Taftie

The European Network of Innovation Agencies

FOURTH BENCHMARK REPORT 2019-2020

OF TAFTIE'S STRUCTURAL NETWORK ON BENCHMARKING

TOWARDS A COMPARATIVE OVERVIEW OF INNOVATION PROGRAMMES IN EUROPE

4th Benchmark report 2019-2020 of TAFTIE's Structural Network on Benchmarking

The European Network of Innovation Agencies

FOREWORD

Today, innovation agencies play a very important role in guiding and supporting innovation around the world. By joining their forces in TAFTIE, the European network of leading national innovation agencies, knowledge and best practices from their activities are shared which ensures the improvement of innovation performance of countries and regions at the international level. Following this objective, the TAFTIE's Structural Network of Benchmarking (SNB) task force helps to understand and demonstrate how the policies these agencies implement and what impact they have on innovation ecosystems. Hence, these activities should lead to understanding and setting up of common tools for improvement in this area. The essential and regularly prepared analytical reports of SNB, the Benchmark reports, serve as manuals for enhancement and harmonisation of the tools used in TAFTIE's member agencies for assessment and evaluation of supporting measures.

This version of the report, the 4th Benchmark report, introduces data comparison based on the summarisation of measures applied in the selected SNB members in years 2019 and 2020. The report consists of two parts. At first, there is an analysis of standard input, throughput and output indicators for four types of instruments (R&D grants, collaborative R&D grants, innovation vouchers and competence centres) applied in 16 SNB members in the 2019-2020 period. Such an analysis with focus on business enterprises comparison had been brought to regular implementation in previous SNB reports.

As a novelty, this report brings results from the pilot round for harmonisation of outcome and impact indicators (for some of the instruments) implemented in specific selection of 14 TAFTIE and partner's agencies in 2021 and 2022, applying the methods prepared by SNB and Technopolis Group. The pilot round followed the November 2019 SNB report 'Monitoring systems in TAFTIE Agencies: outcome and impact indicators', and the project between SNB and Technopolis Group for harmonisation of outcome and impact indicators and related guidance. The first tests on specific outcome and impact indicators were already presented by the Croatian Agency for SMEs, Innovations and Investments (HAMAG-BICRO, Croatia) and the Technology Agency of the Czech Republic (TA ČR, Czechia) in the Third Benchmark report.

The Slovak Innovation and Energy Agency has been chosen in 2020 for two years' (2021-2022) coordination of the SNB process of data collection, validation, processing and analysis in order to prepare presented SNB's 4th Benchmark report 2019-2020.

CONTENTS

All the chapters in this report focused on standard benchmarking process follow the structure from the 3rd Benchmark report. They are structured around the instrument types covered:

The second part of the report, summarisation of the results from the pilot round for harmonisation of outcome and impact indicators has its own structure with no specified chapters.

SUMMARY AND CONCLUSIONS

Following the three previous reports, the 4th Benchmark report summarises the main findings from the analysis of standard input (public investment), throughput (activities) and output (results) indicators for four types of instruments (R&D grants, Collaborative R&D grants, Innovation vouchers and Competence centres). This regular activity helps TAFTIE members to understand how the cooperation, knowledge-sharing and practice harmonisation lead to the improvement for all relevant countries and regions.

Hence, the creation of the fourth report again confirms the *first lesson* learned – SNB members are able to maintain a continuous network and issue periodic benchmark reports of the innovation programmes. This story of benchmark reports begin with the development of the First Benchmark report (2012-2014) of which methodology was set up with the support of the Technopolis Group. Already under the full methodological control of the SNB group, Austrian Research Promotion Agency, FFG, Austria and Netherlands Enterprise Agency, RVO.nl, the Netherlands, as coordinators of the process, prepared the Second Benchmark report (2015-2016) where standard input and output key figures on four types of instruments have been compiled, analysed, and reported. The Third Benchmark report (2017-2018), prepared by Croatian Agency for SMEs, Innovations and Investments, HAMAG-BICRO, Croatia and Technology Agency of the Czech Republic, TA ČR, Czechia brought new indicators, basic SNB agencies comparison in terms of year of establishment, membership of TAFTIE and number of employees and better understanding of many dilemmas and definition issues coming out from the process of data delivering, processing and validation (e.g. how agencies calculate project connections in cooperative R&D projects and projects in competence centre). Furthermore, several specific programme parameters have been considered for the first time in the SNB group in a systematic way: research categories (basic research, industrial research, experimental development or other type), thematic focus (thematic call or bottom-up), type of financing (grant, loan or conditional loan), source of financing (ESIF, national or other source) and type of call (open or temporary call). The 4th Benchmark report brings additional information about the programmes defined in cooperation with Portuguese National Innovation Agency, ANI, Portugal and RVO.nl: type of research, project size, min-max % subsidy, min-max € subsidy, affiliation to SMEs, cooperation obligatory, project duration and additional notes. Based on that, many agencies set up their processes to be able to deliver such data on a regular basis. All the programmes covered in the SNB network were chosen for being quite similar and hence easier to compare. The differences between agencies' programmes are one of the main sources for mutual learning, e. g. the differences in the design of the programmes and the context in which the programmes are implemented. However, the individual numbers reported for all innovation programmes still need additional information to avoid misinterpretation.

The *second lesson* learned is that the SNB group has potential to extend its role and membership. In the period between the first and the current report, several agencies have been added to the process of report creation and data collection. Though three agencies involved in the 3rd Benchmark report (Business Finland, Innoviris Brussels and Research Council of Norway) were not able to deliver the data for this report, the SNB group welcomes the contribution of another agency (Innovation Norway) in the report preparation.

The *third lesson* learned comes from the complex pilot round for harmonisation of outcome and impact indicators. While the first tests on specific indicators were already presented by HAMAG-BICRO and TA ČR in the Third Benchmark report, this report brings novelty in the results from the more widely implemented process (for some of the instruments) based on the methods prepared by SNB and Technopolis Group. The methodology was prepared during the joint project of SNB and Technopolis Group for harmonisation of outcome and impact indicators and related guidance. The process, implemented in specific selection of 14 TAFTIE and partner's agencies in 2021 and 2022, applied followed the methodological findings presented in the November 2019 SNB report 'Monitoring systems in TAFTIE Agencies: outcome and impact indicators', and the March 2021 Technopolis reports 'Guidelines and recommendations for existing monitoring systems' and 'Using external data for outcome and impact indicators.

1. INTRODUCTION

1.1 Purpose

The main benefit of regular preparation of benchmark reports is to give an insight how TAFTIE member agencies assess and evaluate the innovation supporting processes within four specific groups of instruments in the European countries and regions.

The 4th Benchmark report comes with the results and partial data about standard input, throughput and output indicators from the 16 TAFTIE member countries, of which the vast majority have experience in the preparation of previous benchmark reports. The specification of the participating agencies in this report (incl. name, logo, contact persons and home country) is in Table 1. A, and their description is in Table 1. B.

For the 4th Benchmark report, three TAFTIE agencies do not follow the preparation process. While Research Council of Norway, Norway (participating in the 1st and 3rd Benchmark reports) directly specified that the agency will no longer be able to engage in the SNB working group, Business Finland, Finland (participating in all previous reports) and Innoviris Brussels, Belgium (participating only in the 3rd Benchmark report) do not only follow the current activities.

On the other hand, one agency, Innovation Norway, Norway which also participated in the pilot round for harmonization of outcome and impact indicators, strengthened the SNB group within the standard benchmark process.

Table 1.A Participating agencies in the 4th Benchmark report (part I)

Agency logo	Agency name (abr.)	Contant persons	Country
	Portuguese National Innovation Agency (ANI)	***João Ferreira*** *joao.ferreira@ani.pt*	Portugal
	Bpifrance	***Ronan Bourgeois*** *ronan.bourgeois@bpifrance.fr* ***Sylvie Cogneau*** *sylvie.cogneau@bpifrance.fr*	France
	Centre for the Development of Technology and Innovation (CDTI)	***Ascension Barajas Inigo*** *ascension.barajas@cdti.es*	Spain
	Enterprise Estonia (EAS)	***Elisabeth Ebon Niinepuu*** *Elisabeth.Niinepuu@eas.ee*	Estonia
	Enterprise Ireland (EI)	***Tonya Walsh*** *Tonya.Walsh@enterprise-ireland.com*	Ireland
	Austrian Research Promotion Agency (FFG)	***Rafael Lata*** *rafael.lata@ffg.at*	Austria
	Croatian Agency for SMEs, Innovations and Investments (HAMAG-BICRO)	***Ivona Jerković*** *Ivona.Jerkovic@hamagbicro.hr* ***Neno Rakić*** *Neno.Rakic@hamagbicro.hr*	Croatia
	Innovation Fund (IF)	***Ana Mojsilovic*** *Ana.Mojsilovic@inovacionifond.rs*	Serbia
	Swiss Innovation Agency (Innosuisse)	***Adrian Berwert*** *adrian.berwert@innosuisse.ch*	Switzerland

Table 1.A (part II)

Agency logo	Agency name (abr.)	Contant persons	Country
	Innovation Norway	***Pål Aslak Hungnes*** *Pal.Aslak.Hungnes@innovasjonnorge.no* ***Kerstin Solholm*** *Kerstin.Solholm@innovasjonnorge.no* ***Eva Camerer*** *Eva.Camerer@innovasjonnorge.no*	Norway
	Luxinnovation	***Barbara Grau*** *barbara.grau@luxinnovation.lu*	Luxembourg
	Netherlands Enterprise Agency (RVO)	***Arjan Wolters*** *arjan.wolters@rvo.nl*	Netherlands
	Slovak Innovation and Energy Agency (SIEA)	***Peter Adamovský*** *peter.adamovsky@siea.gov.sk* ***František Kozmon*** *frantisek.kozmon@siea.gov.sk*	Slovakia
	SPIRIT Slovenia	***Irena Meterc*** *Irena.Meterc@spiritslovenia.si*	Slovenia
	Technology Agency of the Czech Republic (TA ČR)	***Petr Horák*** *horak@tacr.cz* ***Anna Jeřábková*** *anna.jerabkova@tacr.cz*	Czechia
	Flanders Innovation & Entrepreneurship (VLAIO)	***Luc De Buyser*** *luc.debuyser@vlaio.be* ***Donald Carchon*** *donald.carchon@vlaio.be*	Belgium

Table 1.B Description of the participating agencies in the 4th Benchmark report (part I)

Agency logo	Agency name (abr.)	Agency description
	Portuguese National Innovation Agency (ANI)	**The Portuguese National Innovation Agency** supports technological and business innovation in Portugal, contributing to the consolidation of the National Innovation System and the strengthening of the competitiveness of the national economy in global markets. ANI runs funding instruments and fiscal incentives to promote private investment in R&D and promotes research-industry cooperation for an effective transfer of knowledge to the market. ANI fosters the internationalisation of Portuguese innovative companies and R&D institutions through supporting participation in Horizon Europe, hosting part of Horizon Europe's NCPs network (Pillar 2 and Pillar 3), as well as other international R&D and business support networks such as Eureka and the Enterprise Europe Network (EEN).
	Bpifrance	**Bpifrance** provides assistance and financial support to small and medium-sized enterprises, facilitating access to banks and equity capital investors, in particular during the high-risk phases: start-up, innovation, development, international, buy out.
	Centre for the Development of Technology and Innovation (CDTI)	**The Centre for the Development of Technology and Innovation** is a Spanish public organisation, under the Ministry of Science and Innovation, whose objective is to help Spanish companies to increase their technological profile by means of supporting and encouraging their participation in national and international R&D&i projects. It is a state-owned company that has financed more than 15000 technology development projects so far.
	Enterprise Estonia (EAS)	**Enterprise Estonia** promotes business in Estonia. It is one of the largest institutions within the national support system for entrepreneurship and innovation, providing financial assistance, counselling, cooperation opportunities and training for entrepreneurs, research institutions, the public and non-profit sectors. The agency supports the development of companies that have export capacity and create higher added value.
	Enterprise Ireland (EI)	**The Enterprise Ireland** is the government organisation responsible for the development and growth of Irish enterprises in world markets. Working in partnership with companies, the agency supports sustainable economic growth, regional development and secure employment.
	Austrian Research Promotion Agency (FFG)	**The Austrian Research Promotion Agency** is the national funding agency for industrial research, development and innovation in Austria. The agency offers a broad portfolio of funding schemes for R&D and innovation projects of companies and research performing entities in Austria, funding advice and assisting in the submission to European programmes and international cooperation projects for Austrian researchers.
	Croatian Agency for SMEs, Innovations and Investments (HAMAG-BICRO)	**The Croatian Agency for SMEs, Innovations and Investments** is an independent institution under the supervision of the Ministry of Economy and Sustainable Development (intermediary body level 2 for R&D&I calls for companies within ESIF). The Agency provides support to small and medium-sized enterprises through all development stages starting from the research and development of an idea to innovation, commercialization and launch to the market. The Agency's activities include: issuing guarantees for bank credits to SMEs, implementation of grant schemes, providing micro-loans and supporting the national innovation system through Technical Secretariat for the National Innovation Council and Innovation Council for Industry.

Table 1.B (part II)

Agency logo	Agency name (abr.)	Agency description
	Innovation Fund (IF)	**The Innovation Fund of the Republic of Serbia** (IFS, founded 2011) is the national institution for supporting innovative activities and managing funding for stimulating innovation development. The intention of the IFS is to contribute to the overall development of innovations through promoting innovative entrepreneurship, implementing financing programs to R&D-oriented projects, and strengthening the linkage between academia and industry.
	Swiss Innovation Agency (Innosuisse)	**Innosuisse, the Swiss Agency for Innovation** supports science-based innovations and promotes the knowledge and technology transfer through innovation projects (collaborative R&D grants, R&D grants), networking, start-up training and start-up coaching as well as international project funding. The R&D grants are Innosuisse's most important funding instrument, also in budget terms. In contrast to the other funding agencies, Innosuisse provides the funding contributions to the research institutions and not to the companies. As a rule, the companies have to make an additional financial contribution of 50%. The R&D grants benefit exclusively the research institutions.
	Innovation Norway	**Innovation Norway** is the Norwegian Government and regional authorities' instrument for realising value-creating industrial and commercial development throughout the country. Main objective is to trigger sustainable development and value added in Norwegian business and industry and release the business opportunities of all regions of Norway, through creating more successful entrepreneurs, more enterprises with capacity for growth and more innovative business clusters. Innovation Norway contributes to sustainable growth and exports for Norwegian businesses by being a sparring partner for enterprises with ambitions, and offering loan, guarantees and grants, expertise and networks. The vision is to give local ideas global opportunities. The overall strategy 2020-2025 is to be a sparring partner for businesses in all regions by meeting customers where they are, to be able to contribute to a business community which solves global societal challenges, to bring the most qualified companies to international markets, and to contribute to value creation across the country.
	Luxinnovation	**Luxinnovation - The National Innovation Agency of Luxembourg** offers a wide portfolio of services to companies and public research actors in order to foster innovation. The agency ensures that Luxembourg continues to attract international investment, companies and skills that are a perfect fit for the country. Luxinnovation is a public private partnership composed of the Ministry of the Economy, the Ministry for Higher Education and Research, the Luxembourg Chamber of Commerce, the Luxembourg Chamber of Skilled Crafts and the Federation of Luxembourgish Industrials.
	Netherlands Enterprise Agency (RVO.nl)	**The Netherlands Enterprise Agency** operates under auspices of the Ministry of Economic Affairs. As an agency it works for different ministries and the European Commission. It covers a wide range of policy area's: agriculture, environment, foreign trade policy, international economic development, sustainability, climate & energy and of course R&D and innovation. Its customers range from large companies, knowledge institutes until SME's and individual households. The instruments used vary as well: subsidies, credits, financial guarantees, etc. Over the last 15 years RVO.nl is built up from more than 20 different existing organisations.
	Slovak Innovation and Energy Agency (SIEA)	**The Slovak Innovation and Energy Agency** is a contributory organization of the Ministry of Economy of the Slovak Republic. For more than ten years, SIEA has implemented measures supported by the European Structural and Investment Funds (ESIF). Activities in innovations are preparation and implementation of support schemes and mechanisms for entrepreneurs, analyzing the innovation potential of industries, advice services on the implementation of research findings into practice, active participation on international projects funded through the ESIF and other sources.
	SPIRIT Slovenia	**SPIRIT Slovenia** as a national agency is entrusted with the regulatory, expert and development tasks serving to increase competitiveness of Slovenia's economy in the area of entrepreneurship, internationalization, foreign investment, and technology. Regarding innovation support services agency offers a big range of activities focused on mentor and expert support to startups and companies in growth, mostly in combination with grants for RDI support. The agency is a also part of EEN consortium and the NCP for EIC and EIT instruments.

Table 1.B (part III)

Agency logo	Agency name (abr.)	Agency description
	Technology Agency of the Czech Republic (TA ČR)	**The Technology Agency of the Czech Republic** is an organizational unit of the state that was founded in 2009 by Act No. 130/2002 Coll. on the support of research, experimental development and innovation. The creation of TA ČR is one of the cornerstones of the fundamental reform of research and development (R&D) in the Czech Republic. The key feature of the reform is the redistribution of financial support from the national budget. TA ČR simplifies state support for applied research and experimental development which was fragmented and implemented by many bodies before the reform.
	Flanders Innovation & Entrepreneurship (VLAIO)	The state agency **Flanders Innovation & Entrepreneurship** is the contact point for entrepreneurs in Flanders. The agency encourages and supports innovation and entrepreneurship and contributes to a favourable business climate. (https://www.vlaio.be/nl/andere-doelgroepen/flanders-innovation-entrepreneurship)

The SNB group consists of innovation agencies with diverse size (in terms of persons) and tasks, from direct support to the innovation ecosystem, through the provision of training, coaching and networking for entrepreneurs, NGOs, public institutions etc., to the provision of support infrastructure. They also have a lot of experience in general, as well as members of TAFTIE. Figure 1. A specifies the years of establishment of the agencies included in the report, Figure 1. B years when these agencies entered TAFTIE and Figure 1. C approximate number of agencies' staff.

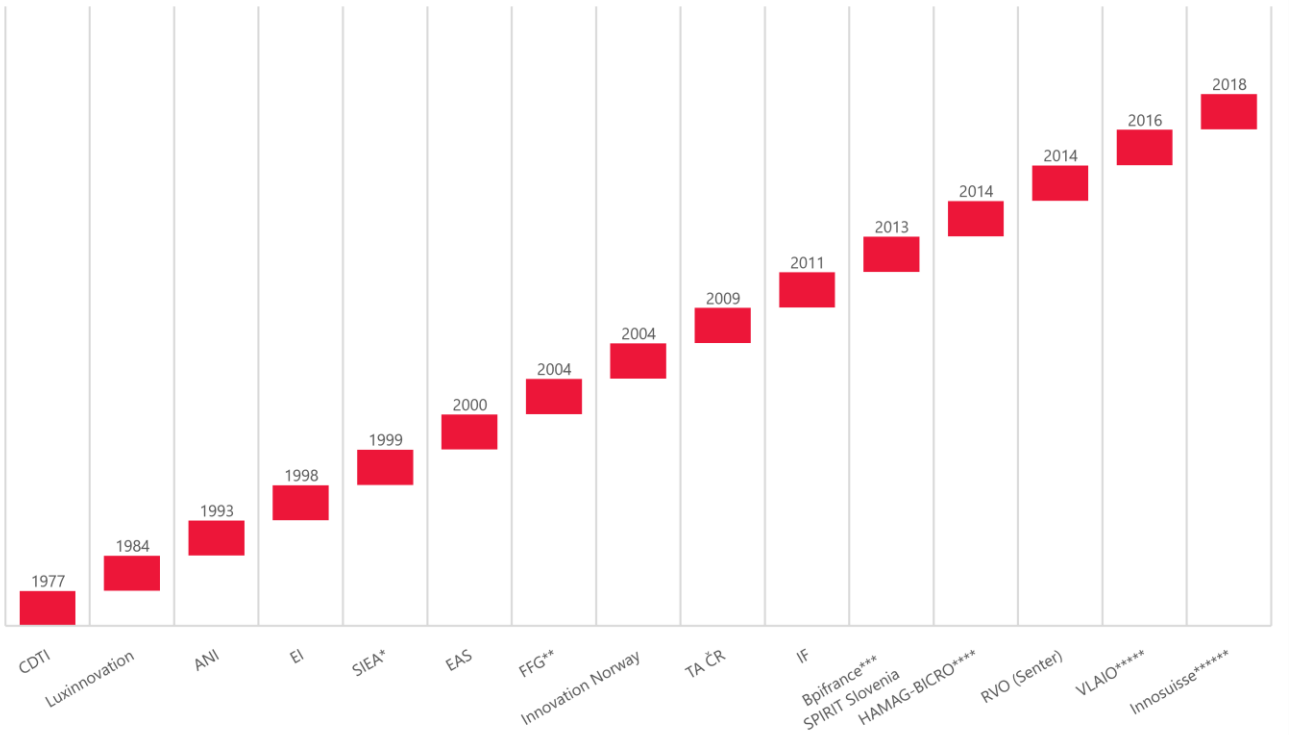


Figure 1.A Years of establishment of the SNB agencies participating in the 4th Benchmark report

* SIEA was established in 1999 as SEA (Slovak Energy Agency), following its predecessor Slovak Energy Inspectorate. In 2007, the agency was renamed to SIEA thanks to greater focus on innovation.

** FFG was formed in 2004 as a merger of four forerunner agencies, one of which (FFF) dates back to the 1960s.

*** Bpifrance is launched in 2013. Oseo, CDC Entreprises and FSI joined up form Bpifrance.

**** HAMAG-BICRO was established in 2014 as a merger between the Croatian Agency for SMEs and Investments (HAMAG INVEST) and the Croatian Business Innovation Agency (BICRO), continuing also with the activities of the HAMAG INVEST predecessor, the Croatian Guarantee Agency (HGA), founded in 1994.

***** Enterprise Flanders and the company activities of IWT were merged into VLAIO in 2016.

****** Innosuisse was launched in 2018, continuing with the activities of the Commission for Technology and Innovation, established in 1947.

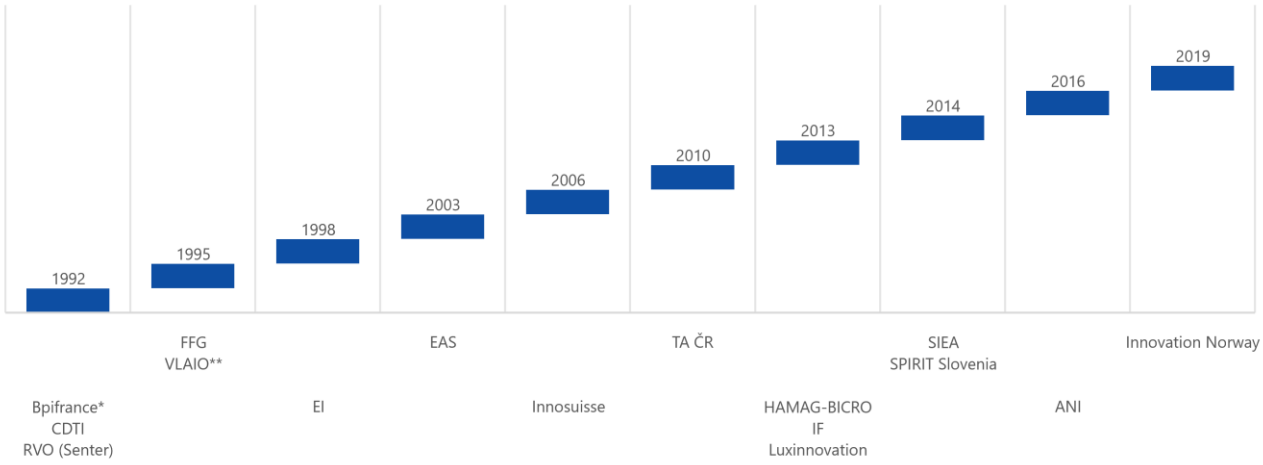


Figure 1.B Years of entering TAFTIE by the SNB agencies participating in the 4th Benchmark report

* Anvar, the Bpifrance predecessor, was one of the founding fathers of TAFTIE.

** IWT, the VLAIO predecessor was already in TAFTIE in 1995.

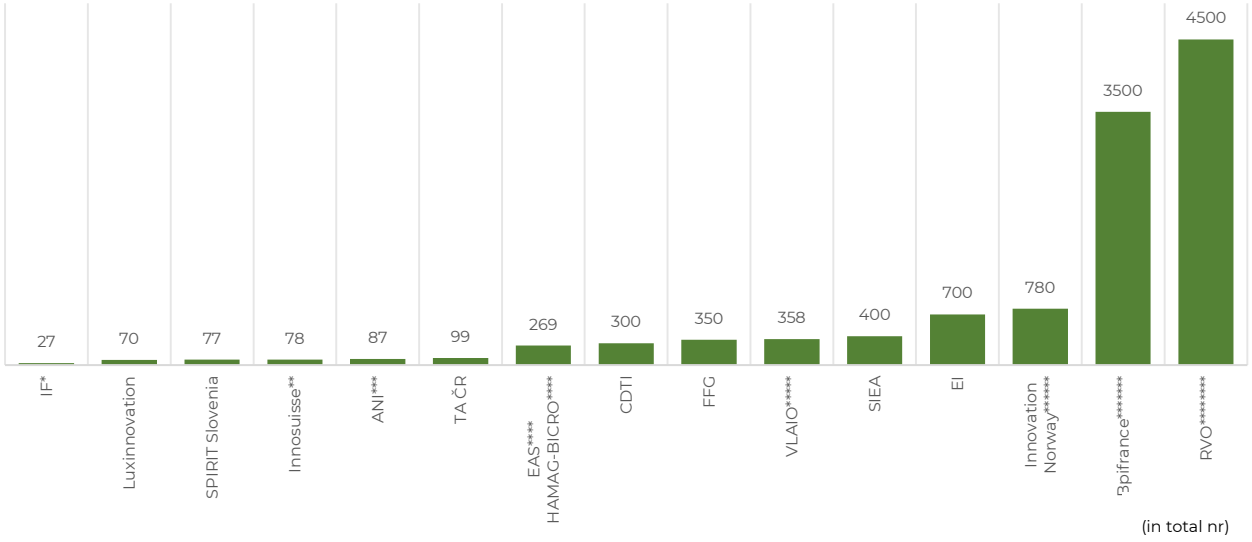


Figure 1.C Approximate number of employees of the SNB agencies participating in the 4th Benchmark report

* Innovation Fund's employees in 2019.

** Innosuisse – 66 employed FTE in agency, excluding 163 experts, 22 persons in innovation council and 7 board members.

*** ANI's employees in 2019.

**** Both EAS and HAMAG-BICRO had 269 employees in 2019.

***** VLAIO had 335 employees in 2019 and 380 in 2020. The number is an average of these two years.

****** Innovation Norway had 793 employees as of December 31, 2020, 32 of which were part time. This means approx 780 FTE.

******* Bpifrance has 3500 FTEs overall, including about 300 in innovation financing activities.

******** Numbers of employees involved in R&D policy roughly estimated on the basis of the contracted budget by the Ministry of Economic Affairs (DG Business & Innovation only) towards RVO. About 7% of the RVO agency budget is dedicated towards R&D policy implementation (excluding patent office, fiscal measures, R&D related activities abroad and several smaller activities; excluding RD policies by other departments and DG Climate & Energy) which more or less equals 310 employees on a total of 4500 RVO employees.

1.2 Scope

Similarly to previous reports, the comparative analysis in the 4th Benchmark report consists of four groups of innovation support programmes implemented in the agencies involved in the benchmarking process. The sample of agencies involved changes over time, therefore, Tables 1. C and 1. D specify all the agencies and their programmes in the 1st (2012-2014), the 2nd (2015-2016), the 3rd (2017-2018) and the 4th (2019-2020) benchmark reports.

