

Austrian Research and Technology Report 2016

Report under Section 8 (1) of the Research
Organisation Act on federally subsidised research,
technology and innovation in Austria



This report was commissioned by the Federal Ministry of Science, Research and Economy (BMWF) and the Federal Ministry for Transport, Innovation, and Technology (BMVIT). It was written by a working group consisting of the Austrian Institute of Technology (AIT), JOANNEUM RESEARCH (JR) and the Austrian Institute of Economic Research (WIFO) with the support of the Centre for European Economic Research (ZEW). The Vienna University of Economics and Business (WU Wien) participated in the textual design.

Team of authors: Wolfgang Polt & Jürgen Streicher (Koordination, JR), Peter Biegelbauer (AIT), Eva Buchinger (AIT), Michael Dinges (AIT), Klaus Friesenbichler (WIFO), Georg Furlinger (AIT), Florian Holzinger (JR), Werner Hölzl (WIFO), Kathrin Hranayai (WIFO), Jürgen Janger (WIFO), Angela Köppl (WIFO), Agnes Kügler (WIFO), Karl-Heinz Leitner (AIT), Reinhard Millner (WU Vienna), Michael Peneder (WIFO), Michael Ploder (JR), Christian Rammer (ZEW), Sybille Reidl (JR), Wolfram Rhomberg (AIT), Anna Strauss (WIFO), Fabian Unterlass (WIFO), Maximilian Unger (JR), Peter Vandro (WU Vienna).

Imprint

Owners, Authors and Publishers:

Federal Ministry of Science, Research and Economy (BMWF), 1010 Vienna

Federal Ministry for Transport, Innovation and Technology (BMVIT), 1030 Vienna

All rights reserved

No parts of this publication may be reproduced except when the source is referenced.

Designed and produced by:

Peter Sachartschenko & Mag. Susanne Spreitzer OEG, Vienna

Translated by: Young Translations LLC, Vienna

Cover: © magann – Fotolia

Printed by:

Plöchl Druck, Freistadt

Vienna, 2016

research in Austria. To achieve these objectives, numerous steps have been described and embedded in a broad approach to implement the RTI strategy. The incentives promoting technological developments should not only be implemented at the supply side; stimuli should also come from the demand side. They should emphasise promotion of non-technological innovations and highlight the importance of cooperation with science. In addition, not only existing firms are being addressed; entrepreneurial dynamics is a separate priority of its own within this area of the strategy.

This chapter focuses on four priorities in the RTI strategy related to corporate research and innovation:

- the demand-side promotion of innovation, particularly through public procurement with this in mind,
- cooperation between science and business,
- Industry 4.0 and
- actions to promote the availability of venture capital.

2.2.1 Demand-side stimulation for innovation

Eva Buchinger

Innovation policy instruments for the demand side are becoming increasingly important, such as public procurement that promotes innovation, regulations and standards, and 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.⁴⁰ Since public procurement is an important economic factor, public procure-

ment promoting innovation is currently the most prominent demand-side instrument on the innovation policy agenda.

Public procurement promoting innovation arrived in Austria in 2007 as a topic driven by the EU that was visible through the widely communicated “procure_inno”⁴¹ guidelines. Although the guidelines received very positive acceptance, they had no significant mobilisation impact due to the lack of any accompanying measures. The incorporation of the demand-side stimulation for innovation in the catalogue of objectives for the 2011 RTI strategy⁴² was therefore a logical consequence and created the basis for concrete measures aimed at public procurement that promotes innovation. These measures cover the strategic, legal and operational dimension of policy action for the purposes of the RTI strategic principle of a comprehensive approach to innovation policy⁴³.

