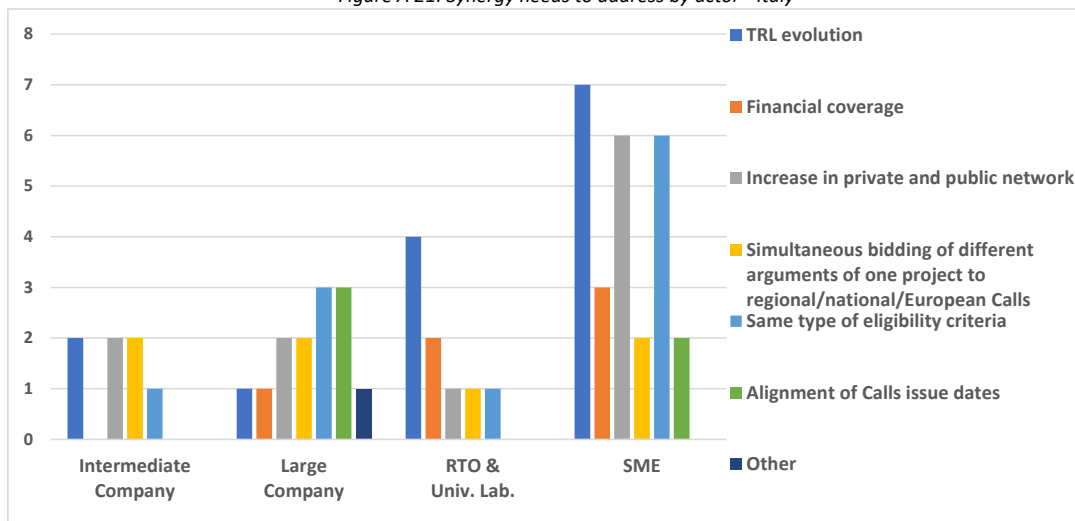


Figure A 21: Synergy needs to address by actor - Italy



Most interviewed entities agree that synergy should address **TRL evolution, increase in public and private network, and same type of eligibility criteria**. A general note noted by most of the interviewed entities is the **timely exchange of relevant info, data and results among related funding opportunities** even though they are supported by different public funding programs.

c. Ideal synergy scenario

- v. Adequate interconnection among regional/national and European research subject 16
- vi. Coherent planning among regional/national and European Calls 14
- vii. Connection between research results and new Call topics 16
- viii. Other 0

Figure A 22: Ideal synergy scenario - Italy

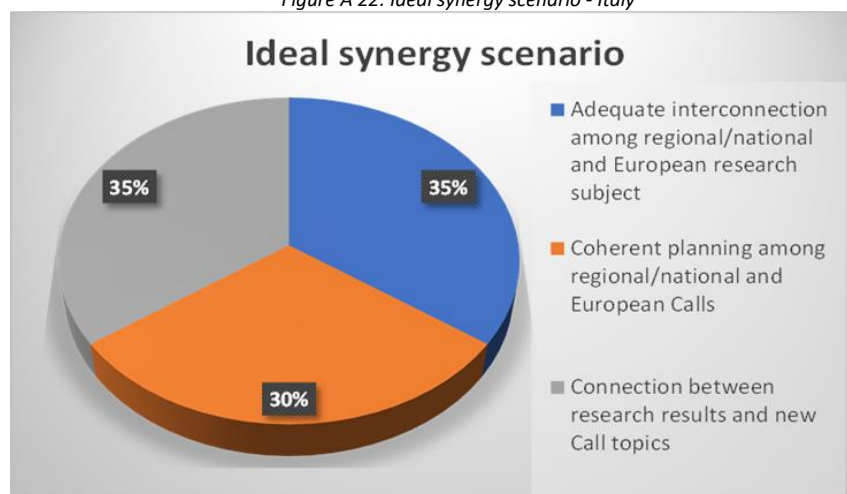
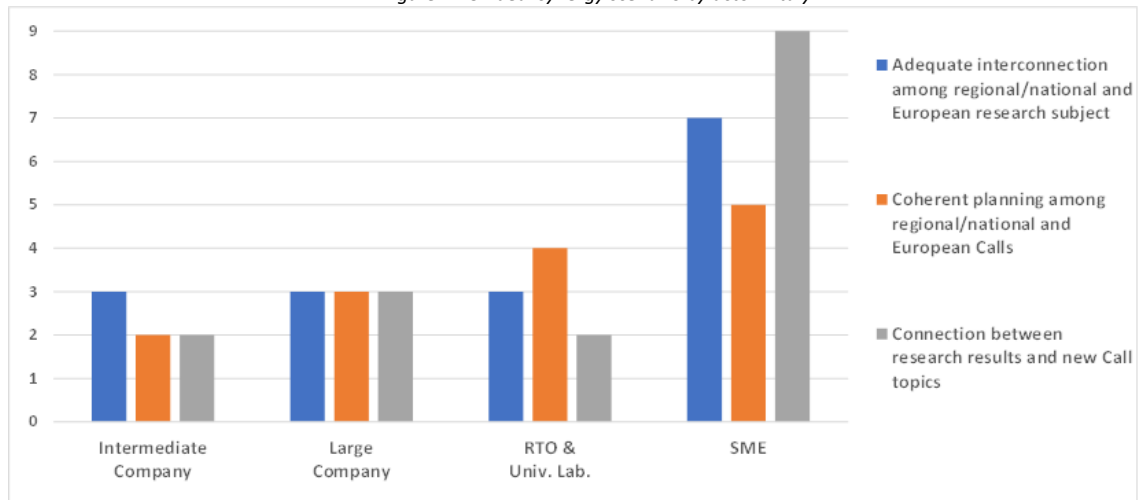