Table 1.C Overview of instruments per participating agency – 1st and 2nd Benchmark report

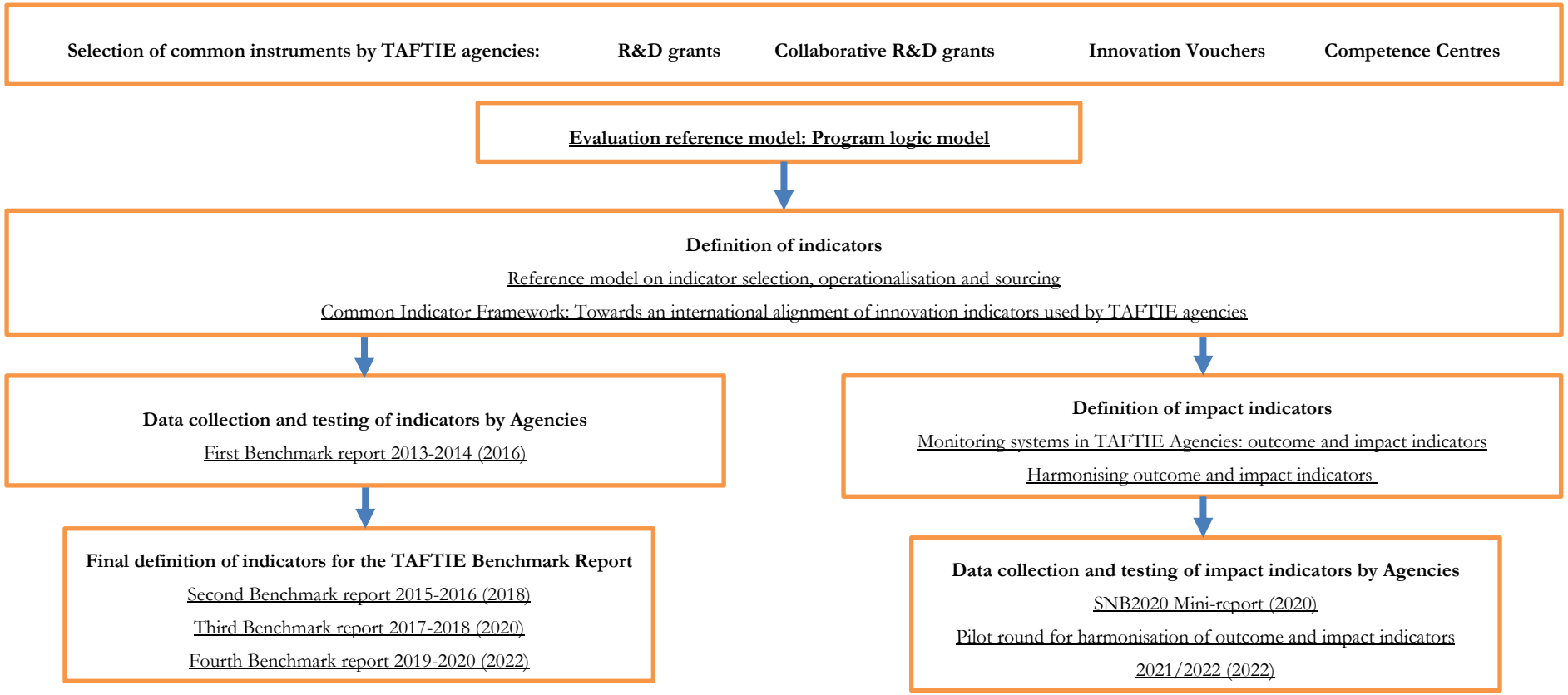
Agency	*1st Benchmark report*				*2nd Benchmark report*			
	Period 1 (2012-2014)				Period 2 (2015-2016)			
	R&D grants	Collaborative R&D grants	Innovation vouchers	Competence Centre	R&D grants	Collaborative R&D grants	Innovation vouchers	Competence Centre
ANI					X	X		
Bpifrance								
Business Finland	X	X		X	X	X		X
CDTI	X	X			X	X		
EAS	X			X		X		X
EI		X	X	X	X	X		X
FFG	X	X	X	X	X	X	X	X
HAMAG-BICRO	X				X	X		
IF								
Innosuisse								
Innovation Norway								
Innoviris								
Luxinnovation	X				X			
RCN		X						
RVO	X	X	X	X	X	X	X	X
SIEA	X		X		X		X	
SPIRIT Slovenia								
TA ČR		X		X		X		X
VLAIO								

Table 1.D Overview of instruments per participating agency – 3rd and 4th Benchmark report

Agency	*3rd Benchmark report*				***4th Benchmark report***			
	Period 3 (2017-2018)				**Period 4 (2019-2020)**			
	R&D grants	Collaborative R&D grants	Innovation vouchers	Competence Centre	**R&D grants**	**Collaborative R&D grants**	**Innovation vouchers**	**Competence Centre**
ANI	X	X			**X**	**X**		
Bpifrance	X				**X**	**X**		
Business Finland	X	X	X					
CDTI	X	X			**X**	**X**		
EAS		X		X	**X**	**X**		**X**
EI					**X**	**X**	**X**	**X**
FFG	X	X	X	X	**X**	**X**	**X**	**X**
HAMAG-BICRO	X	X	X		**X**	**X**	**X**	
IF		X	X		**X**	**X**	**X**	
Innosuisse	X	X	X		**X**	**X**	**X**	
Innovation Norway					**X**			
Innoviris	X	X						
Luxinnovation	X				**X**			
RCN		X						
RVO	X	X	X	X	**X**	**X**	**X**	
SIEA	X		X		**X**		**X**	
SPIRIT Slovenia	X				**X**	**X**		
TA ČR		X		X		**X**		**X**
VLAIO	X	X			**X**	**X**		**X**

1.3 Indicators

The 4th Benchmark report follows the selection of indicators applied in the previous reports. The methodology includes primary set of basic indicators (*inputs, activities* and *outputs*), arranged by Technopolis Group in 2015 and slightly amended in January 2016 by the TAFTIE SNB group, and four other indicators selected by HAMAG-BICRO and TA ČR (then TAFTIE SNB coordinators) in 2019. The origins of the preparation process for indicators within TAFTIE SNB is specified in Scheme 1.A. All the indicators with defined rationale, why we need to use them for comparison of the instruments applied in the TAFTIE agencies, are specified in Tables 1. E (input), 1. F (throughput) and 1. G (output).



Scheme 1.A Origins of the benchmarking process in TAFTIE

Table 1.E Input indicators selected for the 4th Benchmark report

INPUT INDICATORS: PUBLIC INVESTMENT							**Rationale for using the indicator**
Logical Framework Element	**Indicator**	**Definition and subindicators**	**R&D Grants**	**R&D Collaborative Grants**	**Innovation Vouchers**	**Competence Centres**	
Budget	Contracted Budget	**Amount of funding contracted in year x** (total, all enterprises, large enterprises, SMEs, knowledge institutions, other)	**X**	**X**		**X**	✓ Contracted budget monitoring per year ✓ Demand for instrument/programme ✓ Importance for instrument/programme
Budget	Issued Budget	**Value of issued vouchers in year x** (total, all enterprises, large enterprises, SMEs, knowledge institutions, other)			**X**		✓ Issued budget monitoring per year ✓ Effective demand for voucher
Budget	Reimbursed Budget	**Value of reimbursed vouchers in year x** (total, all enterprises, large enterprises, SMEs, knowledge institutions, other)			**X**		✓ Reimbursed budget monitoring per year (absorption) ✓ Non-effective demand for voucher
Budget	Share of contracted budget of the programme	**Share of contracted budget of the programme (4th Benchmark report)** Reflects the contracted budget of the selected programme expressed as a share of the total contracted budget of all agency programmes selected for the 4th Benchmark report in year x.	**X**	**X**	**X**	**X**	✓ The effect of contracted budget of the programme within the total contracted budget of all agency programmes selected for the benchmarking ✓ Relative importance of the instrument/programme in the context of the report
Budget	Share of contracted budget of the programme	**Share of contracted budget of the programme** Reflects the contracted budget of the selected programme expressed as a share of the total contracted budget of all agency programmes in year x (not including tax incentives).	**X**	**X**	**X**	**X**	✓ The effect of contracted budget of the programme within the total contracted budget of all agency programmes per year ✓ Relative importance of the instrument/programme in the context of the report

Table 1.F Throughput indicators selected for the 4th Benchmark report (part I)

THROUGHPUT INDICATORS: ACTIVITIES							**Rationale for using the indicator**
Logical Framework Element	**Indicator**	**Definition and subindicators**	**R&D Grants**	**R&D Collaborative Grants**	**Innovation Vouchers**	**Competence Centres**	
Managing and Operating Grants/ Competence Centres	Awarded Grants	**Total number of awarded grants in year x**	**X**	**X**		**X**	✓ Awarded grants monitoring per year ✓ Demand for instrument ✓ Importance of instrument
Managing and Operating Vouchers	Issued Vouchers	**Number of issued vouchers in year x** (total, all enterprises, large enterprises, SMEs, knowledge institutions, other)			**X**		✓ Issued vouchers monitoring per year ✓ Effective demand for voucher
Managing and Operating Vouchers	Reimbursed Vouchers	**Number of reimbursed vouchers in year x** (total, all enterprises, large enterprises, SMEs, knowledge institutions, other)			**X**		✓ Reimbursed vouchers monitoring per year (absorption) ✓ Non-effective demand for voucher
Managing and Operating Grants/ Vouchers	Application Success Rate	**Number of applications in year x** (total, successful, unsuccessful, application success rate) Count the year of application, not the year in which a decision was made. A positive decision is successful application. A negative decision is an unsuccessful application. The total number of applications is the amount of 'positive and negative decisions' in a year x.	**X**	**X**	**X**		✓ The importance of the programme for (potential) beneficiaries and institution which launch the programme in terms of programme design-quality and budget ✓ Quality of applications and probability of success ✓ Budget situation of agencies affects the positive evaluation of applications
Managing and Operating Vouchers	Number of Potential Beneficiaries	**Number of unique (in a year; in the programme) organizations that vouchers are issued to in year x** (total, all enterprises, large enterprises, SMEs, knowledge institutions, other)			**X**		✓ Popularity of the programmes ✓ Demand for voucher, related to company and organisation types
Managing and Operating Grants/ Vouchers	Number of Beneficiaries	**Number of unique (in a year; in the programme) organizations contracted for grants or reimbursed vouchers in year x** (total, all enterprises, large enterprises, SMEs, knowledge institutions, other)	**X**	**X**	**X**		✓ Beneficiaries' detection and classification ✓ Effective demand related to company and organisation types

Table 1.F (part II)

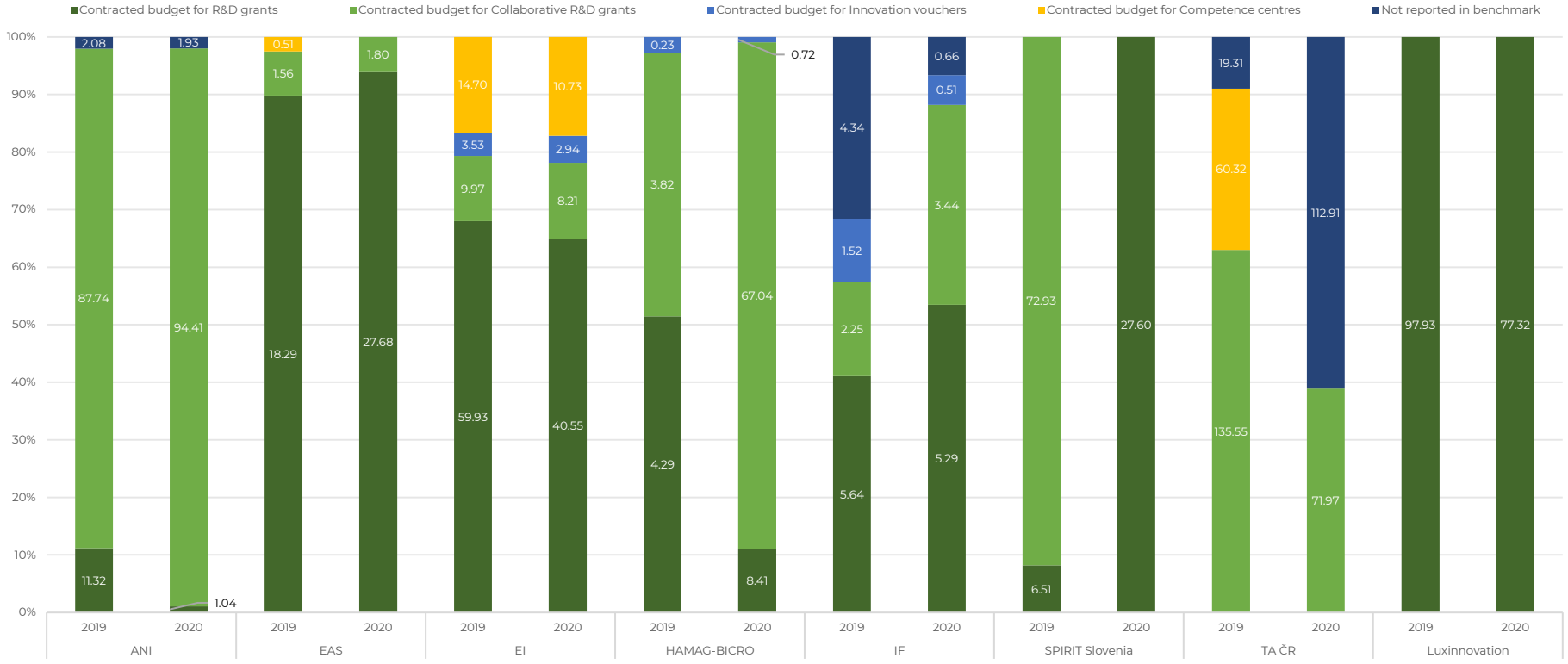
THROUGHPUT INDICATORS: ACTIVITIES							**Rationale for using the indicator**
Logical Framework Element	**Indicator**	**Definition and subindicators**	**R&D Grants**	**R&D Collaborative Grants**	**Innovation Vouchers**	**Competence Centres**	
Managing and Operating Grants/ Competence Centres	Number of Participants	**Number of unique (in a year; in the programme) organizations active in R&D projects contracted or in competence centres in year x** (total, all enterprises, large enterprises, SMEs, knowledge institutions, other)		**X**		**X**	✓ Participants' detection and classification ✓ Scope/range of the instrument/programme, related to company and organisation types ✓ Companies/organisations with a contracted financial stake in a project funded either by contributing or receiving or a combination of both
Managing and Operating Vouchers	Reimbursement Rate	**Number of issued or reimbursed vouchers in year x** Count the number of reimbursed vouchers of vouchers issued in year x			**X**		✓ Utilization of the vouchers ✓ Non-effective demand for the instrument ✓ Target reliability of the instrument
Managing and Operating Grants/ Vouchers	Number of active projects/vouchers	**Number of realized (active) projects in year x** How many projects were active in terms of technical activities during year x (active at least one day in year x reported)	**X**	**X**	**X**		✓ Projects/vouchers implementation scores in terms of technical activities per year ✓ Operational load/capacity of agencies for instruments ✓ Importance of instrument/programme in portfolio
Managing and Operating Competence Centres	Competence centres	**Number of competence centres supported in year x**				**X**	✓ Competence centres' detection and classification ✓ Scope/range of the instrument/programme
Managing and Operating Competence Centres	Competence centres	**Number of competence centres active (realized) in year x**				**X**	✓ Competence centres' detection and classification ✓ Operational load/capacity of agencies for instruments ✓ Importance of instrument/programme in portfolio
Managing and Operating Grants	Number of foreign participants	**Number of unique foreign organizations contracted for grants in year x** (total, all enterprises, large enterprises, SMEs, knowledge institutions, other)		**X**			✓ The importance of foreign participation and collaboration in domestic activities

Table 1.G Output indicators selected for the 4th Benchmark report

OUTPUT INDICATORS: RESULTS							**Rationale for using the indicator**
Logical Framework Element	**Indicator**	**Definition and subindicators**	**R&D Grants**	**R&D Collaborative Grants**	**Innovation Vouchers**	**Competence Centres**	
(Collaborative) R&D Projects	Private Contributions	**Beneficiaries' own contribution in Euro contracted in year x** (total, all enterprises, large enterprises, SMEs, knowledge institutions, other)	**X**				✓ Beneficiaries' private funds monitoring
(Collaborative) R&D Projects	Private Contributions	**Participants' own contribution in Euro contracted in year x** (total, all enterprises, large enterprises, SMEs, knowledge institutions, other)		**X**		**X**	✓ Participants' private funds monitoring
(Collaborative) R&D Projects	Private Contributions	**Total (financial) size of projects**	**X**	**X**		**X**	✓ Total project funds monitoring
Specific R&D Co-operation Relations	Specific R&D Co-operation Relations	**Number of participation relationships in projects contracted in year x** (total, company-company relationships, company-knowledge institutes relationships**)** The formula for calculating cooperation links is: N!/2(N-2)!		**X**		**X**	✓ The importance of collaboration per instrument ✓ Involvement of other partners, differentiated by type of partners
Specific Knowledge & Technology Generation	Technical Success of Projects	**Number of closed projects in year x** (which achieved objectives as planned, which yielded results beyond planned objectives, which achieved its objectives partially, which failed to reach its objectives or were discontinued)	**X**	**X**	**X**	**X**	✓ Realisation of technical activities ✓ Average goal achievements of instruments/programmes (narrow sense)

2. BUDGETS FOR INNOVATION-FOCUSED ACTIVITIES

The second chapter of this report focuses on the specification of the budgets of relevant agencies used for the support of innovation-focused activities. We divided the SNB agencies into two groups – group of agencies with smaller budgets and group of agencies with larger budgets – for better comparison. As can be seen in Figure 2.A, in 2019 and 2020, the agencies from the first group contracted more financial resources within R&D grants and Collaborative R&D grants (with the exception of IF and TA ČR).



(in millions of € and %)

Figure 2.A Distribution of the budgets for innovation-focused activities – SNB agencies with smaller budgets (in millions of €)

While some agencies from the second group share the same financial distribution policies than those agencies with smaller budgets (e.g. Bpifrance and SIEA), the majority of this group do not report a larger part of the budgets for this analysis (Figure 2.B).

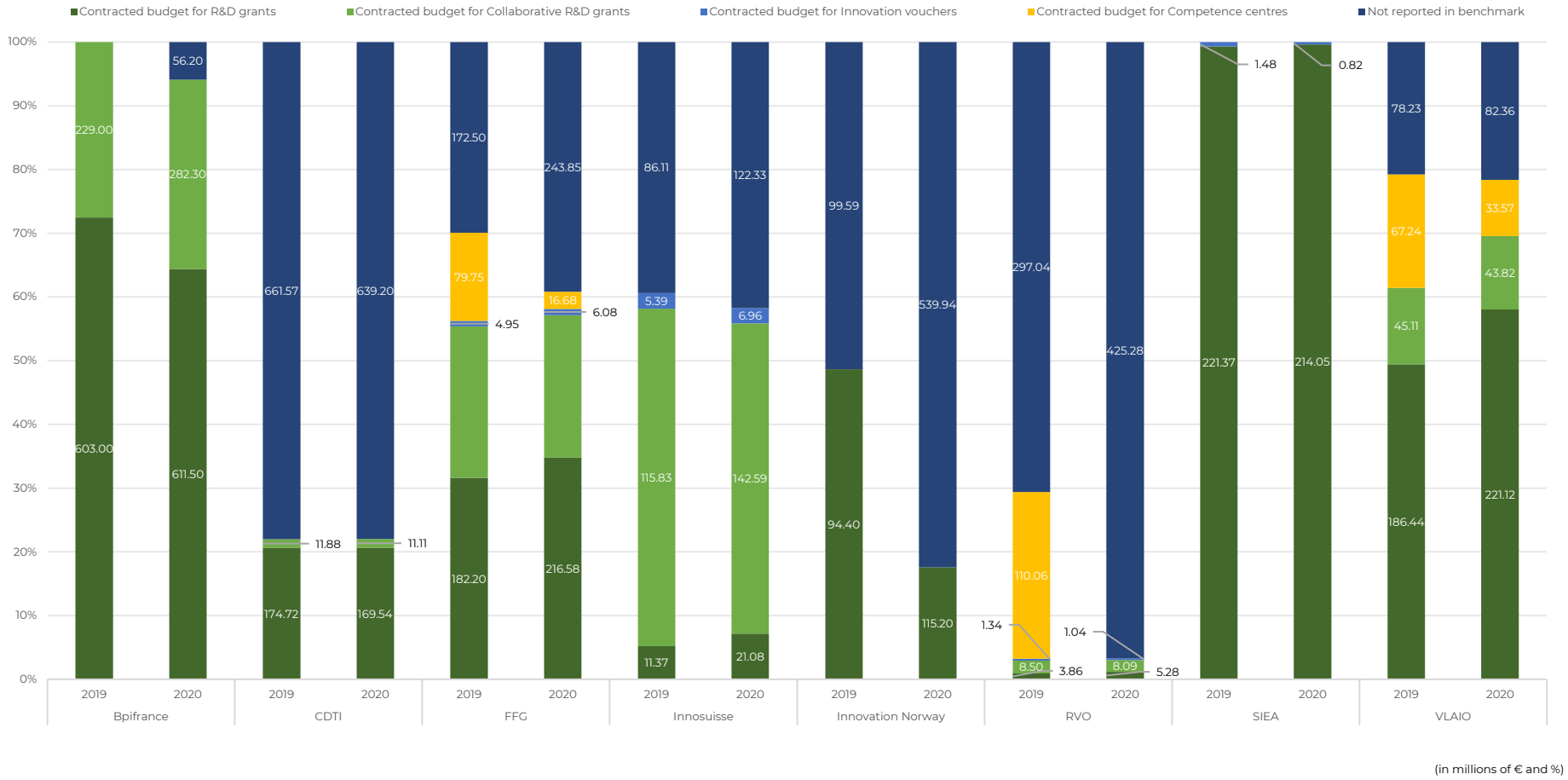


Figure 2.B Distribution of the budgets for innovation-focused activities – SNB agencies with larger budgets (in millions of €)

3. R&D GRANTS

3.1 Introduction

The first programme type in the 4th Benchmark report, R&D grants, generally relate to common subsidy schemes with business acting as beneficiaries. It is one of the most typical innovation support instruments applied in the SNB agencies. For this report, a total of 15 from 16 involved agencies delivered data for this instrument. All the programmes managed by involved agencies are specified in Table 3. A.

The indicators and definitions are in general the same across agencies and instruments. However, the differences exist in the number of selected programmes and context/design of the instruments applied in relevant countries and regions. Some of the programmes support all types of companies, other only SMEs, some focus on pilot development of products, other on commercialisation or action planning, and some consists of direct subsidy, while other are in the form of loans. The programme division, thematic focus, type of financing, source of financing and type of call are specified in Table 3. B. The type of research, project size, min-max % subsidy, min-max € subsidy, affiliation to SMEs, cooperation obligatory, project duration and additional notes are specified in Table 3. C.

Table 3.A Description of the R&D grants programmes included in the 4th Benchmark report (part I)

Agency	Programme name	Programme description
ANI	Individual R&D Demonstration Projects - Seal of Excellence	Financial support for the projects of Portuguese companies which succeeded in passing the SME Instrument or the EIC Accelerator Pilot threshold evaluation score but could not be funded under the available Call budget.
	Individual R&D Demonstration Projects and Pilot Lines	Financial support for demonstration projects of advanced technologies and pilot lines following on from successfully completed R&D activities. Technologies that are not sufficiently validated, from a technological point of view, are tested in a real situation before a specialized audience to demonstrated the commercial, economic and technical advantages of the new technological solution.
Bpifrance	Aides à la faisabilité	Innovation feasibility study is a programme for innovative products, processes or services with industrialization or commercialization prospects.-
	Aide au développement de l'Innovation	Innovation development support serves companies to develop innovative products, processes or services which present prospects for industrialization and marketing.
	Bourse French Tech	Bourse French Tech focuses on business projects with growth potential from any type of innovation.
	Aide au développement Deeptech	The ADD programme aims at helping companies carrying out deeptech technological innovation projects, involving industrial research and/or experimental development work, to develop innovative products, processes or services with concrete prospects for industrialisation and marketing.
	I-LAB	Created in 1999 by the ministry of Research, this competition enables the detection and emergence of business creation projects based on innovative technologies. It offers the winners a valuable label for seeking funding. It supports the best projects by offering financial aid and guidance. It encourages the transfer of research results to the socio-economic world.
	Concours Innovation i-Nov	Since 2017, I-Nov competition supports the accelerated emergence of companies with the potential to become world leaders in their field.
CDTI	Individual Business R&D Projects	Programme provides funding in the form of grants or soft loans. The CDTI in this way supports business projects of an applied nature for the creation and significant improvement of a production process, product or service submitted by one single company.

Table 3.A (part II)

Agency	Programme name	Programme description
EAS	Product Development Grant (tootearendustoetus)	The aim of product development grant is to encourage companies to invest in development of new competitive products and services.
	Enterprise Development Programme (ettevõtte arenguprogramm)	The enterprise development programme aims to support well-thought-out development, improved action planning, innovation implementation and product development. In the course of the development programme, each participating enterprise will launch new products and services that are more profitable than their predecessors.
EI	Exploring Innovation grant	The grant is to support better planning of R&D, Innovation or International Collaboration projects (oriented on digital projects as well as carbon reduction). Grant rate of up to 50% of eligible costs. Typical maximum support of €35k.
	Agile Innovation grant (R&D support)	Short projects with big impact with total project cost less than €300,000 projects (oriented on digital projects as well as carbon reduction). Features a fast track approval.
	Agile Innovation grant (Digital Process Innovation Projects)	A project to implement a new way of working for the company that leads to an increase in quality, speed, dependability or flexibility of the company's operations. 50% of the eligible costs, up to a maximum grant of €150,000.
	R&D Fund	Supports the development of new or substantially improved products, services or processes which will have a competitive advantage in a company's target market.
	Intellectual Property Start	It is an additional support to incentivise companies to develop an IP strategy, focused on capturing, managing and exploiting their R&D results to greater effect.
	Intellectual Property Plus	
FFG	Einzelprojekt (BP)	The FFG's R&D grant is a combination of four specific programmes there are focused on single firm project funding, either in generic sense, or in relation to the future of energy, gender issues in technology and innovation or space applications.
	Einzelprojekt (Energien 2020)	
	FEMtech Forschungsprojekte (Talente)	
	Einzelprojekt ASAP	
HAMAG-BICRO	Proof of Concept (PoC7, PoC8)	Proof of Concept programme provides support to beneficiaries in proving their concepts, to deal with technology risk and provides assistance to commercialisation.
	Fostering development of new products/services resulting from R&D activities (IRI1, IRI 2)	Fostering development of new products/services resulting from R&D activities programme supports R&D activities of business entities.
IF	Mini Grants Program	The Mini Grants Program is aimed at private young enterprises which are engaged in the development of technological innovations with a clear market need.
	Matching Grants Program	The Matching Grants Program is designed for enterprises looking for significant financial resources for the commercialization of research and development.
Innosuisse*	Innovation projects without implementation partner	Innosuisse supports innovation projects by researchers who have come across an innovative idea with substantial market potential, but have not yet found an a company for its implementation on the market. In particular, Innosuisse supports high-risk projects with a very high innovative content. The funding ist directed to research institutions.
Innovation Norway	R&D Contracts	R&D Contracts trigger an innovative partnership between two or more parties. Through close cooperation a supplier get unique insight into the customers need. The result is a product that is much better adapted to the marked. The selection criteria are the project's level of innovation, international marketing potential, as well as the economic feasibility and ability to carry it through.
	Environmental Technology Aid Scheme	Testing environmental technology at full scale may be very expensive and the potential return on investment is uncertain. Environmental technology includes technologies, processes, solutions, and services that are better for the environment than those currently in use. This is a broad definition that requires further clarification. A quantified description of the project's environmental impact is required to be eligible for funding from the Environmental Technology Scheme.
Luxinnovation	na	na
RVO	SMEs Instrument Top Sectors: Feasibility Projects	Feasibility projects are aimed at SMEs to map out all technical and economic risks of future innovation projects (literature and patent survey, market analysis).

Table 3.A (part III)

Agency	Programme name	Programme description
SIEA	Operational Programme Research and Innovation (OP R&I)	OP R&I programme focuses on the creation of a stable innovation-friendly environment for all relevant entities and promotion of the efficiency and performance of the system of research, development and innovations.
SPIRIT Slovenia	RRI Covid	R&D projects to eliminate the consequences of COVID-19.
	SME Instrument, Phase 2	Development of new products
	SME Instrument, Phase	Feasibility study
	Strengthening the competencies and innovation potentials of companies	Strengthening the competencies and innovation potentials of companies
VLAIO	Development projects	Development projects increase innovation in a large group of companies in Flanders and have a clear business case.
	Research projects	Research projects stimulate R&D in companies.

* At Innosuisse, the research institutions that carry out the projects act as beneficiaries.

