



CURRENT TRENDS IN AUSTRIA

The period covered by this Austrian Research and Technology Report was dominated by a series of societal challenges exacerbated by the COVID-19 pandemic as well as the increasingly apparent consequences of climate change and the humanitarian, economic and geopolitical fallout from Russia’s invasion of Ukraine. Austria’s RTI system, however, was characterised by goal-oriented and positive dynamics in 2021.

The first RTI Pact 2021-2023 saw a major budget increase of 27% for the 10 central research and research funding institutions.

Sub-strategies

Besides the RTI Strategy 2030, the objective of establishing Austria as an Innovation Leader has also given rise to a wide range of sub-strategies with relevance for RTI. The most recent RTI-relevant sub-strategies launched at the national level include:

- Excellence Initiative (excellent=austria)
- Location Strategy 2040
- Digital Action Plan
- “AIM AT 2030” AI Strategy
- Austrian Space Strategy 2030+
- Mobility 2040 – R&I Mobility Agenda 2026
- FIT4UrbanMission
- RTI Initiative “Circular Economy”

Austrian Microdata Center

The legal foundations for the Austrian Microdata Center (AMDC) were created when the amendments to the Federal Statistics Act and the Research Organisation Act entered into force on 1 January 2022. The AMDC will begin operations on 1 July 2022 and open its doors to scientists and researchers from this day onwards. Besides generating more precise results, the use of microdata from Statistics Austria and from administrative registers of government ministries as well as of registers of independent officials will also allow innovative and more complex research questions to be answered.

Future Austria Fund

The Future Austria Fund is another important government project that is being implemented: Between 2022 and 2025, the National Foundation for Research, Technology and Development will be endowed with €140 million a year and developed further into the

Future Austria Fund as specified in the RTI Strategy 2030. This funding will serve to finance cutting-edge basic and applied research as well as technology and innovation development.

Governance and monitoring

The Research Financing Act also lays the foundations for a new governance system for ten central institutions for non-university research and research funding.

Research institutions	2021: income in €1,000	2021: employees
Austrian Institute of Technology GmbH (AIT)	179,059	1,331
Institute of Science and Technology Austria (ISTA)	85,002	935
Austrian Academy of Sciences (OeAW)	207,874	1,828
Silicon Austria Labs GmbH (SAL)	32,163	251
Ludwig Boltzmann Gesellschaft (LBG)	37,195	607
Research funding institutions	2021: funding/present value in €1,000	
Austria Wirtschaftsservice Gesellschaft mbH (aws)	287,000	
Christian Doppler Research Association (CDG)	18,496	
Austrian Science Fund (FWF)	270,017	
OeAD-GmbH (OeAD)	53,725	
Austrian Research Promotion Agency (FFG)	640,131	

The future growth in the budget is expected to be reflected in the performance achieved by these institutions. To this end, they undergo a monitoring process that was developed further in 2022. Selected target values in various areas were examined more closely for the first time.

	1 Funding, including third-party funding		5 Internationalisation
	2 Quality assurance and evaluations		6 Knowledge and technology transfer
	3 Human resources and qualifications		7 Communication and interaction with society
	4 Output, innovation and excellence		8 Gender and promotion of gender equality

Developments in the higher education sector

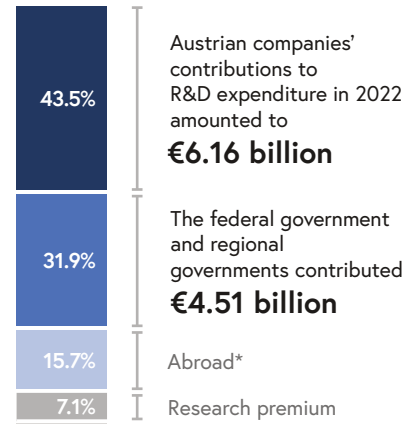
The universities’ budget for the 2022–2024 performance agreement period was increased by 12.5% compared to that of the preceding period, reaching a record high of €12.3 billion. Knowledge transfer was defined as one of the key priorities, and a whole series of projects and objectives were laid out for STEM subjects. Participation in the European Universities initiative is being expressly supported, as is engagement in research conducted into climate change, sustainability and transformation. A uniform framework for training at higher education institutions was established with the package of legislative measures for higher education institutions.

FUNDING OF R&D AND INNOVATION

According to the R&D survey 2019, R&D funded by the public sector increased by 44.3% in nominal terms in 2009–2019 and by 8.3% in 2017–2019 (including the higher education sector). The number of companies performing R&D increased by 31.4% in 2009–2019 and by 11% in 2017–2019.