Figure A 23: Ideal synergy scenario by actor - Italy



The spreading of answers is almost equal over all possibilities given. The only prevalence (**43%**) is among SMEs on the scenario characterized by the **connection between research results and new Call topics**,

5. Focus on ECARE platform:

a. Specific requirements for the platform

- v. Facilitate project partnership creation 18
- vi. Facilitate funding opportunities among all the Calls at European/national/regional level 15
- vii. Increase in the private and public network 12
- viii. Other 0

Figure A 24: Recommendations for digital platform - Italy

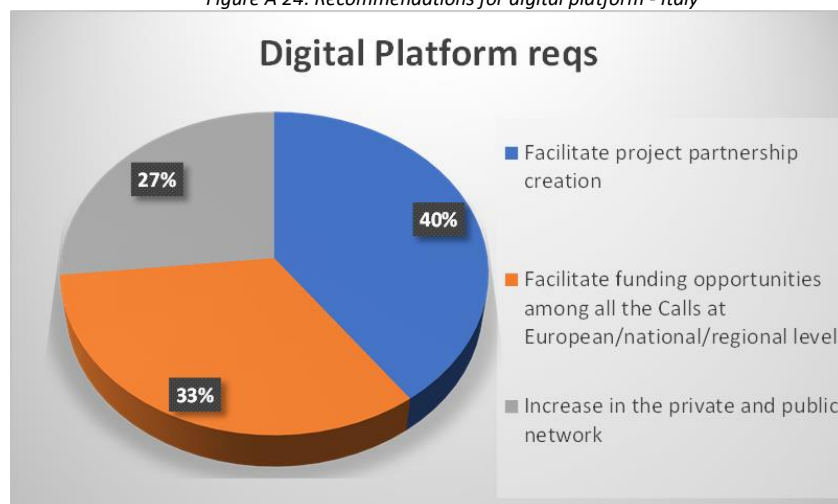
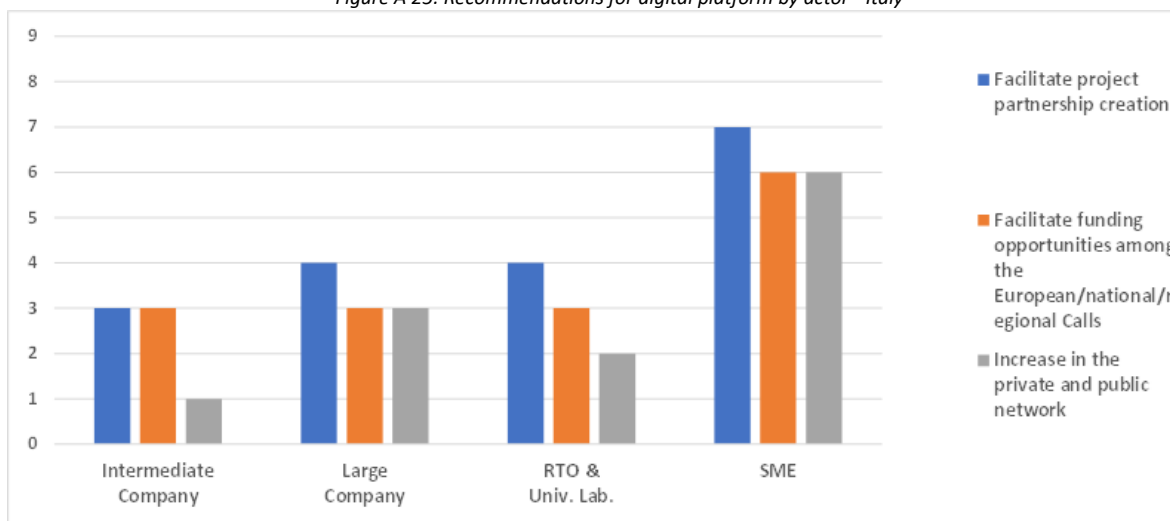


