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ERA THEMATIC DOSSIER ON PERFORMANCE OF AUSTRIAN ENTERPRISES IN HORIZON 2020

An Overview with Special Consideration of “Close-to-Market Instruments”

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IMPRINT

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CONTENT

ERA THEMATIC DOSSIER ON PERFORMANCE OF AUSTRIAN ENTERPRISES IN HORIZON 2020

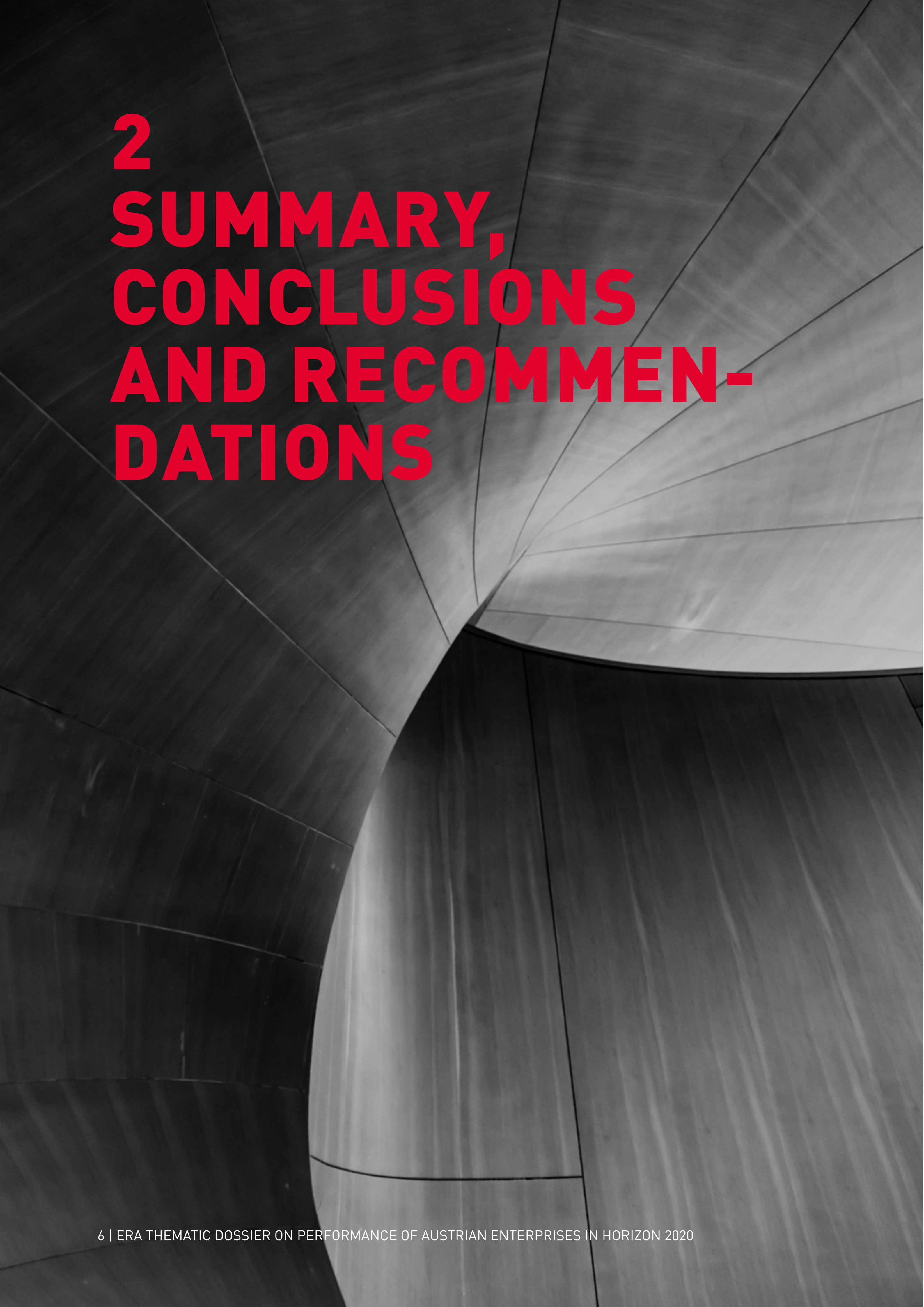
1 INTRODUCTION

The aim of this ERA thematic dossier is to provide a comprehensive overview of the performance of Austrian enterprises in Horizon 2020, and to derive conclusions for policy makers, stakeholders, and other relevant actors in the field. Thus we always take companies (i.e. so-called PRCs - "Private Commercial") as the object of consideration. The empirical analyses are based on the most recent available data (03/2019) provided by the European Commission, and in some cases accompanied by data from the FFG and the EUREKA Secretariat.

The first part of the analysis focuses on the participation of Austrian companies in Horizon 2020 (Chapter 3). Additionally, a whole chapter is devoted to so-called "close-to-market instruments" (Access to risk finance, PCP-PPI) and the participation of Austrian companies in multilateral partnership initiatives (Eurostars). Another focus is placed on the performance of SMEs in relation to the SME instruments in H2020 (Chapter 4).

The performance of Austrian companies within the three pillars (i.e. "Industrial Leadership", "Excellent Science" and "Societal Challenges") is discussed in Chapter 5. Comparisons with national programmes (FFG) complete the empirical analysis (Chapter 6). The dossier concludes with a brief overview of the key changes relevant to companies in the upcoming Horizon Europe programme (Chapter 7).

The present dossier is a product of the cooperation between EU Performance Monitoring (EUPM) and European and International Programmes (EIP). It aims to offer a comprehensive overview, just when the Horizon 2020 period is approaching its end.



2 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

After about five years of Horizon 2020, the overall conclusion is that Austria's companies have performed very well throughout the whole programme period. This positive conclusion is demonstrated by a variety of empirical facts which can be summarised as follows:

- To date Austrian institutions have generated EUR 1,179 million of H2020 funding, of which EUR 405 million (or 34.4%) has been allocated to Austrian private companies. Overall, these good results are evidence of a highly developed innovation system in which innovative companies are supported by a variety of funding opportunities and a broad set of institutions. In all, the highly developed innovation system provides fertile ground for intensive involvement in European FTI programmes.
- There were 6034 applications by companies (i.e. 37.2% of the Austrian total), of which 1090 were successful. Behind these successful participations are 487 individual companies, of which 305 have successfully participated at the European level for the first time (i.e. they did not participate in a FP7 project). Thus the newcomer rate is 68%. This high success rate is not least a result of the SME Instrument which Austrian SMEs were able to use to a comparatively large extent. The strong SME-based Austrian economy also supports these figures.
- There were 6034 applications by companies (i.e. 37.2% of the Austrian total), of which 1090 were successful. Behind these successful participations are 487 individual companies of which 305 have successfully participated at the European level for the first time (i.e. they did not participate in a FP7 project). Thus the newcomer rate is 68%. The majority of these newcomers are well-known within the Austrian RTD community and already have experience of funding from Austrian support institutions. Furthermore, this high success rate is not least a result of the SME Instrument which Austrian SMEs were able to use to a comparatively large extent. The strong SME-based Austrian economy also supports these figures.
- With a success rate of 18.1%, Austrian companies are well above the European average of 14%. Indeed, Austrian companies achieve the highest success rate among all Member States. This demonstrates once again the success of efforts made by Austrian supporting institutions (e.g. EIP, NPCs) which provide consulting and training activities as well as "selecting" promising project appraisals for more intensive mentoring.
- This high success rate is in line with the overall success rate for all Austrian organisations, which is 18% compared with 15.4% for all European organisations. The Austrian SMEs also show an above-average success rate (15% versus 11.6%). In fact, they achieved the second-highest success rate of all Member States (behind Belgium at 15.3%). In addition to their obvious innovative strength, the selective advisory activities of Austrian support institutions have also played a part. Austria's SME sector has also been highly successful, with 275 Austrian SMEs having participated to date. At a total of EUR 169.4 million, they received approximately 42% of the total funding allocated to Austrian private companies (or 14.4% of the total funding Austria has secured in H2020 so far).
- A special focus of this dossier lies on so-called "close-to-market instruments". The major findings of the respective analyses can be summarised as follows:
  - The new SME instruments have proven to be attractive. At 113 participations, Austrian SMEs received approximately EUR 42 million through SME Instrument Phases 1 and 2. The extremely high success rates enjoyed by Austrian small and medium-sized enterprises are remarkable, and, in Phase 1, almost twice as high as the European average.
  - With respect to "Access to risk finance", Austrian firms and intermediaries received loans and loan guarantees amounting to a total of EUR 1,200 million. Thus larger firms were able to use these new European instruments in order to diversify their funding structure and complement their funding. To date 227 SMEs have benefitted from loans (or loan guarantees) amounting to a total of EUR 262 million.

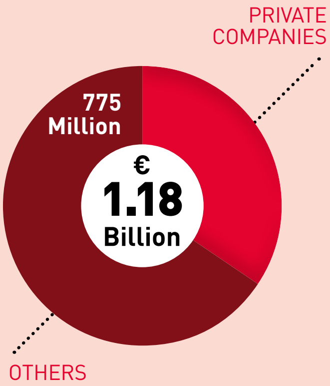
- Eurostars has established itself as a well-performing format for the international co-operation of SMEs within Europe, and as a particular ingredient in cooperation with non-European EUREKA countries including South Korea, Canada and South Africa. Compared to its predecessor programme Eurostars-1 (2008-2013), the key figures for Austrian participation have improved noticeably with respect to the number of applications, quality of the applications, and funding decisions. It should be stressed that Austria's policy towards this instrument has been always very pro-active. Austria will hold the Eureka chairmanship in the period 2020 and 2021.
- With respect to Innovation Procurement, the low level of Austria participation should be noted and suggests there is still ample space for improvement.

