



Austrian Research and Technology Report 2015

**Report of the Federal Government to the Parliament
(National Council) under Section 8(2) of the Research
Organisation Act, on federally subsidised research,
technology and innovation in Austria**

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Nevertheless, there is still a need for action because women are represented at below-average levels in leadership positions, for example. Furthermore, there is very little data on the status quo for equal opportunities in the business enterprise sector. This is the largest R&D sector in Austria, and it has only had a very low proportion of women up to this point. If the proportion of women in R&D in Austria is to be raised overall, effective gender equality measures also need to be implemented in this sector and progress should be reviewed on a regular basis. Progress monitoring for the Austrian Academy of Sciences and IST Austria is done in the performance agreement meetings. Gender equality is an important theme for and is structurally embedded in both institutions. The Austrian Academy of Sciences and IST Austria strive to increase the share of women in research and in leadership positions through active recruiting and efforts to improve the compatibility of work and family.

The Austrian Research Promotion Agency (FFG) and Austrian Science Fund (FWF) have integrated the consideration of gender and equal opportunities into their application and reporting mechanisms in order to more deeply anchor gender in research. The FEMtech research projects funding scheme also enables researchers at the Austrian Research Promotion Agency (FFG) to gain their first experience with incorporating the dimensions of gender and diversity into technological research. This funding policy has facilitated experience with gender-specific research in a broad range of thematic fields and scientific disciplines in recent years. Austria occupies an internationally pioneering role with its funding policy, which supports researchers in integrating the requirements of Horizon 2020.

The analyses for this chapter show something else in addition to the central role of funding providers: long-term effort and consistent funding policy are required to increase the proportion of women in science and to integrate gender into research and development projects.

5.3 Public procurement as an instrument of innovation policy E. Buchinger, C. Rammer

Demand-side innovation policy is becoming increasingly important; including such instruments as public procurement promoting innovation (PPPI), innovation-promoting regulations and standards, and innovation-friendly consumer policy. However, these are not meant to replace supply-side instruments, such as direct and indirect promotion of research, technology, and innovation (RTI), but rather to supplement them in a sensible policy mix.⁴⁹ Because public procurement is an important economic factor, PPPI is currently the most prominent demand-side instrument in play and has secured a fixed position on the innovation policy agenda.

The European Commission – an essential driver for this theme – has announced in its *Innovation Union* document⁵⁰ that its aim is to see member states create PPPI budgets that will facilitate innovation procurement markets in the EU totalling up to at least €10 billion for precisely those innovations that increase the efficiency and quality of public services and thereby address prominent social challenges (environment, health, inclusion, security, etc.).

Demand-side instruments, and especially PPPI, were embedded in 2011 as an objective in the Austrian federal government's strategy for research, technology, and innovation.⁵¹ This was followed in 2012 by the approval of an action plan for public procurement promoting innova-

⁴⁹ See OECD (2014), (2011); EC (2010/C/546).

⁵⁰ See EC (2010/C/546).

⁵¹ See The RTI strategy of the Austrian federal government (2011).

tion (PPPI) in Austria in a ministerial council application⁵² filed by the Federal Ministry for Transport, Innovation and Technology (BMVIT) and the Federal Ministry of Science, Research and Economy (BMWFW).⁵³ The global aim is to increase the share of public procurement that is used for innovations. Unlike other European countries, a quantitative PPPI target was not set.

The fact that quantity plays a fundamental role in procurement in Austria is clear in that the demand from public administration for goods and services manufactured domestically amounted to about €40 billion in 2010.⁵⁴ This is almost 14% of GDP and constitutes a significant demand factor for firms in Austria. However, the proportion of Austrian firms that have conducted innovation activities in the context of public procurement orders is not (yet) particularly high. The initiative in innovation policy to engage more intensely for the promotion of innovation in the business enterprise sector by means of public demand is therefore justified to a high degree.

This chapter will present, first, the current status of PPPI at the federal level, especially in terms of legal and organisational framework conditions. Second, we will assess the importance of public procurement for innovation activities in the Austrian economy, Using the new results of the European Community Innovation Survey (CIS) for the year 2012, which, for the first time, contained a block of questions regarding the distribution of procurement orders by public institutions and the role this plays in innovation activities in the private sector.

5.3.1 Uses and types of PPPI

We speak of public procurement promoting innovation whenever public purchasers create an “innovation market” by issuing calls for tenders

for new or improved goods or services. This can have a significant effect if the call involves large financial volumes of procurement of innovative solutions. It can also generate a significant indirect effect if the public institution steps forward as a *lead user*, meaning that the innovation in demand serves as a reference project.

Multiple benefits of PPPI: the public purse, the economy, and citizens

First, public purchasers can profit from PPPI in four ways:

(1) Effectiveness and impact orientation: participating in the general societal modernisation process, citizens expect the modernisation of services and infrastructure as well. PPPI is necessary whenever the solutions needed do not exist at all, or only at insufficient levels.

(2) Efficiency: New solutions can contribute significantly to increasing productivity and lowering costs.

(3) Optimality: Whenever similar problems exist among two or more public institutions, they can use PPPI to share costs, minimise risks, and thereby attain optimal solutions.

(4) Image: There are often expectations that the public sector assume a pioneering role; with PPPI, among other things, it can show that it co-facilitates modernisation.

Firms also profit in many ways from PPPI. Calls for tenders give firms a clear market signal, and successful bidders (contractors) make revenue. Whenever prototypes are part of PPPI, contractors have the opportunity to test their goods/systems/services (which is normally time-consuming and expensive, which therefore saves them money). Completed projects also serve as references and support further acquisitions.

52 Formerly the Federal Ministry of Economy, Family and Youth (BMWFJ).

53 See Federal Ministry of Economy, Family and Youth (BMWFJ) and Federal Ministry for Transport, Innovation and Technology (BMVIT) (2012a), (2012b).

54 See Federal Ministry of Economy, Family and Youth (BMWFJ) and Federal Ministry for Transport, Innovation and Technology (BMVIT) (2012a); Clement and Walter (2010).

Eventually, the guiding concern for PPPI may be the advantages for citizens. This is because provisioning high-quality services and their affiliated infrastructures is the ultimate task of public institutions. PPPI must therefore be understood as a hub between the economy on the one hand and citizens on the other (Fig. 5-10).