Strategic implementation of strategic public procurement that promotes innovation

The strategic centrepiece is the “guiding concept for public procurement that promotes innovation in Austria”⁴⁴. The guiding concept has a robust political and institutional basis, as both its creation as well as its implementation were put forward by the Council of Ministers⁴⁵ and the contents are based on a comprehensive stakeholder process⁴⁶. In addition, there is also a close cooperation with the regional governments on public procurement that promotes innovation with the interfaces for ecological procurement⁴⁷ and for discussion surrounding social procurement criteria⁴⁸ taken into account. The responsi-

40 See EC (2007/C/799, 2010/C/546); OECD (2011, 2014).

41 See Federal Ministry of Economics and Labour (2007).

42 The RTI strategy names demand-driven stimulation of innovation as a potential contributor with the following objectives: “boosting innovative potential of firms”, “improving the quality of the public-procured infrastructure and services” and “increasing domestic value creation”, see Federal Chancellery et. al (2011, 9–13, 26–27).

43 See BKA et al. (2011, 11).

44 See BMWFJ and BMVIT (2012a).

45 See BMWFJ and BMVIT (2011, 2012b).

46 More than 90 stakeholders from the public sector, industry, special interest groups and other specialist organisations took part in the process. For an overview of the process lasting more than one year see Buchinger (2012).

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

48 See Fair public procurement (2014).

bility for creating and implementing the guiding concept for public procurement that promotes innovation rests in the partnership between the Federal Ministry of Science, Research and Economy (BMWFV) and the Federal Ministry for Transport, Innovation and Technology (BMVIT), with the support of the Federal Procurement Agency (with procurement expertise, access to public facilities) and the Austrian Institute of Technology AIT (innovation expertise, scientific support).

The global aim of the guiding concept for public procurement that promotes innovation is to increase the share of public procurement that is used for innovations. Unlike other European countries, a quantitative PPPI target was not set.⁴⁹ The impacts expected include: 1) stimulating innovation and increasing competition in manufacturing, 2) increasing the efficiency of public facilities, and 3) more quality public services and infrastructures.

Legal implementation of strategic public procurement that promotes innovation

Accounting for innovation in public procurement law was put forward as an action in the guiding concept for public procurement that promotes innovation. It was implemented in 2013 with the amendments to the Public Procurement Act, with “innovation” added as a new secondary target (in addition to the secondary objectives already contained there of “ecology” and “social affairs”).⁵⁰

Operational implementation of strategic public procurement that promotes innovation

A further measure in the guiding concept was also implemented in September 2013: setting up a central innovation-promoting public procurement service centre within the Federal Procurement Agency, initiated and funded by the Federal Ministry for Transport, Innovation and Technology (BMVIT) and the Federal Ministry of Science, Research and Economy (BMWFV). The service centre has the task of supporting public procurement agents in innovation-promoting public procurement. The following activities have been completed since 2013: more than 20 PPPI networking activities, events, seminars at the federal government’s management academy, and PPPI competitions⁵¹, support for public facilities⁵² with their strategic innovation-promoting public procurement planning, construction of a PPPI online platform and, last but not least, raising of awareness for PPPI within the Federal Procurement Agency.⁵³

Efforts then began in 2014 to gradually establish the PPPI competence and contact centres envisioned in the guiding concept. They should be viewed as subject-specific institutions that are complementary to the Service Centre and work closely with it. Competence centres currently include Austria Wirtschaftsservice (aws) (focus: commercial PPPI), the Austrian Research Promotion Agency (FFG) (focus: pre-commercial PPPI), the Austrian Energy Agency AEA (sectoral focus:

49 For the quantitative targets of other European countries and their reference basis see Buchinger (2015).

50 Public Procurement Act sections 19(7) and 187(7) (Federal Law Gazette 2006/17).

51 The winners of the project competitions up to 2015 are: Forschungs- und Technologietransfer GmbH from the University of Applied Sciences at Wiener Neustadt (infrastructure for 3D printing of metals), Wiener Mittelschule Leipziger Platz (participative learning area design concept), Federal Ministry of Finance (BMF) (mobile inspection system), BHAK/BHAS Baden (photovoltaic system plus battery storage system), Upper Austrian/Carinthian regional government (electric vehicles incl. charging infrastructure), Vorarlberg Environmental Association (large-scale installation of e-bike charging stations), Litschau municipality (energy system optimisation), Mozarteum University of Salzburg (locking systems and room booking), Leopold Franzens University of Innsbruck and Medical University of Innsbruck (energy monitoring), Joanneum University of Applied Sciences Graz (digital signage system), Vorarlberg municipality/environmental association (interactive bicycle road signs), Volkshilfe Vienna charitable organisation (computer-assisted facilities management CAFM).