Table 3.B Programme division, thematic focus, type of financing, source of financing and type of call specified for R&D grants (part I)

Agency	Programme name	Research categories				Thematic focus			Type of financing				Source of financing			Type of call		
		Basic research	Industrial research	Experimental development	Other	Thematic call	Bottom-up	Other	Grant	Soft loan /partially reimbursable aid	Conditional loan	Other	ESIF	National	Other sources	Open call	Temporary call	Other
ANI	Individual R&D Demonstration Projects - Seal of Excellence		**X**	**X**			**X**		**X**				**X**				**X**	
	Individual R&D Demonstration Projects and Pilot Lines		**X**	**X**			**X**		**X**				**X**				**X**	

Table 3.B (part II)

Agency	Programme name	Research categories				Thematic focus			Type of financing				Source of financing			Type of call		
		Basic research	Industrial research	Experimental development	Other	Thematic call	Bottom-up	Other	Grant	Soft loan /partially reimbursable aid	Conditional loan	Other	ESIF	National	Other sources	Open call	Temporary call	Other
Bpifrance	Aides à la faisabilité				Feasibility studies		X		X					X		X		
	Aide au développement de l'Innovation			X			X					Repayable advance		X		X		
	Bourse French Tech		X	X	Feasibility studies		X		X					X		X		
	Aide au développement Deeptech		X	X			X		X		X	Mix of a grant + a repayable advance		X		X		
	I-LAB		X	X	Feasibility studies		X							X			X	
	Concours Innovation i-Nov			X		X								X			X	
CDTI	Individual Business R&D Projects			X			X			X			X	X		X		
EAS	Product Development Grant (tootearendustoetus)			X			X		X				X	X		X		
	Enterprise Development Programme (ettevõtte arenguprogramm)			X			X		X				X			X		

Table 3.B (part III)

Agency	Programme name	Research categories				Thematic focus			Type of financing				Source of financing			Type of call		
		Basic research	Industrial research	Experimental development	Other	Thematic call	Bottom-up	Other	Grant	Soft loan /partially reimbursable aid	Conditional loan	Other	ESIF	National	Other sources	Open call	Temporary call	Other
EI	Exploring Innovation grant				X				X				X			X		
	Agile Innovation grant (R&D support)			X					X				X			X		
	Agile Innovation grant (Digital Process Innovation Projects)				X				X				X			X		
	R&D Fund			X					X				X			X		
	Intellectual Property Start				X				X					X		X		
	Intellectual Property Plus				X				X					X		X		
FFG	Einzelprojekt (BP)			X			X		X	X				X		X		
	Einzelprojekt (Energien 2020)		X	X		X			X					X			X	
	FEMtech Forschungsprojekte (Talente)		X			X			X					X			X	
	Einzelprojekt ASAP	X				X			X					X			X	
HAMAG-BICRO	Proof of Concept (PoC7, PoC8)	X	X				X		X					X			X	
	Fostering development of new products/services resulting from R&D activities (IRI1, IRI 2)	X	X	X		X			X				X	X			X	
IF	Mini Grants Program		X				X		X					X	EU IPA	X		
	Matching Grants Program		X				X		X					X	EU IPA	X		

Table 3.B (part IV)

Agency	Programme name	Research categories				Thematic focus			Type of financing				Source of financing			Type of call		
		Basic research	Industrial research	Experimental development	Other	Thematic call	Bottom-up	Other	Grant	Soft loan /partially reimbursable aid	Conditional loan	Other	ESIF	National	Other sources	Open call	Temporary call	Other
Innovation Norway	R&D Contracts		X	X			X		X					X		X		
	Environmental Technology Aid Scheme		X	X		X			X					X		X		
Luxinnovation	na																	
RVO	SMEs Instrument Top Sectors: Feasibility Projects		X			X			X					X		X		
SIEA	Operational Programme Research and Innovation (OP R&I)		X	X		X	X		X				X			X	X	
SPIRIT Slovenia	RRI Covid																	
	SME Instrument, Phase 2		X				X		X				X				X	
	SME Instrument, Phase 1		X	X			X		X				X				X	
	Strenghtening the competencies and innovation potentials of companies			X			X		X				X				X	
VLAIO	Development projects			X			X		X						regional	X		
	Research projects		X				X		X						regional	X		

Table 3.C Type of research, project size, % of subsidy, total subsidy, focus on SME, cooperation obligatory, project duration and additional notes specified for R&D grants (part I)

Agency	Programme name	Type of research	Project size (€; min-max)	Min-Max % subsidy (% of reimbursement; min-max)	Min-Max subsidy (€ of reimbursement; min-max)	SME beneficiaries only	Cooperation obligatory	Max months to complete the project	Additional notes
ANI	Individual R&D Demonstration Projects - Seal of Excellence	Technical demonstration	150 000 - no limit	25% - 66.25%	no limit - no limit	no	no	18	
	Individual R&D Demonstration Projects and Pilot Lines	Technical demonstration	150 000 - no limit	25% - 66.25%	no limit - no limit	no	no	18	
Bpifrance	Aides à la faisabilité	Feasibility studies	no limit (typically 20 000) - 60 000	no limit - 50 %	30 000	yes	no	24	For newly created start-ups < 1 yo and natural persons / Balanced funding plan and sufficient cash flow to carry out the programme are required counting on the subsidy.
	Aide au développement de l'Innovation	Feasibility studies Industrial Research Experimental development Aid for process and Organizational innovation	no limit (typically 100 000) - 3 000 000	Aid in the form of a repaybale advance - Maximum allowed GBER intensity calculated for repayable advance must not be exceeded - aid amounts depending on company size and innovation projetc type. - 45% max advance amount for SMEs 40% max advance amounts for bigger companies (< 5 000 people) - circa 40% minimum reimbursement of the aid amount in any case	3 000 000	no	no	36	Balanced funding plan and sufficient cash flow to carry out the programme are required counting on the repaybale advance.
	Bourse French Tech	Feasibility studies	no limit (typically 20 000) - 100 000	no limit - 70% (for companies less than 1 year old)	50000	yes	no	24	Balanced funding plan and sufficient cash flow to carry out the programme are required counting on the subsidy.

Table 3.C (part II)

Agency	Programme name	Type of research	Project size (€; min-max)	Min-Max % subsidy (% of reimbursement; min-max)	Min-Max subsidy (€ of reimbursement; min-max)	SME beneficiaries only	Cooperation obligatory	Max months to complete the project	Additional notes
Bpifrance	Aide au développement Deeptech	Feasibility studies Industrial Research Experimental development	no limit (typically 1 000 000) - ~ 4 000 000	>>> Aid in the form of a mix of subsidy and repaybale advance.<<< - Maximum allowed GBER intensity calculated for repayable advance must not be exceeded - aid amounts depending on company size and innovation projetc type. - 50% max aid amount for small entreprises 40% for SMEs 30% max aid amount for bigger companies (< 5 000 people)	500 000 - 2 000 000	no	The project must come from reserach and/or have strong links with a scientific community.	36	5 spécific eligibility criteria : - Project coming from a research lab or with strong links with the scientific community - Project presenting barriers to entry and technological barriers - provide a competitive advantage - Complex and long go-to-market pahtway - Including a funding strategy adapted to capita lrequierements of the projetc and leveraging on the aid.
	I-LAB	Industrial Research Experimental development	No limit - ~ 1 000 000	Max subsidy amount fixed by a jury and GBER intensities compliant < 60% of eligible costs.	600 000	yes	no	36	Innovative business creation competition - One call per year. Natural person selected by the jury must be a leader and shareholder of the beneficiary company to be created.
	Concours Innovation i-Nov	Industrial Research Experimental development	600 000 - 5 000 000	>>> Aid in the form of a mix of subsidy and repaybale advance.<<< 45% max aid amount for small entreprises 35% max aid amount for SMEs	2 250 000	yes	no	36	The purpose of this competition is to select, in a competitive procedure for start-ups and SMEs, innovation projects with particularly high potential.
CDTI	Individual Business R&D Projects	Applied research	Average budget: 600 000 Minimum budget: 175 000	Maximum aid: 85% budget Non-reimbourable aid: 20% - 30% over the total aid	148 750 - no limit	no	no	36	Partially reimboursable aid with soft loans

Table 3.C (part III)

Agency	Programme name	Type of research	Project size (€; min-max)	Min-Max % subsidy (% of reimbursement; min-max)	Min-Max subsidy (€ of reimbursement; min-max)	SME beneficiaries only	Cooperation obligatory	Max months to complete the project	Additional notes
EAS	Product Development Grant (tootearendustoetus)	Development	26 667 - no limit	Small 45%, medium 35%, large 45%, covid-19 impacted companies 75%	20 000 - 500 000	no	no	36	Beneficiaries - Companies with average turnover of at least 200 000 € in last 2 years Expected outcome - New product or service is developed, company's turnover and added-value increase Pre-counseling - Mandatory
	Enterprise Development Programme (ettevõtte arenguprogramm)	Development	no limit - no limit	Small 45%, medium 35%, large 45%	no limit - 500 000	no	no	18	Beneficiaries - Companies that are: 1) at least 3 years old; 2) have 8 or more employees; 3) have export experiance OR turnover has grown on average at least 5% per year in the last 3 years Expected outcome - Company prepares and follows a development plan; new product or service is developed; company's turnover and added-value increase 10% per year Pre-counseling - Mandatory
EI	Exploring Innovation grant	Feasibility	no limit - 70 000	no limit - 50%	no limit - 35 000	no	no	n.a.	
	Agile Innovation grant (R&D support)	Experimental development	no limit - 300 000	25% - 45%	no limit - 150 000	no	no	n.a.	
	Agile Innovation grant (Digital Process Innovation Projects)	Process and/or organisational innovation	no limit - 300 000	no limit - 50%	no limit - 150 000	no	no	n.a.	
	R&D Fund	R&D Projects / Experimental Development	n.a.	25% - 45%	n.a.	no	no	n.a.	
	Intellectual Property Start	consultancy	no limit - 2 700	no limit - 80%	no limit - 2 160	yes	no	n.a.	
	Intellectual Property Plus	consultancy	no limit - 70 000	no limit - 50%	no limit - 35 000	yes	no	n.a.	

Table 3.C (part IV)

Agency	Programme name	Type of research	Project size (€; min-max)	Min-Max % subsidy (% of reimbursement; min-max)	Min-Max subsidy (€ of reimbursement; min-max)	SME beneficiaries only	Cooperation obligatory	Max months to complete the project	Additional notes
FFG	Einzelprojekt (BP)	Experimental development	nr	50% - 70%	no limit - 3 000 000	no	single firm project funding	12	
	Einzelprojekt (Energien 2020)	Industrial research	nr	25% - 100% (depending on project type and organization; grants and expenses)	no limit - no limit (from 1 000 000 requested funding volume - there is a 2-stage procedure including hearing)	no	yes (both)	48	
	FEMtech Forschungsprojekte (Talente)	Individual project - Industrial research Cooperative R&D project	nr	nr	1 - 300 000	no	yes (both)	36	
	Einzelprojekt ASAP	Individual Industrial Research Projects | Cooperative Industrial Research and Experimental Development Projects | Oriented Basic Research | Exploratory Projects	nr	Minimum funding is based on the instrument guide and organization classification - Maximum funding is based on the instrument guide and organization classification	Minimum funding is based on the instrument guide and organization classification - Maximum funding is based on the instrument guide and organization classification	no	yes (both)	36	
HAMAG-BICRO	Proof of Concept (PoC7, PoC8)	Basic research Industrial research	12 000 - 86 000 (PoC7) 20 000 - 157 000 (PoC8)	60% - 70%, only SMEs	5 000 - 46 000 (PoC7) 13 000 - 66 000 (PoC8)	yes	no	12	
	Fostering development of new products/services resulting from R&D activities (IRI1, IRI 2)	Basic research Industrial research Experimental development	150 000 - 17 000 000 (IRI1) 270 000 - 17 000 000 (IRI2)	35% - 100%, for SMEs 25% - 100%, for Large companies	25 000 - 7 000 000 (IRI 1) 132 000 - 3 000 000 (IRI 2)	no	no	48	
IF	Mini Grants Program	Industrial research	no limit - no limit	0% - 70%	no limit - 80 000	yes	no	12	
	Matching Grants Program	Industrial research	no limit - no limit	0% - 70% for micro and small enterprises and 0% - 60% for medium-sized enterprises	no limit - 300 000	yes	no	24	
Innosuisse	Innovation projects without implementation partner	Feasability, Research	57 000 - 2 100 000	1	57 000 - 2 100 000	Research institutions only	No obligatory cooperation, public-public cooperation	18	Innosuisse funding inkl. overhead
Innovation Norway	R&D Contracts	Mostly GBER art 25 Industrial Research, experimental development, feasibility studies	n.a. (approx 3 times the assignment in average)	24 000 - 754 000 (average 240 000; assignment sizes 2021)	GBER art 25 with collaboration and SME bonus	no	yes (both private-private and private-public)	36	Up to 3 years after the year of committment
	Environmental Technology Aid Scheme	Mostly GBER art 25 Industrial Research, experimental development, feasibility studies	n.a. (approx 3 times the assignment in average)	16 000 - 6 000 000 (average 620 000; assignment sizes 2021)	GBER art 25 with collaboration and SME bonus	no	no	36	Up to three years after the year of committment

Table 3.C (part V)

Agency	Programme name	Type of research	Project size (€; min-max)	Min-Max % subsidy (% of reimbursement; min-max)	Min-Max subsidy (€ of reimbursement; min-max)	SME beneficiaries only	Cooperation obligatory	Max months to complete the project	Additional notes
Luxinnovation	n.a.	-	-	-	-	-	-	-	
RVO	SMEs Instrument Top Sectors: Feasibility Projects	Feasibility Studies	no limit - no limit	0% - 40%	no limit - 20 000	yes	no	12	First come - first serve selection
SIEA	Operational Programme Research and Innovation (OP R&I)	Various	Call 1.2.2 - 02: 400 000 - 100 000 000 Call 3.1.1 - 03: 30 000 - 266 666	Call 1.2.2 - 02: 25% - 55% Call 3.1.1 - 03: no limit - 75%	Call 1.2.2 - 02: 100 000 - 5 000 000 Call 3.1.1 - 03: 30 000 - 200 000	yes (Call 1.2.2 - 02: Micro, SME, Large Enterprises; Call 3.1.1 - 03: Micro & SME)	both	Call 1.2.2 - 02: 15 Call 3.1.1 - 03: 18	
SPIRIT Slovenia	RRI Covid	Research and development	no limit - 375 000 (eligible costs)	no limit - 80%	Phase1: 50 000 - 200 000 Phase 2: 50 000 - 300 000	SME also large sized companies	private-private or individual recipient	6	
	SME Instrument, Phase 2	Research and development	no limit - no limit	no limit - 60% (micro and small-sized enterprises) no limit - 50% (medium-sized enterprises)	no limit - no limit	SME	private-private or individual recipient	no later than 31. 12. 2021	
	SME Instrument, Phase 1	Research and development	no limit - 50 000	no limit - 50 000 € (lump-sum)	no limit - 35 000 € (lump-sum)	SME	private-private or individual recipient	6	
	Strenghtening the competencies and innovation potentials of companies	Research and development	no limit - 400 000 (eligible costs)	25% - 45% (medium-sized enterprises - micro and small enterprises)	50 000 - 200 000	SME	private-private or individual recipient	18	
VLAIO	Development projects	Development	no limit - no limit	25% - 50 %	25 000 - 3 000 000	no	no	24	
	Research projects	Research	no limit - no limit	25% - 60 %	100 000 - 3 000 000	no	no	36	

3.2 Financial size

The total financial project size of R&D grants programmes (in millions of €) is shown in Figure 3.A (agencies smaller budgets) and 3.B (agencies with larger budgets). The columns consist of the amount of funding contracted (from public sources) and beneficiaries' own contribution contracted (from private sources) in years 2019 and 2020. The highest total amount of money was contracted (from all sources) through the programmes of Bpifrance in 2020 (almost 1400 mil. €, consisting of about 612 mil. € from public and 768 mil. € from private sources), followed by the same organisation in 2019 (about 1300 mil. €, consisting of about 603 mil. € from public and 707 mil. € from private sources). Other significant agencies are FFG (in total about 629 mil. € in 2019 and 705 mil. € in 2020), CDTI (in total about 578 mil. € in 2019 and 536 mil. € in 2020) and VLAIO (in total about 441 mil. € in 2019 and 545 mil. € in 2020). In comparison with other relevant agencies, ANI, EAS, HAMAG-BICRO, IF, Innosuisse, RVO and SPIRIT Slovenia have very small budgets for R&D grants. In contrast to other agencies, the R&D grants from Innosuisse are only paid to the research institutions and not to the companies.

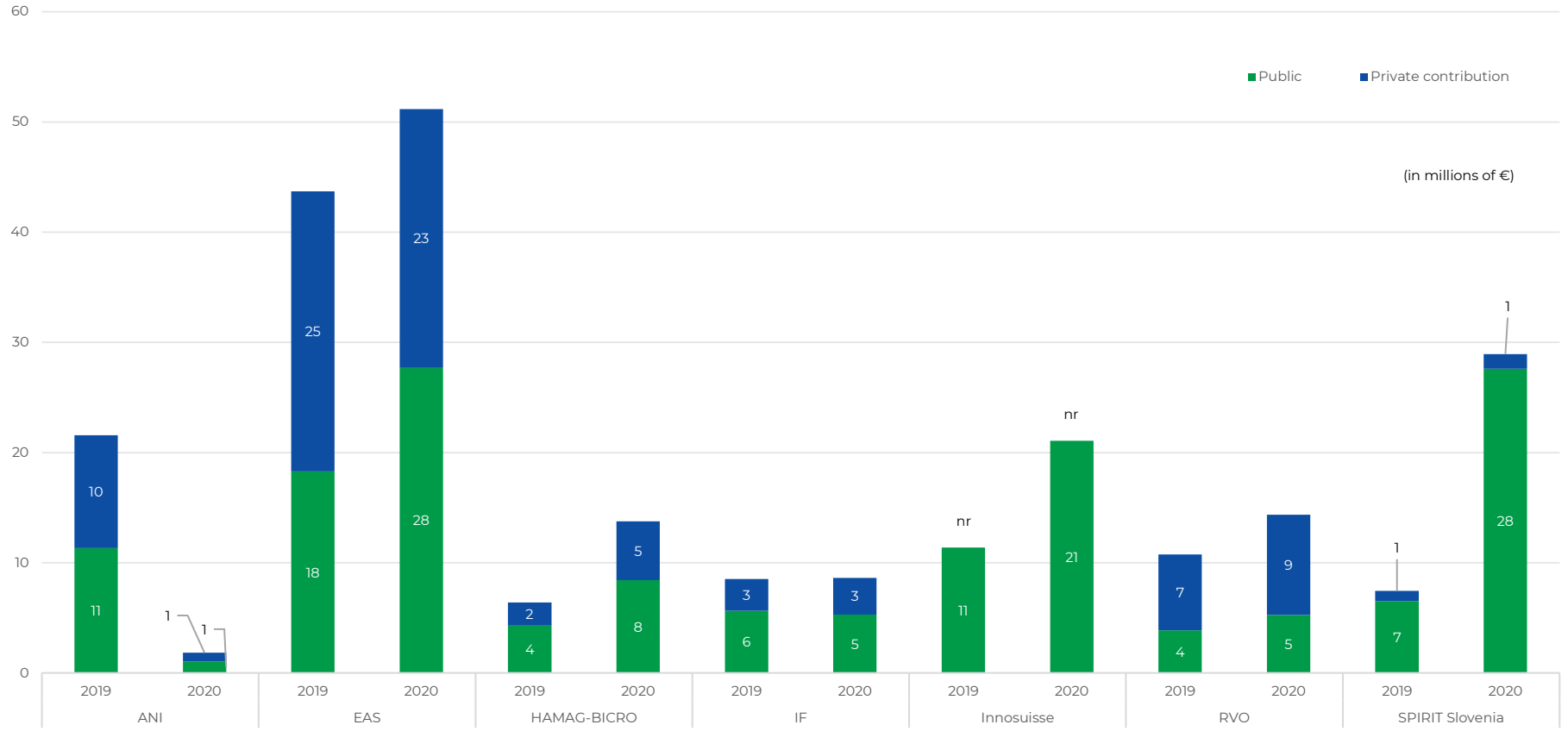


Figure 3.A Financial size of selected R&D grants programmes (public contribution and participants' own contribution) in 2019 and 2020 – smaller budgets (millions of €)

* Innosuisse: Data on additional own funding by research institutions not available.

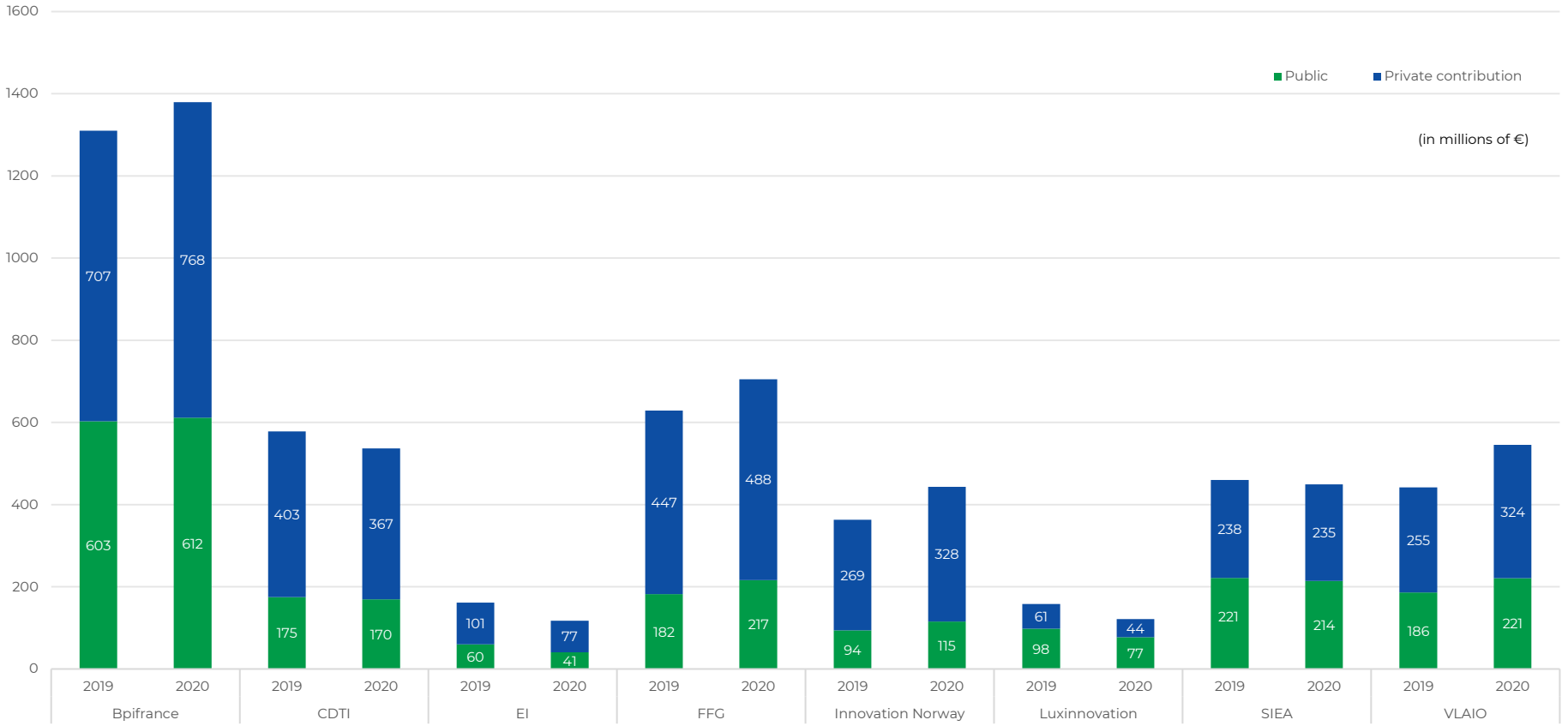


Figure 3.B Financial size of selected R&D grants programmes (public contribution and participants' own contribution) in 2019 and 2020 – larger budgets (millions of €)

* CDTI and FFG are the only two agencies who included soft loans (instead of grants) into the comparison. Soft loan is a loan with no interest or a below-market rate of interest.

Table 3.D Share of contracted budget for R&D grants in total agency innovation programme portfolio and agency innovation programmes in 2019 and 2020

Agency	Share of contracted budget in total agency programme portfolio in 2019 (%)	Share of contracted budget in agency programme portfolio incl. in benchmarking in 2019 (%)	Share of contracted budget in total agency programme portfolio in 2020 (%)	Share of contracted budget in agency programme portfolio incl. in benchmarking in 2020 (%)
ANI	11.19%	11.42%	1.06%	1.09%
Bpifrance	72.65%	72.48%	64.37%	68.42%
CDTI	20.60%	93.63%	20.68%	93.85%
EAS	89.83%	89.83%	93.89%	93.89%
EI	na	68.00%	na	64.96%
FFG	31.61%	45.10%	34.80%	57.21%
HAMAG-BICRO	nr	51.43%	nr	11.05%
IF	41.04%	59.97%	53.48%	57.29%
Innosuisse	5.20%	8.57%	7.19%	12.35%
Innovation Norway*	48.66%	100.00%	17.58%	100.00%
Luxinnovation	100.00%	100.00%	100.00%	100.00%
RVO	0.92%	2.07%	1.20%	3.12%
SIEA	99.34%	99.34%	99.62%	99.62%
SPIRIT Slovenia	na	8.20%	na	100.00%
VLAIO	49.45%	62.40%	58.06%	74.08%

* Innovation Norway: In 2019 all programmes with innovation activities as a major target. In 2020, huge increase in the budgets due to extra innovation stimuli during the first Corona-crisis. Extraordinary liquidity-support is not included in these figures, only a more intensive support for innovation over the existing programs/schemes are included. The increase in the two R&D programs included in our statistics was much smaller than the increase in other schemes with a broader innovation scope than R&D contracts and environmental technology development.

Table 3.D shows two ratios comparing contracted budgets for agencies' R&D granting programmes with the budgets given to all programmes selected for this benchmark report, the budgets for all innovation-focused programmes respectively. While low numbers (e.g. in RVO – 0.92% in 2019 and 1.20% in 2020; or ANI – 11.19% in 2019 and 1.06% in 2020) lead to the interpretation that the money given to selected R&D grants has relatively low significance in the total agency budgets, high numbers (e.g. in Luxinnovation – 100% in both years or SIEA – 99.24% in 2019 and 99.62% in 2020) mean that these included all or almost all programmes in this category.

Following the 3rd Benchmark report methodology, the impact factors for comparison of the agencies' innovation programmes on the extent to which grants foster private and other public investments in R&D were calculated for 2019 and 2020 separately, as well as an average of these years. The impact factors are specified in Figure 2. B. The highest average impact factor was calculated for the grants of Innovation Norway (2.85). This means that for each euro contracted from the Innovation Norway's public funding schemes the beneficiaries contributed by 2.85 euros. High impact factors (higher than 1) were also found in the data from FFG, CDTI, EI, RVO, VLAIO, Bpifrance, EAS and SIEA. These high results could also be due to state aid laws following which some of the projects included have per se a low funding rate. The data also shows a frequent declining trend between 2019 and 2020.

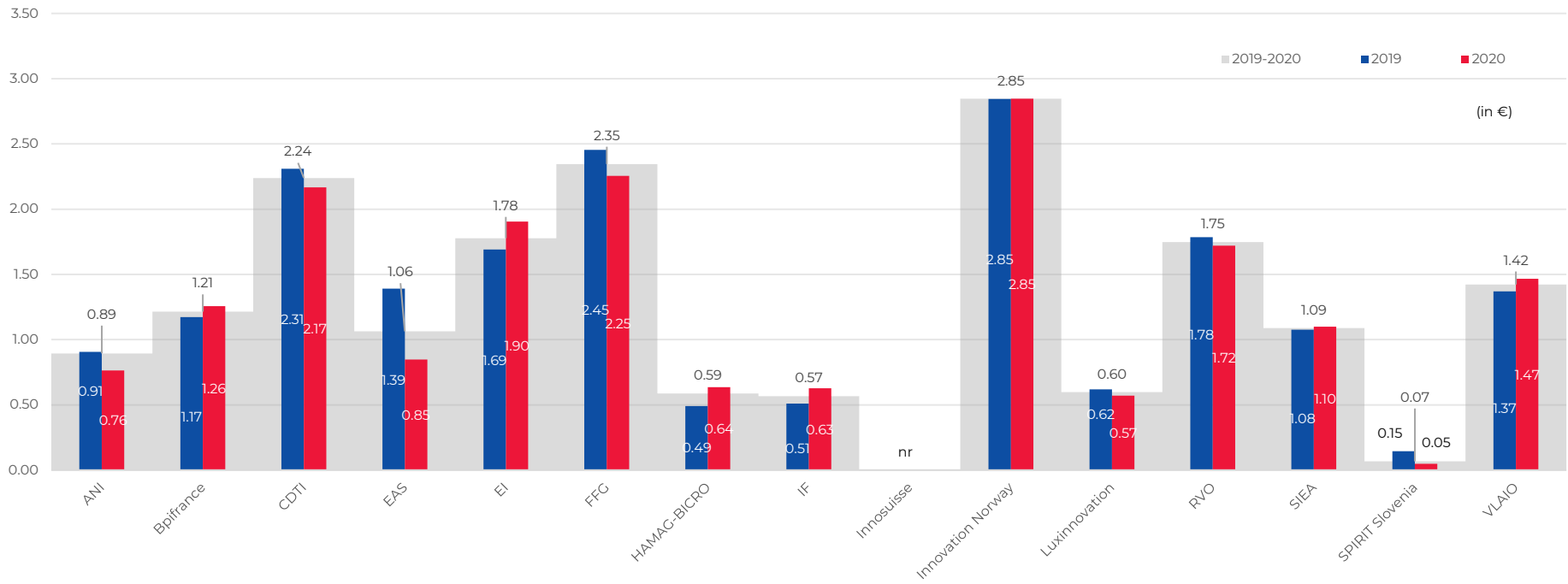


Figure 3.C Impact factors of participants' own contribution per Euro public investment (R&D grants) in 2019, in 2020 and in 2019-2020

The average impact factors were also calculated at the level of target groups – all target groups, all enterprises, large enterprises, SMEs, knowledge institutions and other target groups (Table 3. E). For example, one euro of public support from the R&D grants programmes in Austria (FFG) ensured 3.18 euros from the large enterprises' private sources. Similarly, one euro of public support in Ireland (EI) ensured 3 euros from the large enterprises' private sources. The highest impact factor for SMEs was found in Innovation Norway (2.85), while FFG dominated in the categories of knowledge institutions (0.7) and other organisations (0.66).