Figure A 25: Recommendations for digital platform by actor - Italy



b. Ideal additional requirement for the platform? (in alphabetic order of the originating interviewees)

- Consortium building, both short (R&D Calls) and long-term (industrial programmes).
- Expertise and capabilities showcase.
- Facilitate technology transfer from other sectors.
- Services (i.e. MRO) should be accounted for.
- Coherence between regional and national funding opportunities and European footprint.
- AI-aided searching engine to ease queries.
- Direct link/s with Call/s within the EU Funding & Tender portal.
- Friendly tool to make achievable ECARE objectives.
- Facilitate identification of topics responding to company development trends.
- Introduction of keywords to further characterize the platform contents.
- Filter the outputs by level (European, national, regional) and as function of the eligibility (i.e., the platform returns to a German enquirer only those French/Italian Calls specifically allowing non-national participants).
- Maintain control of shared information to protect competitiveness and IPR aspects.
- Issue notices of new Calls for registered users.
- Updated specific industrial needs with an open innovation approach.
- New disruptive concepts from academic users.

6. Partnership opportunities

a. Are you interested in being part of our ESG?

The question has been given to some interviewees before the ECARE partners decided to avoid having stakeholders in the ESG.

The resulting picture is the following:

4 entities expressed the interest in participating in the ESG.

3 entities expressed the availability to contribute in the platform beta test

6 entities expressed their availability in supporting the development of the platform as advisor.

Appendix D – Interview Assessment Hamburg Aviation (HAv)

HAV INTERVIEWS ASSESSMENT



21/07/2023



1. Focus on ECARE taxonomy

- a. Research priorities in the taxonomy?
- b. Suggested additional topics of the ECARE taxonomy (counts of answers)

Potential improvement:

A different structure with a multidimensional/multidisciplinary design of the taxonomy 4

Taxonomy according to ATA chapters 2

Categorizing of the taxonomy in Research and Development, Production, Operations, MRO, End of life 4

H. Avionics & On-board Systems – H4. Major: Fuel systems does not belong to the topic of Avionics 1

Suggested additional topics:

Cabin, also specifically Cabin under Systems 7

Maintenance, Repair and Overhaul 5

Data, Data Management, Data Analytics 4, e.g. digital twin

AI 2

European Aviation Strategy/CSA 1

End of life /life cycle of the aircraft 2

Test and certification systems 1

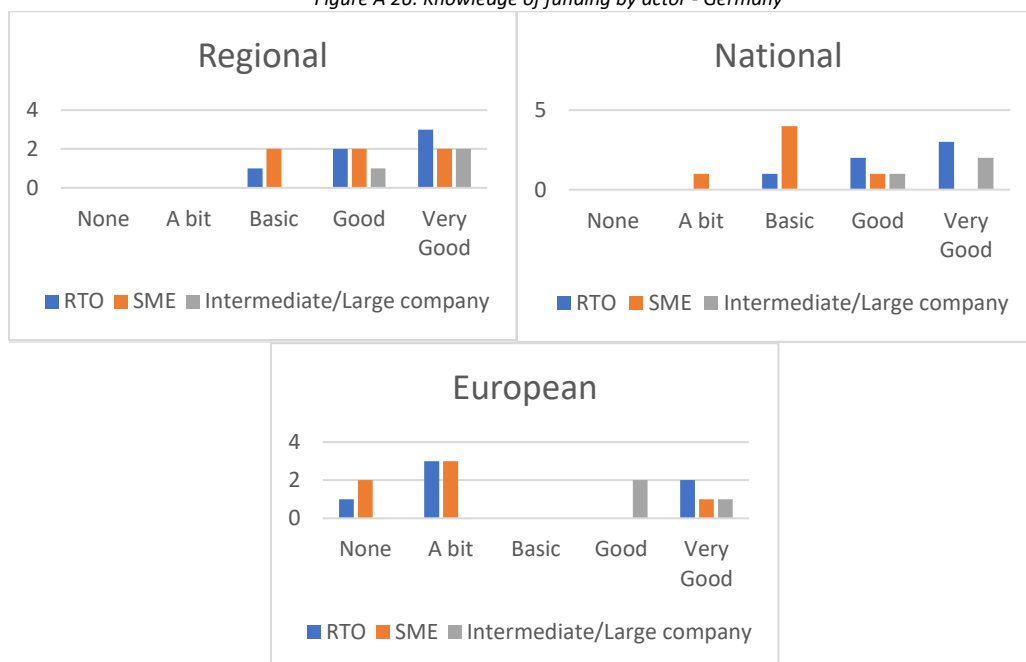
Sustainability/recyclability, e.g. of materials 2