52 See Innovation potential analysis with the Austria Wirtschaftsservice (aws); Austrian Research Promotion Agency strategy development.

53 For the details on the different activities see Federal Ministry for Transport, Innovation and Technology and Federal Ministry of Science, Research and Economy (2015) and www.ioeb.at.

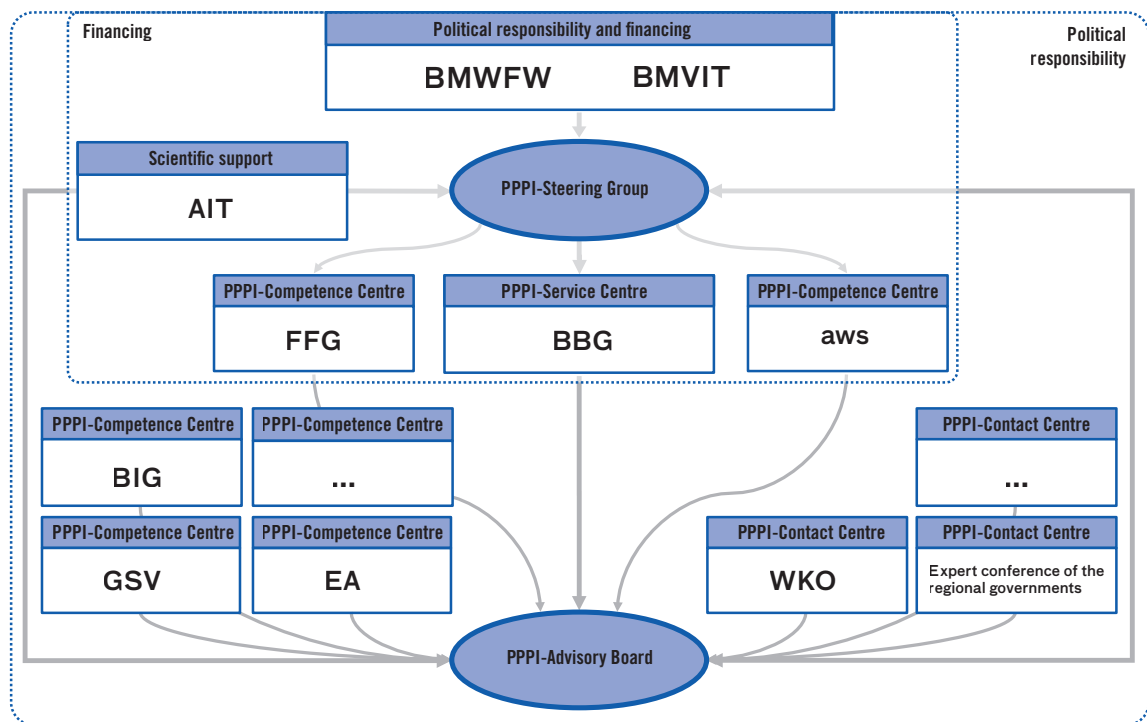
energy), the Federal Real Estate Association BIG (sectoral focus: building construction) and the Austrian Association for Transport and Infrastructure (GSV) (sectoral focus: mobility) and, as contact points, the Federal Economic Chambers WKO and the “public procurement by the regional governments” expert conference.

Fig. 2-1 provides an overview of the governance and funding of the PPPI stakeholders stat-

ed. The “PPPI Annual Report 2013/2014” includes detailed descriptions of the PPPI stakeholders, their activities and a series of results in the form of PPPI good practices.⁵⁴

There are also several funding schemes administered by the Austrian Research Promotion Agency (FFG) on behalf of the various departments. There are already several high-volume projects for pre-commercial procurement in the

Fig. 2-1: PPPI governance – stakeholders, bodies, political responsibility and financing



BMWFW	Federal Ministry of Science, Research and Economy	Austria Wirtschaftsservice (aws)	Austria Wirtschaftsservice
BMVIT	Federal Ministry for Transport, Innovation and Technology	BIG	Federal Real Estate Association
AIT	Austrian Institute of Technology	GSV	Austrian Association for Transport and Infrastructure
FFG	Austrian Research Promotion Agency	EA	Austrian Energy Agency
BBG	Federal Procurement Agency	WKO	Austrian Federal Economic Chambers
			Regional government expert conference
			“Public procurement by the regional governments”

Source: Updated version by Federal Ministry for Transport, Innovation and Technology and Federal Ministry of Science, Research and Economy (2015, 14).

