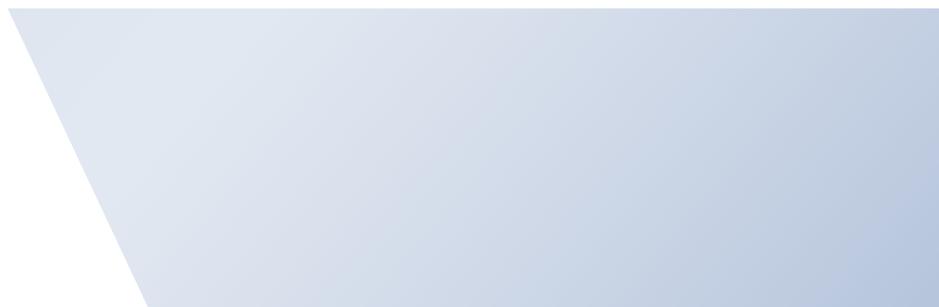
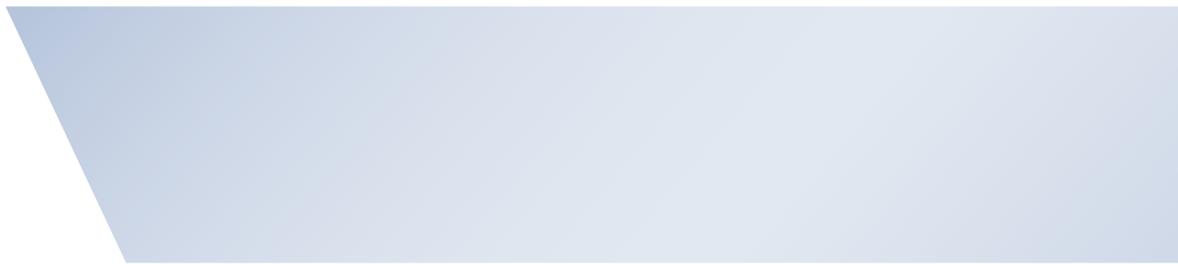


# RTI Strategy 2030

Strategy for Research, Technology  
and Innovation of the  
Austrian Federal Government





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Vienna, 2020

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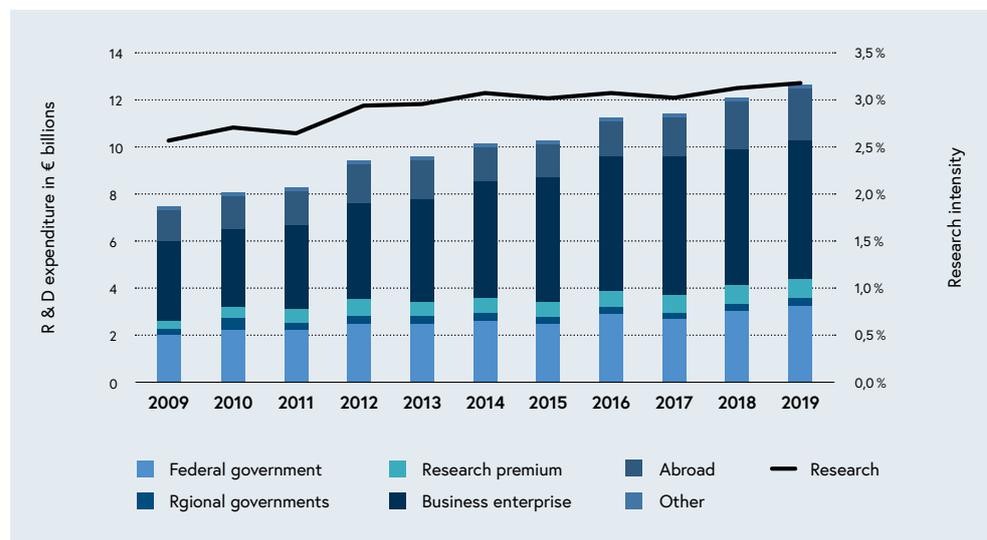
# Introduction

## Austria as an RTI location

Research, Technology and Innovation (RTI) are at the **heart of the Austrian policy** that is future-oriented and designed to be competitive and innovation-friendly. They are the foundation of sustainable growth and the increased resilience of the entire economic system. Companies that perform intensive research and development (R&D) not only create more jobs, they are also more crisis-proof and more successful.