2. General organization of the public funding needs for the future of ECARE Taxonomy

a. Level of knowledge of public funding

	None	A bit	Basic	Good	Very good
i. Regional	0	0	3	5	7
ii. National	0	1	5	4	5
iii. European	3	6	0	2	4

Figure A 26: Knowledge of funding by actor - Germany



- RTOs have good knowledge in regional and national funding, and less knowledge in European Funding
- SMEs have on average good knowledge in regional funding, Basic knowledge in national funding and not much knowledge in European funding
- Intermediate/Large companies have a consistent level of knowledge

b. What is missing in terms of public support?

i. Technical support	0
ii. Financial coverage	5
iii. Industrialization funding	7
iv. Help to build a consortium	6
v. R&D public funding which could lead to greater private R&D funding	0
vi. Funding body which proposes a list of entities to integrate to a consortium	1
vii. Other (to be specified)	13

Industrialization funding (7 plus additional aspects)

- Most interview partners named it as the most important issue. There is the demand for funded projects with a TRL higher than 6, as well as a bigger variety of required TRL at the beginning of the project.
- The problem identified is that project results still go too far into real application and value creation.
- One interviewee emphasized that it would be necessary to keep up with competitors outside of Europe.

Reduction of administrative complexity 8:

- Both aspects of needed documentation and reporting during the project, as well as extensive proposals and application were criticized. The problem seems prevalent for European and regional projects.

Appropriate funding rates 8

- Additionally, to the answer ‘Financial Coverage’, many interviewees identified the funding rates as an issue.
- SMEs wish for higher funding rates, as it is difficult for them to participate in projects otherwise. Specifically, it would be hard to fund investments needed for the research and staff hour used for administrative work.
- Research institutions would like to receive 100 percent funding, including more staff hours.

Help to build a consortium:

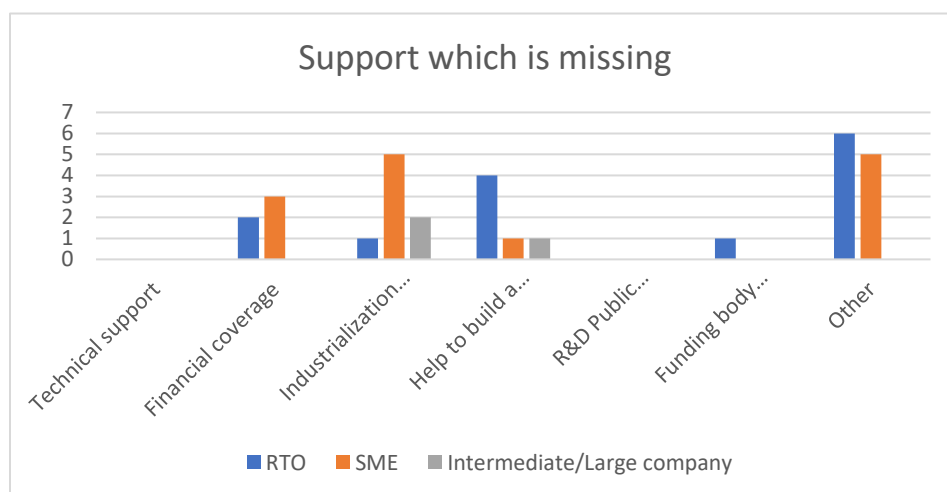
- On European level, some interviewees found it hard to build consortia with international partners
- Matchmaking events for building consortia were suggested.

More support for SMEs

- In addition to financial support, more support for SMEs is wished regarding visibility (also voiced by RTOs, not only by SMEs themselves) and support with applications and proposals.
- Reducing insecurities in terms of planning is another aspect.

Training of employees for research (also specifically for new technologies like hydrogen) 1**More transparency 1**