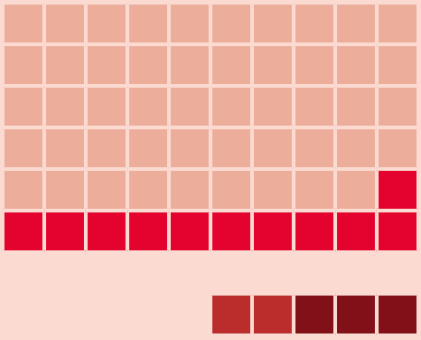
- Regarding thematic specialisation, a clear picture emerges. Company participations tend to be clustered within a small number of large programmes. The five largest programmes account for around 61% of all European PRC participations. The corresponding share of Austrian companies amounts to 68%, indicating that Austria's companies are even more specialised. In Austria these five areas are, in descending order: ICT (Information & Communication Technologies), TPT (Transport and Mobility), MSCA (Marie Skłodowska-Curie Actions), ENERGY, and ENV (Environment).
- Looking at the distribution of participations and funding over the three pillars of H2020, the results are as follows: within the "Leading Role of Industry" pillar there are 408 participations by Austrian companies, receiving an allocated funding of EUR 159.7 million. Within "Societal Challenges", 493 Austrian company participations received a total of EUR 193.1 million. Austrian companies are therefore already particularly successful in the "Societal Challenges" pillar of H2020. It can reasonably be expected that the increased emphasis on "missions" in Horizon Europe will not bring particular disadvantages for Austrian companies. Finally, at 166 participations, Austrian companies secured a total of EUR 45.8 million in funding under the "Excellent Science" pillar. Most of these participations are in MSCA (Marie Skłodowska-Curie Actions), with ITN (Innovative Training Networks) being the most important for PRCs, followed by RISE (Research and Innovation Staff Exchange).
- Some extremely successful companies have outstanding numbers of participations, and hence funding. One company (AVL List) is even involved in 57 projects. All in all, the top 10 companies account for more than 60% of secured funding. Approximately 33%, or around 180 Austrian companies, are participating in more than two successful H2020 projects (together accounting for around two-thirds of all Austrian PRC participations).
- National RTI funding priorities have a positive effect on EU success. Austria's companies are particularly well represented in EU programme lines which reflect a similar "programme line" offering support at a national level, namely ICT, transport and mobility, production and energy.
- However, there are still some drawbacks, which are mainly the result of a general underfunding of H2020:
  - High oversubscription rates in general, leading to overall low success rates. This is especially pronounced in innovation-oriented programmes such as the SME Instrument , with success rates of only 4.4% (European average) and 5.6% (Austria).
  - This is a particular disadvantage for Austria as more than 50% of Austrian PRC applications were evaluated positively, with a large share of these projects unable to receive funding due to a lack of resources. This situation may result in companies becoming increasingly hesitant to participate in future, or even to try for the first time.

ON THE BASIS OF THESE RESULTS, THE FOLLOWING RECOMMENDATIONS CAN BE MADE:

- The problem of positively evaluated project submissions having to be rejected due to a lack of funding may be solved for Austrian projects as follows: Developing a new national programme for these "seal of excellence" projects which would, after a short examination, promote the original project under Horizon Europe conditions. This removes the need to follow rules on state aid, and structural funding could be used for these actions. Examples of such programmes can be found in Spain, Sweden, Italy and Poland.
- To compensate for the abolition of the SME Instrument: Establishing a platform that includes all relevant stakeholders (ministries, agencies such as the aws, FFG and regional funding agencies, start-up incubators and accelerators, etc.) to build up a permanent stream of Austrian companies which are able to generate potentially successful EIC Accelerator projects.
- In order to compensate for the phasing out of Phase 1 projects (funding of business feasibility studies), it would be possible to set up a national programme that could eventually also be backed up with European Co-Fund money.
- Pathfinder: Strengthening current close cooperation with regional agencies and TTOs to generate a relevant pipeline of projects (e.g. spin-offs from the higher education sector).
- Guarantee sufficient resources for the Austrian national support system to maintain the high success rate of Austrian firms via training, consulting and other supportive measures.

Total amount of funding for Austrian organisations





6034 applications by companies
1090 successful applications

from 487 individual companies
(of which 305 are newcomers)

Share of Austrian PRCs in European total

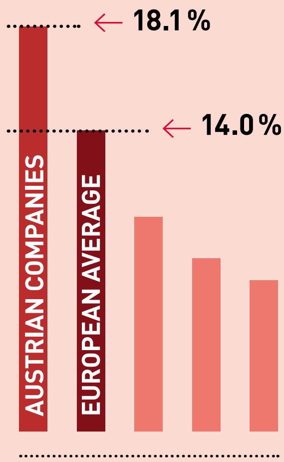
2.3 % (applications)
3.0 % (successful applications)
3.2 % (funding)

PRCs within Austria

37.4 % of successful applications

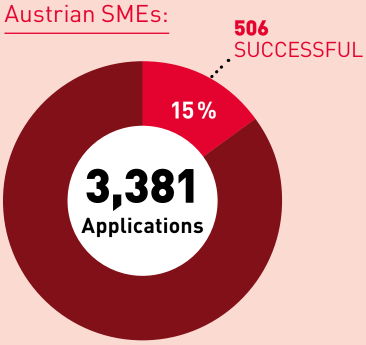
34.3 % of funding

Success rate



Success rate for Austrian companies: **18.1 %** (European average: **14 %**), making it the highest of all Member States.

Austrian SMEs:



275 individual SMEs gained a total of

€ 169,400,000 in funding.

SME instrument: **113 participations** and EUR **41.9 million in funding** received.

182 companies with 2 or more successful participations

2+

these companies account for **60 %** of all successful participations and **87 %** of received funding.

A total of more than EUR 67 million in direct grants were allocated to Austrian PRCs within the close-to-market programmes. Additionally, more than EUR 1200 million in loans and loan guarantees has been received by companies and financial intermediaries within "Access to risk finance". 227 SMEs benefitted from loans (or loan guarantees) to a total of EUR 262 million.
Long-term development is very positive: rising shares for Austrian PRCs, reversing the success rate relative to the European average: from negative (FP4, FP5, FP6) to positive (FP7), to very positive (H2020). Ever increasing number of companies with experience in working with European FTI programmes.

3 AUSTRIAN COMPANIES IN HORIZON 2020 – GENERAL RESULTS

The overall performance of Austrian enterprises (PRCs) within Horizon 2020 so far has been very good. The amount of (approved) funding for Austria amounts to around EUR 1.18 billion (or 2.9% of total Horizon 2020 funding), of which 34% has been directed to Austrian companies. With total funding of EUR 405.3 million, these companies have secured a 3.2% share of the total H2020 funding for PRCs.

There were 6034 applications by companies (i.e. 37.2% of Austrian total) of which 1090 were successful (see Table 1). 37.4% of the Austrian companies are private companies. Behind these successful participations were 487 individual companies, of which 305 have successfully participated at the European level for the first time (i.e. newcomers who did not participate in FP7).

On average, the amount of funding for each participating company was around EUR 372,000 per project, making it somewhat higher than the corresponding number for FP7 (EUR 317,000).[1] The largest funding amount received by a company for a single project was EUR 3.19 million.

In total, 1274 companies submitted applications but remained unsuccessful. Although more than 50% of these companies were above the threshold level with their applications, their projects could not be approved due to H2020 budget restrictions. However, this clearly demonstrates the Austrian business sector's large and broad R&D basis.

Table 1: Austrian PRC participation within Horizon 2020: Key figures

	Applications	Approved Participations	Success Rate	Approved Coordinations	Approved Funding
H2020 total	658,337	101,247	15,4%	23,055	41,287,500,922
H2020 total-PRC	262,314	36,782	14,0%	6609	12,724,319,848
Share total-PRC on European total	**39.8%**	**36.3%**		**28.7%**	**30.8%**
H2020 Austria	16226	2917	18,0%	606	1,179,295,986
H2020 Austria-PRC	6034	1090	18,1%	203	405,257,841
Share Austria-PRC on Austria total	**37.2%**	**37.4%**		**33.5%**	**34.4%**
H2020 total	658,337	101,247	15,4%	23,055	41,287,500,922
H2020 Austria	16226	2917	18,0%	606	1,179,295,986
Share Austria on European total	**2.5%**	**2.9%**		**2.6%**	**2.9%**
H2020 total-PRC	262,314	36782	14,0%	6,609	12,724,319,848
H2020 Austria-PRC	6034	1090	18,1%	203	405,257,841
Share Austria on total-PRC	**2.3%**	**3.0%**		**3.1%**	**3.2%**
H2020 total-SME	147413	17091	11,6%	5338	5,968,497,219
H2020 Austria-SME	3381	506	15,0%	147	169,388,992
Share Austria on total-SME	**2.3%**	**3.0%**		**2.8%**	**2.8%**

Source: EC 2019/03; FFG calculations

1 However, it should be taken into account that these figures refer to nominal values.

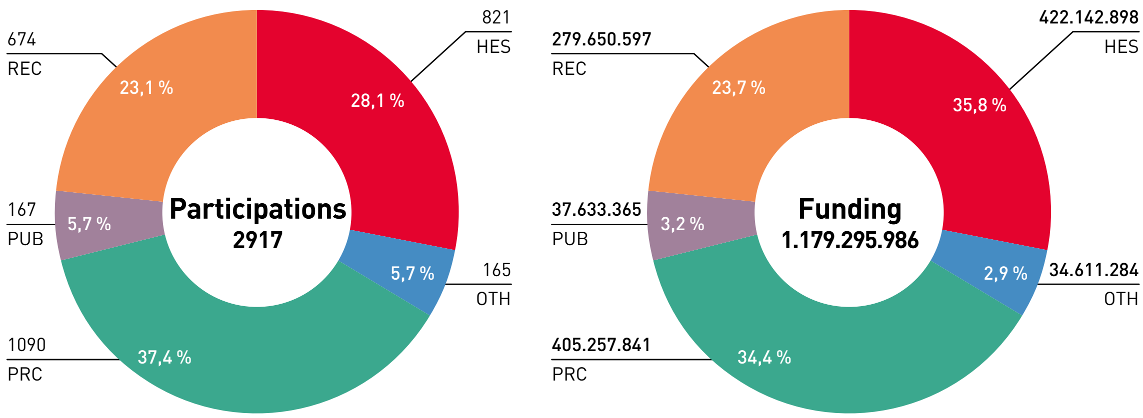
At 18%, the success rate for Austrian institutions lies well above the European average of 15.4%. This pattern of good overall performance continues a trend which has also been observed in previous framework programmes. Ultimately, it is the result of a highly competitive innovation system which is able to continuously generate high-quality research and innovation projects. Specifically, the success rate of Austrian PRCs is even slightly higher than that of all Austrian institutions (18.1% versus 18.0%), and significantly above the EU benchmark success rate of 14% for PRCs. This again demonstrates the competitiveness and quality of innovation activities undertaken by Austrian PRCs.

Austrian SMEs account for a significant share of the total number of approved PRC participations. With a total of 506 participations, SMEs account for 46% of all Austrian PRC participations. In terms of funding, these participations translate to a share for SMEs of 42% of the total funding received by Austrian PRCs, indicating that the size of projects (in financial terms) in which SMEs are involved is slightly lower than for PRCs in general. Austrian SMEs experience a success rate of 15% which is again substantially higher than the European average for SMEs of 11.6%.

With a share of 37%, Austrian companies are the largest institutional group of Austrian applications, followed by institutions from the higher education sector (HES) at around 28%, and research centres (REC) at 23% (see Figure 1). Accordingly, the absolute numbers of participations are 1090 by PRCs, 821 by HES, 674 by REC, 167 by public institutions (PUB), and 165 by the rest (OTH).