Types of PPPI: pre-commercial and commercial procurement of innovation

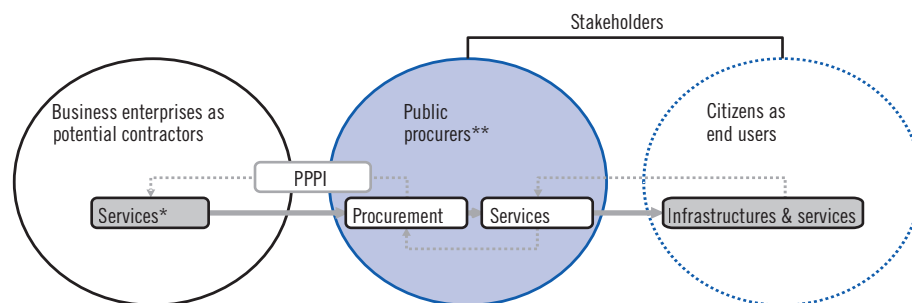
On the basis of current law – in this case the Federal Procurement Act (Bundesvergabegesetz)⁵⁵ – we must draw a distinction between two kinds of PPPI. Commercial procurement of innovation as the normal case in the context of BVergG and pre-commercial procurement as an exception in the BVergG.

The commercial procurement of innovation (*public procurement of innovation*, PPI) signifies the call for tenders for new/improved goods and services. This includes (i) new development (developed for the public sector as client⁵⁶), (ii) first purchase (public client as the first point at which this product is purchased, thereby enabling its use as a reference project), and (iii) diffusion (pro-

urement of innovative goods or services that have only recently become available on the market). The BVergG says the following: Section 19/7 “*Innovative aspects can be considered in the procurement process. This can be done in particular by taking into account innovative aspects in the description of the service, the establishment of technical specifications, or by the determination of specific award criteria.*”

Pre-commercial procurement (PCP) means the call for tenders for R&D services that are done under the following conditions set forth in the BVergG: Section 10/13 “*This federal law does not apply (...) to research and development services unless their results are the exclusive property of the client for its use in the exercise of its duties and the services are completely remunerated by the client*”. This means, among other things, that the rights to the R&D results are shared. PCP can occur in the form of classical R&D services, or in the form of a multi-stage procedure (PCP scheme), as this is also applied in EU research frameworks (Horizon 2020). This stepwise, intensely competitive process facilitates optimal solutions for public purchasers (Fig. 5-11).

Fig. 5-10: PPPI as the hub between the economy and the citizens



* Services acc. to the Federal Procurement Act (Bundesvergabegesetz): Provisions of construction services & supply of goods & provision of services

** Public procurers acc. to the Federal Procurement Act (Bundesvergabegesetz): Federal government, regional governments, local governments & public entities & sectoral contractors

Source: Buchinger (2012).

⁵⁵ See Federal Law Gazette (2006/17).

⁵⁶ Including R&D services that are performed according to the BVergG rules and therefore do not need to adhere to the BVergG conditions for exceptions, such as the sharing of rights (see pre-commercial procurement). Exclusive expert reports, standard studies, etc.

Transport, Innovation and Technology (BMVIT) and the Federal Ministry of Science, Research and Economy (BWFWF).⁵⁹

As already mentioned in the introduction, the PPPI action plan aims to increase the share of public procurement volume that is used for innovations. This is meant to generate two types of impact. On one hand, manufacturing should be stimulated to offer better goods and services, which is meant to enable public institutions to offer better public services and infrastructures on the other.

Although there have already been public procurement activities with innovation stimulation⁶⁰, their number is low. To overcome this marginalisation, a clear message was formulated during the aforementioned stakeholder process that the increase of share of PPPI in procurement budgets requires political support. The action plan therefore proposes a mix of measures that cover four dimensions:

- Strategic dimension (“soft law”): Political support for the introduction of innovation-related procurement plans in public institutions and the setting aside of appropriate budgets. Integration of the innovation needs of public institutions in existing programmes.
- Operative dimension (funding & procurement): Establish a PPPI service centre and PPPI competence and contact points to be able to offer custom-tailored support for public institutions. Provisioning of financial incentives for PPPI and the initialisation of PPPI pilot projects.
- Legal dimension (“hard law”): Amendment of the BVerG with the objective of naming innovation as an explicit goal.
- Impact dimension: Establishment of a PPPI monitoring and benchmarking system.

The action plan does not identify a quantitative target (i.e. a percentage of the procurement budget dedicated to PPPI). This is a difference with respect to other European countries such as France, Spain, the United Kingdom, and the Netherlands, where quantitative goals exist.

Progress in the implementation of the PPPI action plan

The implementation of the PPPI action plan is coming along well. Progress was made in all four dimensions.

In the strategic dimension, preparations were made for the introduction of innovation-related procurement plans with information campaigns. Furthermore, there is already an example of integrating the innovation needs of public institutions via PCP into an existing programme focused on transportation (transport infrastructure funding). There is also a pilot programme for innovative heating and cooling of historical buildings, which uses the PCP instrument. Table 5-3 presents an overview of completed and ongoing PCPs in Austria.

In the operational dimension, the PPPI Service Centre was set up in the Federal Procurement Agency (BBG) in 2013. Its website⁶¹ provides information about the Service Centre's offerings, which range from online platforms to events and training sessions, to pilot projects and strategic support. Efforts then began in 2014 to gradually establish the PPPI competence and contact centres envisioned in the action plan. They should be viewed as subject-specific institutions that are complementary to the Service Centre and work closely with it. Currently, these institutions include Austria Wirtschaftsservice (aws) (focus: commercial PPPI), the Austrian Research Promotion Agency (FFG) (focus:

⁵⁹ Previously Federal Ministry of Economy, Family and Youth (BMWFJ).

⁶⁰ The action plan includes a list of good practices; for further examples, see also PPPI Service Centre (2014), Brünner et al. (2012), Buchinger and Steindl (2009).

⁶¹ See <http://www.ioeb.at/>

Table 5-3: Completed and ongoing PCPs in Austria

Purchaser	Problem	Solutions via PCP	Duration
ASFINAG	Mobile transportation management system for construction sites & major events	MOVEBAG (mobile sensor components that can be mounted on-site with a few hand movements) MOVE BEST (mobile, energy self-sufficient, dynamically controllable components and displays)	05/2012 – 09/2014
ÖBB INFRA	Detection of natural dangers	SART (early warning for initial slide movements with Impact Sentinel sensors) NATURAL DANGER RADAR (energy self-sufficient detection of mass movements by means of high-frequency radar technology) RISKCAST (mobile, decentralised data capture using meteorological information)	05/2012 – 09/2014
ÖBB PRODUKTION	eHybrid train engine with and without overhead lines		05/2014 – 12/2016
Burghauptmannschaft	Heating & cooling of historical buildings		09/2014 -

Sources: Federal Ministry for Transport, Innovation and Technology (BMVIT) et al. (2014), https://www.ffg.at/mobilitaetderzukunft_call2014as4; <https://www.ffg.at/PilotHeizenKuehlen>

pre-commercial PPPI), AustriaTech (sectoral focus: intelligent mobility), the Austrian Energy Agency AEA (sectoral focus: energy), the Austrian Economic Chambers WKO, and the “procurement platform of the regional governments” as contact centres. Discussions are being held with additional potential competence centres, such as the Federal Real Estate Association BIG, for example. The result is a series of events in which best practice examples are introduced and offered in interactive learning forums.⁶²

Both the PPPI Service Centre and, to some extent, the competence/contact centres are financed by both of the ministries in charge (the Federal Ministry for Transport, Innovation and Technology (BMVIT) and the Federal Ministry of Science, Research and Economy (BMWF)). This not only allows for the aforementioned events to be held, but also enables the provisioning of financial incentives for PPPI and the initialisation of PPPI pilot projects. Examples of this are the PCP projects outlined above and a recent project competition in which public in-

stitutions could win consultancy services.