Figure A 27: Missing support by actor - Germany



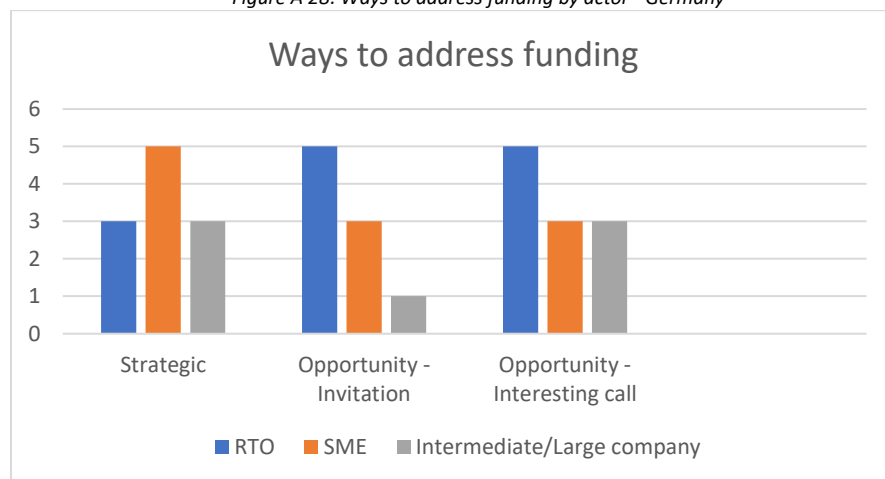
3. Public funding for R&D project needs

- a. Main public funding received in recent years (See Appendix 5 of Deliverable 2.1)
- b. Management of different level of funding (regional/national/European)
 - i. One person dedicated to the management of public funding 5
 - ii. R&D roadmap setup internally or externally 1
 - iii. Regular meeting with a project manager from a regional or national funding body 0
 - iv. Exchange with a national contact point 1
 - v. Other (to be specified) 9

- The large and intermediate companies, as well as bigger RTOs have departments dedicated to R&D and funded projects. These include dedicated project managers and sometimes specialized staff to cover administrative and legal aspects.
- The SMEs often have only one person who manages funding, mostly the managing director itself (mentioned 4 times), sometimes with the help of the team.
- Two SMEs have one dedicated person per research project.
- The universities and RTOs have different approaches, one of them has everyone in the department involved in managing funding. Another one has only the director to submit proposals and delegate tasks.
- One interviewee mentioned that they have a R&D roadmap specifically for funding
- One interviewee exchanged with national contact points

- c. Way to address the different funding schemes
 - i. Strategic plan 11
 - ii. By opportunity
 - a. Invitation to integrate a consortium by another partner 9
 - b. New interesting call 8

Figure A 28: Ways to address funding by actor - Germany



- All the large and intermediate companies have a strategic approach to funding, with one large company also sometimes joining projects because of an invitation.
- Most of the RTOs and SMEs try to align their funding projects to their own strategy but are also open to joining funding by opportunity.

d. Correlation among received public funding and ECARE Taxonomy (See Appendix 8 of Deliverable 2.1)

4. Synergies needs between regional, national and European funding

a. Meaning of synergies

- i. More funds 6
- ii. More results 9
- iii. More focus 8
- iv. More continuity in the research 12
- v. Other (to be specified) 5

Other:

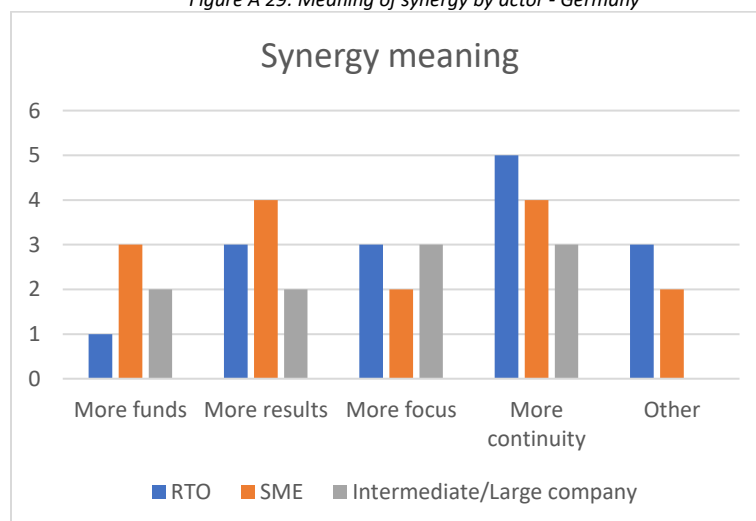
- **Better coordination/cooperation/collaboration between projects and funding bodies 3**

(This point which was named by several interviewees, one focused specifically on the use or establishment of research infrastructure)

- **More transparency 1**
- **More technology and innovation 1**
- **Less competition between funding bodies 1**
- **Simple application process (consistent application and project management structure) 1**

More continuity is wished for by most interviewees, but especially by the RTOs, as they are more dependent on funded project to secure their budget and staff.