It is interesting to compare the shares with respect to participations versus funding. The HES share of participations is only 28%, while their share of funding is 36%. In contrast, the share of private companies in the participations drops from 37% to 34% in the funding. The reasons for this are different funding conditions (funding intensity, consideration of overheads) as well as small-scale programmes for companies (in particular the SME Instrument with a lump sum of only EUR 50,000 in Phase 1).

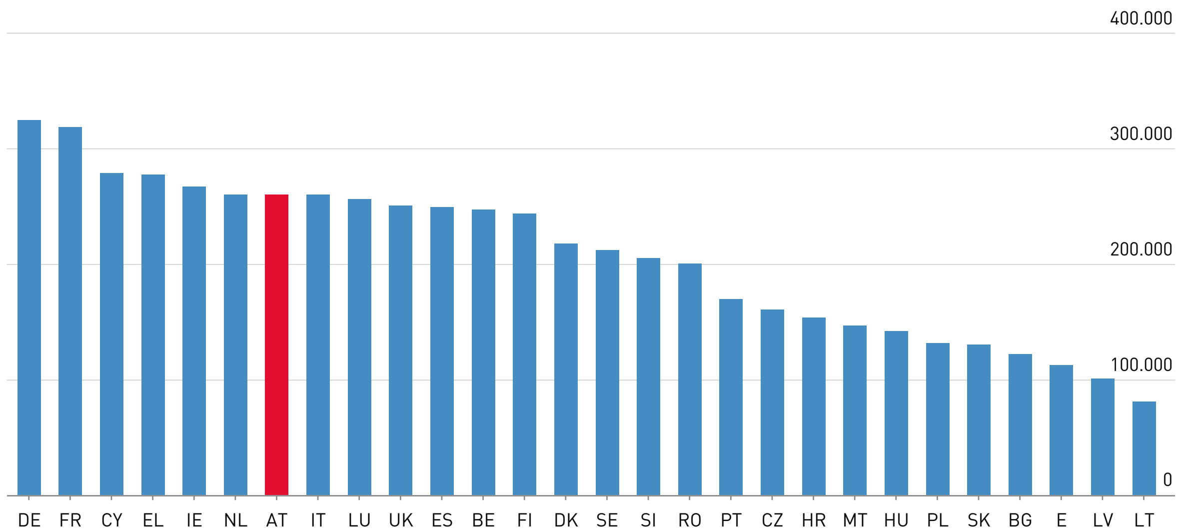
Fig. 1: Austrian participation (number of participations & funding) broken down by organisational type



Source: EC 2019/03; FFG calculations

Figure 2 gives a European-wide comparison of the project size as measured by the median of approved funding for PRCs, per project, per applicant. With a median of more than EUR 250,000 in funding per applicant, Austria's companies are well positioned within the leading group of Member States for this indicator. This high level of funding per application indicates that the projects do play a pivotal role for the companies' R&D endeavours.

Fig. 2: Median of approved funding per project per applicant



Source: EC 2019/03; FFG calculations

Table 2 summarises the development of the performance of Austrian PRCs in comparison to the European average over the different programme periods. Overall, the performance of Austrian PRCs has been extremely positive. The total number of participations by Austrian PRCs in the total participations has risen continuously since Austria joined the European Union in 1995; between FP4 and Horizon 2020 it increased fourfold. This sharp increase has also translated into a rising share of Austrian PRCs in the European total (both with regard to the number of participations and the amount of funding): from 2.1% (participations) and 2.2% (funding), up to 3.0% (participations) and 3.2% (funding) respectively.

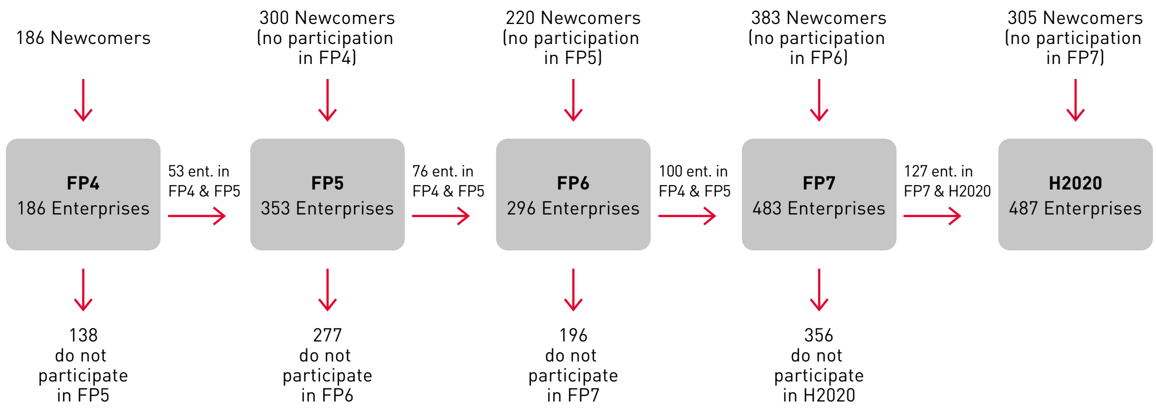
Table 2: The performance of Austria's PRC over time: a comparison of different programme periods

Companinies: Participations	**FP4 (1994-1998)**	**FP5 (1998-2002)**	**FP6 (2002-2006)**	**FP7 (2007-2014)**	**H2020 (2014-2020)**
All Countries	12.705	22.191	13.979	36.505	36.782
Austria	**264**	**585**	**345**	**1.018**	**1.090**
Share of Austria on total	2,1%	2,6%	2,5%	2,8%	3,0%
Companies: Funding (mainlist)	**FP4 (1994-1998)**	**FP5 (1998-2002)**	**FP6 (2002-2006)**	**FP7 (2007-2014)**	**H2020 (2014-2020)**
All countries	3.607.427.037	4.513.988.484	3.036.137.421	10.836.295.827	12.724.319.848
Austria	**77.621.411**	**104.429.631**	**72.262.867**	**347.667.315**	**405.257.841**
Share of Austria on total	2,2%	2,3%	2,4%	3,2%	3,2%

Source: EC 2019/03; FFG calculations

The growing number of participations corresponds with an increase in the number of companies with experience in H2020 projects (see Figure 3).

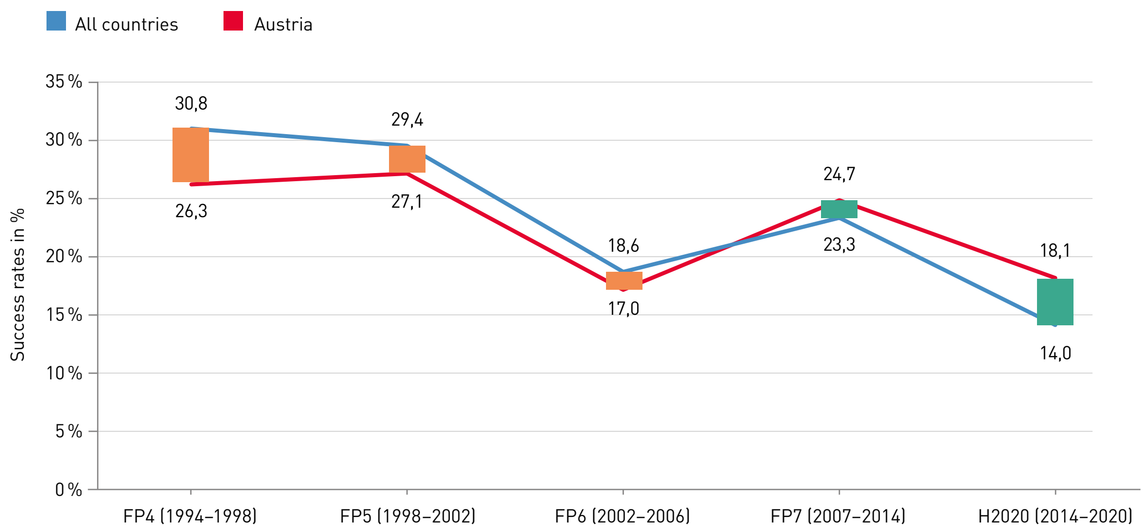
Fig. 3: The development of EU FTI participation of Austrian companies: the long-term view



Source: EC 2019/03; FFG calculations

One particularly positive development is the success rate of Austrian companies (see Figure 4). Initially Austrian PRCs had a success rate below the European benchmark (= EU average as indicated by red bars in Figure 5). This difference diminished during FP5 and FP6, with Austrian PRCs even rising above the European average for the very first time in FP7. During H2020 this outstanding success rate was even more pronounced, with a positive deviation for Austria's PRCs of six percentage points (indicated by green bars in Figure 5). However, the general trend over the long term shows decreasing success rates, indicating the large and "exploding" number of applications which are not matched by available budget.

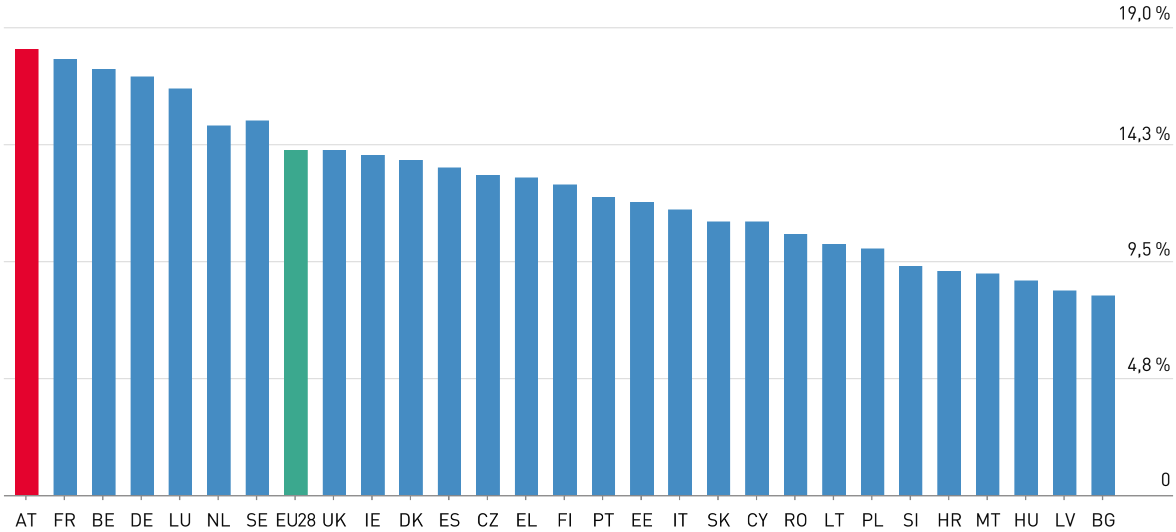
Fig. 4: Long-term development of success rates of PRCs



Source: Cordis, Proviso, EC03/2019, FFG calculations

In fact, in a European comparison, Austrian private companies now achieve the highest success rate (see Figure 5).