Table 3.E Impact factors of participants' own contribution per Euro public investment (R&D grants) in 2019-2020, divided according to target groups

Agency	Total	All enterprises	Large enterprises	SMEs	Knowledge institutions	Other
ANI	0.89	0.89	2.82	0.83	nr	nr
Bpifrance	1.21	na	na	na	na	na
CDTI	2.24	2.24	2.85	1.79	nr	nr
EAS	1.06	1.06	1.99	1.02	nr	nr
EI	1.78	1.78	3.00	1.50	nr	nr
FFG	2.35	2.41	3.18	1.43	0.65	0.66
HAMAG-BICRO	0.59	0.59	0.65	0.58	nr	nr
IF	0.57	0.57	nr	0.57	nr	nr
Innosuisse	nr	nr	nr	nr	na	nr
Innovation Norway	2.85	2.85	2.84	2.85	nr	nr
Luxinnovation	0.60	0.60	0.62	0.50	nr	nr
RVO	1.75	1.75	nr	1.75	nr	nr
SIEA	1.09	1.09	1.65	1.00	nr	nr
SPIRIT Slovenia	0.07	0.07	nr	0.07	nr	nr
VLAIO	1.42	1.42	1.80	1.16	nr	nr

3.3 Beneficiaries

The proper comparison of the R&D granting programmes needs the specification of unique beneficiaries according to the type of organisation. Sometimes, the number of beneficiaries does not correspond to the number of awarded grants due to the possibility to support more organisations with one grant. As can be seen in the Figures 3.D (2019) and 3.E (2020), the highest number of unique beneficiaries, awarded grants as well, was specified by Bpifrance. In 2019, the agency delivered 4,816 grants to more than 5,000 beneficiaries. Similar numbers were calculated for the year 2020.

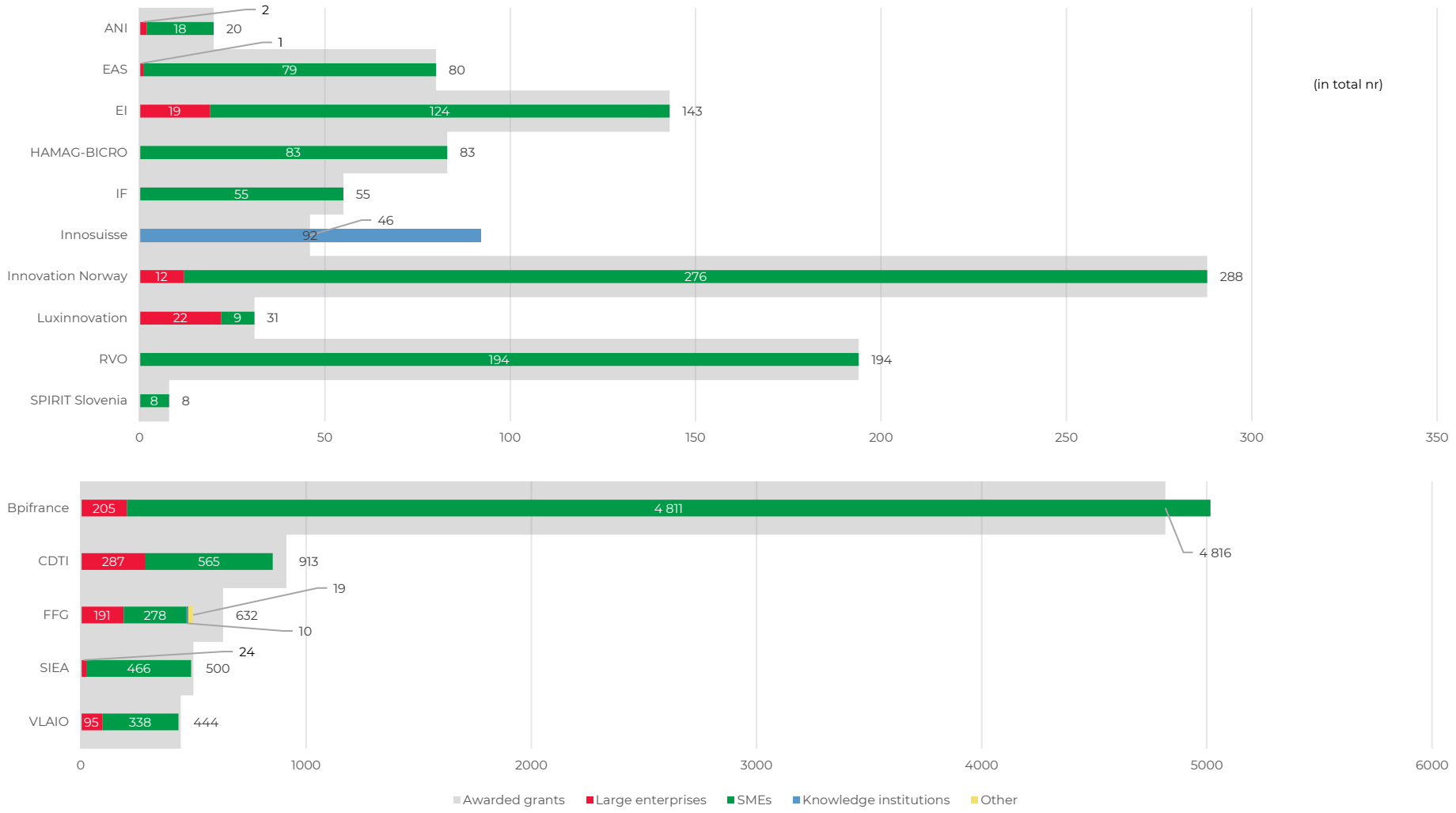


Figure 3.D Total number of awarded grants and unique beneficiaries divided according to target groups (R&D grants) in 2019 – smaller and larger budgets

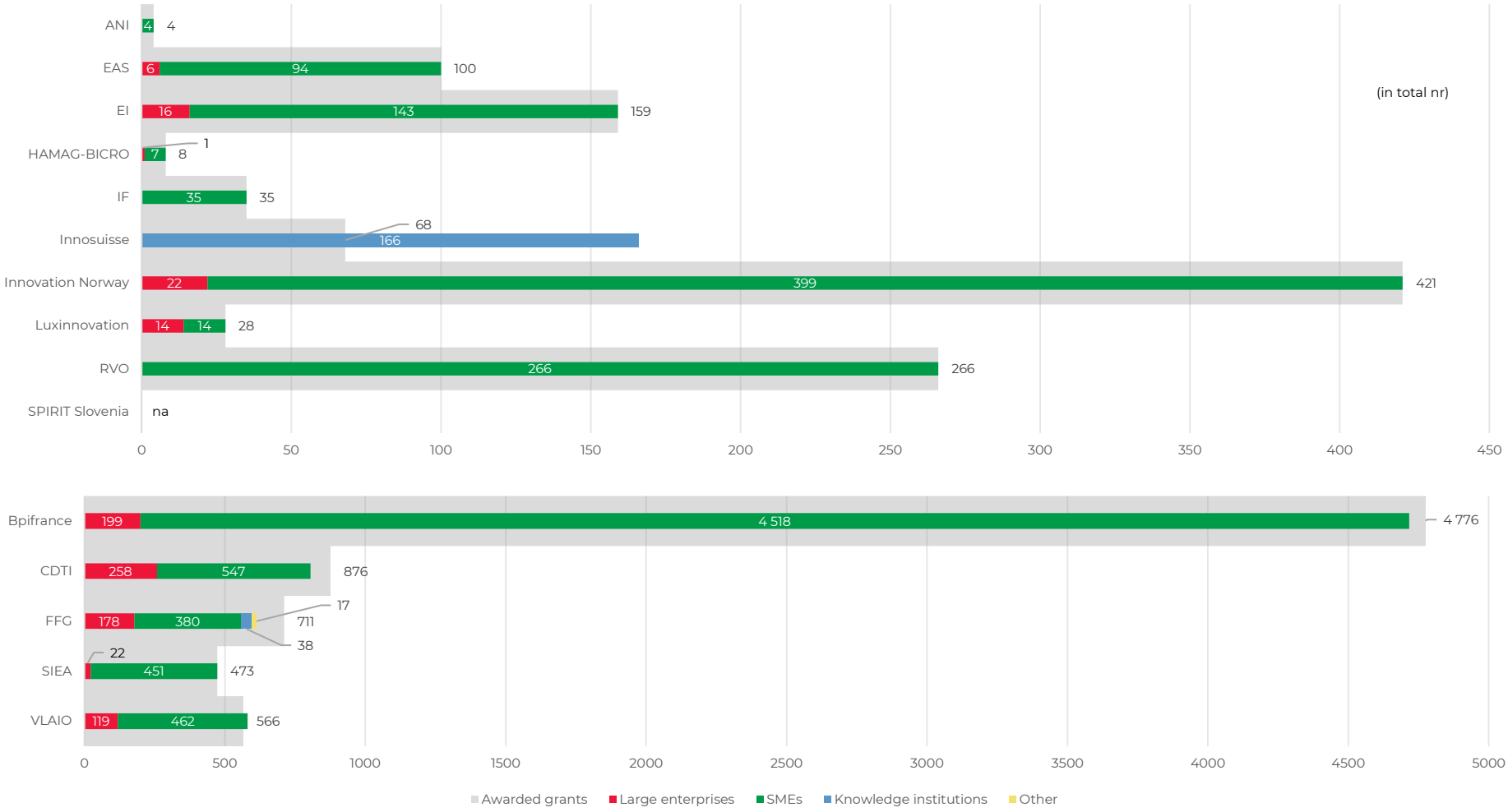


Figure 3.E Total number of awarded grants and unique beneficiaries divided according to target groups (R&D grants) in 2020 – smaller and larger budgets

The highest average size of the grants (in terms of contracted budget per grant) in 2019-2020 was calculated for ANI (514,697 euro). This means that on average ANI delivered grants in the amount of more than 510,000 euro. In this 2-year period, a small number of projects were financed, of which the Seals of Excellence stand out, covering individual budgets of around 1.5 million euros. Other significant average grants were awarded by SIEA (442,950 euro) and VLAIO (403,526 euro). All the results are specified in Figure 3. F.

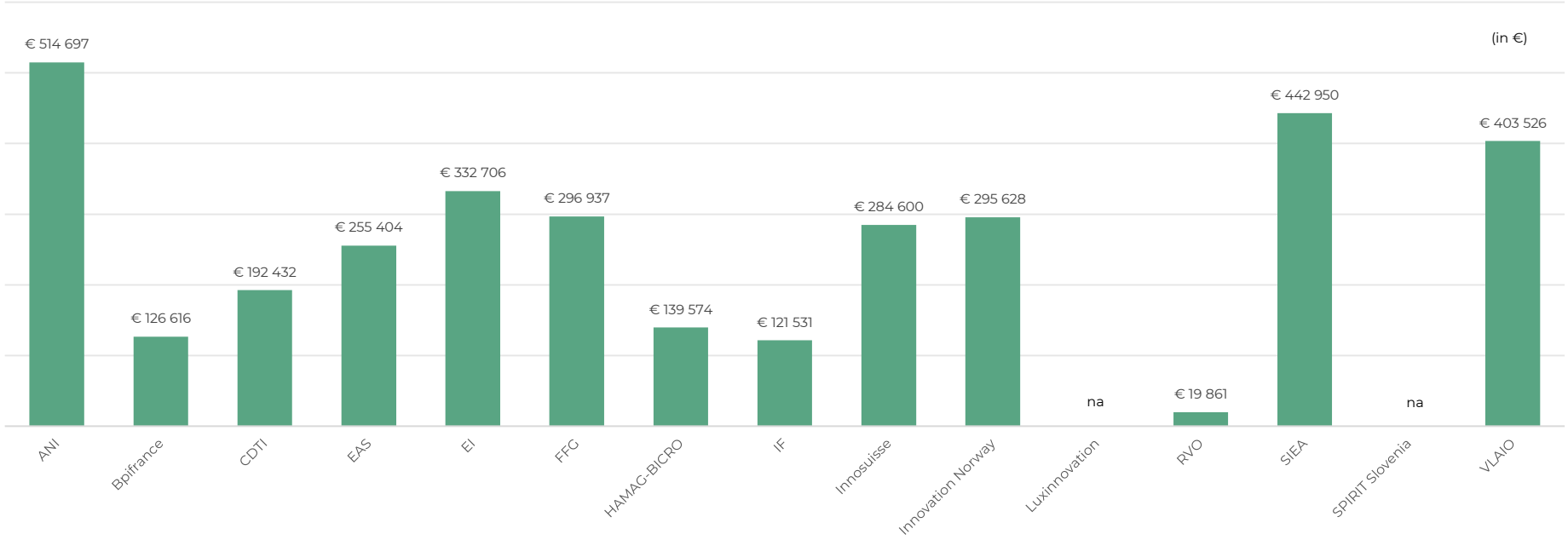


Figure 3.F Average size of the R&D grants (in terms of contracted budget per grant) in 2019-2020

The theory of innovation systems puts the importance of small and medium-sized enterprises (SMEs) at the forefront. These organizations most often come to market with new ideas because it is a necessity for them to survive. Hence, the 4th Benchmark report compares the importance of SMEs in the R&D granting programmes of relevant agencies. Figure 3.G consists of two types of data – the share of SMEs on all organisations (percentage based on numbers) and the share of SMEs on total budget (percentage based on euros). In IF, RVO and SPIRIT Slovenia, all the R&D grants go to SMEs. On the other hand, in Luxembourg (Luxinnovation), the share of SMEs on organisations is less than 40 % and the share of SMEs on budget is even small – less than 20 %.

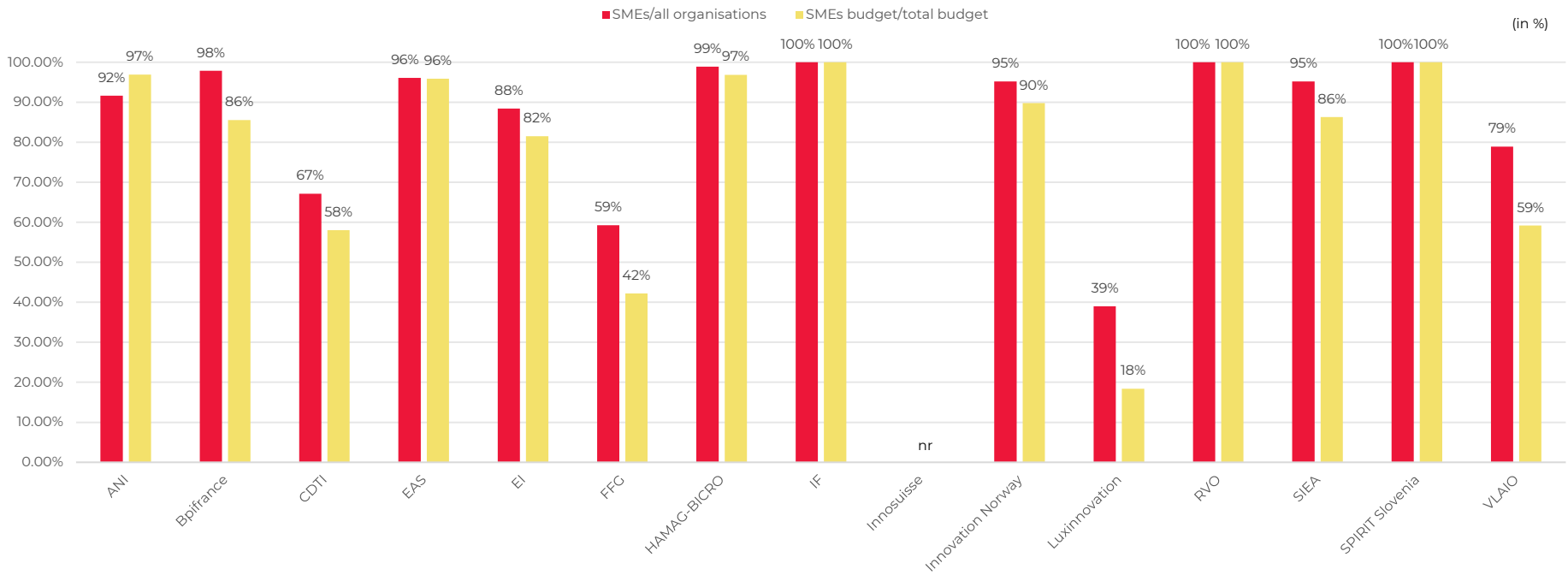


Figure 3.G SMEs: number of SME beneficiaries as a share in the total number of unique beneficiaries; contracted budget to SMEs, as a share in total contracted budget, 2019-2020

* Innosuisse: Grants for research institutions only.

3.4 Project implementation

The analysis of the project implementation for R&D granting is based on awarded grants, active projects and closed projects. The results of this analysis are presented in the Figure 3.H. While Bpifrance dominates in terms of awarded grants in both years (4,816 grants in 2019 and 4,776 in 2020), FFG and VLAIO reported the highest numbers in terms of active projects. In 2019, FFG has 1,338 and VLAIO 1,137 projects in the status "active". In 2020, FFG has 1,437 and VLAIO 1,357 projects in the status "active". The highest numbers of closed projects were found in CDTI (762 in 2019 and 768 in 2020), followed by FFG (650 in 2019 and 632 in 2020).

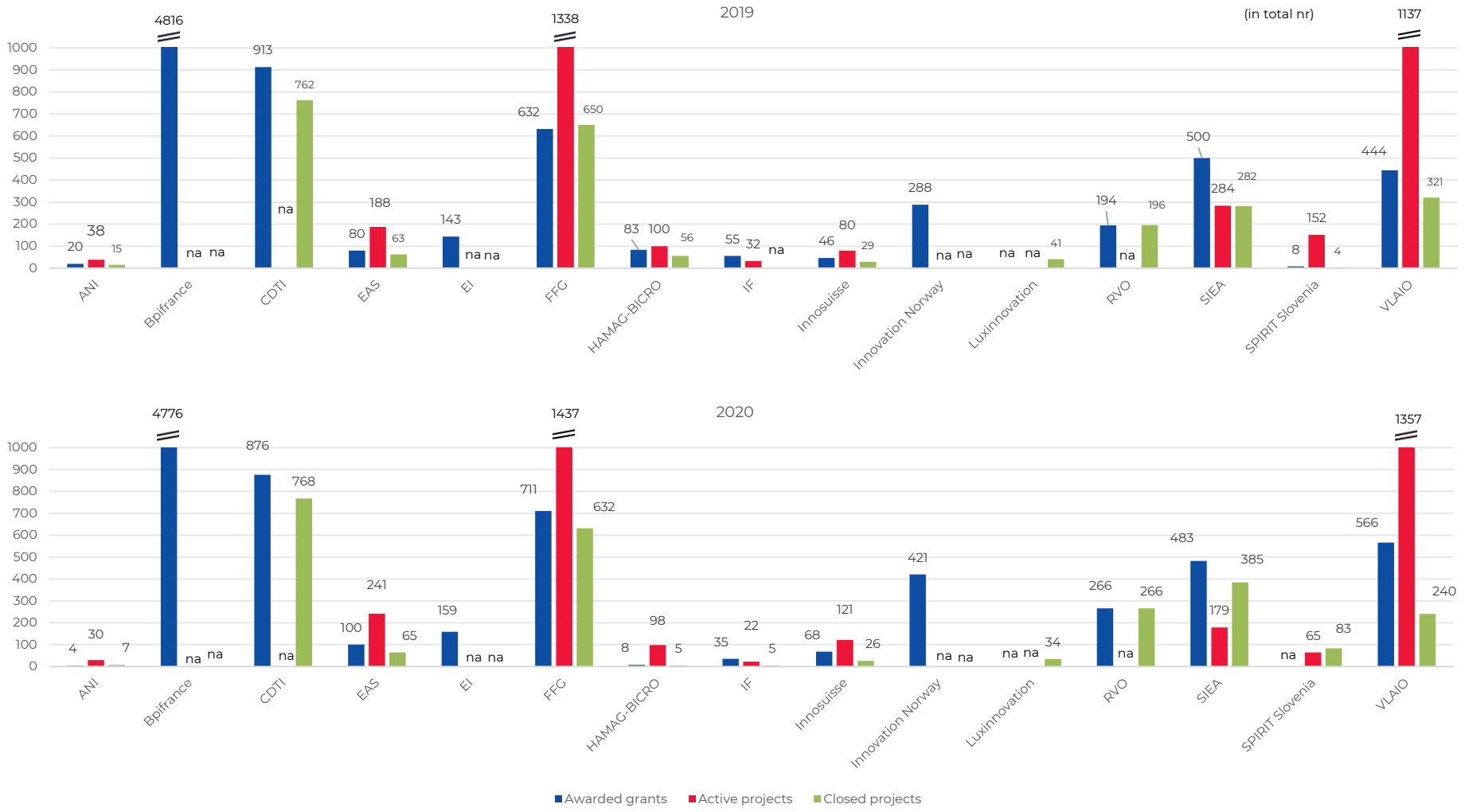


Figure 3.H Projects implementation in terms of awarded grants, active projects and closed projects (R&D grants) in 2019 and 2020

3.5 Application success rate and technical success rate

How the beneficiaries are successful in terms of proposals for subsidies is specified by the application success rate. In general, the application success rate is defined as the number of successful proposals divided by the total number of both successful and unsuccessful proposals. Figure 3. I shows the results of relevant agencies in this indicator in both observed years. While all the proposals to Luxinnovation succeeded in 2019 (also about 97 % of them in 2020), the lowest success rates were calculated for IF (13.99 % in 2019 and 10.87 % in 2020. Very high levels of successfulness also were identified for Bpifrance (98.79 % in 2019 and 99.71 % in 2020), EAS (96.39 % in 2019 and 99.01 % in 2020) and VLAIO (88.98 % in 2019 and 90.13 % in 2020). For other relevant agencies, the results are in range from 38.33 % to 80.71 %. A low success rate might be an indication of high popularity of the programme in the target group and/or limited budget for the higher number of projects contracting.

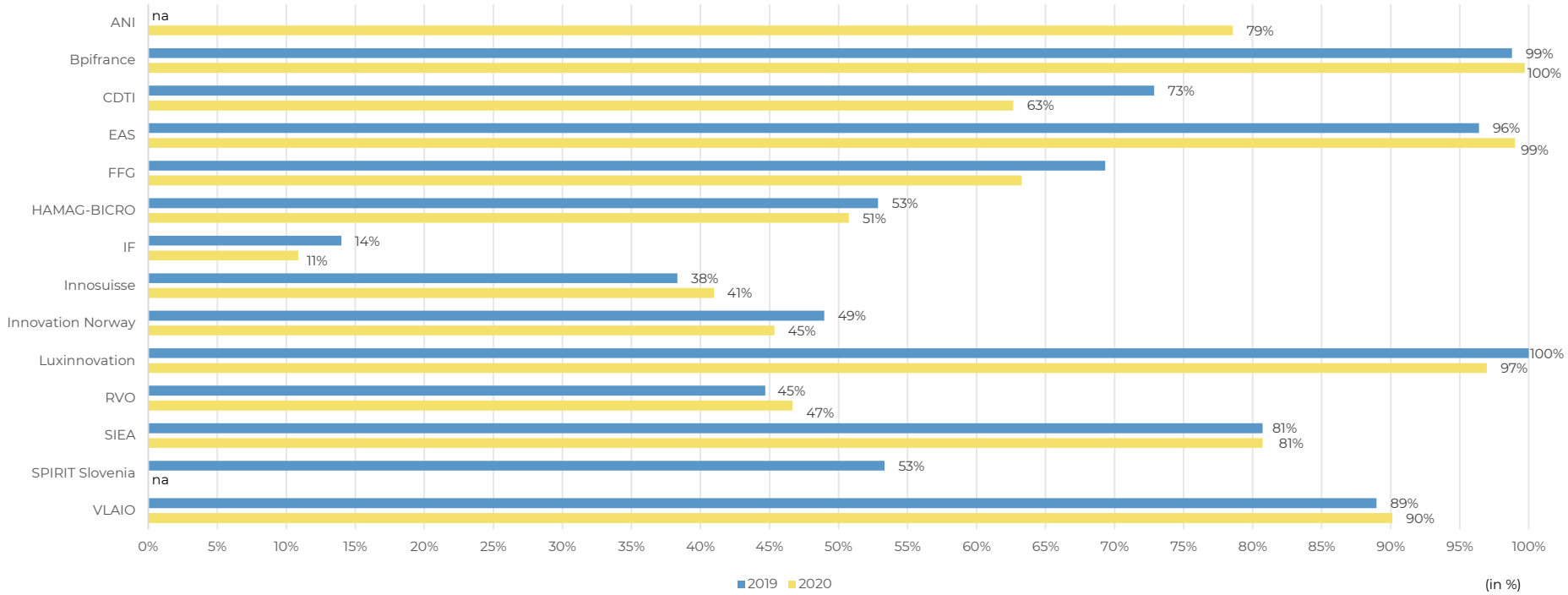


Figure 3.I Application success rate (R&D grants): number of successful proposals as a share in the total number of proposals (%) in 2019 and 2020 (agencies with available data)

Another important success rate metric is a technical success of projects. It is defined as the number of projects which achieved objectives as planned or beyond planned objectives as a share in the total number of closed projects. About a half of relevant agencies cannot deliver this data for R&D grants which makes the comparison challenging. From the available data shown in Figure 3. J, the best results in terms of technical success were achieved in SPIRIT Slovenia (both years 100 % success), followed by HAMAG-BICRO (100 % in 2020 and 98 % in 2019) and IF (100 % in 2020, for 2019 data not available). High success rate was also calculated for EAS (97 % in 2020 and 95 % in 2019).

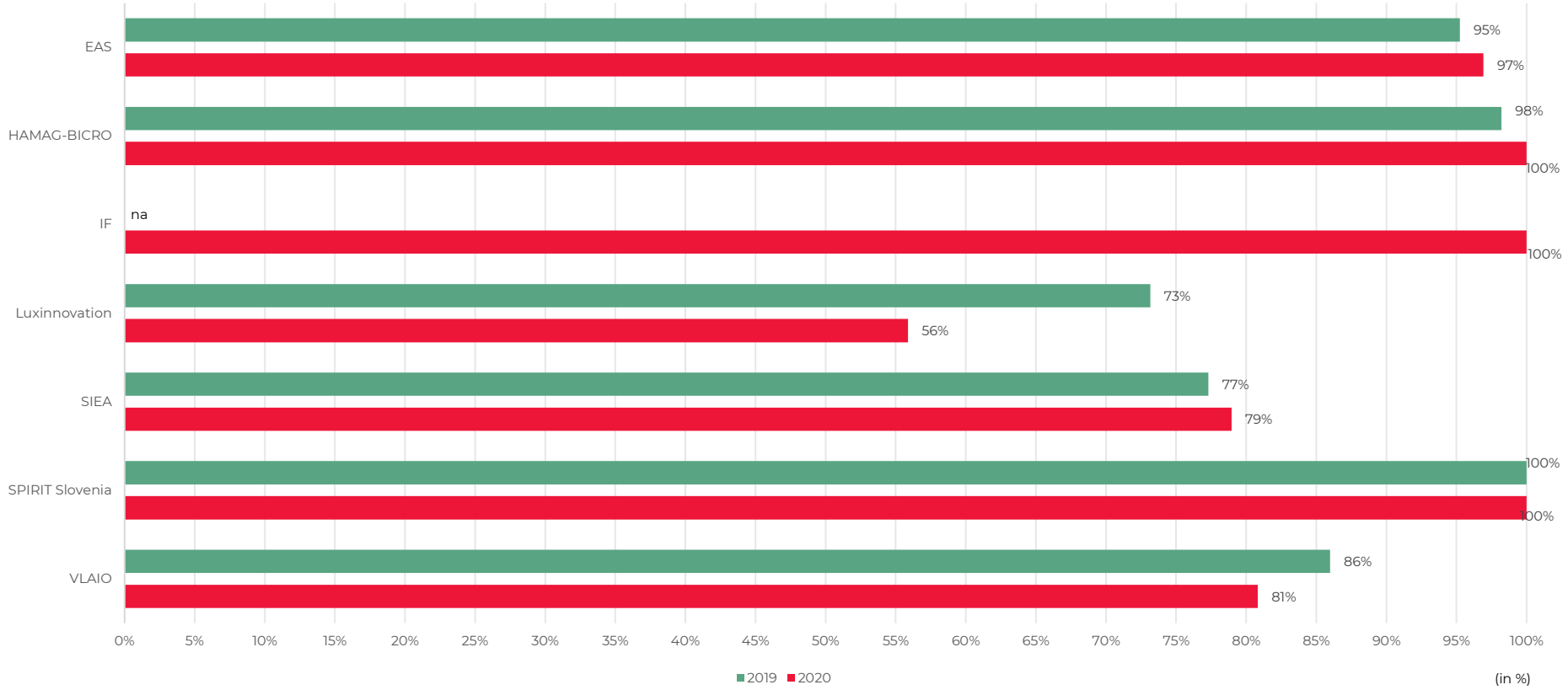


Figure 3.J Technical success rate: number of projects which achieved objectives as planned or beyond planned objectives as a share in the total number of closed projects (%) in 2019 and 2020 (agencies with available data)

4. COLLABORATIVE R&D GRANTS

4.1 Introduction

The second programme type in the 4th Benchmark report, Collaborative R&D grants, involves all subsidy schemes with focus on cooperation of beneficiaries – businesses and/or knowledge institutes. For this report, a total of 13 agencies delivered data for this instrument. All the programmes managed by involved agencies are specified in Table 4. A.

Similarly to R&D grants, the interpretation of collaborative R&D grants requires special attention to the differences in sectors and target groups, types of R&D, budgets, criteria and instrument design. The programme division, thematic focus, type of financing, source of financing and type of call are specified in Table 4. B. The type of research, project size, min-max % subsidy, min-max € subsidy, affiliation to SMEs, cooperation obligatory, project duration and additional notes are specified in Table 4. C.