Figure A 29: Meaning of synergy by actor - Germany



- b. Existing synergies between the different public funding
 - i. YES (with needs for enhancement) 10
 - ii. NO 5

The interviewees who have not experienced synergies so far expressed the following wishes:

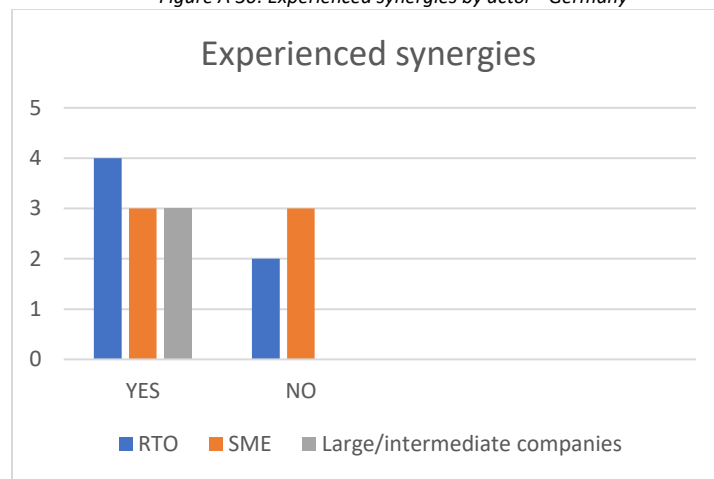
- Distribution of various topics among different funding programs
- Simplification/Standardization of administrative processes
- More collaboration between different funded projects
- Better support for small partners
- Structural overlap in the application process

The interviewees who have experienced synergies identified the following:

- Differentiated priorities in terms of content
- Consistency of topics
- Application on same platform (for different national funding)
- Efforts for cooperation between funded projects, topical alignment
- Could acquire skills, knowledge in prior projects and use it for continuous projects
- Continuous use of existing infrastructure (should become easier)
- Recommendations for different funding projects, better fitting projects/consortia (mostly between regional and national level, would like to see transfer to other industries)
- National and European programs are aligned when it comes to research topics
- Alignment of regional and national funding

50 percent of the interviewed SMEs do not have experienced any existing synergies.

Figure A 30: Experienced synergies by actor - Germany



- c. Synergy needs to address
 - i. TRL evolution 8
 - ii. Financial coverage 2
 - iii. Increase in the private and public network 2

- iv. Simultaneous bidding of one project to regional/national/European Calls **11**
- v. Same type of eligibility criteria **6**
- vi. Alignment of Calls issue dates **10**
- vii. Other **6**

i: Regarding TRL evolution:

- An RTO mentioned the wish for specialization (higher TRL) along with increasingly regional small-scale interests that the region wants to promote.
- A SME expressed the wish for funding of product launches (along with higher TRL)
- An RTO emphasized the importance of transition of research to industry (TRL and accordingly the education of staff)

iv: Regarding simultaneous bidding

- An SME suggested a consultation in form of funding bodies referring proposals to other projects for the best match

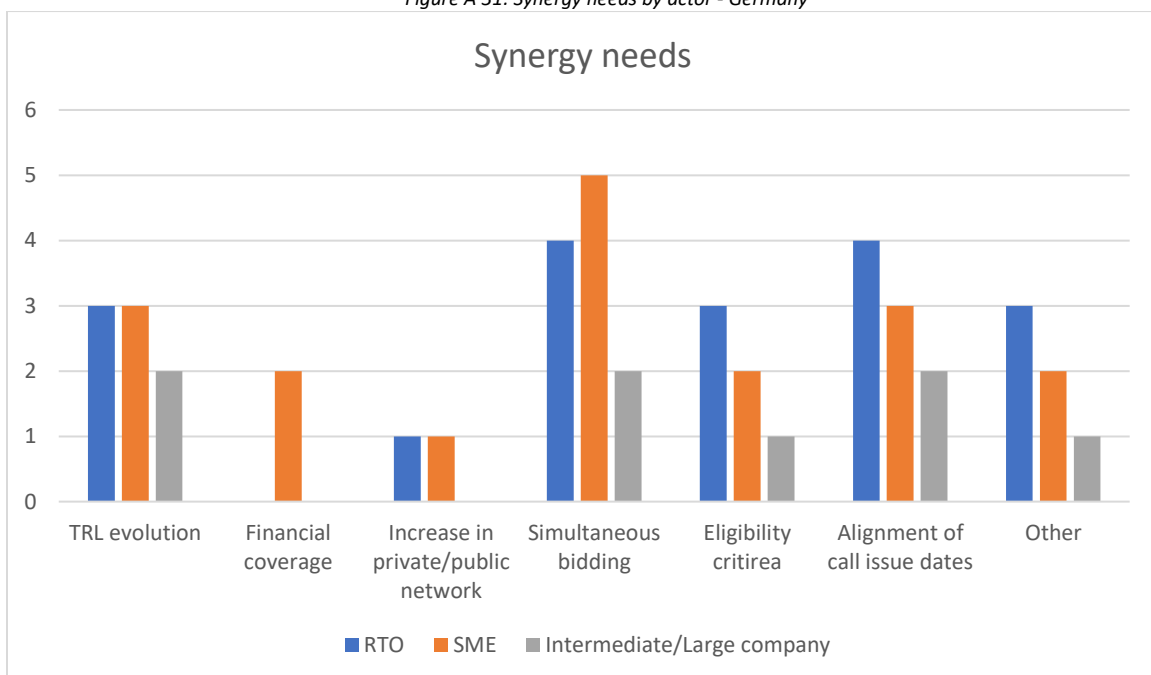
v: Same type of eligibility criteria

- An RTO emphasized that synergies for the same type of eligibility criteria would only be useful if everyone agrees on an absolute minimum.