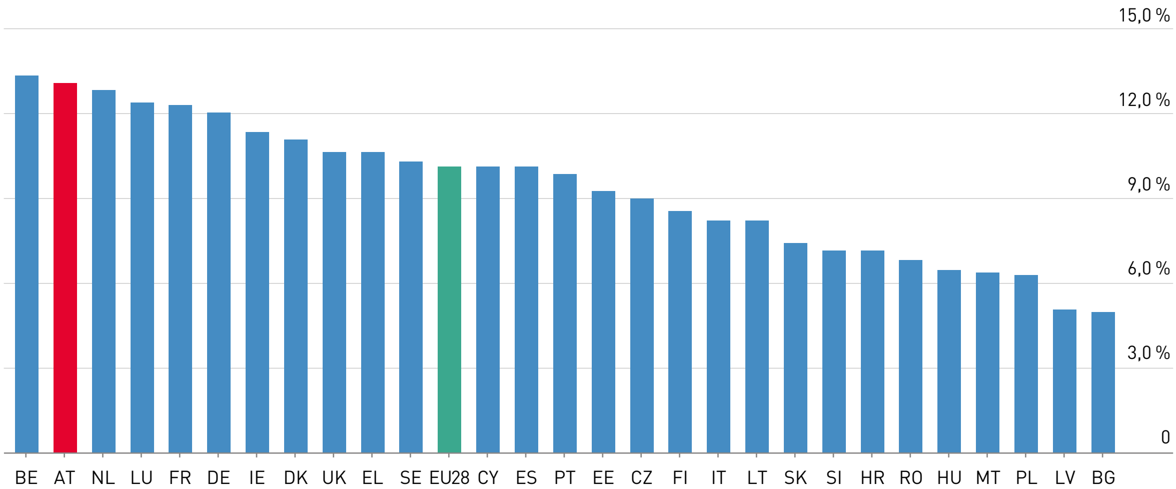
Fig. 5: Overall success rates of private companies by countries



Source: EC 2019/03; FFG calculations

The positive performance of Austrian SMEs is demonstrated by their high success rate within H2020 (all instruments) in general (see Figure 6). Indeed, Austrian SMEs experienced the second highest success rate (at 15%) of all Member States, coming in just behind the leading country Belgium (at 15.3%).

Fig. 6: Overall success rates of SMEs by countries



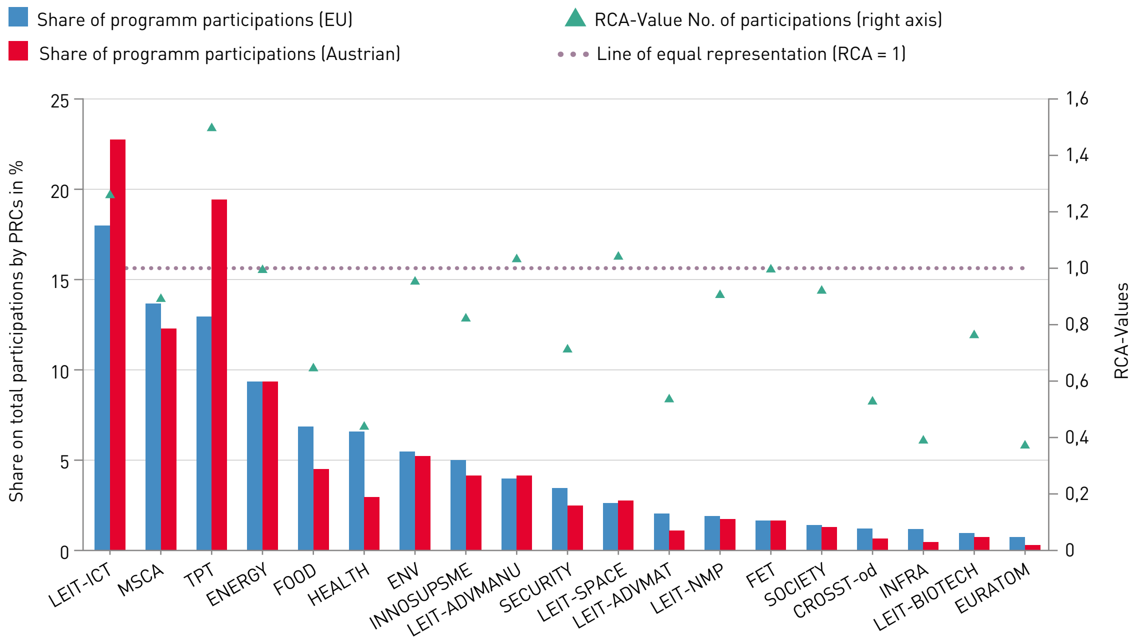
Source: EC 2019/03; FFG calculations

Horizon 2020 consists of a multitude of individual thematic programmes, each geared towards its own goals. Figure 7 gives an overview of the relative strength of Austrian PRCs within individual H2020 programmes compared to the EU benchmark. By using so-called RCA indices (RCA = "Revealed Comparative Advantage"), the relative importance of a country within a specific programme (i.e. share of this programme in Austria) is compared to the overall European share. Index values greater than 1 indicate a relative "strength" (i.e. the Austrian share is higher than the overall European share), and vice versa.

Figure 7 reveals that the hierarchy of programmes (measured by the number of PRC participations) tends to be similar for Austria and the EU benchmark - indeed the correlation coefficient between the two vectors is 0.96. However, there are some marked discrepancies as follows (for the larger programmes only): Austrian PRCs show greater involvement in the LEIT-ICT (Austrian share: 22.8% versus a European benchmark of 18.0%) and TPT programmes (Austrian share: 19.4% versus a European benchmark of 13.0%), whereas Austrian PRCs are relatively underrepresented in the FOOD and HEALTH programmes.

The picture is quite clear: PRC participations (at Austrian and European level) tend to be clustered in a small number of large programmes, with the five largest programmes accounting for around 61% of all European PRC participations. The corresponding share of Austrian companies amounts to 68%, indicating that Austria's companies are even more specialised.

Fig. 7: Participations by PRCs broken down by programmes: Austria versus EU total



Source: EC 2019/03; FFG calculations

Note: Only larger programmes are shown in this figure. The cumulative share of the shown programmes amounts to about 99%

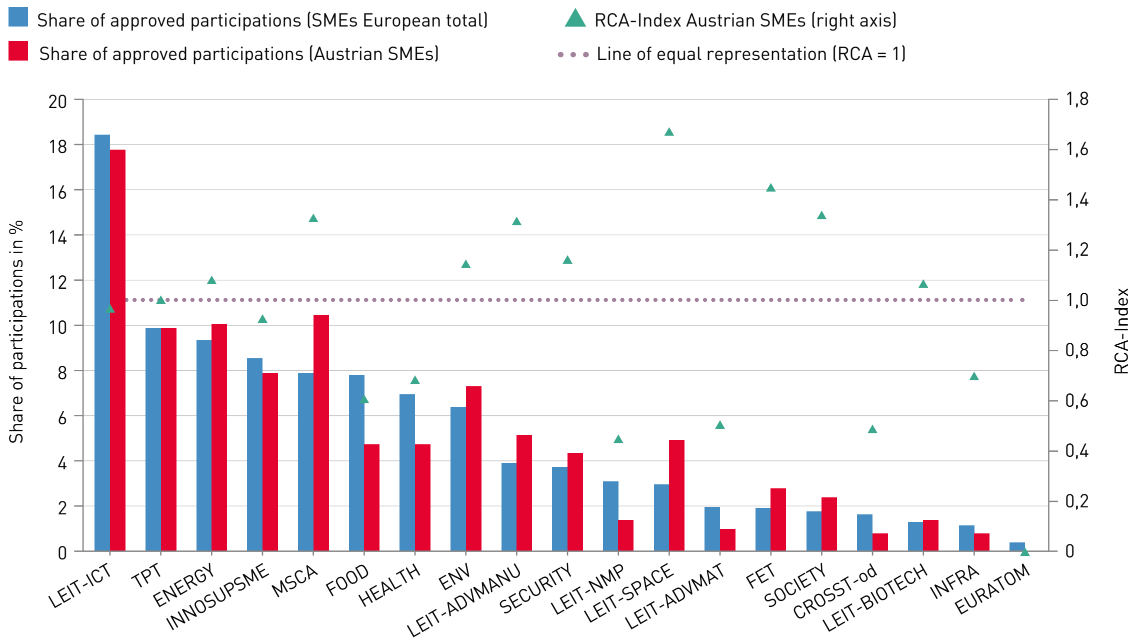
Note: The RCA-Index ("Revealed Comparative Advantage") compares the Austrian share in a specific thematic area with the overall European share. If Austria's RCA in a thematic area is above 1, then the share of this thematic area in Austria is higher than in Europe overall, and vice versa. Example (including only PRCs): The share of Austrian participation by PRC is 3.0%, whereas in LEIT-ICT Austria's share of the European total amounts to 3.7%. Hence the RCA (3.7 / 3.0) is about 1.2, indicating a "comparative advantage" for Austria's companies in this particular thematic area.

Figure 8 shows this specialisation pattern for Austrian SMEs over the various H2020 programmes. The results are quite similar. At a share of around 18%, LEIT-ICT is the most important thematic area in both Austria and the EU as a whole. However, there are small differences. In Austria, about 10% of all SMEs participations fall within the MSCA programme ("Marie Skłodowska-Curie Actions" with ITN "Innovative Training Networks", and RISE "Research and Innovation Staff Exchange", being the two leading MSCA measures), making this the second most important programme for Austria. In Europe as a whole, the corresponding share amounts to "only" 8%, putting it in 5th position. Thematic areas which are overrepresented in Austria are ENV, LEIT-ADVMANU, Security, LEITSPACE and some smaller programmes such as FET and SOCIETY. Thematic areas which are significantly underrepresented in Austria are FOOD and HEALTH.

Interestingly, the specialisation amongst SMEs is somewhat less pronounced than for the companies as a whole. The 5 most important thematic areas for SMEs make up 56% (Austria) and 54% (European total).

With a total funding of EUR 405.3 Million Austrian companies secured a share of 3.2 ot the total funding for private companies within Horizon 2020 from 2014 until now

Fig. 8: Participations by SMEs broken down by programmes: Austria versus EU total



Source: EC 2019/03; FFG calculations

Note: Only larger programmes are shown in this figure. The cumulative share of the shown programmes amounts to about 99%

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An explicit aim of Austrian and European research and technology policy is to stimulate cooperative research and particularly to strengthen links between the academic (e.g. HES, REC) and business sectors. Figure 9 provides selected empirical facts concerning cooperative research projects in Austria. More than a third of these projects are cooperative endeavours between private business (PRC) and universities (HES), receiving around EUR 366 million in total. This translates to a share of 40.2% of all funding for cooperative projects.