Progress has been especially rapid in the attainment of the goals in the action plan. The 2013 amendment of the BVergG named innovation as an explicit goal.⁶³ The BVergG now includes a total of three mission-oriented goals: the inclusion of environmental aspects as a “should” criterion and the consideration of socio-political concerns and innovation aspects as “can” criteria.

In terms of the impact dimension, the action plan anticipated an overall evaluation that will be conducted in 2016. The first steps are being taken right now to establish a PPPI monitoring and benchmarking system. The first events have undergone an assessment, and Statistics Austria was commissioned to conduct a PPPI pilot survey, the results of which will be completed in the autumn of 2015. The PPPI pilot survey will include the major public institutions of the federal government (ministries and the related state-owned firms) as well as exemplary regional governments and larger cities.

⁶² See <http://www.ioeb.at/downloads-links/nachlesen-zu-veranstaltungen/>

⁶³ See Federal Law Gazette (2006/17).

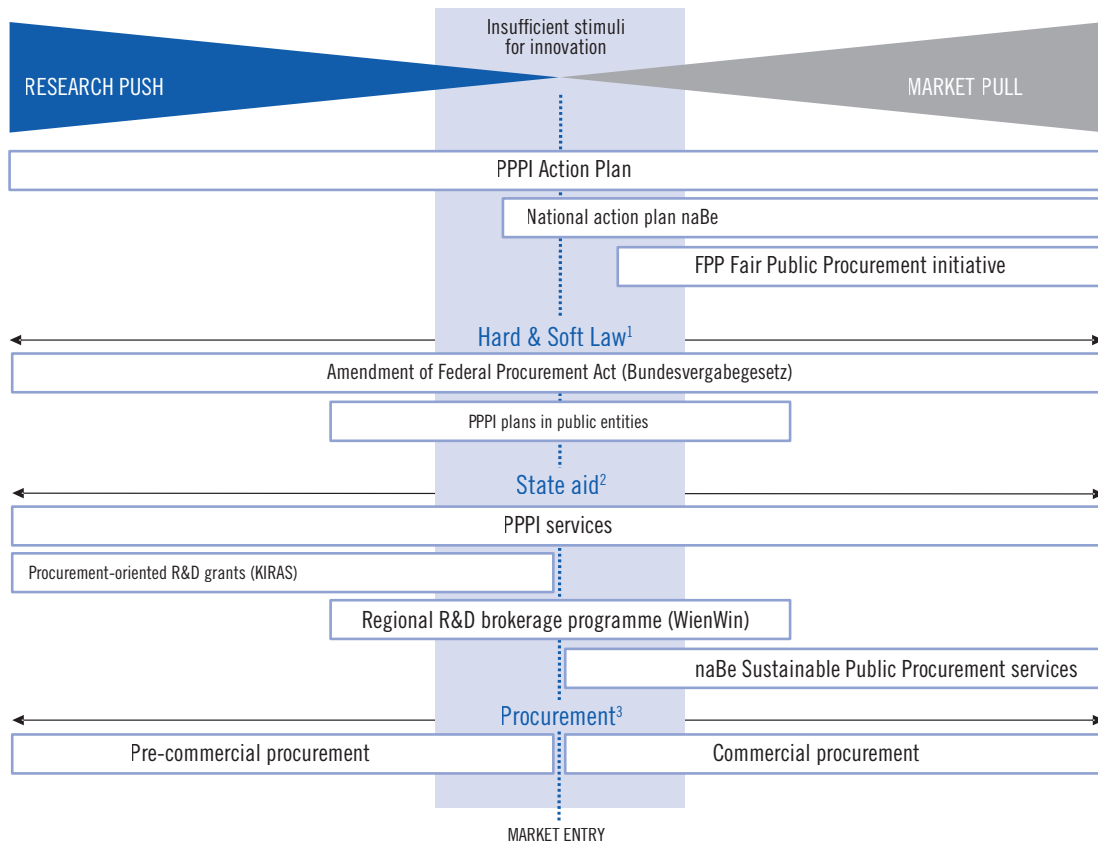
The Austrian procurement policy mix ^{smart}

A bundle of instruments exist around the theme of procurement in Austria. These can be understood and referred to as a policy mix (Fig. 5-12). They include, along with the PPPI action plan (from 2012), the Austrian action plan for sus-

tainable public procurement (from 2010⁶⁴) and the new initiative, "Fair procedures secure jobs" (from 2014).⁶⁵ Even if environmentally friendly and fair procurement procedures do not aim primarily for innovation, there are nevertheless areas of overlap.

In this policy mix, we often encounter envi-

Fig. 5-12: Austrian Procurement Policy Mix ^{smart}



PPPI innovation-friendly public procurement: National action plan

naBe Sustainable procurement: National action plan

Fair contract allocation secures jobs: Social partner initiative

WienWin: Regional R&D brokerage programme of the city of Vienna

KIRAS: National research programme for security research

1) "Hard Law" = laws, "Soft Law" = strategies, plans, treaties, etc.

2) Government financial assistance acc. to EU "Framework of state aid for research & development & innovation" (OJEU 2014/C/198)

3) Pre-commercial procurement of R&D (PCP), commercial public procurement of innovative solutions (PPI), acc. to the EU "Procurement Directives" (EU 2014/25, 2014/24) and their incorporation in the Austrian Federal Procurement Act (Bundesvergabegesetz) (Federal Law Gazette 2006/17)

Source: Buchinger (2014).

64 See Federal Ministry of Agriculture, Forestry, Environment and Water Management (BMLFUW) and Federal Ministry of Finance (BMF) (2010).