vii: Other

- Less bureaucracy/administrative effort
- More Focus
- Continuous evaluation during the project
- More security (funding and consistency in funded topics)

Figure A 31: Synergy needs by actor - Germany



- d. Possible links between the different public funding
- i. A larger call for projects bringing together all funding bodies, each focusing on a level of TRL, with reporting periods to unlock each tranche of funding according to the level of TRL 2
 - ii. Direct links between regional, national and European funding 7
 - iii. Ease of submission 8
 - iv. Each funding body recommending the one that fund the next one at a higher TRL 2
 - v. Other (to be specified) 10

Collaboration 5

Several interviewees suggested different types of collaboration as a possible link, with the following specification:

Cross industrial, when it comes to transfer of knowledge and collaboration of projects 2

Transfer of knowledge between projects 1

German with international funding bodies 1

Transparency 3

Different interviewees identified the need for transparency in the form of more exchange between the different funding bodies and more competition.

None 3

Three interviewees think that links between public funding would not be beneficial

Consortium building 2

Two interviewees thought of possible links regarding consortia:

Simplification to include non-German partners in the consortium 1

Option to continue a project using previous results, but with a new partner 1

It is difficult to include the whole value chain in the consortium, if only German partners are allowed 1

Funding bodies helping with recommending/suggesting partners, so it easier to know who a trustworthy partner could be 1

Research topics 2

Political alignment of research topics 1

More open approach to topics without specifying the technology 1

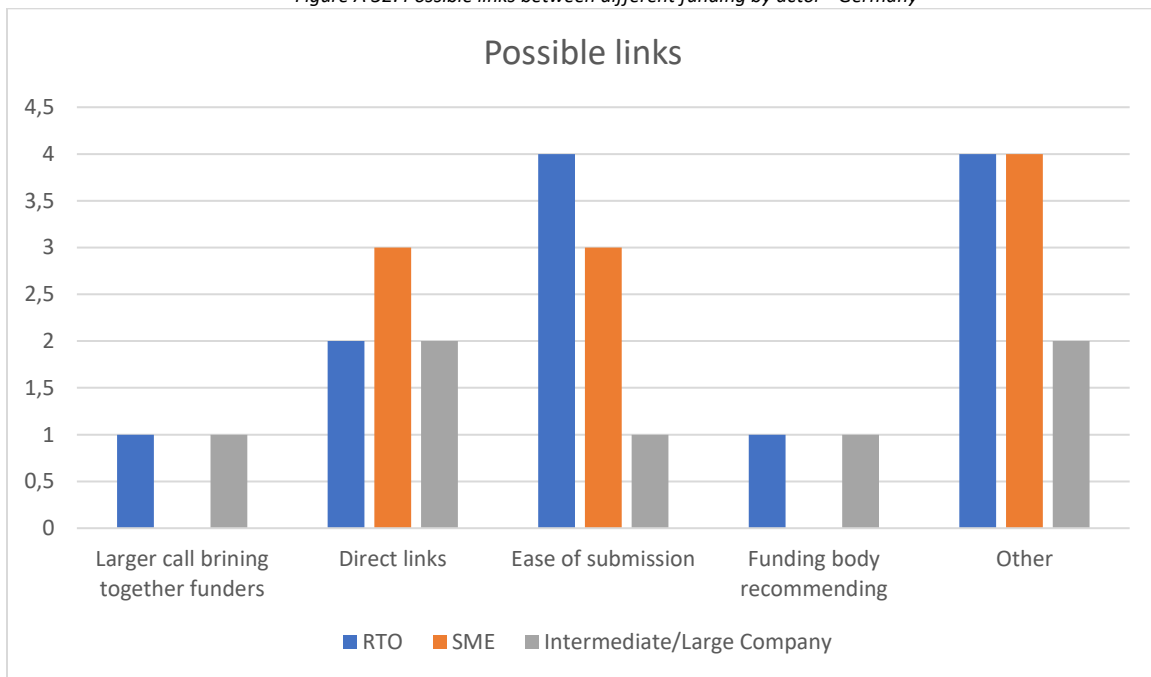
Better links between research and industry (also when it comes to staff) 1