Cooperative projects between PRCs and public research institutions (REC) account for 37.4% of all cooperative projects, and receive 44.1% of funding. Together, these types of cooperative projects account for almost three-quarters of all cooperative projects and about 80% of total funding. This demonstrates the high degree of research interaction between these sectors in Austria. Horizon 2020 is clearly an important means of stimulating such cooperative links.

Fig. 9: Cooperative projects with Austrian involvement in H2020

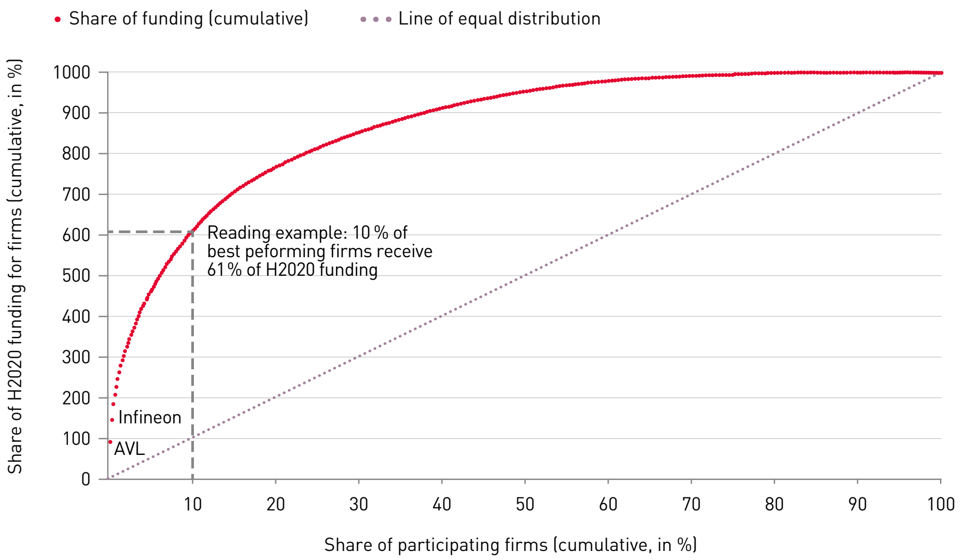
Source: EC 2019/03

Note: The category "Rest" includes public research institutions, private associations etc.

A striking feature of Austrian participation in Horizon 2020 is the high degree of concentration with respect to the funding flows to participating Austrian companies. Figure 10 reveals this unequal distribution using a Lorenz concentration curve. A small share of extremely successful firms (red) account for a disproportionate amount of funding. Indeed, the most successful Austrian firm (AVL) was able to secure 57 participations within Horizon2020 alone, with a funding of around EUR 32.9 million, accounting for 9.1% of the total Horizon 2020 funding received by Austrian PRCs. In second place comes Infineon in Villach/Carinthia, which was able to successfully secure 30 project participations. Together, these two firms account for around 15% of the total value of funding received by Austrian companies in H2020 to date.

As shown in Figure 10, around 61% of the funding goes to the group of the 10% most successful Austrian PRCs, while 50% of the companies receive 95.4% of the total funding. This pattern reflects how R&D activities in general are unevenly distributed, with a small number of R&D-intensive companies (mainly large enterprises) accounting for the majority of overall R&D in the business sector.

Fig. 10: Lorenz curve of H2020 funding for Austrian business firms



Source: EC 2019/03; FFG calculations

4 CLOSE-TO-MARKET INSTRUMENTS

4.1 AUSTRIAN SMES IN THE NEW SME INSTRUMENTS

Austria's research and technology policy explicitly targets SMEs as a means of improving their innovativeness, making the strong integration of SMEs into the H2020 programme an express Austrian goal. The overall performance of Austrian SMEs has already been discussed in Chapter 3. This chapter predominantly focuses on the new SME instruments. The overall performance of Austrian SMEs with respect to the new SME instruments is shown in Table 3. It also shows the relative position of the SME instruments in quantitative terms compared to all H2020 instruments.

When assessing the relative position and importance of the new SME instruments, the numbers for all H2020 instruments must be taken into account. Total European funding for the SME instruments amounts to EUR 1.9 billion (distributed over 4787 participations). Thus the share of the SME Instrument in the total funding allocated to SMEs is almost 32%, indicating the relative importance of the SME Instrument for SMEs. The corresponding value for this share in Austria is 24.7% (EUR 41.9 million out of a total EUR 169.4 million are from the SME Instrument). In terms of participations, the share of the SME Instrument amounts to 22.3% (Europe: 28%). These patterns indicate that Austrian SMEs are also highly successful in general programmes which are not specifically geared towards the SME sector. This shows the strength and innovativeness of the Austrian SMEs who keep abreast with their larger peers.

To date the total number of Austrian participations within the SME Instrument amounts to 113: most (i.e. 88) belong to Phase 1 ("concept and feasibility assessment") while 25 participations are in Phase 2 ("innovation project"). Given the largely divergent funding basis (flat rate of EUR 50,000 versus anywhere from EUR 500,000 to EUR 2,500,000), in terms of funding this order is reversed. The 25 Austrian Phase 2 projects received EUR 37.6 million, amounting to almost 90%.

Table 3: SME-instrument: Approved participations, coordinations and funding

	Participations		Coordinations		Funding		Success Rate
	Number	in % of European total	Number	in % of European total	in Mio. €	in % of European total	
European total all instruments	101,247	100.0%	23,055	100.0%	41,287.5	100.0%	15.4%
Austria all instruments	2,917	2.9%	606	2.6%	1,179.3	2.9%	18.0%
European SME all instruments	17,091	100.0%	5,338	100.0%	5,968.5	100.0%	11.6%
Austria SME all instruments	506	3.0%	147	2.8%	169.4	2.8%	15.0%
European total SME-Instrument	4,787	100.0%	4,461	100.0%	1,929.1	100.0%	7.0%
Austria in SME-Instrument	113	2.4%	108	2.4%	41.9	2.2%	11.4%
All countries in SME-Instrument Phase 1	3,601	100.0%	3,416	100.0%	168.5	100.0%	8.6%
Austria in SME-Instrument Phase 1	88	2.4%	86	2.5%	4.3	2.6%	16.3%
All countries in SME-Instrument Phase 2	1,186	100.0%	1,045	100.0%	1,760.6	100.0%	4.4%
Austria in SME-Instrument Phase 2	25	2.1%	22	2.1%	37.6	2.1%	5.6%

Source: EC 03/2019

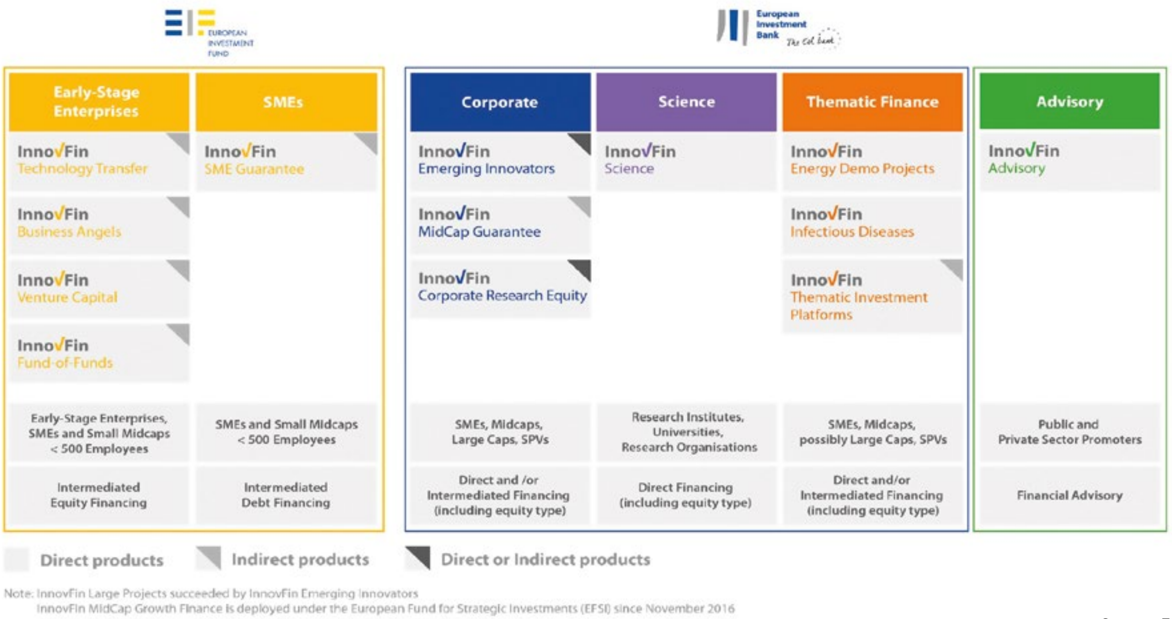
The success rates are particularly positive. With an overall success rate (Phase 1 and 2) of 11.4%, Austrian SMEs are significantly above the European average of 7.0%. This is particularly pronounced in Phase 1 in which Austria's success rate is almost twice as high as the European average. One possible explanation is – as customer feedback shows – the high quality of guidance and training offered by the FFG. Around 90% of the SMEs asking for support are advised not to apply, having been assessed as unready. This prevents large quantities of resources being wasted on ineffective application processes. Given these results, it is regrettable that Phase 1 will be abolished in HEU. In order to compensate for the phasing out of Phase 1 projects, it would be advisable to set up a national programme that could eventually also be supported with European Co-Fund money.

4.2 OTHER CLOSE-TO-MARKET INSTRUMENTS

ACCESS TO RISK FINANCE

Under H2020, the pilot actions for access to risk finance (RSI, RSFF) introduced under FP7 were further enhanced (see Figure 11). The EIB Group (the European Investment Bank and the European Investment Fund) works on behalf of the European Commission to implement various risk finance products for different target groups, with a range of InnovFin Products having been developed and introduced from the start of H2020. Via InnovFin ("EU Finance for Innovators"), the EIB Group can provide financing starting at EUR 25,000 for investments in research and innovation (R&I) to companies and other entities of all sizes and ages: start-ups, small and medium-sized enterprises (SMEs), mid-caps, larger private companies, research institutes/organisations, universities and R&I-driven entities.

Fig. 11: Structure of Access to Finance programme



Source: FFG

THERE ARE TWO MAIN CATEGORIES:

- Direct products: the EIB interacts directly with an entity, e.g. a large company;
- Indirect products: for SMEs and small midcaps, the EIF (mainly) interacts via so-called national/regional financial intermediaries.

In 2016 the EFSI ("Juncker investment plan") was introduced. One of its sectors also targets R&I investments, so it can be said that in this sector EFSI adds more firepower to existing products (though with slight differences in the details).

The results for Austria can be summarised as follows: So far, for R&I, around EUR 1,200 million in loans or loan guarantees has been received by Austrian companies (directly) or has been contracted to financial intermediaries for SMEs (indirectly) from H2020/InnovFin or EFSI (see Table 4). To date 227 SMEs have benefitted from loans (or loan guarantees) amounting to a total of EUR 262 million.