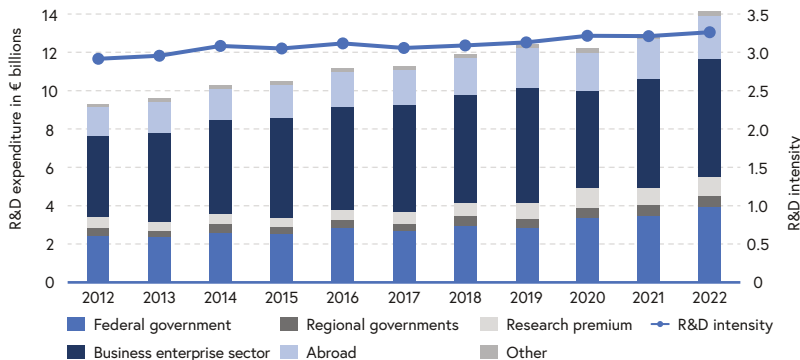
According to the global estimate for 2022, expenditure on research and experimental development will amount to

€14.15 billion



* mainly comprises R&D funded by foreign-based companies on behalf of their Austrian subsidiaries as well as return flows from the EU's Research and Innovation Framework Programmes

Funding of R&D carried out in Austria and the development of R&D intensity, 2012–2022

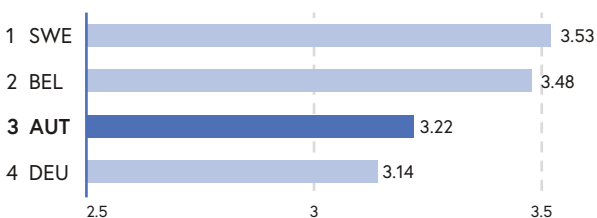


Source: Statistics Austria, global estimate of 22 April 2022

3.26%

is Austria's estimated R&D intensity for 2022, meaning that it will have exceeded the European target value of 3% for an impressive ninth consecutive year.

R&D intensity, 2020



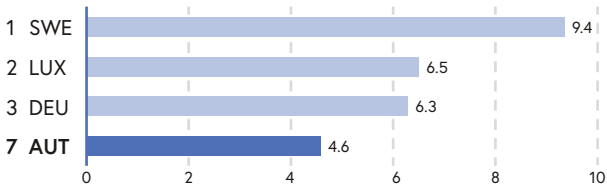
Source: Eurostat (2021a)

Austria ranked third for R&D intensity in 2020, placing it amongst the leading group in Europe and was able to overtake Germany and improve its ranking by one place compared to 2019.

In April 2021, Austria submitted to the European Commission its national Recovery and Resilience Plan (RRP) for the years 2020–2026, whose measures are in line with the National Reform Programme (NRP). After the RRP was approved by the EU Council on 13 July 2021, Austria became one of the 13 member states to receive funding for their recovery plans from the first tranche.

INTERNATIONAL RANKING

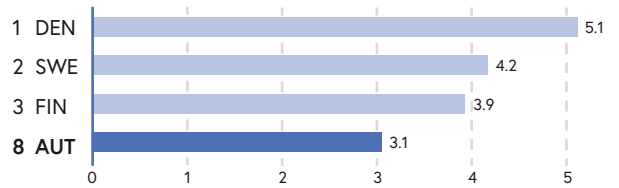
Patent intensity (triadic patents) per 1,000 R&D employees, 2019



Source: OECD (2021b)

Although Austria's patent intensity fell between 2018 and 2019, it remains above the EU average.

Number of scientific (citable) articles in all disciplines, standardised by country population, 2020