65 See <http://www.faire-vergaben.at/>

ronmental agencies at the regional and national level as counterparts and increasingly as partners to the PPPI Service Centre and the Competence & Contact Centres. Furthermore, the KIRAS R&D programme (funding programme for security research directed at the needs of public institutions)⁶⁶ and the WienWin Initiative (brokerage of pre-existing R&D results with an orientation towards public institutions in Vienna) belong to Austria's ^{smart} procurement policy mix.

The establishment of PPPI in Austria encountered again and again the difficulty of conceiving of legal foundations, because while R&D was almost always involved, substantially different laws were affected. Commercial and pre-commercial procurement must be separated in a clear way from R&D funding: whereas both forms of procurement are governed by the BVerG, the rules for R&D funding (*state aid*) are based on the RTD guidelines.⁶⁷

5.3.3 Importance of public procurement for innovation activities in the Austrian economy

Public procurement includes a multitude of stakeholders in the public sector that range from regional administrative bodies (local administrations, regional governments, federal government) and downstream agencies to public institutions such as social security funds, public enterprises and overwhelmingly publicly controlled sectors (such as energy and water supply, health, education, and broadcasting). Each year a large number of procurement transactions take place in all of these public fields; the larger organisations conduct hundreds to thousands of such transactions. A uniform recording and documentation of these procurement transactions in one database does not ex-

ist, and it does not make sense to do so in the face of the heterogeneity of individual procurement transactions. However, the current Community Innovation Survey (CIS) 2012 by the European Commission provides an information source that allows us to assess the significance of public procurement for enterprises in Austria, while simultaneously providing indications of how much public procurement contributes to innovation activities at enterprises. One advantage of this data base is that it facilitates international comparison and thereby a classification of the importance of innovation-oriented public procurement in Austria in comparison to other EU countries. One disadvantage of the data base is that it does not cover the entire business enterprise sector; it only covers enterprises with ten or more employees in manufacturing (including mining, energy and water supply and disposal) and selected services segments (retail, transportation and warehousing, information and communication, financial and insurance services, architectural and engineering activities, research development, advertising and market research).

The CIS 2012 first recorded whether enterprises received public procurement contracts in the period during 2010 to 2012, and whether innovation activities were performed in connection with these contracts (either because the order requested it or innovation was done independently of any contractual stipulations). Second, the survey then asked whether enterprises had worked actively together with public clients on innovation projects. Third, the CIS asked about the importance of public clients as a source of information on the innovation activities of business enterprises.

Austria has very good preconditions for the use of public procurement as an innovation pol-

⁶⁶ See Chapter 6.5 and <https://www.ffg.at/kiras-das-programm>

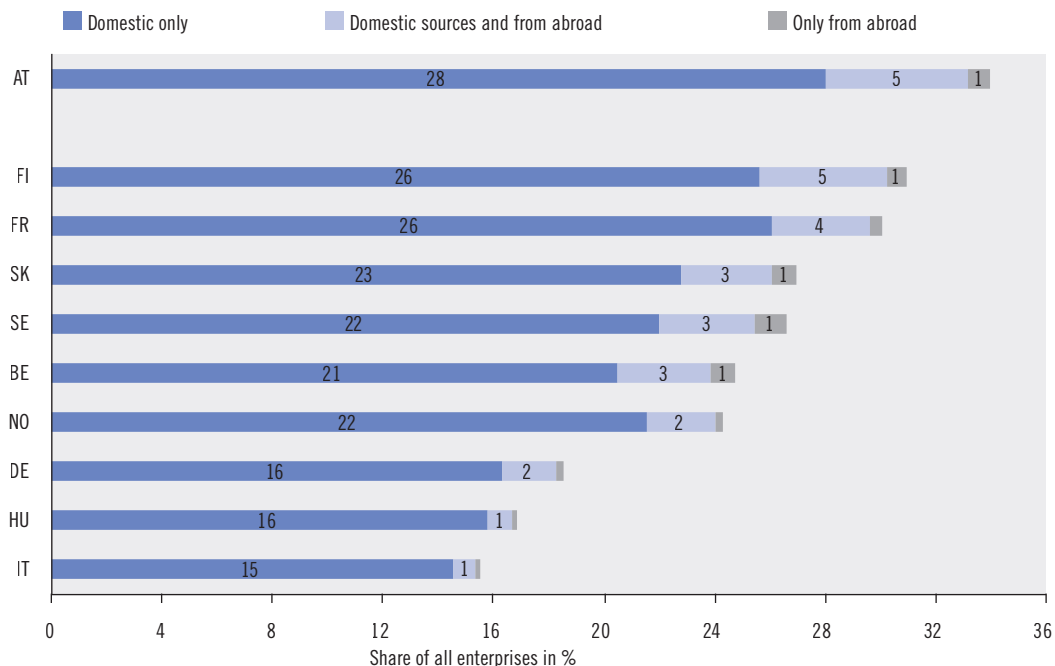
⁶⁷ See Federal Ministry for Transport, Innovation and Technology (BMVIT) and Federal Ministry of Science, Research and Economy (BMWFW) (2015a) (2015b) (2015c); Federal Ministry for Transport, Innovation and Technology (BMVIT) and Federal Ministry of Economics and Labour (BMWA) (2007).

icy instrument. This is because no other EU country⁶⁸ has a higher share of business enterprises that have received public procurement contracts.⁶⁹ During 2010 to 2012, 34% of enterprises in Austria received at least one procurement contract (Fig. 5-13). 28% received such contracts exclusively from domestic sources, 5% from both domestic and foreign sources, and 1% only from sources abroad. Other European countries with a high share of enterprises with public procurement contracts are Finland (32%) and France (30%). This share came in at only 18% in Germany. The high figure for Austria underscores first the great overall economic sig-

nificance of public demand, yet also shows that this demand is distributed across a very large number of enterprises, including many small to medium-size enterprises (SMEs).

The proportion of enterprises in Austria with public procurement contracts from domestic sources⁷⁰ is almost the same among small enterprises (10 to 49 employees) at 34% as among large enterprises with more than 250 employees (35%). Within manufacturing (excluding construction), the proportion of small enterprises with domestic procurement contracts is even higher than that of large firms. Among medium-sized enterprises (50 to 249 employees),

Fig. 5-13: Share of enterprises that received public procurement contracts, 2010–2012



All information refers to enterprises with ten or more employees in the (NACE) economic sectors 5-39, 46, 49-53, 58-66, 71-73.

Sources: Eurostat: CIS 2012. Calculations: ZEW.

68 Because the question regarding the reception of public procurement contracts was not included among the obligatory questions in the CIS 2012, not all countries integrated these questions into their national surveys, which means that data only exists for some EU member states and EU accession candidates. The reference countries include those countries bordering on Austria, the six largest EU member states, the Benelux countries, and the Scandinavian countries, insofar as information was available for these countries.