> Austrian companies (and especially SMEs) were able to benefit particularly from the new close-to-market-instruments

Table 4: Overview of financial support for Austrian firms and institutions received via Access to Finance

	Mio. €	
Direct products (EIB loans)	InnovFin/H2020	EFSI (FEI)
KTM, Swietelsky, Mapei RDI, Tupacex, Doppelmayr, Xylem, MAM, Benteler	220.1	
Food Industry Resource Efficiency & Innovation, Apeiron, AVL, KTM, Zumtobel, AMS, F2G, Marinomed		409.0
Indirect products (financial intermediaries)	InnovFin/H2020	EFSI (FEI)
Unicredit Austria, aws	96.0	296.0

Source: FFG

Currently, no equity-contracts with Austrian financial intermediaries (e.g. VC funds etc.) have been signed for R&I (InnovFin or EFSI).

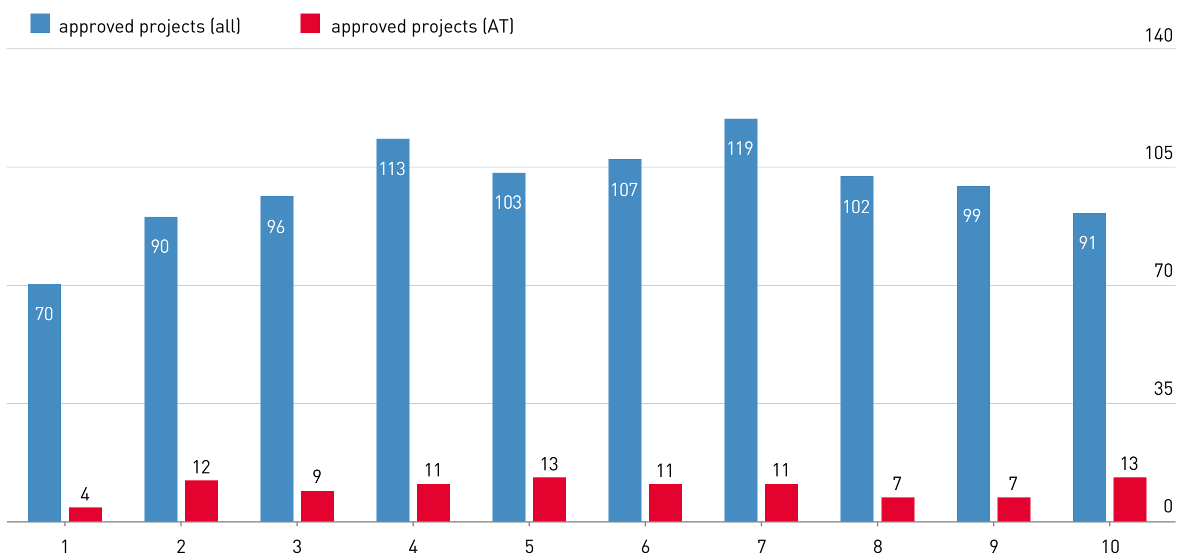
AUSTRIA IN EUROSTARS-2 FROM 2014 UNTIL Q1/2019

Eurostars-2 is a joint funding programme between a number of EUREKA countries (36 countries are involved to date) and the European Union. Eurostars aims to support transnational close-to-market R&D projects led by SMEs. Specifically, the programme addresses SMEs which are already active in R&D activities. In addition to SME engagement which represents at least half of the project volume, other organisations such as universities, research organisations and large companies may be project partners.

Compared to the predecessor programme Eurostars-1 (2008-2013), the key figures for the Austrian participation have improved noticeably with respect to the number of applications, quality of the applications and funding decisions.

The number of applications ranges from 24 to 41 per cut-off, of which between 7 and 13 are finally approved (funded). This corresponds to a success rate of about 30%, a number which is also in line with the overall programme success rate. It should be noted that Austrian participants have reached impressively high positions in the Eurostars ranking lists, e.g. in Cut-Off rank no. 1 was assigned to a project co-ordinated by an Austrian SME, as were ranks 1, 2, 5 and 15 in Cut-Off 5. Including Cut-Off 10 (from September 2019), 99 Eurostar-2 projects with Austrian participation were approved (see Figure 12). These projects received total funding of EUR 25.4 million, of which EUR 6.3 million was contributed by the EU. Four additional cut-offs are planned for 2019 and 2020.

Fig. 12: Development of Eurostars-2: The position of Austria



Source: Eurostars, FFG

Eurostars has established itself as a well-performing format for the international cooperation of SMEs within Europe and as a particular ingredient, also with non-European EUREKA countries including South Korea, Canada and South Africa. It has the advantage of centrally organised and evaluated cut-offs (calls), with dedicated earmarked budgets in the participating countries. The FFG services provided for Austrian actors within Eurostars are awareness, training for applications, advisory services during all phases of the project, evaluation of financial viability, funding and monitoring of successful applications.

INNOVATION PROCUREMENT

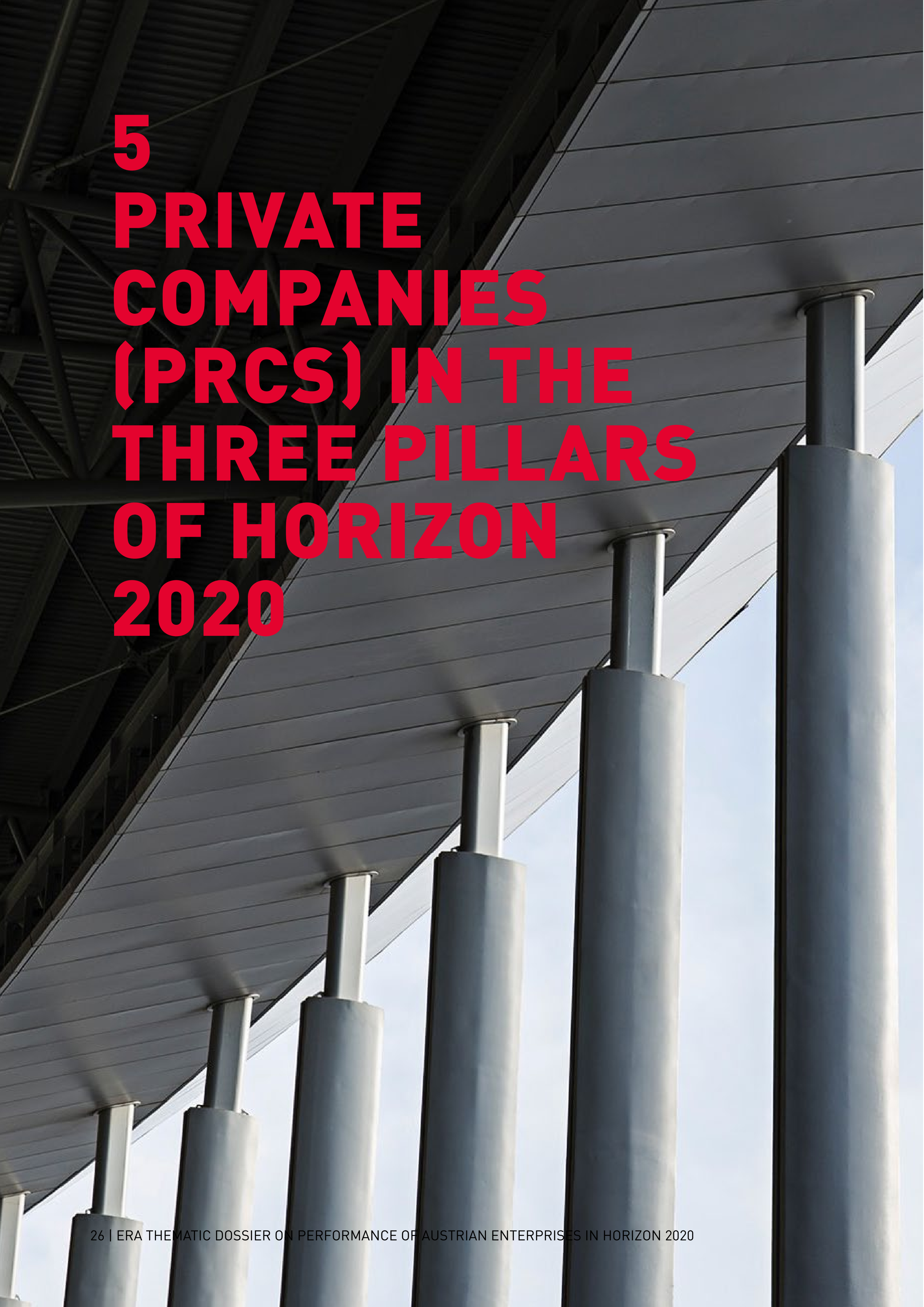
As part of Horizon 2020's increasing orientation towards innovation, it is intended to address users and potential procurers of innovations. In this context, the European Commission (EC) has launched new measures to support public procurers investing in innovation procurement. Essentially, Innovation Procurement includes the two instruments of Pre-Commercial Procurement (PCP) and Public Procurement of Innovative Solutions (PPI) which encourage the public sector to engage in research and development services or acquire innovative products or services.

To date, a total of 24 projects have been funded for the calls for PCP and PPI measures. The committed funding for eligible projects in the area of Innovation Procurement amounts to EUR 142 million, with PCP projects making up the largest share. Austrian organisations are involved in both a PCP and a PPI project, and receive funding totalling EUR 243,000.

This instrument has been only hesitantly accepted by the target group. However, the framework conditions changed over the course of Horizon 2020, with the result that better funding rates and support measures are now available for procurers.

This instrument will continue to be used in the forthcoming Framework Programme. Within the framework of the European Innovation Council, Innovation Procurement will be used as an instrument to promote market-oriented innovations. Furthermore, measures for innovation-promoting public procurement will also be supported in other market-oriented programmes such as the Digital Europe Programme and the European Defence Programme.