Table 4.A Description of the Collaborative R&D grants programmes included in the 4th Benchmark report (part I)

Agency	Programme name	Programme description
ANI	Collaborative R&D Business Projects	Financial support for projects that take place between companies and other organizations in the R&D System, which lead to the creation of new products, processes or systems or to the significant improvement of existing ones.
	Collaborative R&D Business Projects - Suppliers Club	Financial support for collaborative projects of Portuguese companies and other organizations in the R&D System who integrate a network of suppliers of a nuclear large company. Promotes the integration and participation of Portuguese companies, especially SMEs, in international value chains, through the cooperation with companies with relevant roles in those value chains, ensuring better conditions of access to markets, technologies and competencies.
	Collaborative R&D Business Projects - International Partnerships	Financial support for R&D collaborative projects between companies and Polytechnic Institutions (Portuguese and European).
	Industrial R&D Projects on a European Scale	National co-funding of Portuguese companies and other organizations in the R&D System participating in the Eureka Network programmes.
	Mobilizing R&D Programmes	Financial support for strategic cross-thematic R&D projects that envisage the development of new products, processes or services which are highly intensive in technology and innovation, generate structural effects in value chains or sectors and enhance competitiveness in the participating entities and their internationalization.
	Collaborative R&D Demonstration Projects and Pilot Lines	Financial support for collaborative demonstration projects of advanced technologies and pilot lines following on from successfully completed R&D activities. Technologies that are not sufficiently validated, from a technological point of view, are tested in a real situation before a specialized audience to demonstrated the commercial, economic and technical advantages of the new technological solution.
Bpifrance	PSPC (Projets Structurants Pour la Compétitivité)	PSPC projects must involve at least two companies - SME, ETI or large group - and a research organisation. In general, several companies and research laboratories pool their skills and expertise to build the new products or services and technologies of tomorrow.
	Développement de filières	This programme aims to strengthen the competitiveness of strategic industries through innovation in order to guarantee the sustainability of the industrial fabric and meet market needs, while promoting the ecological and energy transition.
CDTI	Cooperative Business R&D Projects	Programme provides funding in the form of grants and soft loans, granted at an interest rate below market rates. The soft loan may have a non-reimbursable part (a grant). Up to 85 percent of eligible project costs may be financed.

Table 4.A (part II)

Agency	Programme name	Programme description
EAS	Development Voucher (arendusosak)	The development voucher is essentially a supporting measure for preliminary research. The results of the development voucher should enable the entrepreneur to gain comprehensive knowledge on whether their development idea has the potential necessary for continuing the development process in other stages.
	Innovation Voucher (innovatsiooniosak)	The innovation voucher enables a small and medium-sized entrepreneur (SME) who is cooperating with a higher education institute, test laboratory, or intellectual property experts, to develop innovative solutions for development obstacles, carry out tests with new materials, gather knowledge on technologies, conduct studies in intellectual property databases etc.
	Norway Grants "Green ICT" Programme 2014-2021	The programme "Green ICT" objective is increased value creation and sustainable growth in Estonia's private sector. Green ICT aims to stimulate and develop innovation-led long-term business cooperation between Estonia and Norway. For this bilateral cooperation projects are supported to enhance joint business ambitions and innovation.
EI	Innovation Partnership Feasibility	The Innovation Partnership Programme can provide up to 80% of the cost of research work towards the development of new and improved products, processes or services, or generate new knowledge and know-how.
	Innovation Partnership grant (Industrial Collaborative Research)	
	Innovation Partnership grant (Experimental Collaborative Development)	
	Disruptive Technologies Innovation Fund	The Disruptive Technologies Innovation Fund is seeing investment in the development and deployment of disruptive innovative technologies, on a commercial basis, targeted at tackling national and global challenges. The fund is driving collaboration between our world class research base and industry as well as facilitating enterprises to compete directly for funding in support of the development and adoption of these technologies and seeding a new wave of start-ups.
FFG	Kooperationsprojekte (TP)	Six specific FFG's programmes are focused on cooperative R&D funding.
	EUREKA-Projekt	
	ERA-Net Projekte	
	Kooperationsprojekt ASAP	
	FEMtech Forschungsprojekte (Talente)	
	Kooperationsprojekt ASAP	
HAMAG-BICRO	Fostering development of new products/services resulting from R&D activities (IRI1, IRI 2)	Fostering development of new products/services resulting from R&D activities programme supports the development of new products, services, technologies, and strengthening cooperation of business entities with scientific and research institutions through R&D activities (own R&D activities, contract research and collaborative research).
	Eureka	EUREKA projects are market-driven innovative R&D projects, run by an international consortium.
	Eurostars	Eurostars supports innovative international projects led by research and development-performing SMEs.
IF	Collaborative Grant Sheme Program	Collaborative Grant Scheme Program is designed to incentivize private sector companies and public sector R&D organizations to engage in joint R&D projects with the goal of creating new products and services, as well as innovative technologies with significant future impact and market potential.

Table 4.A (part III)

Agency	Programme name	Programme description
Innosuisse	R&D grants for collaborative innovation projects	The collaborative R&D programme is carried out jointly by domestic knowledge institutions and companies. The programme stimulates private sector companies (mostly SMEs) and public sector R&D institutions to create new products, services and processes, as well as innovative technologies with significant market potential and added value for the Swiss economy. Innosuisse funds only the project costs at the research institutions and the companies have to contribute at least 50% of the total project costs. R&D collaborative grants are the most important instrument in the funding portfolio of Innosuisse.
RVO	SMEs Instrument Top Sectors: R&D Cooperation Projects	SMEs can apply for a subsidy on a collaborative to project to develop a new product, production process or service. The project involves at least two SMEs. Only costs made by SMEs are subsidized.
SPIRIT Slovenia	Demo-pilot projects - Part 1	Demo-pilot projects
	Demo-pilot projects - Part 2	Demo-pilot projects
TA ČR	ALFA (2011-2019)	These programmes are mainly focused on support for industrial technologies with market applications; and on support for the innovative potential of social sciences, humanities and arts. ALFA programme focused on broad bottom-up collaborative research grants support in: 1) Progressive technologies, materials and systems. 2) Energy sources, security and environment 3) Transportation. The DELTA programme focused on international cooperation with mainly non-EU countries. GAMA programme focused on Proof-of-Concept support. Programme EPSILON is also realized via broad bottom-up collaborative research grants in: 1) Knowledge economy 2) Energy and materials 3) Environment. BETA2 programme realized research via public tenders. The ZETA programme focuses on supporting cooperation between academia and companies by putting together students of MA and doctorate study programmes at universities and young research workers aged up to 35. The ETA programme aims for incorporation of social sciences and humanities into projects of applied research, experimental development and innovation. The KAPPA programme is financed by the EEA and Norway Grants, it mainly assumes the application of industrial research projects.
	DELTA (2014-2021)	
	GAMA (2014-2019)	
	EPSILON (2015-2026)	
	BETA2 (2017-2024)	
	ZÉTA (2017-2025)	
	ÉTA (2018-2023)	
	KAPPA (2019-2024)	
	THÉTA (2018-2025)	Thematic calls for energy, transportation and environmental research.
VLAIO	ICON	ICON programme aimes at building bridges between academic and industrial research.
	International Cooperative projects	Cooperative projects are research projects or development projects within the context of an European programme (Eureka, ERAnet).

Table 4.B Programme division, thematic focus, type of financing, source of financing and type of call specified for Collaborative R&D grants (part I)

Agency	Programme name	Research categories				Thematic focus			Type of financing				Source of financing			Type of call		
		Basic research	Industrial research	Experimental development	Other	Thematic call	Bottom-up	Other	Grant	Loan	Conditional loan	Other	ESIF	National	Other sources	Open call	Temporary call	Other
ANI	Collaborative R&D Business Projects		X	X			X		X				X				X	
	Collaborative R&D Business Projects - Suppliers Club		X	X		X			X				X				X	
	Collaborative R&D Business Projects - International Partnerships		X	X			X		X				X				X	
	Industrial R&D Projects on a European Scale		X	X			X		X				X			X		
	Mobilizing R&D Programmes		X	X			X		X				X				X	
	Collaborative R&D Demonstration Projects and Pilot Lines		X	X			X		X				X				X	
Bpifrance	PSPC (Projets Structurants Pour la Compétitivité)	X	X	X			X		X		X	Mix of a grant + repayable advance		X			X	
	Développement de filières				Creation of shared industrial units or service platforms enabling companies in the same sector to benefit from access to open resources			X	X		X	Mix of a grant + repayable advance		X			X	
CDTI	Cooperative Business R&D Projects			X			X			X			X			X		

Table 4.B (part II)

Agency	Programme name	Research categories				Thematic focus			Type of financing				Source of financing			Type of call		
		Basic research	Industrial research	Experimental development	Other	Thematic call	Bottom-up	Other	Grant	Loan	Conditional loan	Other	ESIF	National	Other sources	Open call	Temporary call	Other
EAS	Development Voucher (arendusosak)		X	X			X		X				X			X		
	Innovation Voucher (innovatsiooniosak)		X	X			X		X				X			X		
	Norway Grants "Green ICT" Programme 2014-2021		X	X		X		Green Industry Innovation, ICT and Welfare Technology	X						X		X	
EI	Innovation Partnership Feasibility				X		X		X				X				X	
	Innovation Partnership grant (Industrial Collaborative Research)		X				X		X				X				X	
	Innovation Partnership grant (Experimental Collaborative Development)			X			X		X				X				X	
	Disruptive Technologies Innovation Fund		X			X			X					X			X	
FFG	Kooperationsprojekte (TP)		X			X			X					X			X	
	EUREKA-Projekt			X			X		X					X		X		
	ERA-Net Projekte		X			X			X					X			X	
	Kooperationsprojekt ASAP		X			X			X					X			X	
	FEMtech Forschungsprojekte (Talente)		X			X			X					X			X	
	Kooperationsprojekt ASAP	X				X			X					X			X	

Table 4.B (part III)

Agency	Programme name	Research categories				Thematic focus			Type of financing				Source of financing			Type of call		
		Basic research	Industrial research	Experimental development	Other	Thematic call	Bottom-up	Other	Grant	Loan	Conditional loan	Other	ESIF	National	Other sources	Open call	Temporary call	Other
HAMAG-BICRO	Fostering development of new products/services resulting from R&D activities (IRI1, IRI 2)		X	X		X			X				X	X			X	
	Eureka		X	X			X		X					X			X	
	Eurostars		X	X			X		X					X			X	
IF	Collaborative Grant Sheme Program		X				X		X					X		X		
Innosuisse	R&D grants for collaborative innovation projects		X	X			X		X					X		X		
RVO	SMEs Instrument Top Sectors: R&D Cooperation Projects		X			X			X					X			X	
SPIRIT Slovenia	Demo-pilot projects - Part 1			X		X			X				X				X	
	Demo-pilot projects - Part 2			X		X			X				X				X	
TA ČR	ALFA (2011-2019)		X	X			X		X					X			X	
	DELTA (2014-2021)		X	X			X		X					X			X	
	GAMA (2014-2019)		X	X			X		X					X			X	
	EPSILON (2015-2026)		X	X			X		X					X			X	
	BETA2 (2017-2024)		X	X			X					X		X		X		
	ZÉTA (2017-2025)		X	X			X		X					X			X	
	ÉTA (2018-2023)		X	X			X		X					X			X	
	KAPPA (2019-2024)		X	X			X		X					X			X	
	THÉTA (2018-2025)		X	X		X	X		X					X			X	
VLAIO	ICON	X	X	X			X		X						regional		X	
	International Cooperative projects		X	X		X	X		X						regional	X	X	

Table 4.C Type of research, project size, % of subsidy, total subsidy, focus on SME, cooperation obligatory, project duration and additional notes specified for Collaborative R&D grants (part I)

Agency	Programme name	Type of research	Project size (€; min-max)	Min-Max % subsidy (% of reimbursement; min-max)	Min-Max subsidy (€ of reimbursement; min-max)	SME beneficiaries only	Cooperation obligatory	Max months to complete the project	Additional notes
ANI	Collaborative R&D Business Projects	Creation of new products or processes or improving existing ones	150 000 - no limit	25% - 80%	no limit - no limit	no	yes (both)	36	
	Collaborative R&D Business Projects - Suppliers Club	Creation of new products or processes or improving existing ones	150 000 - no limit	25% - 80%	no limit - no limit	no	yes (both)	36	
	Collaborative R&D Business Projects - International Partnerships	Creation of new products or processes or improving existing ones	no limit - no limit	25% - 80%	no limit - no limit	no	yes (both)	36	
	Industrial R&D Projects on a European Scale	Creation of new products or processes or improving existing ones	150 000 - no limit	25% - 80%	no limit - no limit	no	yes (both)	36	
	Mobilizing R&D Programmes	Creation of new products or processes or improving existing ones with value chain or multisectoral level impact	3 000 000 - 10 000 000	25% - 80%	no limit - no limit	no	yes (both)	36	
	Collaborative R&D Demonstration Projects and Pilot Lines	Technical demonstration	150 000 - no limit	25% - 66.25%	no limit - no limit	no	yes (both)	18	

Table 4.C (part II)

Agency	Programme name	Type of research	Project size (€; min-max)	Min-Max % subsidy (% of reimbursement; min-max)	Min-Max subsidy (€ of reimbursement; min-max)	SME beneficiaries only	Cooperation obligatory	Max months to complete the project	Additional notes
Bpifrance	PSPC (Projets Structurants Pour la Compétitivité)	Industrial Research Experimental development	5 000 000 - 50 000 000	25 % - 45 %	1 250 000 - 25 000 000	no	yes (with at leats 2 private companies + 1 public research organization)	36 - 84	
	Développement de filières	Industrial Research Experimental development	Several millions	Aid in the form of a mix of subsidy (half of the aid) and repayable advance (half of the aid) - Up to 50% for innovation cluster	> 2 MEUR	no	The project is preferably led by a project company or possibly by a structure federating several companies, or even an entity representing the companies in the sector (such as a professional federation, an association, a cluster, etc.).	36	Seed phase of maximum 5 years and a business plan demonstrating financial autonomy from public support afterwrads.
CDTI	Cooperative Business R&D Projects	Applied	Average budget: 450 000 per participant Minimum budget: 175 000	Maximum aid: 85% budget Non-reimbourable aid: 20% - 30% over total aid	n.a.	no	yes	36	Partially reimboursable aid with soft loans
EAS	Development Voucher (arendusosak)	Feasibility	no limit - no limit	0.7	no limit - 35 000	yes	no	18 (4 months min duration)	Beneficiaries - Small or medium sized companies co-operating with knowlegde institutions, testing centres or experts Expected outcome - Prototyping; technological development or testing of components; industrial experiment or feasibility study; legal counseling, study or registration of patent, model or industrial design; accreditation, certification, standardization etc Pre-counseling - Advised, but not mandatory

Table 4.C (part III)

Agency	Programme name	Type of research	Project size (€; min-max)	Min-Max % subsidy (% of reimbursement; min-max)	Min-Max subsidy (€ of reimbursement; min-max)	SME beneficiaries only	Cooperation obligatory	Max months to complete the project	Additional notes
EAS	Innovation Voucher (innovatsiooniosak)	Feasibility	no limit - no limit	0.8	no limit - 6 000	yes	no	12 (4 months min duration)	Beneficiaries - Small or medium sized companies co-operating with knowlegde institutions, testing centres or experts Expected outcome - Prototyping; technological development or testing of components; industrial experiment or feasibility study; legal counseling, study or registration of patent, model or industrial design; accreditation, certification, standardization etc Pre-counseling - No
	Norway Grants "Green ICT" Programme 2014-2021	Development	400 000 - no limit	25% - 50%	200 000 - 1 250 000	no	no	36	Beneficiaries - Companies in co-operation with Estonian or Norweigan companies Expected outcome - Supports cooperation, increases competitiveness and decreases environmental impact in the following sectors: green industry innovation, ICT and welfare technologies Pre-counseling - Advised, but not mandatory
EI	Innovation Partnership Feasibility	Feasibility	no limit - 9 000	no limit - 100%	no limit - 9 000	no	yes	n.a.	
	Innovation Partnership grant (Industrial Collaborative Research)	Industrial Collaborative Research	n.a.	65% - 80%	no limit - no limit (assessed on a one-by-one basis; normally 100 000 for early stage, 200 000 for all other)	no	yes	6 - 24 (more in exceptional circ)	
	Innovation Partnership grant (Experimental Collaborative Development)	Experimental Collaborative Development	n.a.	40% - 60%	no limit - no limit (assessed on a one-by-one basis; normally 100 000 for early stage, 200 000 for all other)	no	yes	6 - 24 (more in exceptional circ)	
	Disruptive Technologies Innovation Fund	Industrial research or Experimental development	no limit - 1 500 000	40% - 50%	n.a.	no	yes	min 36	

Table 4.C (part IV)

Agency	Programme name	Type of research	Project size (€; min-max)	Min-Max % subsidy (% of reimbursement; min-max)	Min-Max subsidy (€ of reimbursement; min-max)	SME beneficiaries only	Cooperation obligatory	Max months to complete the project	Additional notes
FFG	Kooperationsprojekte (TP)	Usually industrial research, in few cases experimental development	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	
	EUREKA-Projekt	Eureka projects aim to develop advanced civilian products, processes or services. experimental development	nr	40% - 60%	n.a.	no	yes (at least 2 companies; coorperation with science only as subcontrators)	12	
	ERA-Net Projekte	Depending on the call, different topics are addressed. These are always trans-national calls whose topics are in the common interest of different funding agencies	nr	Minimum funding is based on the instrument guide and organization classification - Maximum funding is based on the instrument guide and organization classification (usually R&D state aid funding intensities; research organisations in non-economic activies limited to 85%)	Minimum funding is based on the instrument guide and organization classification - Maximum funding is based on the instrument guide and organization classification (usually 100 000 - 2 000 000)	no	yes (usually both)	n.a.	
	Kooperationsprojekt ASAP	Individual Industrial Research Projects | Cooperative Industrial Research and Experimental Development Projects | Oriented Basic Research | Exploratory Projectsń	nr	usually R&D state aid funding intensities; research organisations in non-economic activies limited to 85%. Minimum funding is based on the instrument guide and organization classification / Maximum funding is based on the instrument guide and organization classification.	Minimum funding is based on the instrument guide and organization classification - Maximum funding is based on the instrument guide and organization classification (usually 100 000 - 2 000 000)	no	yes (both)	36	
	FEMtech Forschungsprojekte (Talente)	Individual and cooperative R&D projects, industrial research	nr	Minimum funding is based on the instrument guide and organization classification - Maximum funding is based on the instrument guide and organization classification (usually R&D state aid funding intensities; research organisations in non-economic activies limited to 85%)	1 - 300 000	no	yes (both)	36	
HAMAG-BICRO	Fostering development of new products/services resulting from R&D activities (IRI1, IRI 2)	Industrial research Experimental development	163 000 - 7 000 000 (IRI1) 2 000 000 - 7 000 000 (IRI2)	35% - 100%, for SMEs 25% - 100%, for Large companies	25 000 - 7 000 000 (IRI1) 132 000 - 3 000 000 (IRI2)	no	no (both type of cooperation)	48	

Table 4.C (part V)

Agency	Programme name	Type of research	Project size (€; min-max)	Min-Max % subsidy (% of reimbursement; min-max)	Min-Max subsidy (€ of reimbursement; min-max)	SME beneficiaries only	Cooperation obligatory	Max months to complete the project	Additional notes
HAMAG-BICRO	Eureka	Industrial research Experimental development	126 000 - 335 000 (Cro part)	50% - 60%, for SMEs 40% for Large companies	no limit - 200 000	no	yes (private-private; PRO partners could be extern.a.l partners only - not directly)	36	
	Eurostars	Industrial research Experimental development	175 000 - 560 000 (Cro part)	50% - 60%, only SMEs	no limit - 200 000	yes	yes (private-private; PRO partners could be extern.a.l partners only - not directly)	36	
IF	Collaborative Grant Sheme Program	Industrial research	no limit - no limit	0% - 70% for micro and small enterprises and 0% - 60% for medium-sized enterprises	no limit - 300 000	yes	no	24	
Innosuisse	R&D grants for collaborative innovation projects	Industrial development Innovation projects	100 000 - 4 100 000	20% - 50%	56 000 - 1 600 000	no	yes (public-private)	no limit	Innosuisse Funding inkl. Overhead
RVO	SMEs Instrument Top Sectors: R&D Cooperation Projects (MKB Innovatiesubsidie Topsectoren (MIT) - R&D samenwerkingsprojecten)	Industrial and experimental R&D	143 000 - no limit	0% - 35%	50 000 - 350 000	yes	yes (private - private collaboration obligatory; both SMEs)	24	Tendering; ranking
SPIRIT Slovenia	Demo-pilot projects - Part 1	Research and development	875 000 - 5 000 000	25% - 45%	500 000 - 2 500 000	also large sized companies	yes (private-private)	36	
	Demo-pilot projects - Part 2	Research and development	no limit - no limit	25% - 45%	no limit - no limit	also large sized companies	yes (private-private)	36 (due to the covid crisis, the projects could be extended by an additional 12 months)	
TA ČR	ALFA (2011-2019)	Applied research	53 149 - 2 567 330	22.5% - 91.1%	33 562 - 1 685 336	n.a.	no	73	
	DELTA (2014-2021)	Applied research	106 391 - 1 182 637	47.5% - 74.0%	50 536 - 871 457	n.a.	no	37	
	GAMA (2014-2019)	Applied research	69 314 - 933 400	0.55	38 122 - 933 400	n.a.	no	61	
	EPSILON (2015-2026)	Applied research	48 472 - 5 543 969	30.3% - 85%	€35,140–€2,721,585	n.a.	no	49	
	BETA2 (2017-2024)	Applied research	n.a.	1	n.a.	n.a.	no	n.a.	This project is applied research public procurement (public tenders) of ministries and other state bodies.

Table 4.C (part VI)

Agency	Programme name	Type of research	Project size (€; min-max)	Min-Max % subsidy (% of reimbursement; min-max)	Min-Max subsidy (€ of reimbursement; min-max)	SME beneficiaries only	Cooperation obligatory	Max months to complete the project	Additional notes
TA ČR	ZÉTA (2017-2025)	Applied research	35 854 - 419 950	44.9 % - 85%	30 476 - 355 702	n.a.	no	47	
	ÉTA (2018-2023)	Applied research	22 791 - 893 001	56.8% - 90%	18 233 - 712 385	n.a.	no	48	
	KAPPA (2019-2024)	Applied research	605 206 - 2 621 003	75% - 96%	527 554 - 2 337 914	n.a.	no	44	
	THÉTA (2018-2025)	Applied research	80 296 - 3 242 022	37% - 90%	62 570 - 2 201 360	n.a.	no	93	
VLAIO	ICON	Research and/or development	no limit - no limit	25% - 60% (for the companies; research institutes get 100%)	100 000 - 3 000 000	no	yes (at least 3 companies and 1 research institute)	36	
	International Cooperative projects	Research and/or development	no limit - no limit	25% - 60%	25 000 - 3 000 000	no	yes (both, at least 2 cooperating companies)	36	

4.2 Financial size

The total financial project size of Collaborative R&D grants programmes is shown in Figure 4.A (smaller budgets) and Figure 4.B (larger budgets). Similarly to R&D grants, the columns consist of the amount of funding contracted (from public sources) and beneficiaries' own contribution contracted (from private sources) in years 2019 and 2020. The highest total amount of money was contracted (from all sources) through the programmes of Bpifrance (about 762 mil. € in 2020, consisting of about 282 mil. € from public and 480 mil. € from private sources; and about 673 mil. € in 2019, consisting of about 229 mil. € from public and 444 mil. € from private sources), followed by Innosuisse (more than 308 mil. € in 2020, consisting of about 143 mil. € from public and 165 mil. € from private sources; and (about than 254 mil. € in 2019, consisting of about 116 mil. € from public and 138 mil. € from private sources). In comparison with other relevant agencies, CDTI, EAS, EI, IF, RVO and VLAIO have very small budgets for collaborative R&D grants.

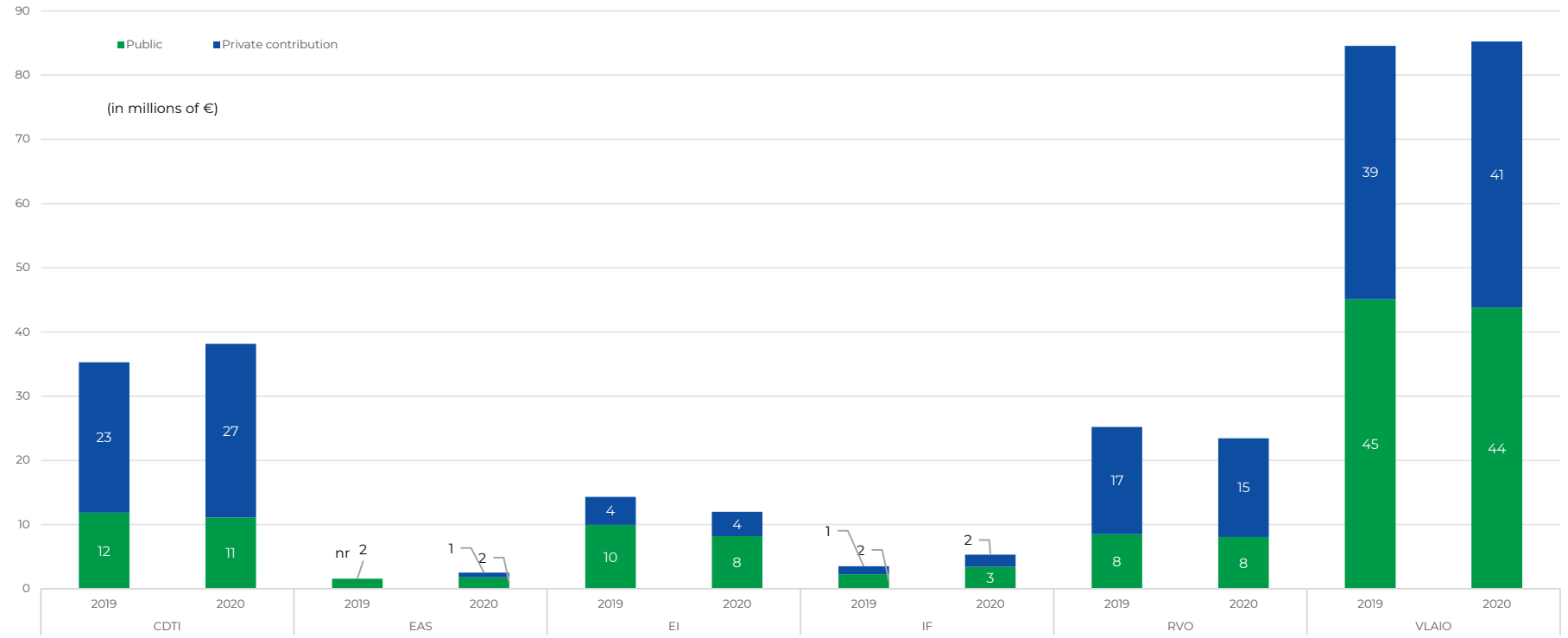


Figure 4.A Financial size of selected Collaborative R&D grants programmes (public contribution and participants' own contribution) in 2019 and 2020 – smaller budgets (millions of €)

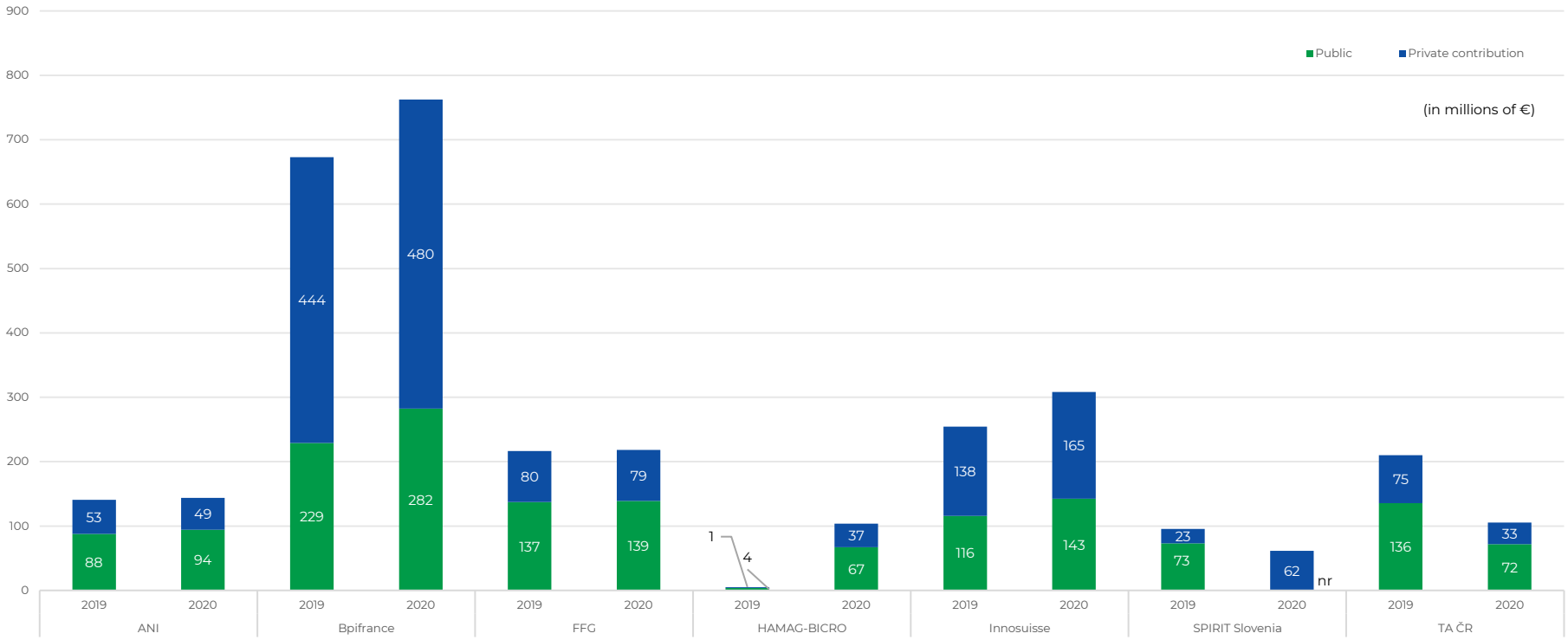


Figure 4.B Financial size of selected Collaborative R&D grants programmes (public contribution and participants' own contribution) in 2019 and 2020 – larger budgets (millions of €)

For Collaborative R&D grants, the highest shares on budgets (Table 4. D) were calculated for ANI (in total agency portfolio 86.75% in 2019 and 96.95% in 2020) and TA ČR (63% in 2019 and 38.93% in 2020). On the other hand, CDTI (in total agency portfolio 1.40% in 2019 and 1.35% in 2020) and RVO (2.02% in 2019 and 1.84% in 2020) specified very low ratios in these statistics.