69 Public procurement contracts are defined as procurement orders by public institutions related to public administration and security, as well as publicly operated institutions including schools, hospitals, utility enterprises, etc.

70 Because this chapter focused above all on public procurement activities in Austria, the following only considers those enterprises that received public procurement contracts from domestic agencies. All information for the reference countries only refers to procurement contracts from domestic public agencies.

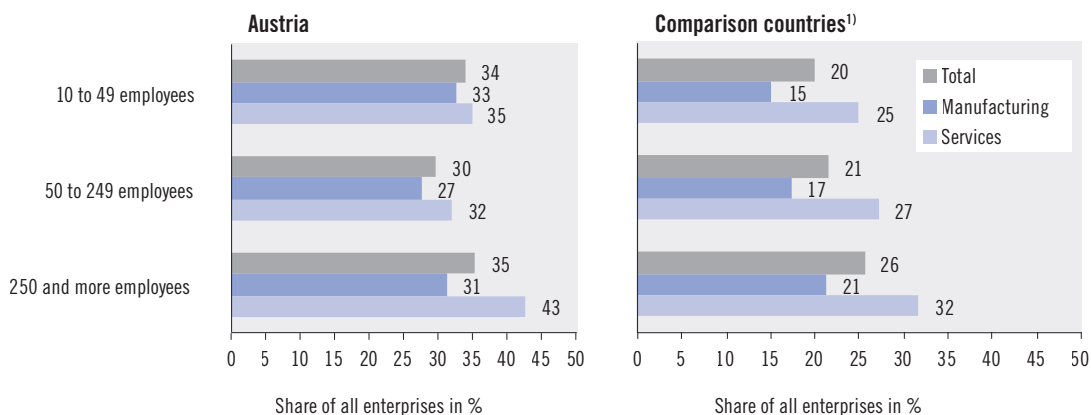
30% receive public procurement contracts. In most other EU countries, public agencies tend to award contracts more often to larger enterprises. In these countries, 20% of small enterprises and 21% of medium-sized enterprises receive public contracts, while the figure was 26% for large firms (Fig. 5-14). The differences in the distribution of public procurement contracts in the reference countries between manufacturing (15% of enterprises) and services (25% of enterprises) is larger than in Austria, where there were only minimal differences.

The CIS 2012 recorded the extent to which these enterprises with public procurement contracts completed innovation activities in the context of such contracts.⁷¹ The survey distinguished between innovation activities that were explicitly required in the contract and innovation activities that were not explicitly requested. The proportion of enterprises in Austria with public procurement contracts for which at least one of these contracts included a contrac-

tual provision for the implementation of innovation activities stood at 7% in the period during 2010 to 2012. This rate was somewhat lower than the figures for the reference countries. Slovakia and Italy both posted a share of 11%, France 10%, Norway and Germany 9%, and Belgium and Finland were at 8% (Fig. 5-15, left part).

The share of enterprises in Austria with public procurement contracts that engaged in innovation in the context of at least one of their contracts without such activity being requested explicitly in the contract stood at 16% for the 2010–2012 period, which was significantly higher than the share of enterprises that pursued contractually required innovation activities.⁷² Higher shares of “voluntary” versus “required” innovation activities only occurred in Finland and France. The high proportion of “voluntarily” innovative enterprises in the context of procurement contracts shows that there is potential for innovation in a larger number of pro-

Fig. 5-14: Share of enterprises in Austria and in reference countries that received public procurement contracts during 2010 to 2012 from domestic agencies, by size class



1) BE, DE, FI, FR, IT, NO, SK.

All information refers to enterprises with ten or more employees in the (NACE) economic sectors 5-39 (= manufacturing) and 46, 49-53, 58-66, 71-73 (= services).

Sources: Eurostat: CIS 2012. Calculations: ZEW.

71 Innovation activities include activities related to the development or introduction of product, process, marketing or organisation innovations.

72 It should be noted that a portion of firms completed both contractually required and “voluntary” innovation activities in the context of public procurement contracts. The scope of these overlaps, however, is not presented in the statistics published by Eurostat.

curement processes, without this potential necessarily leading to direct demand for innovations by procurement offices. This underscores the importance of supporting public agencies in the identification and formulation of innovation opportunities.

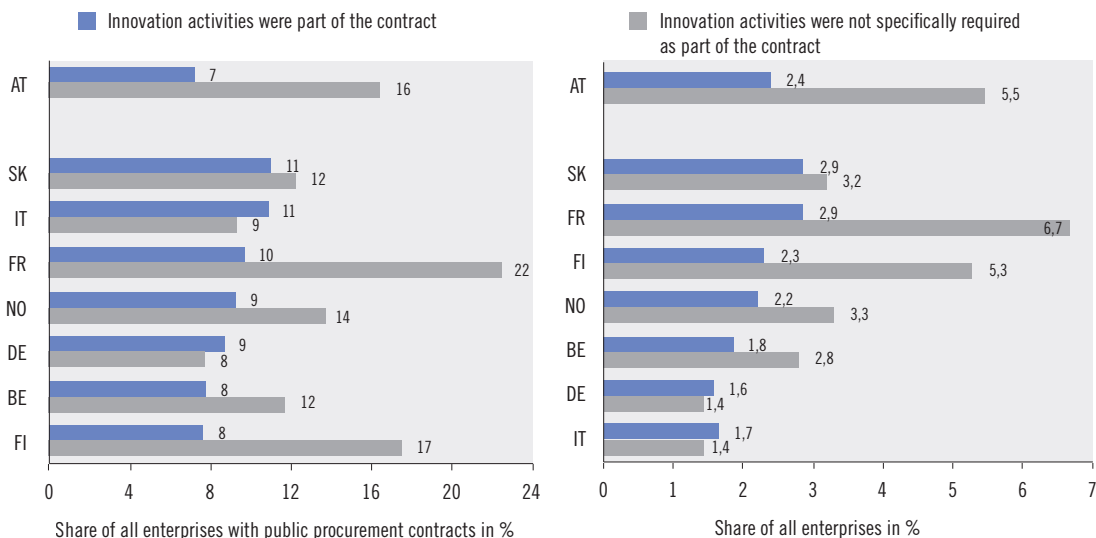
If we express the number of enterprises that conducted contractually obligated innovation activities in the context of public procurement contracts as a percentage of all enterprises, then Austria has attained the third highest value among the European reference countries (2.4%, following France and Slovakia with 2.9% each) (Fig. 5-15, right part). In absolute numbers, there were somewhat more than 400 enterprises that fit this description and were surveyed in the CIS (i.e. more than ten employees in manufacturing and selected enterprise-oriented services segments). Austria's higher proportion related to the overall number of enterprises is due to the significantly higher distribution of public procurement contracts in the Austrian business en-

terprise sector overall. This enabled innovation-oriented public procurement to reach a comparatively large proportion of enterprises, although the share of public procurement projects that explicitly require innovations is not very high.