54 See Federal Ministry for Transport, Innovation and Technology and Federal Ministry of Science, Research and Economy (2015). Further examples of successful implementation can e.g. be found in Brünner et al. (2012); PPPI Service Centre (2014).

topic areas of “Mobility” and “Building”⁵⁵ and a whole series of R&D projects with stakeholder involvement in the “Security” topic area.⁵⁶

Impact of Public Procurement Promoting Innovation

PPPI events and the work of the PPPI service centre were all analysed as part of assessments – with positive results. An overall PPPI evaluation is planned for 2017/2018, since only an example examination and evaluation of the impact can be completed beforehand based on the short time involved in implementing the actions.

Efforts to develop a comprehensive PPPI monitoring system were launched in Austria in order to obtain extensive data for evidence-based action on policy. A pilot survey by Statistics Austria resulted in an estimated PPPI share of total procurement volumes in the government sector of between 2.3% and 3.3%⁵⁷; there are no representative figures yet for the outsourced firms. This monitoring is coordinated with the EU developments on measuring PPPI.

In summary, it can be stated that innovation stimulation fuelled by demand is well-established institutionally using public procurement-promoting innovation. The “elite” good practices will need to be transferred to a broad “mass movement” in future. The existing commitment to RTI strategy should be upheld further and intensified from the policy side in order to enable this. One possibility would be, for example, to enshrine a PPPI target and/or earmark the PPPI budget in policy.

2.2.2 Expanding cooperation between science and industry

The Chapters 2.1.2 and 2.1.4 already covered the reasons why university knowledge is crucial for competitiveness of firms in highly developed economies. Empirical findings show that the proportion of scientific literature in all citations has increased significantly within patented corporate inventions since the 1980s. University research essentially provides ideas and human resources that are crucial for new technologies and radical innovations. Ideas and human resources from science may be relevant to innovative processes at firms in different ways.

A distinction can be made between cooperation (*i.e. engagement*) between universities and industry (for example through research cooperation, *i.e.* joint research projects or consulting) and the exploitation or commercialisation of research results by the universities themselves (e.g. through licensing patents, spin-offs, etc.).⁵⁸ Additional options are available in the inter-sectoral mobility of university and corporate researchers, where university graduates convey the university knowledge to the relevant firms, meaning that university instruction is generally considered to be one of the most important transfer channels.⁵⁹ Simple reading of academic publications by corporate researchers also ranks very highly among firms in terms of the significance of potential options for using university knowledge. However, research cooperation and exploitation are essential mechanisms for ensuring that corporate innovations are able to benefit from progress in sci-

55 With pre-commercial procurement, public bodies invite R&D tenders in a multi-stage competition (Pre-Commercial Procurement PCP). Austrian PCPs and their procurers include: “Traffic infrastructure research”: ASFINAG and ÖBB INFRA; “Mobility of the future”: ÖBB PRODUKTION; “Heating & cooling of historical buildings” Burghauptmannschaft Österreich.

56 The stakeholders are included as mandatory in the KIRAS safety research programme. There are 219 cases of stakeholder involvement in the 150 projects implemented (data correct as at 2014); these include e.g. BMI, BMLVS and the emergency services.

57 Uncertainties in making the distinction between PPPI became apparent in the pilot survey. Scenarios were therefore calculated with results for the PPPI share of between 2.3% and 3.3%. Reporting year 2013, source: Statistics Austria.

58 See Janger (2015); Perkmann et al. (2013).

59 See Leten et al. (2014); Veugelers and Del Rey (2014).