Table 4.D Share of contracted budget for Collaborative R&D grants in total agency innovation programme portfolio and agency innovation programmes in 2019 and 2020

Agency	Share of contracted budget in total agency programme portfolio in 2019 (%)	Share of contracted budget in agency programme portfolio incl. in benchmarking in 2019 (%)	Share of contracted budget in total agency programme portfolio in 2020 (%)	Share of contracted budget in agency programme portfolio incl. in benchmarking in 2020 (%)
ANI	86.75%	88.58%	96.95%	98.91%
Bpifrance	27.59%	27.52%	29.72%	31.58%
CDTI	1.40%	6.37%	1.35%	6.15%
EAS	7.67%	7.67%	6.11%	6.11%
EI	na	11.31%	na	13.15%
FFG	23.78%	33.94%	22.37%	36.77%
HAMAG-BICRO	nr	45.85%	nr	88.01%
IF	16.36%	23.91%	34.71%	37.18%
Innosuisse	52.96%	87.36%	48.67%	83.57%
RVO	2.02%	4.57%	1.84%	4.79%
SPIRIT Slovenia	na	91.80%	na	na
TA ČR	63.00%	69.21%	38.93%	100.00%
VLAIO	11.96%	15.10%	11.50%	14.68%

Next figure (Figure 4.C) focuses on the impact factor specifying the extent to which grants foster private and other public investments in collaborative R&D. The highest average impact factor was calculated for Collaborative grants of CDTI (2.19). This means that for each euro contracted from the CDTI's public funding schemes the beneficiaries involved in the collaboration contributed by 2.19 euros. High impact factors (higher than 1) were also found in the data from RVO, Bpifrance and Innosuisse. The data for Collaborative R&D grants are quite stable between 2019 and 2020.

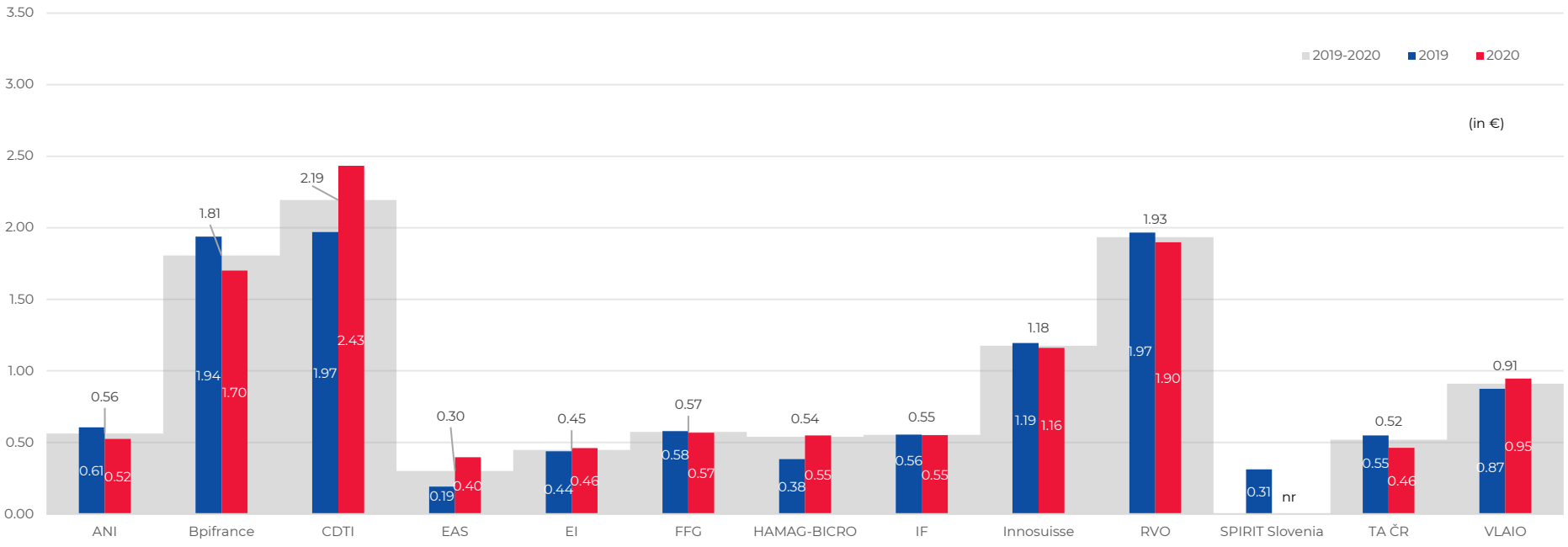


Figure 4.C Impact factors of participants' own contribution per Euro public investment (Collaborative R&D grants) in 2019, in 2020 and in 2019-2020

Again, the average impact factors were also calculated at the level of target groups – all target groups, all enterprises, large enterprises, SMEs, knowledge institutions and other target groups (Table 4.E). For example, one euro of public support from the R&D grants programmes in Spain (CDTI) ensured 2.72 euros from the large enterprises' private sources. Similarly, one euro of public support in Netherlands (RVO) ensured 1.93 euros from SMEs' private sources. The highest impact factor for knowledge institutions was found in ANI (0.42) and other organisations in FFG (0.53).

Table 4.E Impact factors of participants' own contribution per Euro public investment (Collaborative R&D grants) in 2019-2020, divided according to target groups

Agency	Total	All enterprises	Large enterprises	SMEs	Knowledge institutions	Other
ANI	0.56	0.68	0.95	0.56	0.42	0.50
Bpifrance	1.81	na	na	na	na	na
CDTI	2.19	2.19	2.72	1.79	nr	nr
EAS	0.30	0.30	nr	0.30	nr	nr
EI	0.45	0.45	0.54	0.33	nr	nr
FFG	0.57	0.84	1.25	0.47	0.33	0.53
HAMAG-BICRO	0.54	0.59	1.01	0.48	0.33	nr
IF	0.55	0.55	nr	0.55	nr	nr
Innosuisse	1.18	na	na	na	na	na
RVO	1.93	1.93	nr	1.93	nr	nr
SPIRIT Slovenia	1.15	1.15	nr	nr	nr	nr
TA ČR	0.52	1.10	1.38	0.95	0.25	0.34
VLAIO	0.91	1.06	1.30	0.87	nr	nr

4.3 Beneficiaries

As can be seen in the Figures 4.D (average 2019-2020 with awarded grants, unique participants and unique beneficiaries),4.E (2019 with awarded grants and participants divided according to target groups) and 4.F (2020 with awarded grants and participants divided according to target groups), the highest number of unique beneficiaries was specified by Innosuisse. In 2019, the agency delivered 345 grants to 509 beneficiaries and 1,060 participants and in 2020 404 grants to 619 beneficiaries and 1216 participants. High number of participants and beneficiaries was also found in the data of FFG. In 2019, the agency awarded 300 grants to 688 beneficiaries and 721 participants, and in 2020, 288 grants to 584 beneficiaries and 612 participants.

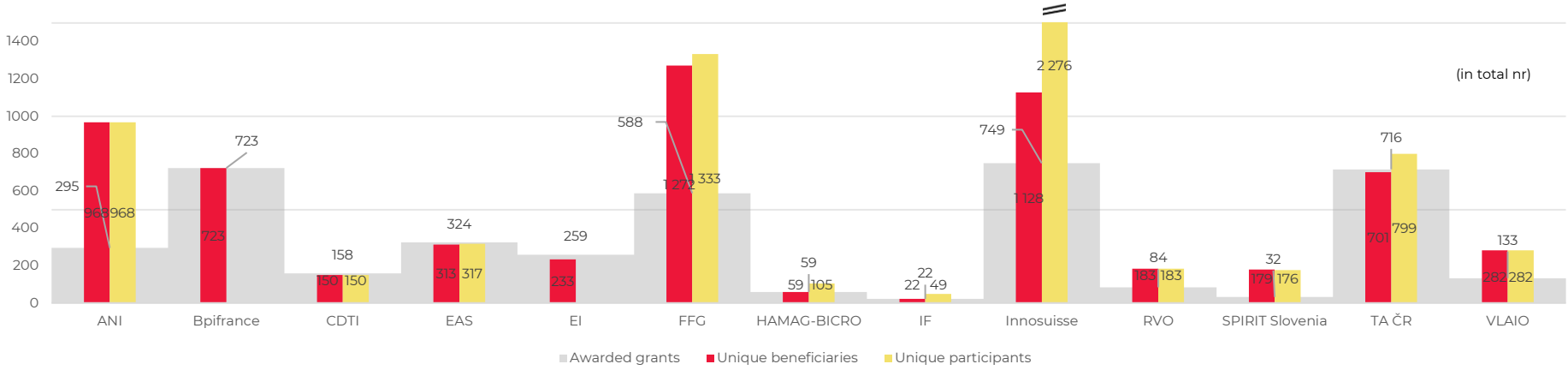


Figure 4.D Total number of awarded grants, unique beneficiaries and unique participants (Collaborative R&D grants) in 2019-2020

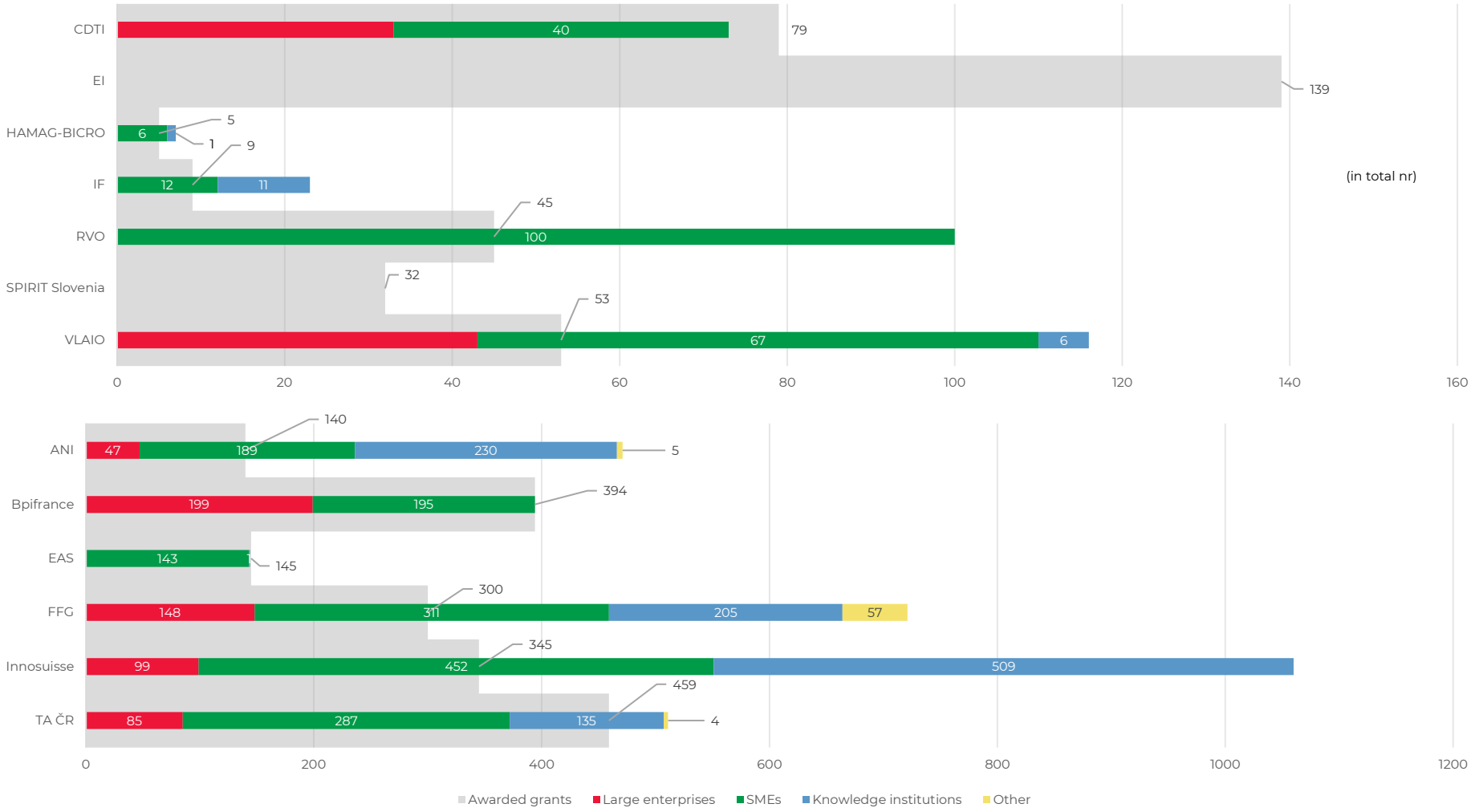


Figure 4.E Total number of awarded grants and unique participants divided according to target groups (Collaborative R&D grants) in 2019 – smaller and larger budgets (agencies with available data)

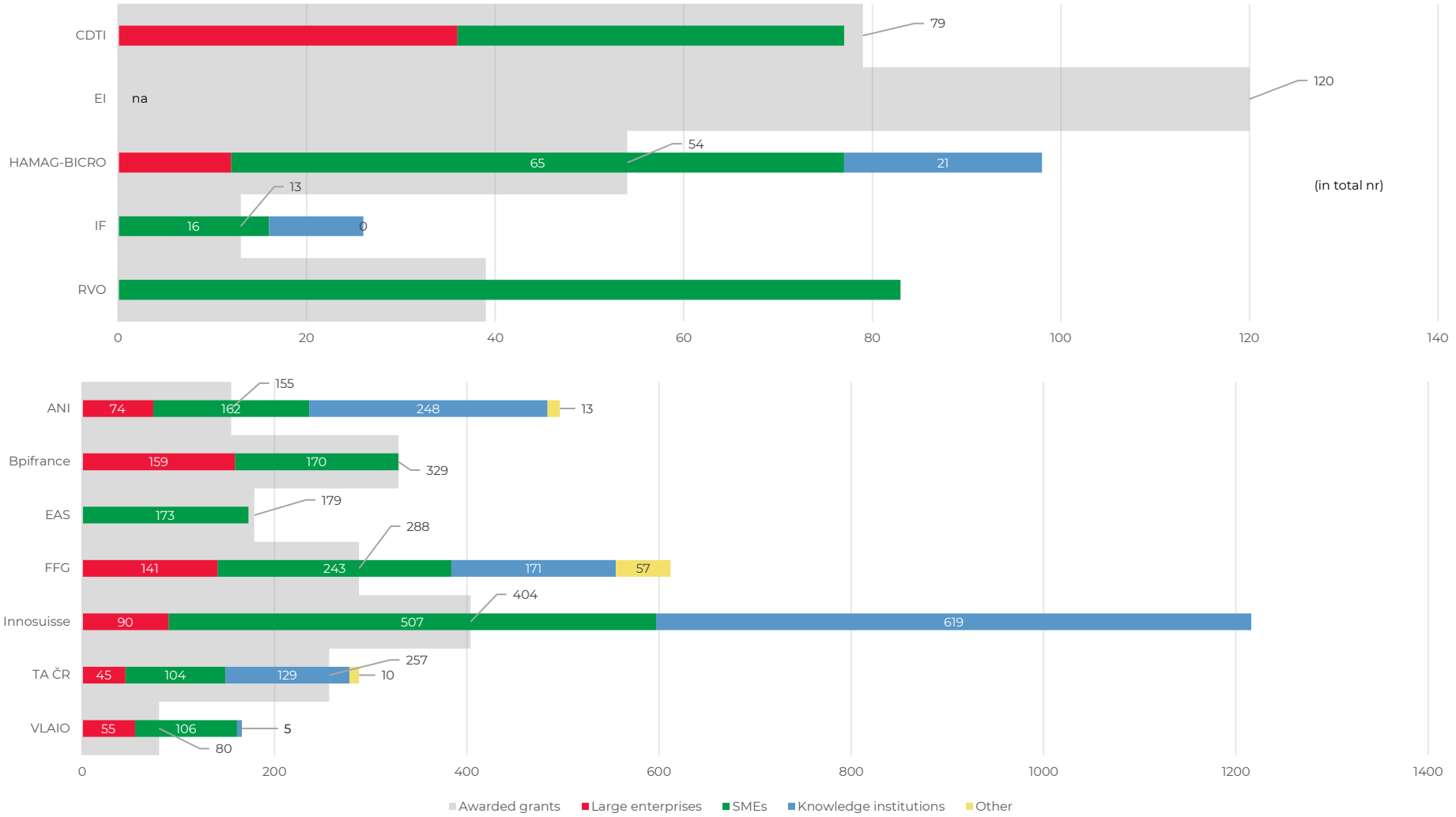


Figure 4.F Total number of awarded grants and unique participants divided according to target groups (Collaborative R&D grants) in 2020 – smaller and larger budgets (agencies with available data)

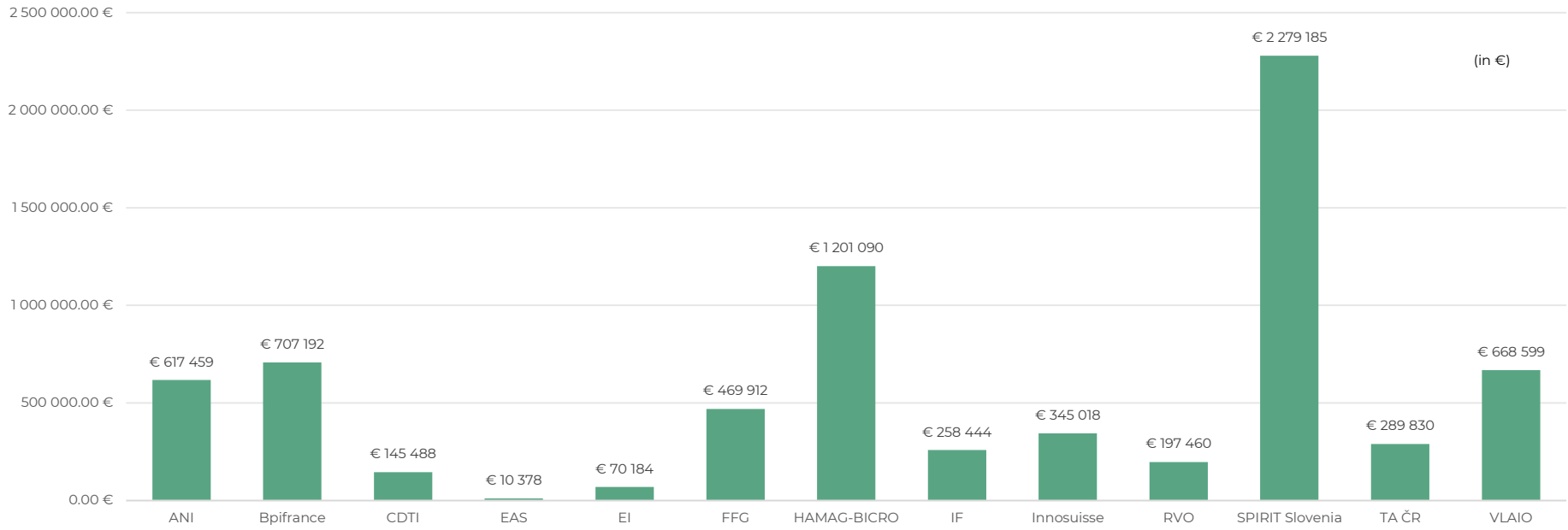


Figure 4.G Average size of the Collaborative R&D grants (in terms of contracted budget per grant) in 2019-2020

For the Collaborative R&D grants, the highest average size (in terms of contracted budget per grant) in 2019-2020 was again calculated for SPIRIT Slovenia (2,279,185 euro). Other significant average grants were awarded by HAMAG- BICRO (1,201,090 euro) Bpifrance (707,192 euro), VLAIO (668,599 euro) and ANI (617,459 euro). All the results are specified in Figure 4.G.

In terms of the importance of SMEs (Figure 4.H), EAS and RVO are the only two agencies which gives all the Collaborative R&D grants to this target group. Innosuisse included own contribution of SMEs to the projects, otherwise no grants for SMEs.

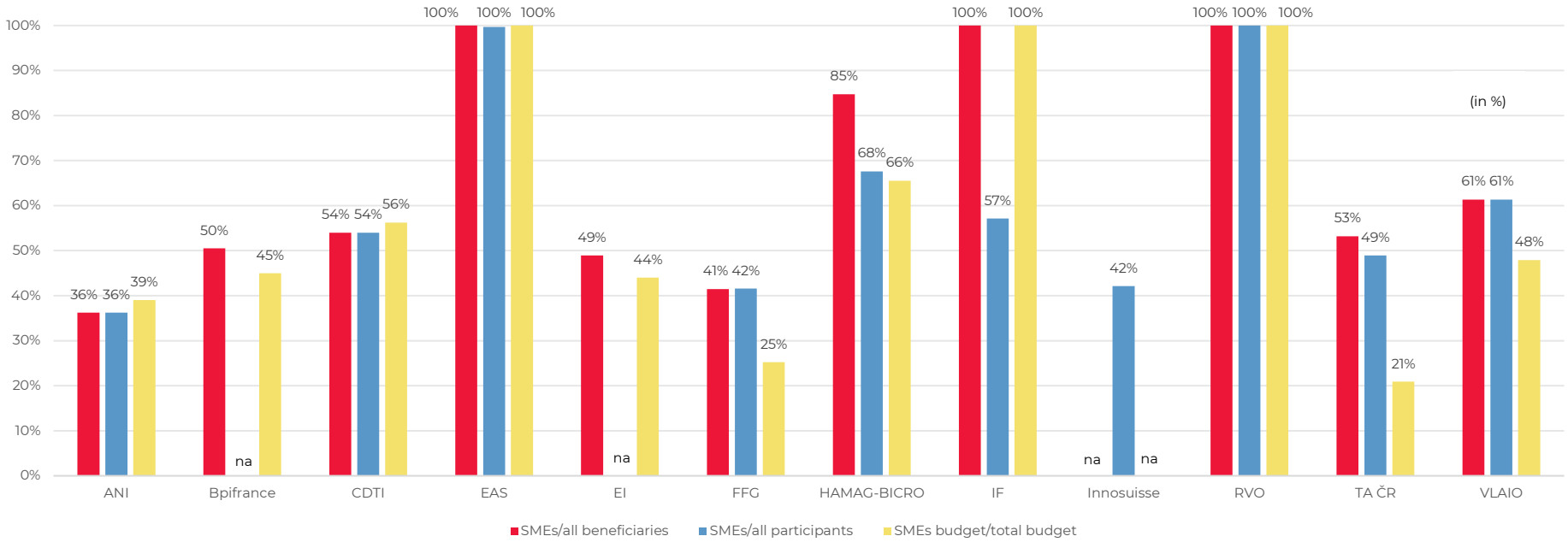


Figure 4.H SMEs: number of SME beneficiaries as a share in the total number of unique beneficiaries; number of SME participants as a share in the total number of unique participants; contracted budget to SMEs, as a share in total contracted budget, 2019-2020 (agencies with available data)

4.4 Project implementation

The results of the project implementation analysis for the Collaborative R&D grants are presented in Figure 4.I. From the relevant agencies, in 2019, the highest number of awarded grants was found in TA ČR (459). FFG dominated in both active projects (1116) and closed projects (763). Very high number of active projects was also specified by Innosuisse (1013). In 2020, the highest number of awarded grants were in Innosuisse (404), active projects in Innosuisse (1133) and closed projects in FFG (1018).

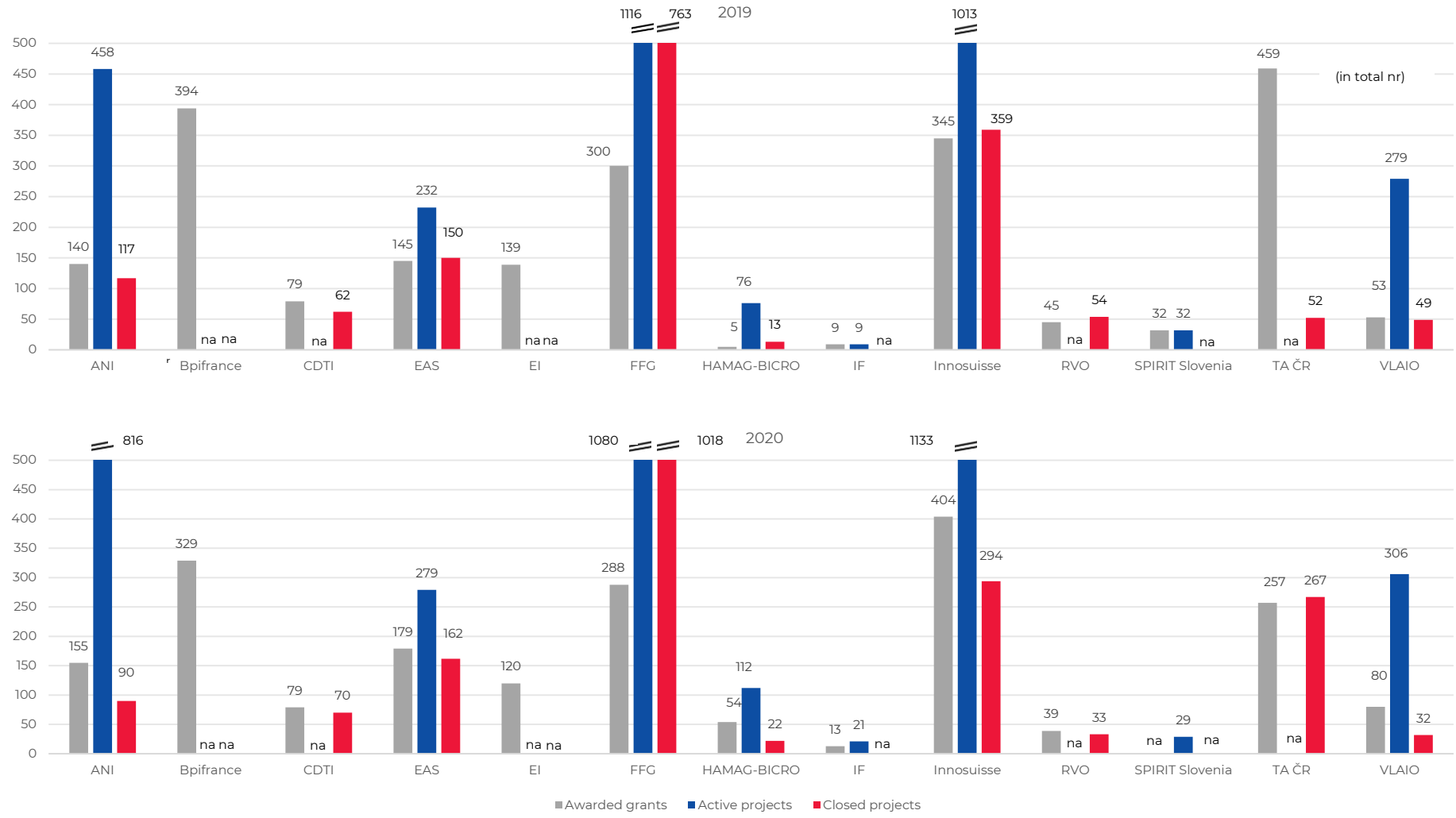


Figure 4.I Projects implementation in terms of awarded grants, active projects and closed projects (Collaborative R&D grants) in 2019 and 2020

4.5 Organizing capacity

One of the objectives of Collaborative R&D grants is to support sustainable relationships between private and/or public partners. An important aspect of this so-called organizing capacity is the extent to which organizations are brought together to cooperate in joint R&D projects. The share of two types of relationships in the projects within Collaborative R&D programmes included in the 4th Benchmark report is specified in Figure 4.J (data labels show absolute values) and Table 4.F (absolute values). As can be seen, all the relationships of RVO are in the form of company-company, on the other hand, IF has all the relationships in the form of company-knowledge.