The share of enterprises that have implemented innovations in public procurement contracts without such innovation being required in the contract was 5.5% of all enterprises in Austria, which was the second-highest result among all of the reference countries for which information was available. Only France had a higher value of 6.7%.

An interesting result emerges if these proportions are differentiated by size. Whenever large enterprises in Austria conduct innovation activities in the context of procurement contracts, this is done significantly more frequently because of a contractual requirement than is the case for SMEs. Of large enterprises with public procurement contracts, 20% performed contrac-

Fig. 5-15: Share of enterprises that during 2010 to 2012 conducted innovation activities in the context of public procurement contracts from domestic agencies

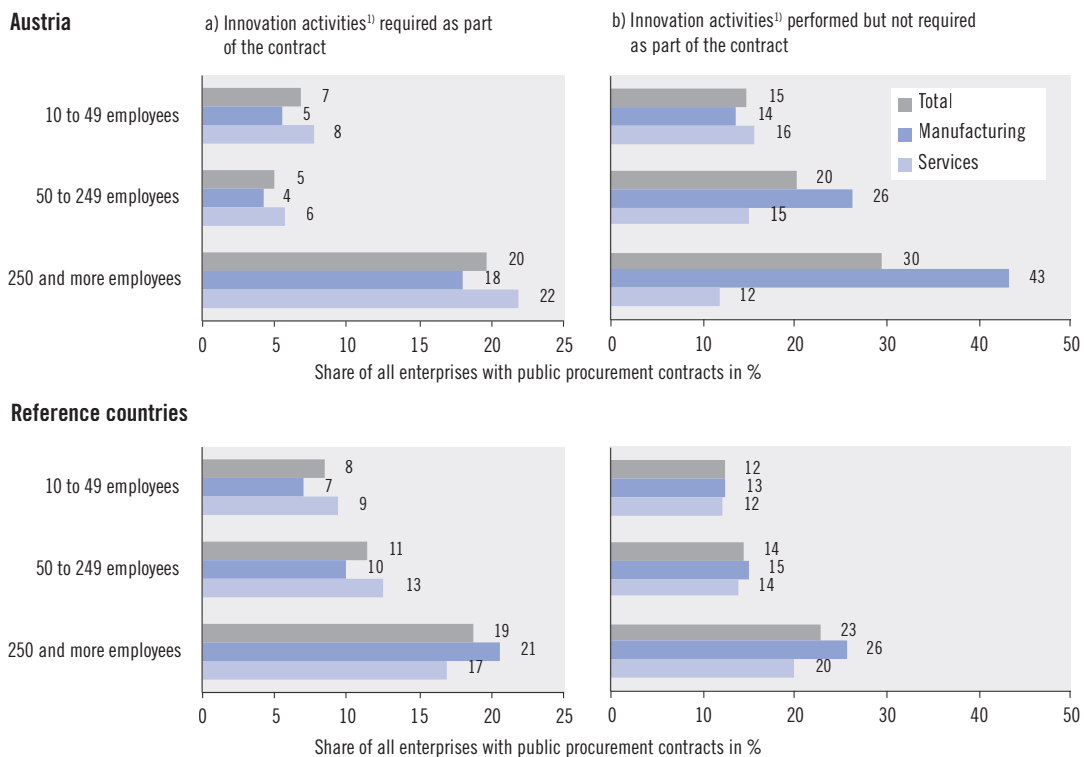


* There is no distinction for Sweden as to whether or not innovation activities were explicitly required in a contract.

All information refers to enterprises with ten or more employees in the (NACE) economic sectors 5-39, 46, 49-53, 58-66, 71-73.

Sources: Eurostat: CIS 2012. Calculations: ZEW.

Fig. 5-16: Share of enterprises that during 2010 to 2012 conducted innovation activities in the context of public procurement contracts from domestic agencies, by size



1) Activities in the development or introduction of product, process, marketing or organisation innovations.
 All information refers to enterprises with ten or more employees in the (NACE) economic sectors 5-39 (= manufacturing) and 46, 49-53, 58-66, 71-73 (= services).

Sources: Eurostat: CIS 2012. Calculations: ZEW.

tually required innovation for at least one order, while 30% report that they conducted innovation activities in connection with public procurement contracts without this being contractually required (Fig. 5-16). At medium-sized enterprises (50 to 249 employees), the share of “voluntary” innovative activities was 20%, which was four times as high as the share of innovative activities completed due to contractual requirements (5%). About twice as many small enterprises (10 to 49 employees) are “voluntarily” innovative (15% versus the 7% that completed innovation projects as part of a contract). There were significantly closer gaps between “voluntary” and contractually required innovation activities in the reference countries in terms of public procurement contracts. The

share of SMEs in the reference countries that conducted contractually required innovation activities was somewhat higher than in Austria. This allows us to conclude that in Austria, innovation demand at public procurement agencies tends to be oriented more towards large enterprises than is the case in other countries. At the same time, there may be an even greater potential for more strongly innovation-oriented procurement in Austria for procurement contracts to SMEs.

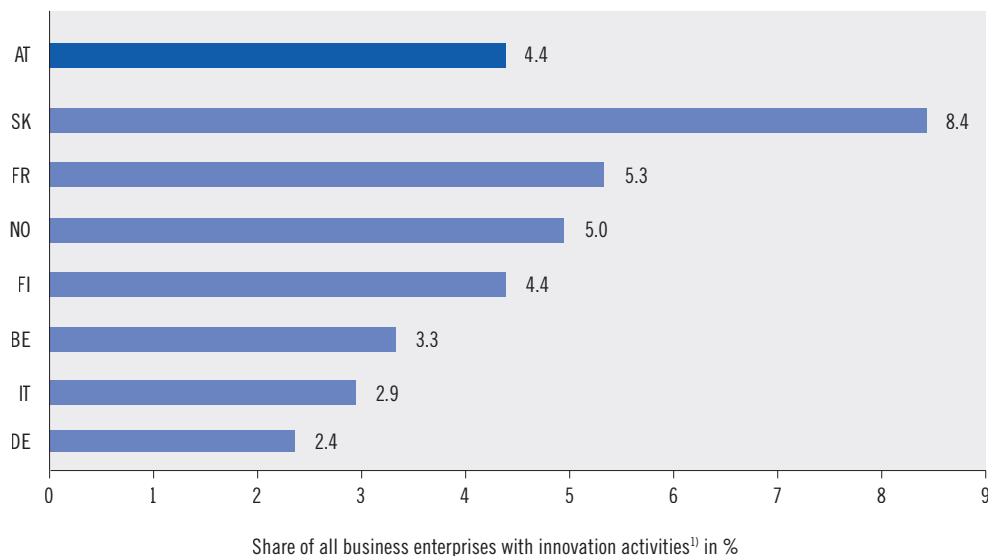
The importance of public procurement contracts for innovation activities in the business enterprise sector can be assessed roughly by looking at the share of innovating business enterprises that implemented at least part of their innovation activities in connection with public

procurement contracts that they received from domestic agencies. For Austria, this proportion was 14% for the 2010–2012 period (Fig. 5-17). This is the third highest value among the reference countries. Slovakia and France (both 18%) exhibited a greater significance of public procurement as an innovation driver. This rate was only 7% for Sweden and a mere 4% in Germany.