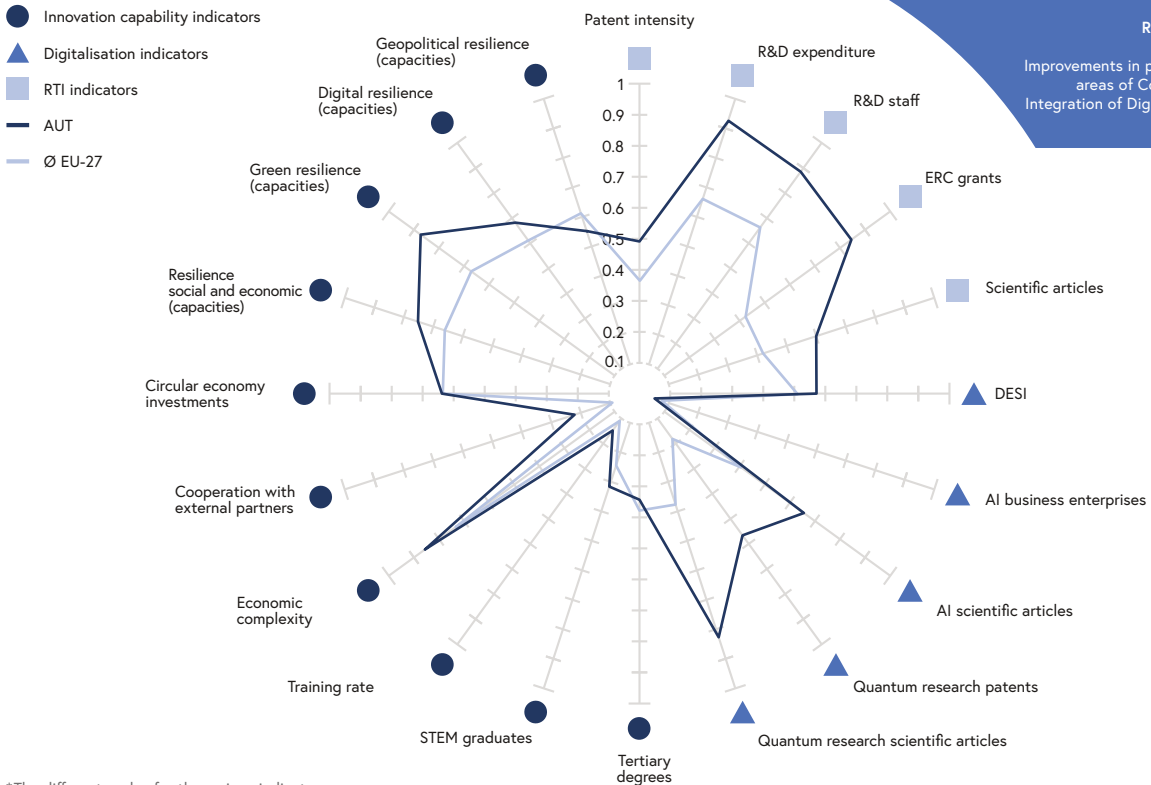
Source: Scimago Journal & Country Rank (2021)

The number of scientific articles per 1,000 inhabitants increased slightly between 2019 and 2020 and is also above the EU average.

Austria scores above the EU-27 average almost across the board and enjoys a particularly good position with regard to RTI indicators, quantum research and social, economic and green resilience.

Readiness for Frontier Technologies Index 2020	IMD World Talent Ranking 2021
Ranked 22 of 158	Ranked 4 of 27
European Innovation Scoreboard 2021	Global Innovation Index 2021
Ranked 8 of 27	Ranked 18 of 132
DESI Index 2021	
Ranked 10 of 27	
Improvements in particular in the areas of Connectivity and Integration of Digital Technology	

Austria's innovation capability compared to the EU average*

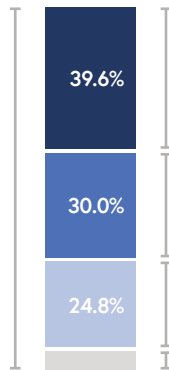


*The different scales for the various indicators were standardised to values between 0 and 1.

AUSTRIA IN HORIZON 2020

Funding amounts raised as part of Horizon 2020

€1.95 billion
in Horizon 2020 project funding was allocated to Austria in total

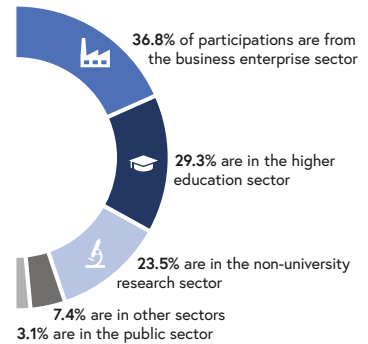


€0.77 billion was raised by Austrian higher education institutions

€0.58 billion by Austrian companies

€0.48 billion non-university research institutions
Public sector/Other

Proportion of Austrian participations in Horizon 2020 by sector

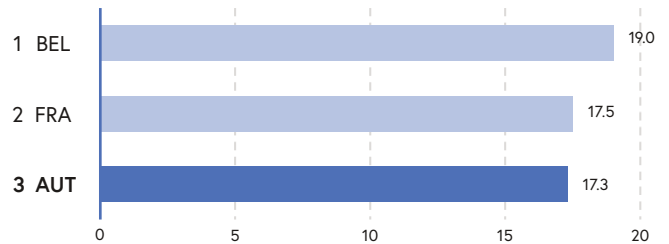


With a success rate of

17.3%

for the 2014–2021 programme period, Austria is third behind Belgium and France

Success rate of Horizon 2020 participations by country (in percent)