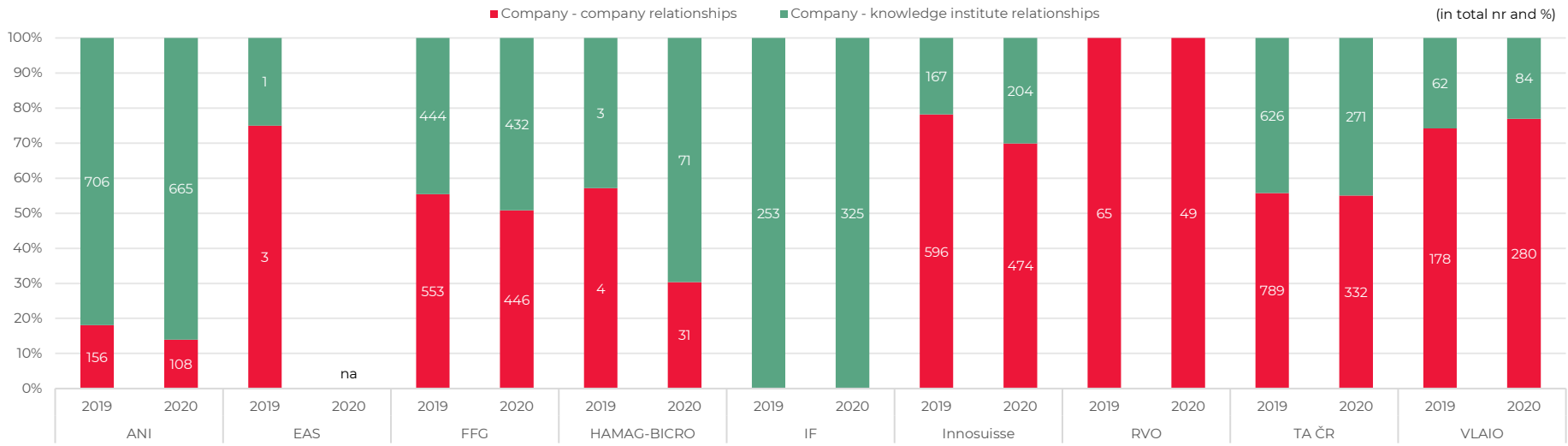


Figure 4.J Cooperation relations within Collaborative R&D grants in 2019 and 2020 (in %; data labels show total number of relations; agencies with available data)

Table 4.F Cooperation relations within Collaborative R&D grants in 2019 and 2020 (absolute values; agencies with available data)

	ANI		EAS		FFG		HAMAG-BICRO		IF		Innosuisse		RVO		TA ČR		VLAIO	
	2019	2020	2019	2020	2019	2020	2019	2020	2019	2020	2019	2020	2019	2020	2019	2020	2019	2020
Company - company relationships	156	108	3	0	553	446	4	31	na	na	596	474	65	49	789	332	178	280
Company - knowledge institute relationships	706	665	1	0	444	432	3	71	253	325	166	204	0	0	626	271	62	84

In these terms, the calculation of the average number of beneficiaries per grant awarded and per million euro contracted was implemented (Table 4.G). The highest number of beneficiaries per one grant was found in SPIRIT Slovenia (5.59). However, the most interesting number came in the data of EAS provided for the calculation of the average number of beneficiaries per million euro contracted – about 93 beneficiaries obtained money from one million euro contracted from this agency. The second position goes to EI with only 12.82 beneficiaries for one million euro contracted.

Table 4.G Organizing capacity: participants per grant awarded and per million euro budget contracted, 2019-2020

Agency	Beneficiary per grant awarded	Beneficiary per million € budget contracted
ANI	3.28	5.31
Bpifrance	1.00	1.41
CDTI	0.95	6.53
EAS	0.97	93.09
EI	0.90	12.82
FFG	2.16	4.60
HAMAG-BICRO	1.00	0.83
IF	1.00	3.87
Innosuisse	1.51	4.37
RVO	2.18	11.03
SPIRIT Slovenia	5.59	2.45
TA ČR	0.98	3.38
VLAIO	2.12	3.17

4.6 Application success rate

Similarly to R&D grants, the application success rate for Collaborative R&D grants is specified in Figure 4.K. The highest success was achieved by EAS in 2020 (100 %), followed by Bpifrance with 95 % rate in both years. In contrast, IF delivered data with the lowest success rate in 2019 (13 %), followed by TA ČR in 2020 (18 %).

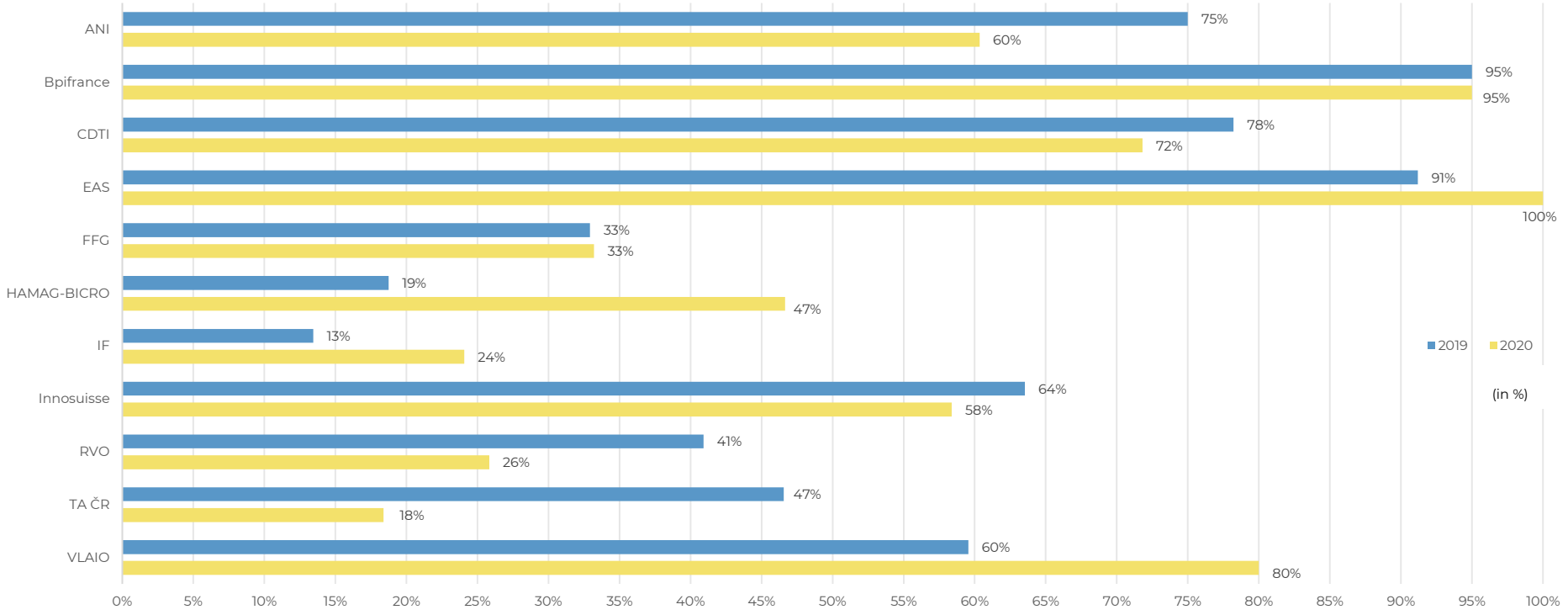


Figure 4.K Application success rate (Collaborative R&D grants): number of successful proposals as a share in the total number of proposals (%) in 2019 and 2020 (agencies with available data)

4.7 Foreign participants

The cooperative programmes in the 4th Benchmark report were not focused on international cooperation, as shown in Figure 4.L. On average, only the programmes of FFG, HAMAG-BICRO, Innosuisse and TA ČR showed some limited number of foreign participants. The highest figures in both terms of total numbers (45) and share of all participants (12 %) were identified in TA ČR. FFG has 31 (5 %), Innosuisse 17 (2 %) and HAMAG-BICRO 2 (2 %) foreign participants in the collaborative R&D granting schemes. Other agencies have no data for this indicator.

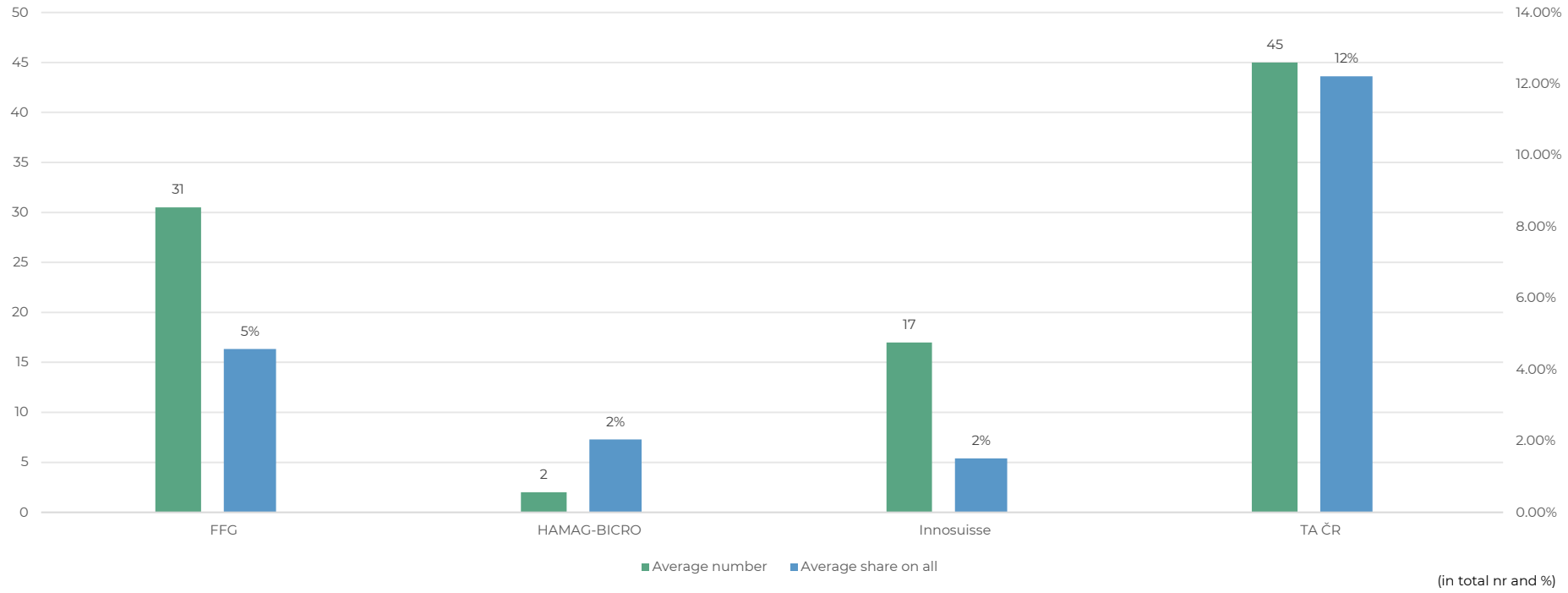


Figure 4.L Foreign participants in Collaborative R&D granting schemes, 2019-2020 (agencies with available data)

5. INNOVATION VOUCHERS

5.1 Introduction

Innovation vouchers provide entrepreneurs (commonly SMEs) with a cheque representing a small sum of money to be used by SMEs to buy innovation related services, typically from a research institute, university and/or consultant. A total of seven agencies delivered data for this type of innovation support programmes, as shown in Table 5.A. Similarly to other measures, there are differences in budget, criteria, target groups and design between participant instruments (sectors, types of R&D).

In this chapter the comparison is made between the programmes' size in terms of budget (in terms of the sum of values on both issued and reimbursed vouchers) and the number of applications, issued and reimbursed vouchers as well as the mutual ratio to each other. The programme division, thematic focus, type of financing, source of financing and type of call are specified in Table 5.B. The type of research, project size, min-max % subsidy, min-max € subsidy, affiliation to SMEs, cooperation obligatory, project duration and additional notes are specified in Table 5.C.

Table 5.A Description of the Innovation voucher programmes included in the 4th Benchmark report

Agency	Programme name	Programme description
EI	Innovation vouchers	The Innovation Voucher Programme was developed to build links between Ireland's publicly funded Knowledge Providers (i.e. higher education institutes, public research bodies) and small and medium-sized businesses. Innovation Vouchers worth €5,000 are available to assist a company or companies to explore a business opportunity or problem with a registered knowledge provider.
FFG	Innovationsscheck	Programme supports the first know-how exchange between SMEs and researchers in which innovative ideas are either generated, evaluated or prototypically developed.
HAMAG-BICRO	Innovation vouchers for SMEs	Programme aims at strengthening SME capacities for collaboration with higher education institutions and research organisations.
IF	Innovation Voucher Scheme	The aim of the Innovation Vouchers scheme is to financially incentivise SME to collaborate with R&D institutions thereby engaging in innovation and making their products more competitive on the market.
Innosuisse	Innovation Cheques	This type of voucher's programme provide SMEs with direct access to the services of research institutions and facilitate the entry into project cooperation with research institutions. It is designed to finance preliminary studies, such as concept development and idea studies or analyses of the innovation and market potential of processes, products, services or technologies.
RVO	SMEs Instrument Top Sectors: Knowledge Vouchers	Programme is a part of the RVO.nl's SME Top Sector scheme.
SIEA	Creative vouchers	Creative vouchers support the architecture, design, programming (ICT) and advertising and marketing sectors.

Table 5.B Programme division, thematic focus, type of financing, source of financing and type of call specified for Innovation vouchers

Agency	Programme name	Research categories				Thematic focus			Type of financing				Source of financing			Type of call		
		Basic research	Industrial research	Experimental development	Other	Thematic call	Bottom-up	Other	Grant	Loan	Conditional loan	Other	ESIF	National	Other sources	Open call	Temporary call	Other
EI	Innovation vouchers				X		X		X					X		X		
FFG	Innovationsscheck		X	X			X		X					X		X		
HAMAG-BICRO	Innovation vouchers for SMEs		X				X		X				X	X		X		
IF	Innovation Voucher Scheme		X				X		X					X		X		
Innosuisse	Innovation Cheques		X	X			X		X					X		X		
RVO	SMEs Instrument Top Sectors: Knowledge Vouchers		X			X			X					X		X		
SIEA	Creative vouchers		X	X		X			X				X				X	

Table 5.C Type of research, project size, % of subsidy, total subsidy, focus on SME, cooperation obligatory, project duration and additional notes specified for Innovation vouchers (part I)

Agency	Programme name	Type of research	Project size (€; min-max)	Min-Max % subsidy (% of reimbursement; min-max)	Min-Max subsidy (€ of reimbursement; min-max)	SME beneficiaries only	Cooperation obligatory	Max months to complete the project	Additional notes
EI	Innovation vouchers	Explore a business opportunity or a problem.	5 000 - 10 000	50% - 100%	5 000 - 10 000	yes	yes	n.a.	
FFG	Innovationsscheck	The innovation voucher is redeemed by small and medium-sized enterprises at research institutions for the implementation of innovation services (potential analysis, preparation of R&D projects, concepts). This facilitates entry into the innovation process and access to external know-how.	no limit - 12 000	0% - 80%	no limit - 10 000	yes	yes (private-public)	12	

Table 5.C (part II)

Agency	Programme name	Type of research	Project size (€; min-max)	Min-Max % subsidy (% of reimbursement; min-max)	Min-Max subsidy (€ of reimbursement; min-max)	SME beneficiaries only	Cooperation obligatory	Max months to complete the project	Additional notes
HAMAG-BICRO	Innovation vouchers for SMEs	Industrial research	1 300 - 10 000	70% - 85%, only SMEs	1 000 - 10 000	yes	yes (private-public)	3	
IF	Innovation Voucher Scheme	Industrial research	no limit - no limit	0% - 60%	no limit - 6 800	yes	no	6	
Innosuisse	Innovation Cheques	Feasabilty, Prelimin.a.ry studies	no limit - 15 000	1	no limit - 15 000	yes	yes (public-private)	12	
RVO	SMEs Instrument Top Sectors: Knowledge Vouchers (MKB Innovatiesubsidie Topsectoren (MIT) - innovatievouchers)	Industrial en experimental R&D	7 500 - 17 000	40% - 70%	5 250 - 9 000	yes	yes (private - public)	12	No selection
SIEA	Creative vouchers	Supporting the use of creative industry services	1 200 – 20 000	50% - 85%	1 000 – 10 000	yes	yes	6	

5.2 Financial size

The financial size of the vouchers issued are specified in Table 5.D. On average (2019-2020), the biggest vouchers were issued in Innosuisse (13,777 euro) and FFG (9,484 euro). In 2019, the size of vouchers oscillated between 3,719 euro (RVO) and 13,483 euro (Innosuisse) and in 2020 between 3,750 euro (RVO) and 14,013 (Innosuisse).

Table 5.D Average size of vouchers issued (Euro), 2019-2020

Agency	2019	2020	2019-2020
EI	€ 5,000	€ 5,000	€ 5,000
FFG	€ 7,133	€ 12,964	€ 9,484
HAMAG-BICRO	€ 7,303	€ 7,649	€ 7,563
IF	€ 5,247	€ 4,331	€ 4,982
Innosuisse	€ 13,483	€ 14,013	€ 13,777
RVO	€ 3,719	€ 3,750	€ 3,732
SIEA	€ 4,922	€ 4,276	€ 4,670

Table 5.E Share of contracted budget for Innovation vouchers in total agency innovation programme portfolio and agency innovation programmes included in benchmarking in 2019 and 2020

Agency	Share of contracted budget in total agency programme portfolio in 2019 (%)	Share of contracted budget in agency programme portfolio incl. in benchmarking in 2019 (%)	Share of contracted budget in total agency programme portfolio in 2020 (%)	Share of contracted budget in agency programme portfolio incl. in benchmarking in 2020 (%)
EI	na	4.01%	na	4.70%
FFG	0.86%	1.23%	0.98%	1.61%
HAMAG-BICRO	nr	2.72%	nr	0.94%
IF	11.03%	16.12%	5.16%	5.53%
Innosuisse	2.47%	4.07%	2.38%	4.08%
RVO	0.32%	0.72%	0.24%	0.61%
SIEA	0.66%	0.66%	0.38%	0.38%

According to the results of budget ratios specified in the Table 5.E, Innovation vouchers have very low importance on agencies' financing. The highest shares were calculated for IF (11.03% in 2019 and 5,16% in 2020) and lowest in RVO (0.32% in 2019 and 0.24% in 2020).

In terms of issued vouchers' budgets (Figure 5.A), in both years the highest amount of resources went to organisations in Switzerland (Innosuisse, about 5.4 million euro in 2019 and 7 million euro in 2020 for SMEs), followed by Austria (FFG, about 5 million euro in 2019 and 6.1 million euro in 2020 for all types of organisations) and Ireland (EI, about 3.5 million euro in 2019 and 3 million euro in 2020 for SMEs). This order of agencies allocating most money was maintained for reimbursed vouchers' budgets. Unlike other relevant agencies, FFG's vouchering programmes also focus on other target groups than SMEs (knowledge institutes and other).

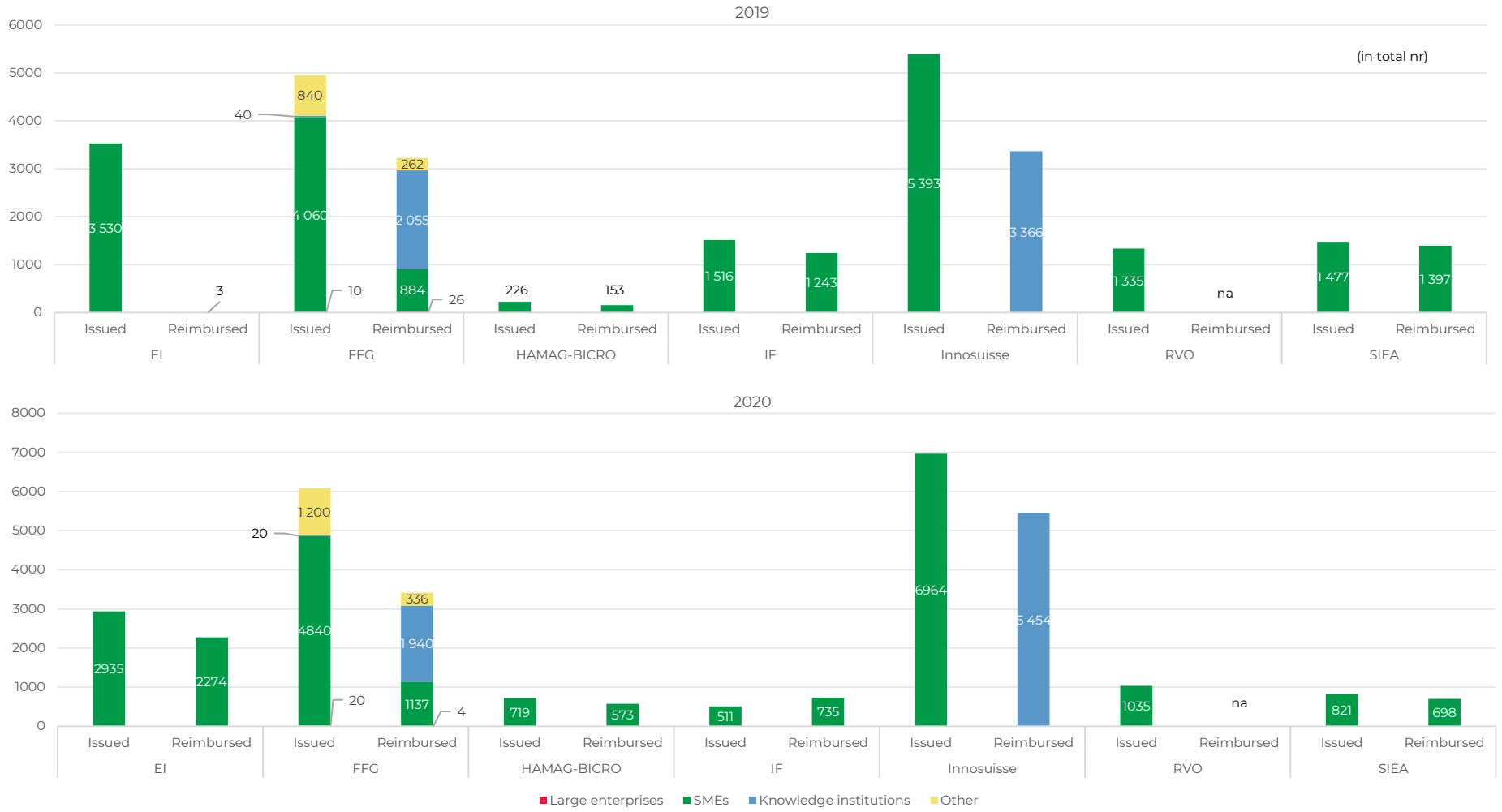


Figure 5.A Innovation vouchers' budgets in 2019 and 2020 (issued and reimbursed; in thousands of €)

5.3 Vouchers and applications

While Innosuisse and FFG have the highest budgets for innovation vouchers, both also dominate in terms of number of applications for vouchers. Figure 5.B shows that a total of 922 applications were submitted to FFG in 2019 (619 in 2020) and 543 applications to Innosuisse (692 in 2020). The highest numbers of issued vouchers were identified in the data of EI (706 in 2019 and 587 in 2020) and the highest numbers of reimbursed vouchers were in FFG (792 in 2019 and 781 in 2020).

Figure 5.B Voucher applications (A), issued vouchers (I) and reimbursed vouchers (R) in 2019 and 2020

5.4 Application success rate and reimbursement rate

The application success rate for vouchers is the number of successful voucher applications divided by the total number of both successful and unsuccessful voucher applications. The results for this indicator calculated for 2019 and 2020 are presented in Figure 5.C. Except EI (for which the data are not available), the success rate oscillates between 58 % (Innosuisse in 2020) to 89 % (IF in 2020). In 2019, the highest success rate was calculated for HAMAG-BICRO (85 %) and the lowest for Innosuisse (64 %).

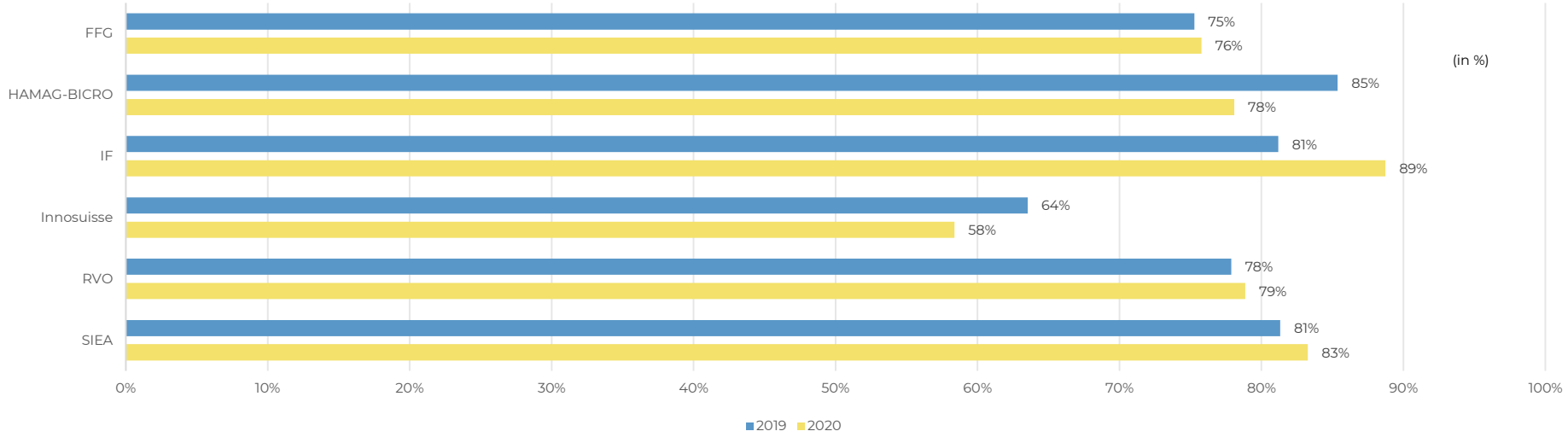


Figure 5.C Application success rate (Innovation vouchers): number of successful voucher applications divided by the total number of both successful and unsuccessful voucher applications (%) in 2019 and 2020

The reimbursement rate is defined as the number of reimbursed vouchers divided by the number of issued vouchers. The results for this indicator calculated for 2019 and 2020 are presented in Figure 5.D. A very high reimbursement rate was calculated for FFG in both years (more than 100 %) due to more reimbursed vouchers than issued in these years. On the other hand, Innosuisse and HAMAG-BICRO have lower reimbursement rates.

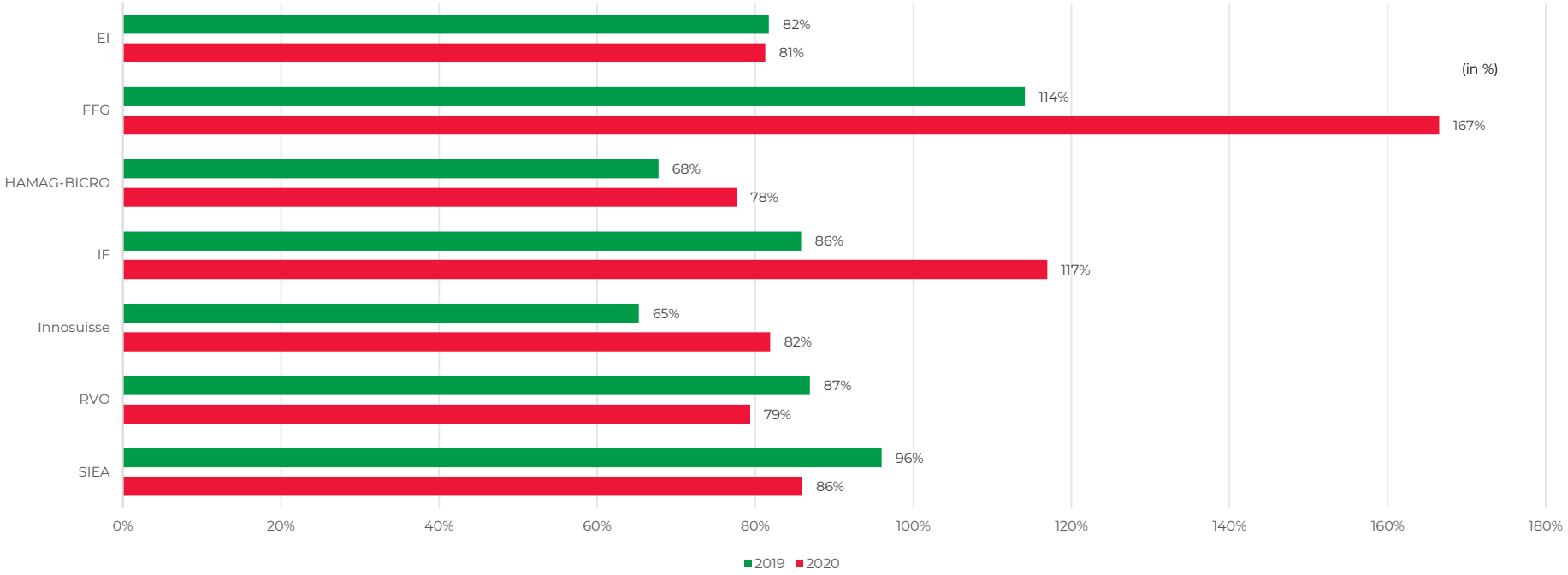


Figure 5.D Reimbursement rate (Innovation vouchers): number of reimbursed vouchers divided by the number of issued vouchers (%) in 2019 and 2020

5.5 Project implementation

The last part of the analysis of innovation vouchers is project implementation – awarded grants, active projects and closed projects in 2019 and 2020. The results for both years (Figure 5.E) show the dominance of FFG mainly in active projects (1434 in 2019 and 1488 in 2020) and closed projects (906 in 2019 and 747 in 2019). In terms of awarded grants, the Austrian agency was overtaken by EI (706 in EI compared to 694 in FFG) in 2019 and by EI and Innosuisse (587 in EI and 497 in Innosuisse compared to 469 in FFG) in 2020.Other relevant agencies had a smaller number of awarded grants, active projects and closed projects in the monitored years or data not available.