Standardization of administrative processes 1

Workshops to prepare for funding projects and finding the best fit 1

A digital platform displaying all European programs and on national and regional level 1

Figure A 32: Possible links between different funding by actor - Germany



e. Ideal synergy scenario

- i. Adequate interconnection among regional/national and European research subjects 6
- ii. Coherent planning among regional/national and European Calls 7
- iii. Connection between research results and new Call topics 6
- iv. Other 7

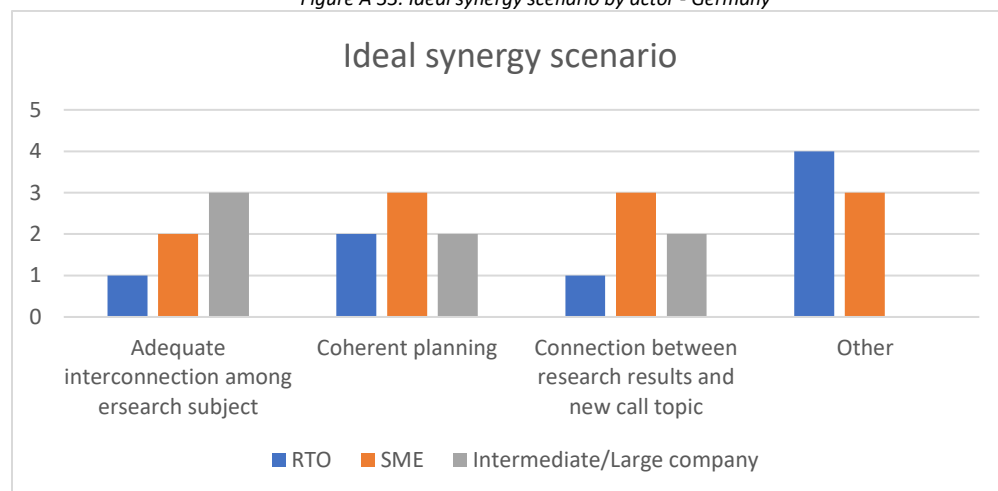
Regarding iii: Finding a balance between continuation of old/current projects and allowing new topics 1

Other

- Funding:
 - More funding for equipment and staff
 - Funding for the time of application/proposal

- Combine fast funding instruments with a short duration, with slow funding instruments with a long duration for a large-scale project, research over a longer period, with higher TRL levels and be more attractive, offer more security
- More collaboration
- Planning with milestones and how to achieve them (with projects)
- When deciding about research topics, choosing topics that align and complement each other rather than duplicating
- It could be mandatory to include junior partners in a project: so new partners are also introduced to experienced partners
- A truly politically effective direction of the nation and the region, so you can work together, and everyone is not only working for their own benefit
- Support offered by local clusters (funded by funding program) for local partners for all programs
- Consultation covering all three levels
- Political alignment of research topics

Figure A 33. Ideal synergy scenario by actor - Germany



5. Focus on ECARE platform:

a. Specific requirements for the platform

- i. Facilitate project partnership creation 8
- ii. Facilitate funding opportunities among all the Calls at European/national/regional level 5
- iii. Increase in the private and public network 4

iv. Other:

6

- Partnership creation with special regards to smaller and newer (inexperienced) potential partners
- Option to filter different categories (funding amount, type, application procedure)
- Incorporate SMEs
- Offer visibility to projects and project partners
- Option for funding bodies to filter information about all projects by one entity and obtain information about the projects
- Visibility for own projects

b. Ideal additional requirement for the platform?

- Include the final clients (e.g., airlines and defense), who use the products developed in funded projects
- Opportunity to directly contact persons of interest
- Active users
- Show new funding instruments that emerge. Also, in related fields to Aviation, so funding towards IT could be relevant, also for aviation topics or the aviation application only the use cases.
- A benefit for people (the users) must be apparent as quickly as possible
- Could be used to attract new qualified staff which are needed for new projects
- Visualize the structure of the funding landscape. A map could show the funding programs, perhaps according to the very simple categories of funding amount, type, and application procedure.
- Quickly updated information, option to filter for different topics and interests
- Matching with future projects in percent: How much do the topic/the partners/funding match my requirements for future projects? (with AI, Keywords...)
- Good overview of different projects with application deadlines
- Opportunity to update information on the platform from both sides (funding bodies and participants interested in funding)
- Funding bodies should be able to regularly update data about their own program (2x)
- Synergy effects with other platforms

6. Partnership opportunities

- a. Are you interested in receiving the ECARE newsletter? All interview partners are interested in receiving the newsletter.