Source: Eurostat (2021a)

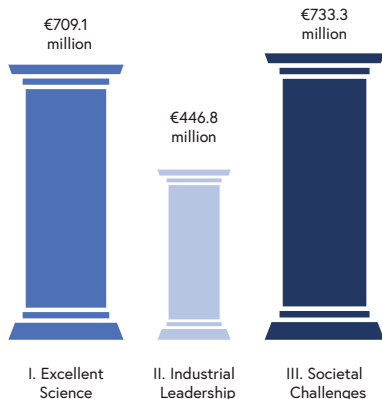
Austria performed particularly well in 2020 in terms of the number of European science awards (ERC grants from Horizon 2020) and came second with 4.5 grants per 1 million inhabitants.

ERC grants in Horizon 2020 per 1 million inhabitants, 2020



Source: European Commission (2021b)

Funds raised by Austrian players by pillar, 2014–2020



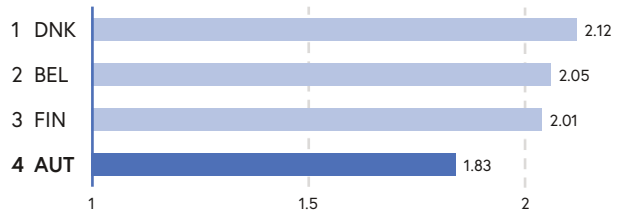
HORIZON EUROPE

At the beginning of 2021, the ninth European Framework Programme for Research and Innovation was launched under the title “Horizon Europe”. The important Projects of Common European Interest (IPCEIs) are one of the main new features. Taking part in these large-scale strategic projects marks a major step towards a new, future-oriented industry policy. Austria is already involved in the Batteries and Microelectronics IPCEIs and is seeking to participate in three others – Microelectronics II, Hydrogen and Health.

PEOPLE IN SCIENCE & RESEARCH

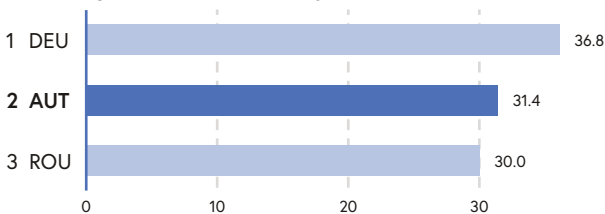
Since outstanding achievements in R&D rely on highly skilled staff, supporting talented individuals is one of the main aims of the RTI Strategy 2030.

R&D staff as a percentage of the working population, 2020



Source: Eurostat (2021a)

Share of graduates in STEM subjects (in percent), 2019

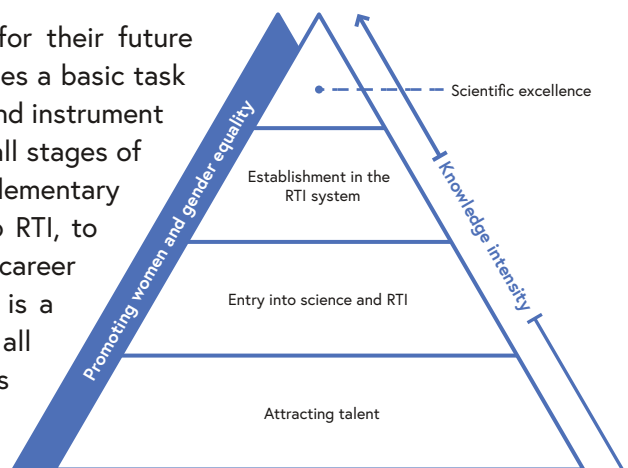


Source: OECD (2021)

31.4%

was the share of graduates in STEM subjects in 2019, placing Austria second in the EU in the OECD rankings.