Differentiation by industry suggests that public procurement contracts have different importance in different sectors when it comes to innovation activities in the business enterprise sector (Table 5-4). It should be noted that procurement contracts play a role in nearly all manufacturing and services segments. The share of enterprises with public procurement contracts from domestic agencies is especially high, at over 50% in telecommunications, waste disposal, sewage, manufacture of other transport equipment (including railway locomotives and rolling stock), architectural and engineering activities, and textile manufacturing. Only a few

industries have high proportions of enterprises with procurement contracts that have implemented innovation activities as part of their contracts. This includes manufacture of other transport equipment, information services, telecommunications, and the manufacture of computer, electronic and optical products. The research and development sector has the highest value at 81%. R&D contracts for government authorities and public research institutions (including universities) may play an essential role here. Enterprises that have completed innovation projects in the course of public procurement contracts without being explicitly required to do so are more often found in a larger number of industries, including industrial sectors such as textile manufacturing, pharmaceuticals, the construction materials industry, metal production, mechanical engineering and machinery, and manufacture of automobiles, as well as water supply and the software industry. This shows that public clients are completely

Fig. 5-17: Share of enterprises that during 2010 to 2012 conducted innovation activities in the context of public procurement contracts from domestic agencies that required innovation activities, among all enterprises with innovation activities



1) Activities in the development or introduction of product, process, marketing or organisation innovations.

All information refers to enterprises with ten or more employees in the (NACE) economic sectors 5-39 (= manufacturing) and 46, 49-53, 58-66, 71-73 (= services).

Sources: Eurostat: CIS 2012. Calculations: ZEW.

Table 5-4: Share of enterprises in Austria that received public procurement contracts during 2010 to 2012 for which they conducted innovation activities, by industry

Economic sector (ÖNACE 2008)	Received PPC ¹⁾	PPC innovations ²⁾		Share of PPC innovations ³⁾
		Required	Not required	
5 to 9 Mining and quarrying	48	0	0	0
10 Manufacture of feed products	18	0	10	0
11, 12 Manufacture of beverages, Tobacco processing	35	0	0	0
13 Manufacture of textiles	52	0	48	0
14 Manufacture of wearing apparel	19	0	0	0
15 Manufacture of leather and related products	40	0	0	0
16 Manufacture of wood and products of wood and cork (except furniture)	25	1	11	0
17 Manufacture of paper and paper products	38	0	0	0
18 Printing and reproduction of recorded media	47	11	5	11
20 Manufacture of chemicals and chemical products	33	0	13	0
21, 19 Manufacture of basic pharmaceutical products and pharmaceutical preparations, Manufacture of coke and refined petroleum products	22	0	57	0
22 Manufacture of rubber and plastic products	27	0	18	0
23 Manufacture of other non-metallic mineral products	49	11	28	12
24 Manufacture of basic metals	20	0	35	0
25 Manufacture of fabricated metal products, except machinery and equipment	37	5	11	4
26 Manufacture of computer, electronic and optical products	40	24	32	10
27 Manufacture of electrical equipment	21	11	23	3
28 Manufacture of machinery and equipment n.e.c.	21	16	45	4
29 Manufacture of motor vehicles, trailers and semi-trailers	28	12	58	7
30 Manufacture of other transport equipment	56	73	100	44
31 Manufacture of furniture	35	1	20	0
32 Other manufacturing	7	0	0	0
33 Repair and installation of machinery and equipment	48	0	3	0
35 Electricity, gas, steam and air conditioning supply	41	16	18	8
36 Water collection, treatment and supply	21	0	71	0
37, 39 Sewage, remediation activities and other waste management services	58	0	0	0
38 Waste collection, treatment and disposal activities; materials recovery	62	13	13	15
46 Wholesale trade, except of motor vehicles and motorcycles	36	6	14	4
49 Land transport and transport via pipelines	30	4	7	4
50, 51 Water transport, air transport	0	0	0	0
52 Warehousing and support activities for transportation	11	11	11	2
53 Postal and courier activities	41	8	8	25
58 Publishing activities	41	8	0	6
59 Motion picture, video and television programme production, sound recording and music publishing activities	28	0	0	0
60 Programming and broadcasting services	25	0	0	0
61 Telecommunications	65	48	0	48
62 Computer programming, consultancy and related activities	41	17	37	8
63 Information service activities	19	55	50	14
64 Financial service activities, except insurance and pension funding	25	2	4	1
65 Insurance, reinsurance and pension funding, except compulsory social security	32	0	7	0
66 Activities auxiliary to financial services and insurance activities	0	0	0	0
71 Architectural and engineering activities; technical testing and analysis	54	4	19	4
72 Scientific research and development	39	81	59	32
73 Advertising and market research	35	15	7	9
Total	33	7	16	4

1) Enterprises with public procurement contracts from domestic agencies (public procurement contracts, PPC) as a % of all enterprises. – 2) Enterprises that conducted innovation activities in the context of PPC as a % of all enterprises with PPC. -3) Enterprises that conducted innovation activities in the context of PPC as a % of all enterprises with innovation activities.

All information refers to enterprises with ten or more employees.

Sources: Eurostat: CIS 2012. Calculations: ZEW.

open to innovation, even if they do not require it directly in their call for tender documents.

The significance of innovation-supporting public procurement for overall innovation activities in enterprises also varies strongly between industries. A high proportion of innovative enterprises that are also party to public contracts requiring innovation activities is found in telecommunications, manufacture of other transport equipment, the R&D sector, post and courier services, waste management, information services, the construction materials industry, and the print trade.