5 PRIVATE COMPANIES (PRCS) IN THE THREE PILLARS OF HORIZON 2020

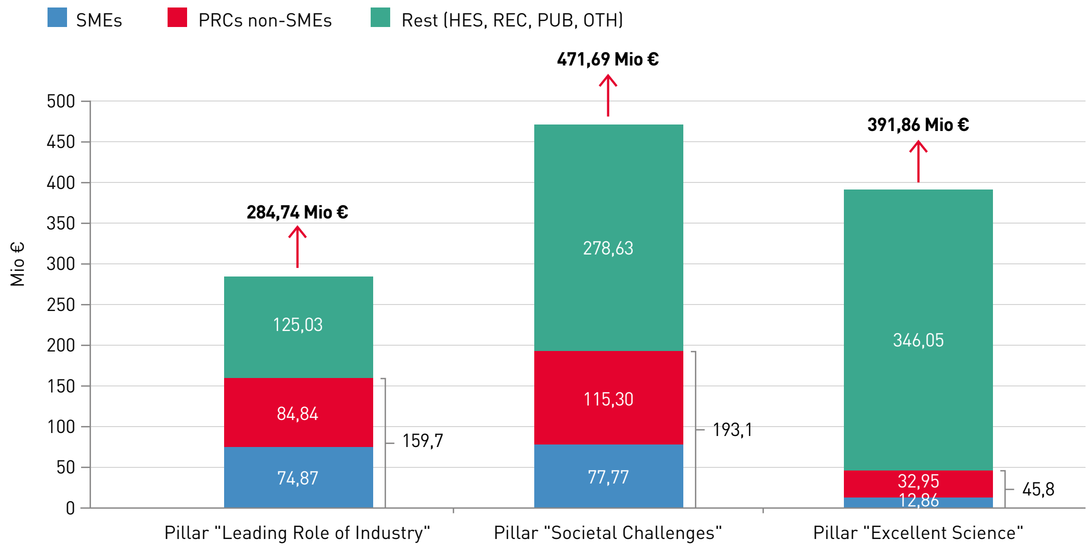


5.1 OVERVIEW

Figure 13 gives an overview of funding with respect to size within the three pillars of Horizon 2020, including the role of private companies (with special consideration of SMEs). The pillar "Societal Challenges" clearly takes the lead with EUR 471.7 million of funding. Even for private companies (and within this group for SMEs as well) this pillar is the most important H2020 funding source (EUR 193.1 million of which EUR 77.8 million go to SMEs). In the pillar "Industrial Leadership" EUR 159.7 million are allocated to private companies of which EUR 74.9 million flow to SMEs. The pillar "Excellent Science" plays only a limited role for private companies (EUR 45.8 million).

The following chapters describe the specific role of private companies in the individual pillars of Horizon 2020.

Fig. 13: Private companies in the three pillars of Horizon 2020: An overview



Source: EC 03/2019, FFG calculations

5.2 INDUSTRIAL LEADERSHIP

Table 5 summarises key figures for the participation of Austrian organisations, and in particular PRCs and SMEs, in the pillar "Industrial Leadership". Of total funding of around EUR 9 billion, 3.1% (or almost EUR 285 million) has been secured by Austrian organisations within this pillar.

With 408 participations, private companies receive EUR 159.7 million of funding (or 3.4% of the European total funding for PRC). Thus, their share of the Austrian funding amounts to 56%. At 18.6%, the success rate of Austrian companies in this pillar is even higher than their overall success rate.

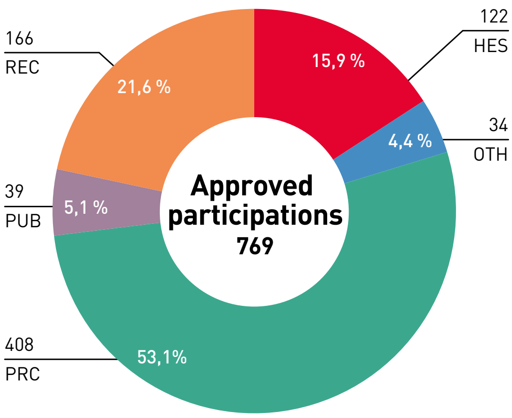
Austrian SMEs are also performing well in this pillar. With 200 participations, they receive EUR 74.9 million in funding, or 47% of the total funding allocated to Austrian PRCs. Their success rate amounts to 14.9%, placing it well above the European average (10.8%).

Table 5: Pillar "Industrial Leadership": Key figures	Applications	Participations	Success Rate	Coordinators	Funding
Industrial Leadership (Total)	151083	23475	15.5%	4451	9,062,737,791
Industrial Leadership (Austria)	3890	769	19.8%	131	284,735,489
Share of Austria on Total	**2.6%**	**3.3%**		**2.9%**	**3.1%**
Industrial Leadership PRC (Total)	93174	12710	13.6%	3019	4,740,084,918
Industrial Leadership PRC (Austria)	2189	408	18.6%	89	159,704,768
Share of Austria on Total	**2.3%**	**3.2%**		**2.9%**	**3.4%**
Industrial Leadership SMEs (Total)	63762	6887	10.8%	2596	2,430,183,927
Industrial Leadership SMEs (Austria)	1343	200	14.9%	80	74,869,704
Share of Austria on Total	**2.1%**	**2.9%**		**3.1%**	**3.1%**

Source: EC 2019/03; FFG calculations

The participations within this pillar broken down by organisational type are summarised in Figure 14. Naturally, PRCs dominate this pillar with a share of 53.1% of all participations, followed by public research institutions (REC) with 21.6%, and universities (HES) with 15.9%.

Fig. 14: Austrian participations by type of organisation



Source: EC 2019/03; FFG calculations

Table 6 demonstrates the importance of the different programmes within this pillar. LEIT-ICT is by far the most important programme, with funding for private companies of EUR 98.7 million and 248 participations. Austria has a 3.9% share of the European total in this programme. The high success rate of 20% further highlights the good performance. LEIT-ADVMANU ("advance manufacturing") is in second place, with EUR 16.2 million in funding and 45 participations.

Table 6: Austrian participations and cordinations in the pillar "Industrial Leadership" broken down by programme

	Participations AT-PRC	Coordinations AT-PRC	Funding AT-PRC	Success rate	Share of participatons AT-PRC on total PRC	Share of funding AT-PRC on total PRC
LEIT-ICT	248	42	98.744.077	19,8%	3,7%	3,9%
LEIT-NMP	19	4	7.602.767	18,3%	2,7%	2,9%
LEIT-ADVMAT	**12**	**0**	**6.863.696**	**21,1%**	**1,6%**	**2,6%**
LEIT-BIOTECH	8	0	2.802.384	22,9%	2,3%	1,7%
LEIT-ADVMANU	45	1	16.163.948	17,2%	3,1%	2,8%
LEIT-SPACE	**30**	**4**	**9.302.471**	**19,6%**	**3,1%**	**3,0%**
RISKFINANCE	1	1	349.953	50,0%	5,9%	8,3%
INNOSUPSME	45	37	17.875.473	13,9%	2,5%	2,7%
Total	**408**	**89**	**159.704.768**	**18,6%**	**3,2%**	**3,4%**

Source: EC 2019/03

Note: The INNOSUPSME programme is not comparable with this list of programmes and thus not considered in the ranking. It constitutes a variety of different actions, the composition of which has changed over the duration of H2020.

5.3 SOCIETAL CHALLENGES

Austria receives a total of EUR 471.7 million of funding within the "Societal Challenges" pillar, of which around EUR 193.1 million (or about 41%) is allocated to PRCs. Again, a very positive picture can be observed with respect to participations by Austrian PRCs (see Table 7). The success rate for Austrian PRCs is well above the European average (21.1% versus 18.4%). This also holds true for Austrian SMEs (15.5% versus 12.6%). SMEs account for 40% of the funding received by Austrian PRCs within this pillar.

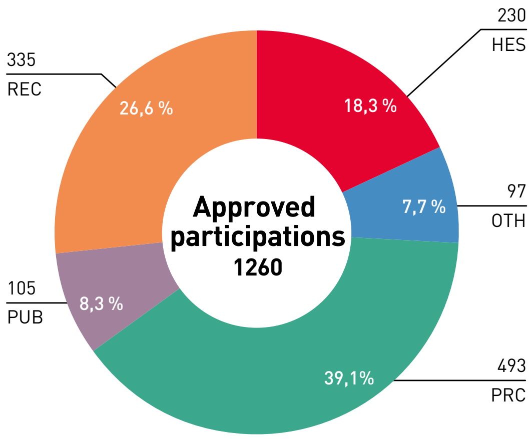
Table 7: Pillar "Societal challenges": Key figures

	Applications	Participations	Success Rate	Coordinators	Funding
Societal Challenges (Total)	225316	41529	18.4%	5338	16,025,920,887
Societal Challenges (Austria)	5955	1260	21.2%	160	471,693,556.5
Share of Austria on Total	**2.6%**	**3.0%**		**3.0%**	**2.9%**
Societal Challenges PRC (Total)	102775	16954	16.5%	3023	6,686,351,759
Societal Challenges PRC (Austria)	2336	493	21.1%	78	193,063,359.2
Share of Austria on Total	**2.3%**	**2.9%**		**2.6%**	**2.9%**
Societal Challenges SME (Total)	62132	7844	12.6%	2473	2,892,029,587
Societal Challenges SME (Austria)	1415	220	15.5%	57	77,765,512.58
Share of Austria on Total	**2.3%**	**2.8%**		**2.3%**	**2.7%**

Source: EC 2019/03; FFG calculations

The participations within this pillar broken down by organisational type are summarised in Figure 15. Again, PRCs have the highest share with 39% of all participations, followed by public research institutions (REC) with 27%, and universities (HES) with 18%. This demonstrates the importance of research performed by private businesses in tackling societal problems and missions, and highlights the fact that this pillar of Horizon 2020 is successful in steering private research towards finding solutions for said challenges. This is of particular relevance to Horizon Europe. The abolition of a specific industry-oriented pillar and the shift to missions will change their framework in which they must operate. The success of Austrian companies in today's "Societal challenges" pillar allows us to expect that they can also achieve success in the future clusters of Horizon Europe.

Fig. 15: Austria participation within pillar „societal challenges": shares by organisational type



Source: EC 2019/03; FFG calculations

Table 8 gives an overview of the relative importance of the different societal challenges (and the different thematic areas tackling the various challenges) for Austrian PRCs. Smart, green and integrated transport (TPT) is clearly on top of the list with 212 participations receiving EUR 84 million in funding. With a share of 4.4% of the total European participations (or a 3.6% funding share), Austrian PRCs are significantly overrepresented in this area. Strikingly, the success rate for Austrian PRCs is also overwhelmingly higher in this areas (42.7% in TPT versus 21.1% overall).

Table 8: Societal Challenges: Austrian participation

	Participations AT-PRC	Coordinations AT-PRC	Funding AT-PRC	Success rate	Share of participatons AT-PRC on total PRC	Share of funding AT-PRC on total PRC
HEALTH	32	14	21,926,749	9.8%	1.3%	2.4%
FOOD	49	8	11,302,276	21.6%	1.9%	1.5%
ENERGY	102	14	47,168,729	17.1%	3.0%	3.1%
TPT	212	27	84,300,344	42.7%	4.4%	3.6%
ENV	57	6	14,904,349	23.7%	2.8%	2.5%
SOCIETY	14	1	3,113,104	7.3%	2.7%	2.5%
SECURITY	27	8	10,347,809	10.5%	2.1%	2.4%
Total	**493**	**78**	**193,063,359**	**21.1%**	**2.9%**	**2.9%**

Source: EC 2019/03; FFG calculations

5.4 EXCELLENT SCIENCE

The first pillar of Horizon 2020, "Excellent Science" clearly focuses on basic research. However, even in this pillar Austrian PRCs play an active role with 166 participations (and 31 coordinators) receiving a total of EUR 45.8 million in funding (see Table 9). 71 of these participations (and 6 of the coordinators) are SMEs.