Research-led teaching to prepare young people for their future activities in science, business and society constitutes a basic task of the education and science system. The funding and instrument portfolio is aimed at researchers and scientists at all stages of their careers. A wide range of supporting and complementary funding instruments are used to attract people to RTI, to develop their skills further and to give them sound career prospects. Promoting women and gender equality is a key cross-cutting issue here, whose relevance in all stages of a career is underlined by specific measures to improve equal opportunities in science and research.



Source: Austrian Institute of SME Research

For more than 25 years, the Austrian research, technology and innovation policy (RTI policy) has been characterised by an evaluation culture which aims to ensure quality and transparency. Programmes, as well as more and more institutions and funding instruments, are assessed regularly to evaluate the extent to which they achieve their objectives, and their impact and efficiency. Most of the evaluation reports are available to the public, and can be accessed in the online repository of the Austrian Platform for Research and Technology Policy Evaluation (fteval).

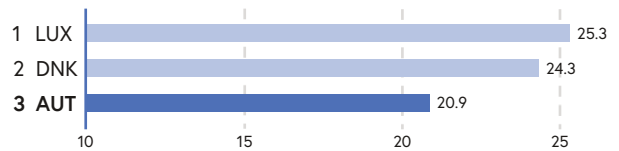
FORWARD-LOOKING TOPICS

Quantum research and technologies

Both Austria and Europe can look back on decades of excellent research efforts in this field. Austria is playing a leading role here and ranks third behind Luxembourg and Denmark with approximately 20 publications per one million inhabitants.

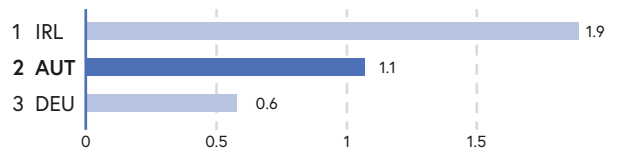
The country is second behind Ireland in terms of patent applications per 10,000 employees, scoring almost three times the EU-27 average.

Number of publications in the field of quantum research per 1 million inhabitants, 2020



Source: Scopus (2021)

Patents in the field of quantum technologies per 10,000 R&D employees, 2019



Source: European Patent Office (2021)

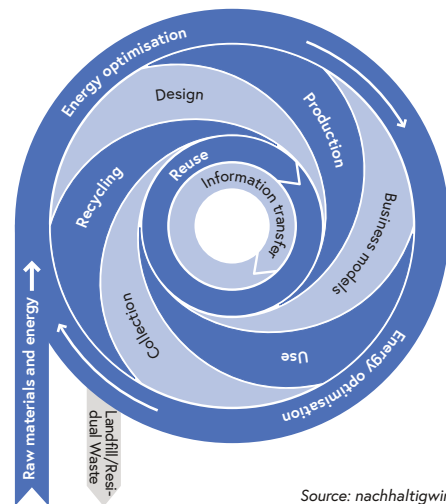
Circular economy

The introduction of the circular economy as a new RTI focus area is significantly expanding the range of thematic funding programmes. To achieve the mission “Österreich auf dem Weg zu einer nachhaltigen und zirkulären Gesellschaft” (Austria on the way to a sustainable and circular society), the federal government is setting the following objectives:

1. Closing materials cycles
2. Intensification of product use
3. Optimised use of resources

This focus is also reflected in green resilience capacities, for which Austria ranks first among the EU-27.

Schematic representation of the circular economy



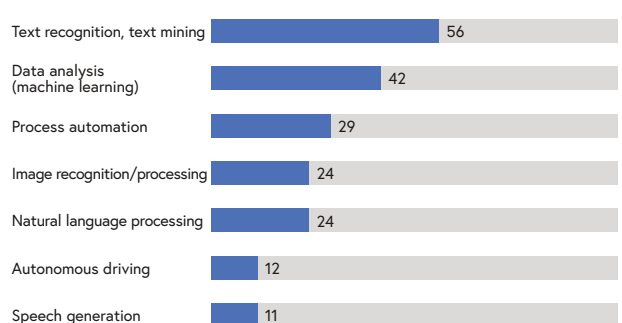
Source: nachhaltigwirtschaften.at

Artificial Intelligence (AI)

AI remains a key technology in (inter-)national innovation systems. Despite an increase in the number of start-ups and numerous political initiatives, there is still significant potential for embracing AI amongst Austrian companies.

The EU Commission has put forward a concept based on the 2020 European AI Strategy in order to encourage the use of AI while taking account of potential dangers and risks and to broaden society’s acceptance of AI.

AI technologies at companies (in percent), 2021



Source: Statistics Austria, ICT use in companies in 2021