Another aspect of the importance of the public sector for innovation activities at business enterprises is the use of information provided by public sector customers or contracting authorities in determining the direction that an enterprise's product or process innovation will take. During 2010 to 2012, 22% of enterprises in Austria referred to customers from the public sector as sources of information. For 4% of enterprises, public sector customers or contracting authorities were very important as suppliers of ideas. In European comparison, the use of the public sector as a source of information for prod-

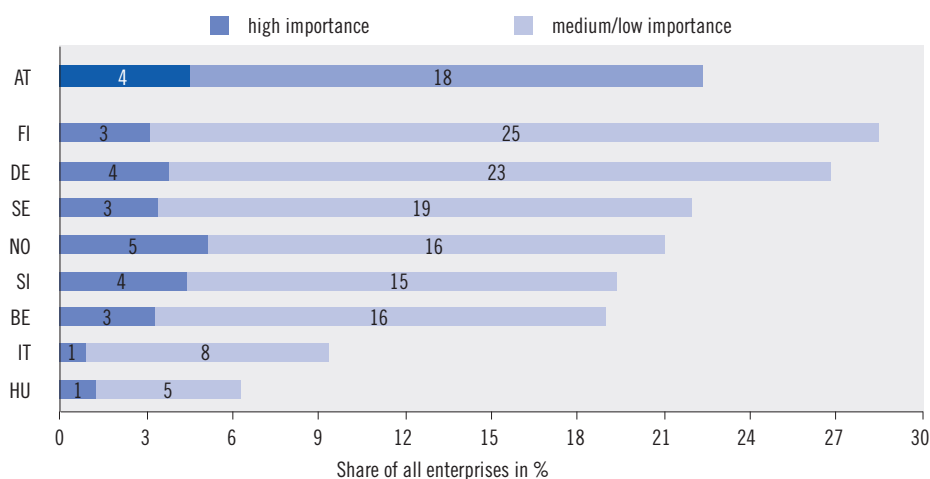
uct and process innovation stands at a significantly above-average level. Only in Finland and Germany is the proportion higher.

Another indicator is the direct, active cooperation with customers or clients from the public sector in innovation projects. In the period 2012–2014, 4% of all enterprises from Austria sought this kind of cooperation. In terms of all enterprises with innovation cooperation agreements, about every fifth enterprise was engaged in cooperation with public institutions. This is an average distribution in European comparison. These proportions are significantly higher in some Scandinavian countries, the United Kingdom, and a few neighbouring Eastern European countries.

5.3.4 Summary

Public procurement is well established in Austria as an instrument of innovation policy at the institutional level. The amendment of the Federal Procurement Act (Bundesvergabegesetz), the establishment of the PPPI Service Centre and the PPPI Competence/Contact Centres, the completion of pilot projects in pre-com-

Fig. 5-18: Share of enterprises that used customers or clients from the public sector as sources of information for their innovation activities¹⁾ during 2010 to 2012

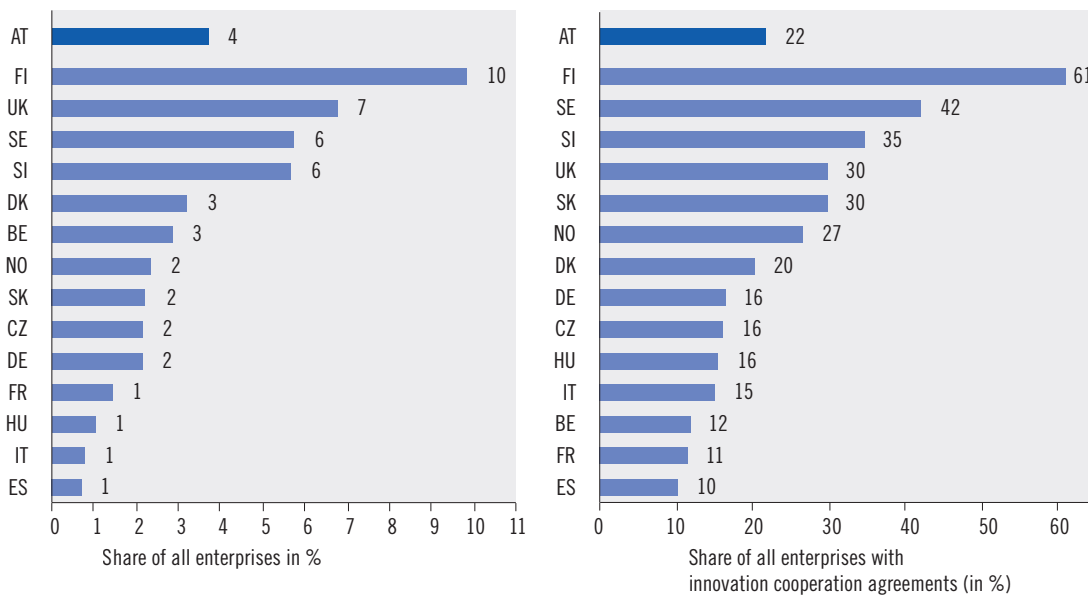


1) Activities in the development or introduction of product or process innovations.

All information refers to enterprises with ten or more employees in the (NACE) economic sectors 5-39, 46, 49-53, 58-66, 71-73.

Sources: Eurostat: CIS 2012. Calculations: ZEW.

Fig. 5-19: Share of enterprises with innovation cooperation agreements during 2010 to 2012 that cooperated with customers or clients from the public sector



All information refers to enterprises with ten or more employees in the (NACE) economic sectors 5-39, 46, 49-53, 58-66, 71-73.
Sources: Eurostat: CIS 2012. Calculations: ZEW.

mercial procurement, and financial incentives to stimulate commercial procurement of innovation are just a few examples of many. As the results of the Community Innovation Survey (CIS) show, PPPI is supported by an Austrian economy that is well placed to promote innovation activities through targeted demand for innovative solutions. The share of enterprises that receive public procurement contracts in Austria is very high in European comparison. The public sector's demand for goods and services touches nearly every area of the Austrian economy, albeit at different intensities. This also applies to SMEs. The specific demand for innovation in the context of public procurement contracts can still develop further. This holds true in particular for the SME target group.

Because the barriers to entry are high for SMEs in large-volume procurement, SMEs and public institutions should proactively approach

one another. On the one hand, SMEs should orient themselves towards more innovative offers to public institutions. On the other hand, public procurement processes should be designed to be more SME-friendly, which means keeping order values low, taking decisions rapidly, less bureaucracy for offer submissions, and an SME-friendly credit check process. From the policy side, the existing commitment to RTI strategy should be upheld further and intensified because experience has shown that it is not easy to motivate public institutions to engage in PPPI. One possibility would be to embed a PPPI target in Austria (for example, dedicating a certain percentage of public procurement volume to go to projects that support innovation). Countries such as France, Spain, the United Kingdom, and the Netherlands can serve as learning models concerning reasonable numbers (i.e. shares of public procurement volumes).

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