Again the success rate for Austrian PRCs (and SMEs) is well above the European average. However, it should be noted that some research-oriented organisations are organised as limited companies (GmbH), and have been classified as PRCs, somewhat distorting the picture.

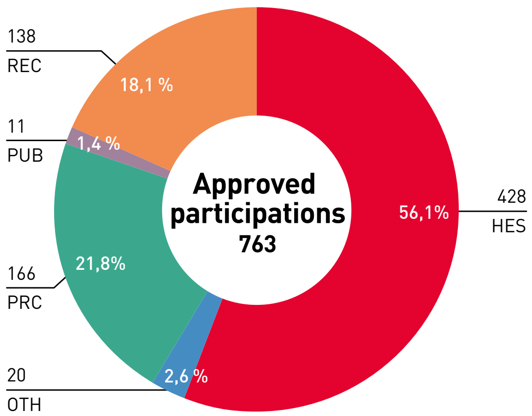
Table 9: Pillar "Excellent Science": Key figures

	Applications	Participations	Success Rate	Coordinators	Funding
Excellent Science (Total)	250,591	32,373	12.9%	12,692	14,429,205,588
Excellent Science (Austria)	5446	763	14.0%	297	391,857,802.9
Share of Austria on Total	**2.2%**	**2.4%**		**2.3%**	**2.7%**
Excellent Science PRC (Total)	54,525	6,160	11.3%	407	961,481,376.8
Excellent Science PRC (Austria)	1189	166	14.0%	31	45,805,385.19
Share of Austria on Total	**2.2%**	**2.7%**		**7.6%**	**4.8%**
Excellent Science SME (Total)	15,324	1,900	12.4%	166	453,204,766.7
Excellent Science SME (Austria)	456	71	15.6%	6	12,860,083.77
Share of Austria on Total	**3.0%**	**3.7%**		**3.6%**	**2.8%**

Source: EC 2019/03; FFG calculations

Unsurprisingly, HES institutions dominate this pillar, with a share of 56% of all Austrian participations. However, PRCs do account for a considerable share of participations (at 22%, even more than public research institutions, RES) (see Figure 16).

Fig. 16: Share of Austrian organisational types within pillar „Excellent Science“



Source: EC 2019/03; FFG calculations

Looking at the individual programmes within this pillar, Austrian PRCs are predominantly engaged in Marie Skłodowska-Curie Actions (MSCA) with 134 participations (and 18 coordinators) receiving EUR 21.2 million in funding (see Table 10).

Table 10: Participation of PRCs within "Excellent Science": Key figures

	Participations AT-PRC	Coordinations AT-PRC	Funding AT-PRC	Success rate	Share of participatons AT-PRC on total PRC	Share of funding AT-PRC on total PRC
ERC	9	9	18,810,081	56.3%	9.6%	20.6%
FET	18	4	4,972,051.25	11.5%	3.0%	2.1%
INFRA	5		839,212.5	17.9%	1.2%	0.5%
MSCA	134	18	21,184,040.44	13.5%	2.7%	4.6%
Total	**166**	**31**	**45,805,385.19**	**14.0%**	**2.7%**	**4.8%**

Source: EC 2019/03; FFG calculations

Note: The numbers for the ERC (particularly the large volume of total funding) are distorted by one very successful research institution which, although geared towards basic research, is organised as a private limited company (GmbH).

6 NATIONAL CONTEXT

Table 11 provides a comprehensive comparison of national FFG programmes and H2020 programmes, categorised by thematic technology areas. The technological profiles of the national and European participations and funding (shares of participations / funding over thematic areas) are quite similar.

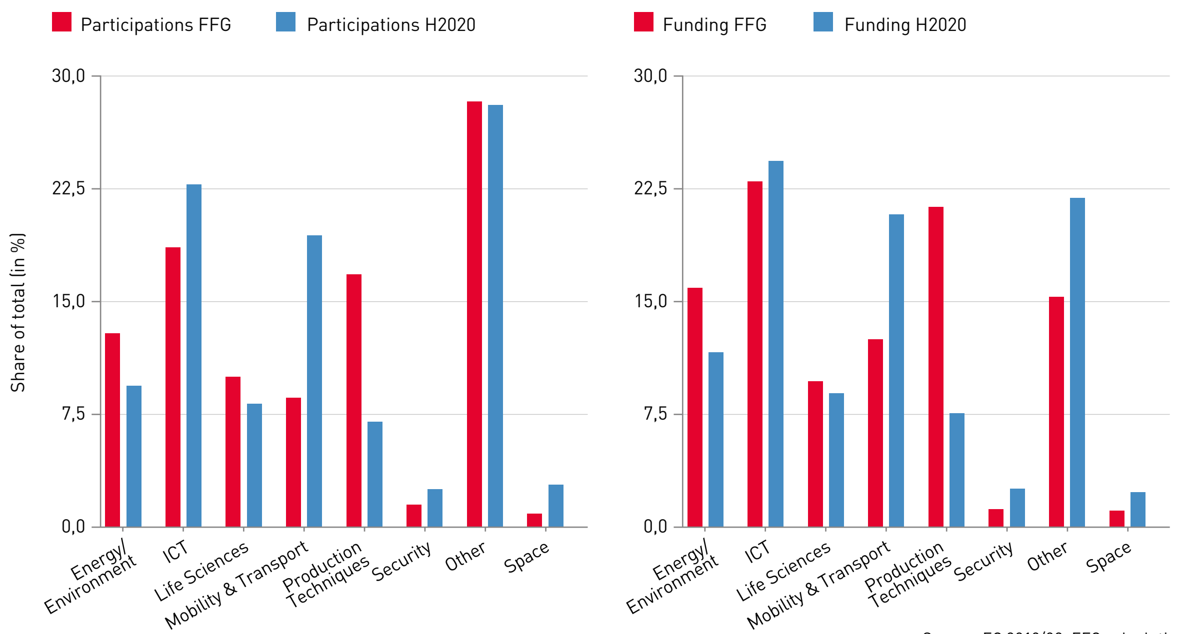
ICT is the most important technology area (for both participations and funding) for Austrian PRCs at the national and European level. However, the ranking differs slightly for the other technology areas. A particular case is the area of "Production": at the national level it is the second most important area in terms of participations, but receives only EUR 30.6 million in funding. At European level this pattern is completely reversed (see also Figure 17). Within H2020 this area has only 76 participations, but these participations receive EUR 248.7 million in funding. FFG programmes such as the *Innovationsscheck*, which have large participation numbers but distribute only minor amounts of funding per applicant, are the reason for this seemingly strange pattern. This highlights the difficulty in comparing national and European funding regimes.

Table 11: Thematic orientation of national and H2020 participations and funding

Technological Area	Participations FFG	Present Value of Funding FFG (in Mio. €)	Participations H2020	Funding H2020 (in Mio. €)
Energy / Environment	2098	185.5	102	47.2
ICT	3029	268.2	248	98.7
LifeSciences	1625	113.2	89	36.0
Mobility / Transport	1408	145.7	212	84.3
Production	2742	248.7	76	30.6
Security	238	14.2	27	10.3
Other Areas	4621	178.1	306	88.7
Space	149	13.1	30	9.3
Without Classification	393	0.7		0.0
Total Sum	**16303**	**1167.2**	**1090**	**405.3**

Source: EC 2019/03; FFG calculations

Fig. 17: Comparison between national (FFG) and European (H2020) participations and funding broken down by technological areas



Source: EC 2019/03; FFG calculations

7
A FIRST OUTLOOK ON HORIZON EUROPE

In general, we can see a system that will stay similar to Horizon 2020 but with some shifts and changes (see Figure 18). What does that mean for companies? The most important changes with specific relevance for companies are as follows:

- **European Innovation Council (EIC):** The European Innovation Council aims to support the EU in achieving leadership with respect to ground-breaking, market-building innovation.
- **6 thematic clusters**: Merging the themes from the "Industrial Leadership" and "Societal Challenges" pillars into five thematic clusters.
- **Mission Orientation**: Together with citizens, stakeholders, the European Parliament and the Member States, a limited number of clearly defined and visible R&I Missions will be defined. These missions will follow the recent discussion of mission-oriented research and technology policy[2].
- **European Partnerships:** These will only be implemented or renewed if they achieve an impact which cannot be achieved by other actions of the Framework Programme or by national activities alone.

Fig. 18: The structure of the future Horizon Europe programme

Source: EC 2019/03; FFG calculations

The most obvious change is the introduction of Pillar 3 (Innovative Europe) with the European Innovation Council. This will include 2 major instruments: the Pathfinder, for disruptive innovations in the early stages of research and development (TRL 2-5) which is derived from the former FET programme, and the Accelerator, a follow-up instrument to the SME Instrument, extended by an equity part. Consequently, the scale-up companies can apply not only for grants, but also for equity in order to finance the scale-up stage.

These new instruments will enable companies with outstanding, disruptive and breakthrough technologies to grow on a large scale. Nonetheless it is unclear whether Austria will be able to maintain its highly successful position in the H2020s SME Instrument, as a lower number of successful companies is envisaged within the given budget lines.

The new pillar 2 "Global Challenges and Industrial Competitiveness" comprises the former Horizon 2020 "Industrial Leadership" (pillar 2) and "Societal Challenges" (pillar 3). The removal of the solitary industrial pillar may make it more difficult for successful companies to repeat this success in the new and strongly mission-based environment. Hence there is a need to adapt and provide support for these specific companies.

The missions are not yet sufficiently specified in order to judge whether they will benefit or disadvantage participating companies. Depending on the topics, they may offer good opportunities for companies to play a leading role in tackling these challenges, ensuring the rapid and broad-based uptake of the results.

Partnerships were, and are, a major factor for Austrian companies. A reorientation towards impact may be no disadvantage for Austrian companies, as long as the relevant partnerships (with a strong Austrian stakeholder community (ECSEL, etc.) are renewed or established.

2 See Mariana Mazzucato (2018): Mission-Oriented Research & Innovation in the European Union. https://ec.europa.eu/info/sites/info/files/mazzucato_report_2018.pdf

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All data in this dossier are based on analyses of data provided by the European Commission. FFG points out that the results refer to a specific point in time; this dossier uses the most recent data release from March 2019. Horizon 2020 is continuously producing new data as a result of new calls, grant agreements etc. Some proposals retained for funding will not lead to a grant agreement and the next project on the reserve list will be considered. This may result in changes in the statistical data.
This dossier offers a snapshot of the current situation.
While we have made every effort to ensure the accuracy of the information provided in this report, no liability can be accepted.