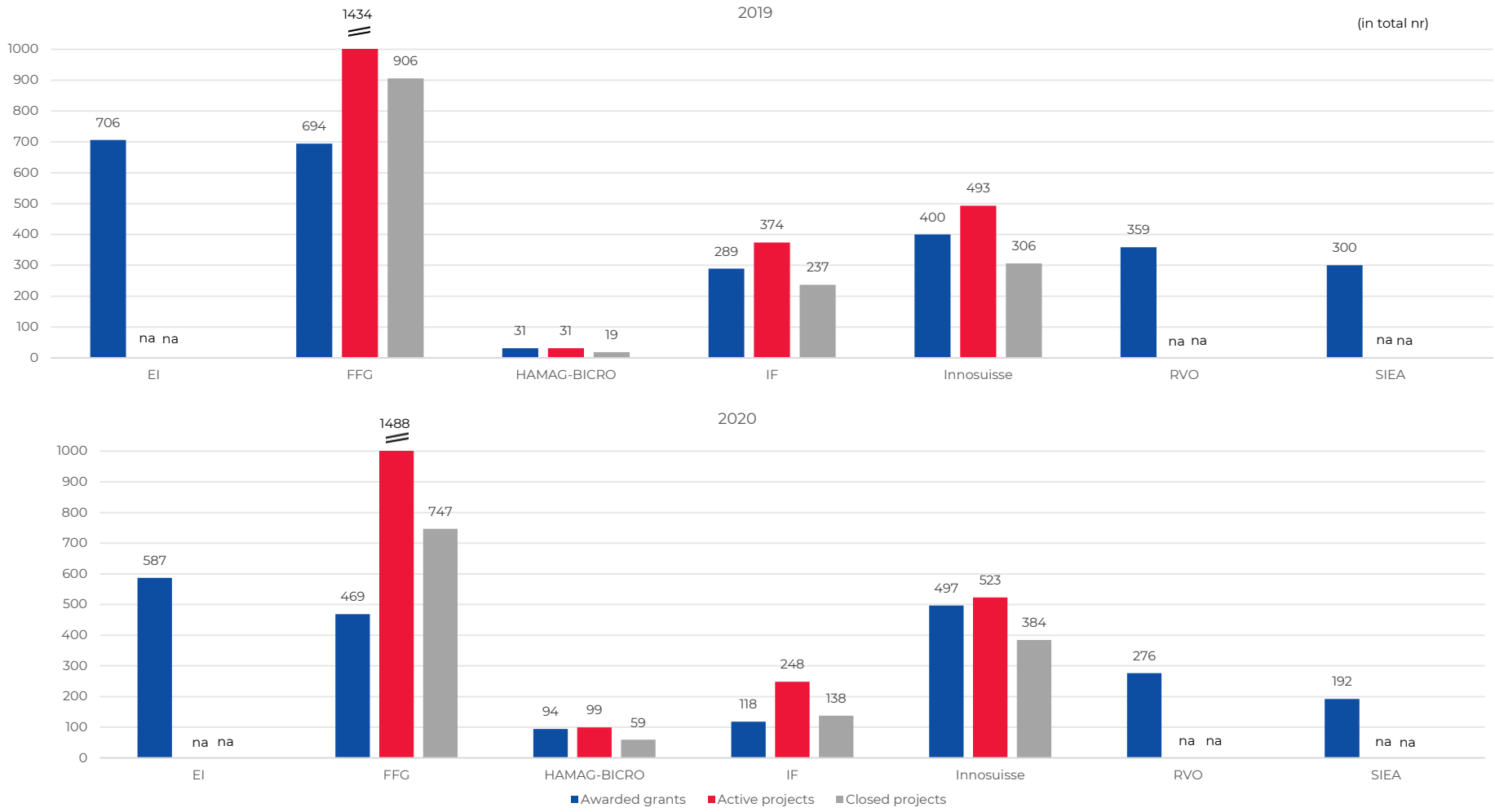


Figure 5.E Projects implementation in terms of awarded grants, active projects and closed projects (Innovation vouchers) in 2019 and 2020

6. COMPETENCE CENTRES

6.1 Introduction

Competence Centres are collaborative entities established and led by industry and resourced by highly-qualified researchers associated with research institutions who are empowered to undertake market focused strategic research for the benefit of industry. The objective of Competence Centre initiatives is to achieve competitive advantage by accessing the innovative capacity of the research community. Main difference with R&D collaborative projects is that Competence Centres initiatives are not about financing individual R&D projects but are centered on (often thematic) programmes with synergies created through coherence in a bundle of projects.

A total of six agencies delivered data for this type of innovation support programmes, as shown in Table 6.A. The programme division, thematic focus, type of financing, source of financing and type of call are specified in Table 6.B. The type of research, project size, min-max % subsidy, min-max € subsidy, affiliation to SMEs, cooperation obligatory, project duration and additional notes are specified in Table 6.C.

Table 6.A Description of the Competence centre programmes included in the 4th Benchmark report

Agency	Programme name	Programme description
EAS	Technology Development Centres Scheme (tehnoloogia arenduskeskused)	Technology Competence Centres (TCC) are registered in the Estonian business Register. They are companies whose main activity is conducting research in the areas that are necessary for companies to conduct product development. The results of the research projects will be used by companies to bring new products and services to the market.
EI	Technology Centres	The Technology Centre programme is a joint initiative between Enterprise Ireland and Industrial Development Agency Ireland. It allows Irish companies and multinationals to work together on market focused strategic R&D projects in collaboration with research institutions.
	Technology Gateways	Technology Gateways work in partnership with Institutes of Technology and Technological Universities across Ireland. Consisting of 16 specialised Gateways and 3 sectoral clusters, the Technology Gateway Network delivers innovation expertise and solutions for Irish industry.
	European Digital Innovation Hubs	European Digital Innovation Hubs – not established yet, due to be operational end of 2022, early 2023.
FFG	Comet	Comet bundles top-level research competences in physical centres by supporting long-term research cooperation between science and industry.
	Laura Bassi Centres of Expertise	In the Laura Bassi Centers of Expertise, excellent women head research centres at the interface between science and economy.
RVO	Top Consortia for Knowledge & Innovation (TKI)	For over 90% of the budget, the TKI receives the subsidy from RVO.nl, and have a significant freedom on which projects the subsidy could be spend. TKI does not carry out research themselves. A partnership must involve at least one Dutch research institution and one entrepreneur. The entrepreneur must make a substantial private contribution. Entrepreneurs and research organizations can get in touch with a TKI in order to request a statement indicating that the project is compatible with the TKI programme, or to join a TKI programme.
TA ČR	Competentence centres	The system of competence centres supports the creation and activities of centres of research and innovation in progressive fields with high application and innovation potential, while also supporting a long-term stable base for applied research.
	National competence centres	
VLAIO	Spearhead Clusters	In 2019-2020 six spearhead clusters in different domains were active and supported in Flanders : Flanders Food, Flux50 (energy), Blue Cluster, SIM (materials), Catalisti (chemistry) and VIL (logistics) : see https://www.vlaio.be/nl/vlaio-netwerk/flanders-innovation-entrepreneurship/innovation-clusters-flanders/spearhead-clusters. The focus of the cluster policy is on increasing the competitiveness of the companies and on improving active collaboration between companies and between companies and knowledge institutes.

Table 6.B Programme division, thematic focus, type of financing, source of financing and type of call specified for Competence centres

Agency	Programme name	Research categories				Thematic focus			Type of financing				Source of financing			Type of call		
		Basic research	Industrial research	Experimental development	Other	Thematic call	Bottom-up	Other	Grant	Loan	Conditional loan	Other	ESIF	National	Other sources	Open call	Temporary call	Other
EAS	Technology Development Centres Scheme (tehnoloogia arenduskeskused)		X	X			X		X				X				X	
EI	Technology Centres				X			X	X					X				X
	Technology Gateways				X			X	X				X	X				X
	European Digital Innovation Hubs				X			X	X				X					X
FFG	Comet	X	X	X			X		X					X			X	
	Laura Bassi Centres of Expertise		X				X		X					X			X	
RVO	Top Consortia for Knowledge & Innovation (TKI)	X	X	X	X	X			X					X			X	
TA ČR	Competentence centres		X	X					X					X			X	
	National competence centres		X	X					X					X			X	
VLAIO	Spearhead Clusters																	

Table 6.C Type of research, project size, % of subsidy, total subsidy, focus on SME, cooperation obligatory, project duration and additional notes specified for Competence centres

Agency	Programme name	Type of research	Project size (€; min-max)	Min-Max % subsidy (% of reimbursement; min-max)	Min-Max subsidy (€ of reimbursement; min-max)	SME beneficiaries only	Cooperation obligatory	Max months to complete the project	Additional notes
EAS	Technology Development Centres Scheme (tehnoloogia arenduskeskused)	Development	no limit - no limit	25%-60%	no limit - 7 000 000	no	no	no later than 31.12.2023 (48 months min duration)	Beneficiaries - Technology development centres Expected outcome - New technologies, products and services are developed in co-operation between technology development centres and companies Pre-counseling - No
EI	Technology Centres	Provide funding directly to the centres and they choose initiatives to present to companies.							
	Technology Gateways	Provide funding directly to the centres and they choose initiatives to present to companies.							
	European Digital Innovation Hubs	Provide funding directly to the centres and they choose initiatives to present to companies.							
FFG	Comet	Comet bundles top-level research competences in physical centres by supporting long-term research cooperation between science and industry	nr	0% - 80%	no limit - 1 700 000	no	yes (both)	96	
	Laura Bassi Centres of Expertise	The target groups are female scientists and young scientists, companies, non-university research institutions as well as universities and universities of applied sciences.	nr	0% - 60%	no limit - 320 000	no	yes (both)	84	
RVO	Top Consortia for Knowledge & Innovation (TKI)	All kinds of research	no limit - no limit	25% - 75% (experimental R&D - fundamental research)	no limit - no limit	no	yes	60	Selection on project quality
TA ČR	Competentence centres	Applied research	4 835 700 - 13 768 705	62.2% - 70%	3 368 247 - 9 441 065	n.a.	yes	96	
	National competence centres	Applied research	4 009 068 - 15 207 939	71.1% - 80%	3 207 255 - 11 912 660	n.a.	yes	56	
VLAIO	Spearhead Clusters	Research and/or development	no limit - no limit	25% - 60 %	25 000 - 3 000 000	no	yes (both, at least 3 cooperating companies)	36	

6.2 Financial size

Again, the first monitored indicator is the financial size consisting of public and private contributions (Figure 6.A) in 2019 and 2020. The highest total amount of money was contracted (from all sources) through the programmes of RVO in 2019 (almost than 250 mil. €, consisting of 110 mil. € from public and about 135 mil. € from private sources), followed by FFG in 2019 (about 237 mil. €, consisting of almost 80 mil. € from public and about 157 mil. € from private sources). The third highest amount were awarded to competence centres by VLAIO in 2019 (about 110 mil. €, consisting of about 67 mil. € from public and 43 mil. € from private sources. It must be noted that the exact amounts each year are highly dependent on the funding rhythm and timing in each competence centre scheme. For instance, the funding of both FFG and TA CR concerns multiple years. Hence, the financial impulse differs extremely between the years.

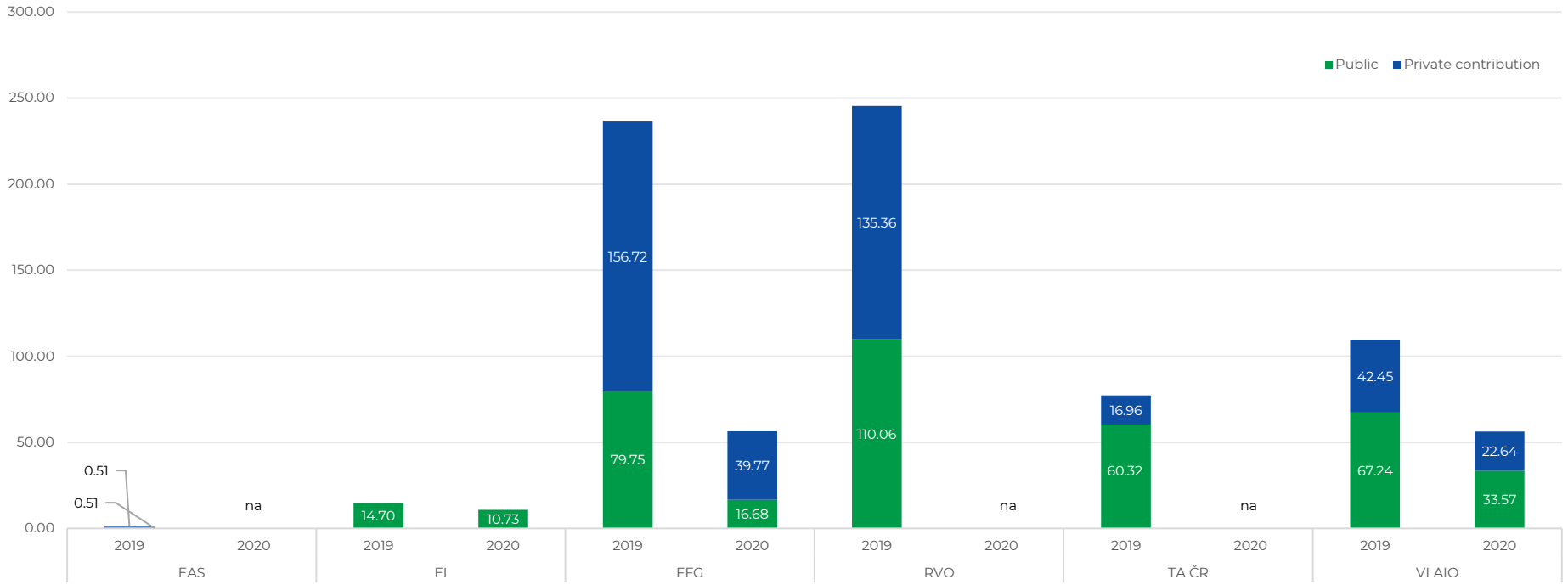


Figure 6.A Financial size of selected Competence centres (public contribution and participants' own contribution) in 2019 and 2020 (millions of €)

Similarly to Innovation vouchers, Competence centres do not have very high importance on budgets of agencies (Table 6.D). The highest shares were calculated for TA ČR (28.03% in 2019) and RVO (26.16% in 2019). On the other hand, EAS's competence centres are not too much significant (2.5% in 2019).

Table 6.D Share of contracted budget for Competence centres in total agency innovation programme portfolio and agency innovation programmes included in benchmarking in 2019 and 2020

Agency	Share of contracted budget in total agency programme portfolio in 2019 (%)	Share of contracted budget in agency programme portfolio incl. in benchmarking in 2019 (%)	Amount of annual payoffs in 2019 (€)	Share of contracted budget in total agency programme portfolio in 2020 (%)
EAS	2.50%	2.50%	na	na
EI	na	16.69%	na	17.19%
FFG	13.83%	19.74%	2.68%	4.41%
RVO	26.16%	59.14%	na	na
TA ČR	28.03%	30.79%	na	na
VLAIO	17.83%	22.50%	8.81%	11.25%

For Competence centres, we also calculated the impact factors – participants' own contributions in competence centres per euro public investment in 2019 and 2020. As can be seen in Figure 6.B, the highest average impact factor was calculated for FFG (2.04). This means that one euro of public investment can bring more than 2 euros of private contributions to the competence centre.

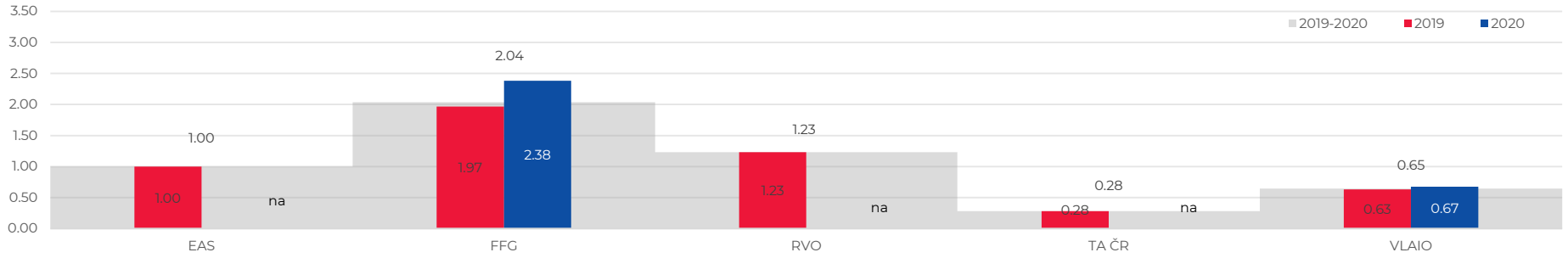


Figure 6.B Impact factors of participants' own contribution per Euro public investment (Competence centres) in 2019, in 2020 and in 2019-2020 (agencies with available data)

Table 6.E summarizes the average public contribution per one supported competence centre. The highest public contribution was found in VLAIO (11.21 mil. €) in 2019, while the lowest in EAS (0.1 mil. €) in 2019. The data for FFG in both years and majority of agencies in 2020 are not available.

Table 6.E Average public contribution per competence centre supported (million euros) in 2019, 2020 and 2019-2020

Agency	2019	2020	2019-2020
EAS	0.10	-	0.10
EI	1.84	1.34	1.59
FFG	4.69	3.34	4.38
RVO	9.17	-	9.17
TA ČR	6.70	-	6.70
VLAIO	11.21	5.60	8.40

6.3 Organizing capacity

Competence centres bring participants together from both industry and science to cooperate with each other on R&D projects in a coherent programme. Firstly, Table 6.F shows the share of SMEs in the total number of participants (absolute numbers of SMEs are in brackets) in 2019, 2020 and the average of these years. In both years, the highest share is found in EAS (in average 89 %) and the lowest in FFG (in average 31.5 %).

Table 6.F Share of SMEs in the total number of participants in Competence centres (absolute numbers of SMEs are in brackets) in 2019, 2020 and the average of these years

Agency	2019	2020	2019-2020
EAS	90.1 % (91)	87.5 % (63)	89 % (154)
EI	39.1 % (267)	45 % (553)	42.9 % (820)
FFG	32.6 % (321)	25 % (41)	31.5 % (362)
RVO	46.4 % (402)	na (na)	46.4 % (402)
TA ČR	44.6 % (75)	na (na)	44.6 % (75)
VLAIO	45.2 % (99)	43.7 % (111)	44.4 % (210)

Total numbers of participants (divided according to target groups) are presented in Figure 6.C. In these terms, EI had competence centres with the largest number of participants in 2020 (491 large enterprises, 553 SMEs and 184 other organisations), followed by FFG in 2019 (271 large enterprises, 321 SMEs, 372 knowledge institutes and 20 other organisations) and RVO in 2019 (225 large enterprises, 402 SMEs, 90 knowledge institutes and 150 other organisations).

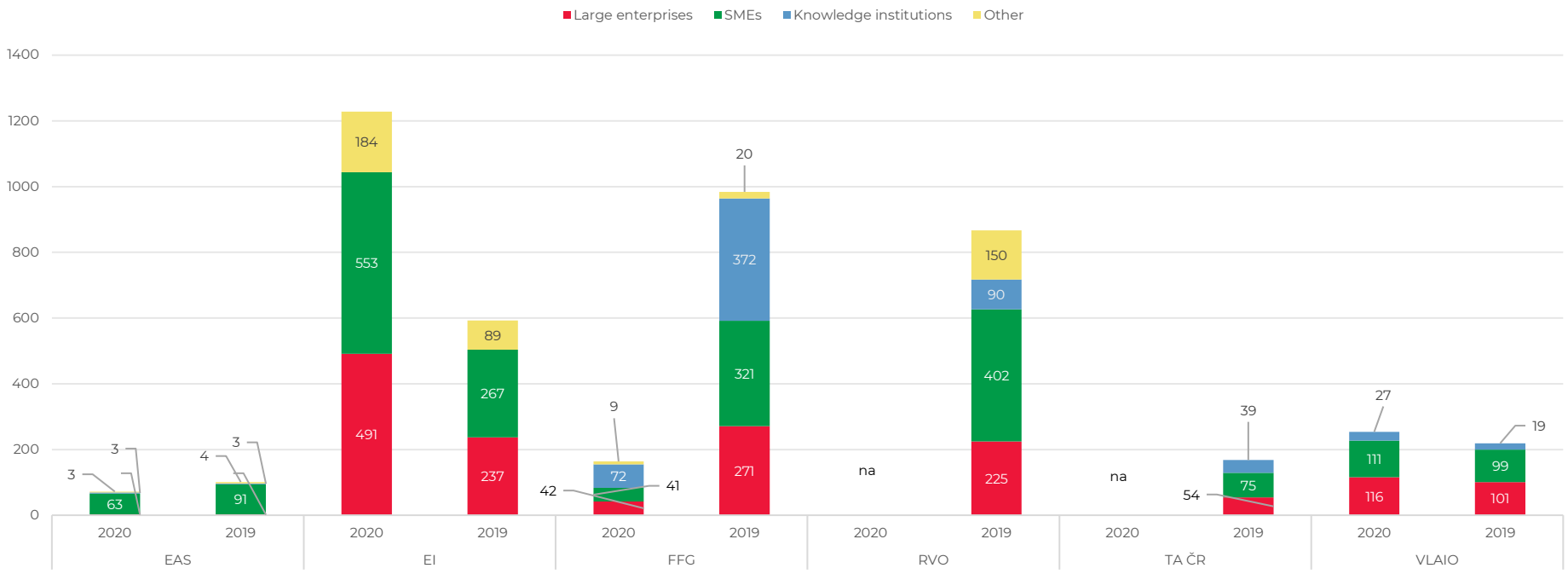


Figure 6.C Participants in running competence centres in 2019 and 2020

Similarly to Collaborative R&D grants, Competence centres should sustainable relationships between private and/or public partners. The share of two types of relationships in the projects within these centres included in the 4th Benchmark report is specified in Figure 6.D and Table 6.G. As can be seen, the highest total relations were stimulated in FFG in 2019 (22640, of which 14542 were in the form of company-company relationship and 8098 of company-knowledge institute relationship). In contrast, the lowest numbers of relations were found in VLAIO in 2020 (383, of which 205 were in the form of company-company relationship and 178 of company-knowledge institute relationship). Comparing to these numbers, TA ČR had the highest share of company-company relationships (more than 90 % of all relationships in 2019).

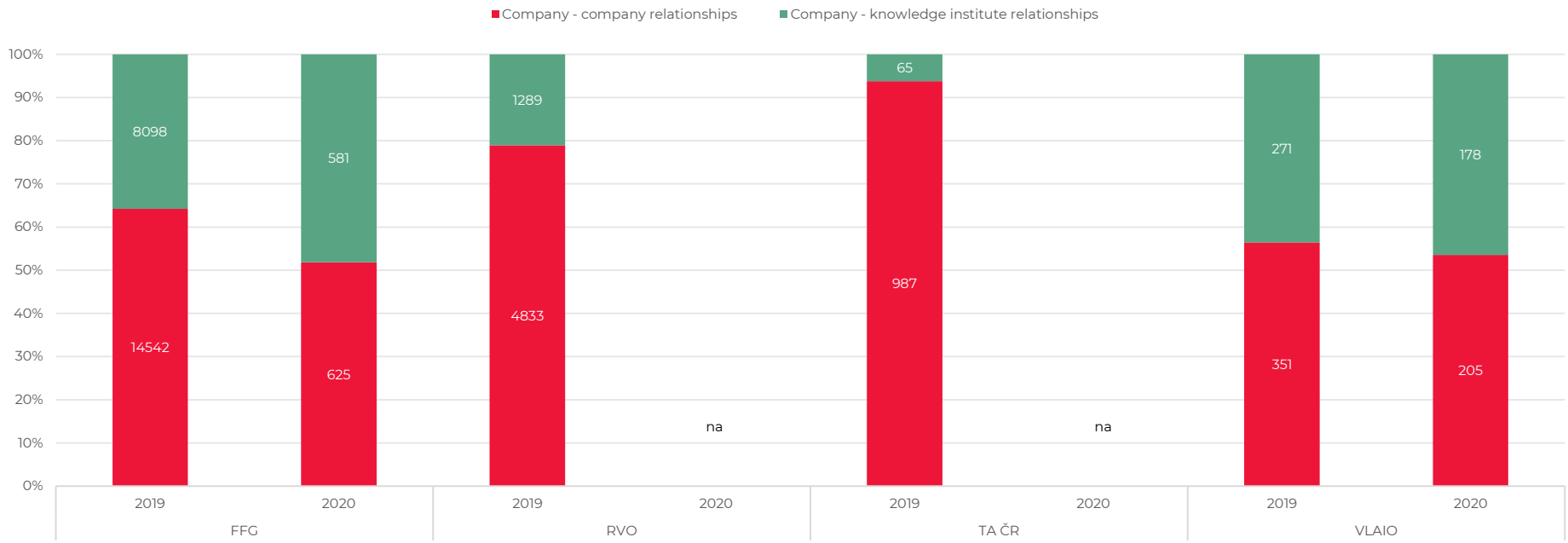


Figure 6.D Cooperation relations within Competence centres in 2019 and 2020 (in %; data labels show total number of relations; agencies with available data)

Table 6.G Cooperation relations within Competence centres in 2019 and 2020 (absolute values; agencies with available data)

	FFG		RVO		TA ČR		VLAIO	
	2019	2020	2019	2020	2019	2020	2019	2020
Company - company relationships	14592	625	4833	na	987	na	351	205
Company - knowledge institute relationships	8098	581	1289	na	65	na	271	178

The last figure prepared for the analysis of Competence centres is the average number of participants per one million euro of contracted budget in 2019-2020 (Figure 6.E). As can be seen, most participants have to share one million support in the centres in Estonia (EAS, 339.89 of participants) and in Ireland (EI, 75.10 of participants).

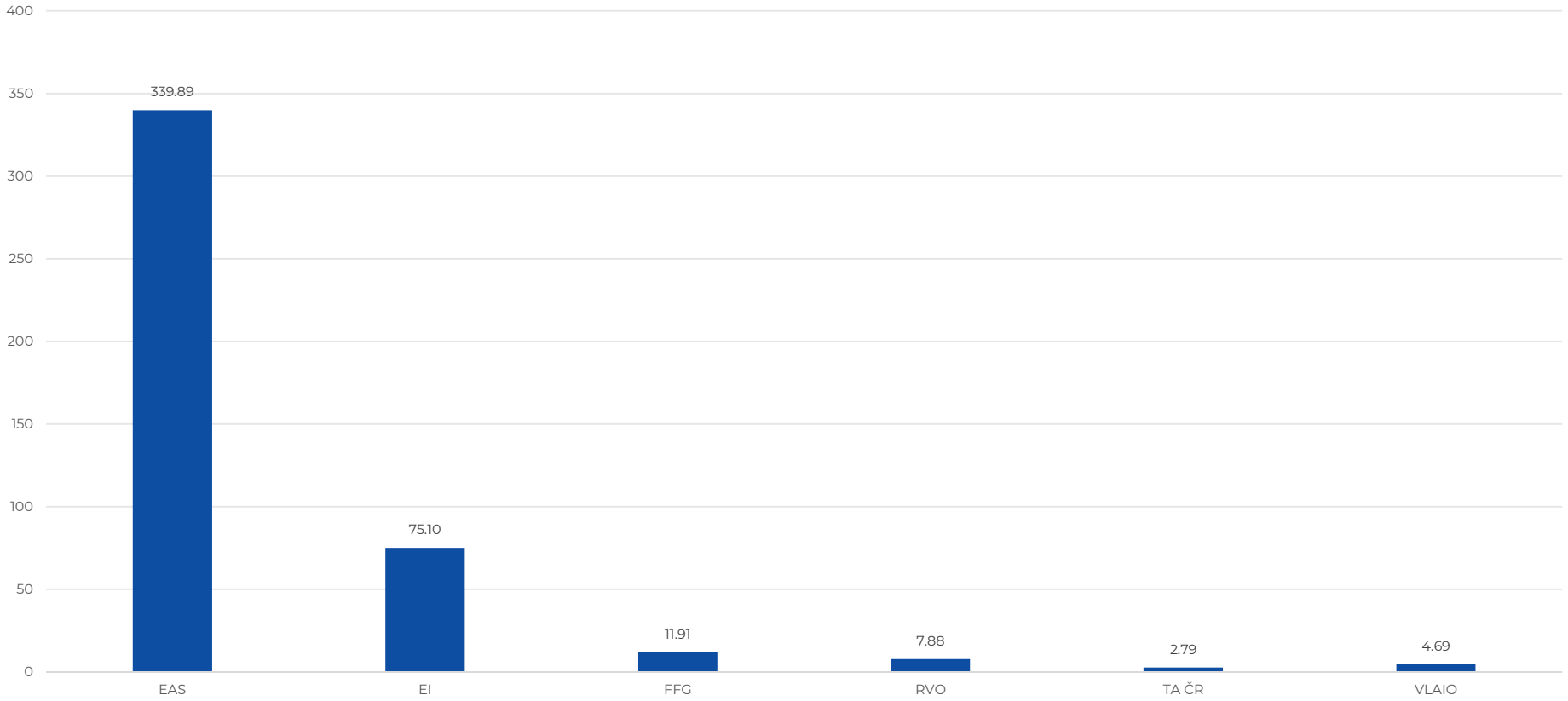


Figure 6.E Average number of participants per one million euro of contracted budget in 2019-2020