Against this background, Austria as an RTI location has shown **dynamic development** in recent years. R&D spending was raised to €12.69 billion in 2019, equivalent to about 3.18% of gross domestic product (GDP). With this ratio of R&D expenditures to GDP, Austria has not only clearly exceeded the 3% target set by the European Union (EU) by 2020, but has also positioned itself in fifth place worldwide and even in second place within the EU. The Austrian research landscape is characterised by 22 public universities, 21 universities of applied sciences, 5 central non-university research institutions, 3,489 research companies, and a total of 5,084 research performing units, including many leading international companies.

Figure 1: Funding of research and experimental development carried out in Austria and research intensity, 2009–2019



Source: Figure 1-1 Austrian Research and Technology Report 2020, based on Statistics Austria, global estimate as at 28 April 2020. Graphic: WPZ Research; the category “Other” combines the two categories “Other public funding” (incl. the higher education sector) and “Private non-profit sector”.

The **first Austrian overall Strategy** for Research, Technology and Innovation from **2011** expired at the end of 2020. Among the positive results are the significant increase in research intensity from 2.67% in 2011 to 3.18% in 2019, and the proportional shift of investment to around 70% of funding towards private companies. The original objective of joining the group of “Innovation Leaders” in the European Innovation Scoreboard has not yet been achieved. In 2020, Austria ranked eighth and is thus one of the “Strong Innovators”.

## Perspectives of the RTI Strategy 2030

The fragmentation of top-level research in Austria and the institutional fragmentation of scientific disciplines is characteristic of a research landscape that has evolved over time. The answer to this is to increase cooperation. It is essential to close the innovation chain in order to improve exploitation and the overall impact of research. Programmes in the European Research Area ERA should be used more intensively, further supplemented by the international orientation of Austrian RTI activities. Research infrastructures—both for basic and applied research—must be up to the standards of leading-edge research.

Particular attention should also be paid to strengthening and expanding applied research as a bridge between basic research and the needs of industry and society, whereby the relevant stakeholders should coordinate when setting their priorities. For example, the climate targets can only be achieved if there is a substantial contribution from research, technology and innovation. Research communication and an intensive dialogue between science and the public can also be extremely helpful in tackling other societal challenges. In addition, the research premium will be maintained as a unique selling proposition (USP) for Austria as an RTI location.

## What is the basis for the RTI Strategy 2030?

The RTI Strategy 2030 is based on a clear commitment to increasing efficiency and output in the system. The work on the RTI Strategy 2030 is largely based on the detailed analysis “**OECD Reviews of Innovation Policy: Austria 2018**”. The European Commission’s concept of **Smart Specialisation** was also used as a reference framework for developing the RTI Strategy 2030. In addition, the strategy is also based on a number of cross-cutting issues (Sustainable Development Goals, digitalisation, strengthening gender equality in RTI, Responsible Science, Open Science and Open Innovation) as well as initial anchor points of the Excellence Initiative, the Location Strategy and the Technology Offensive.

## RTI Strategy 2030: Including the stakeholders

This strategy reflects the **cross-departmental governance of RTI policy**. The top administrative level of the RTI Task Force is composed of representatives of the Federal Chancellery, the Federal Ministry of Finance, the Federal Ministry of Education, Science and Research, the Federal Ministry for Digital and Economic Affairs, and the Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology. It is responsible for coordinating RTI policy at the federal level and controls and accompanies the implementation of the RTI Strategy. In developing this strategy, it was possible to draw on the expertise of a wide range of stakeholders.

## RTI Strategy 2030: Directional framework

According to the government programme, the RTI Strategy 2030 sets out the important objectives and fields of activity of RTI policy for the coming decade. Key parameters define Austria's further development to become a leader in research, technology and innovation. The RTI Strategy lays out a stable and long-term framework to ensure this.

The key challenges, which have been analysed in a comprehensive process, must be overcome. To this end, in the course of operationalising the RTI Strategy, measures must first and foremost be defined in the RTI Pacts that build on the objectives defined in the RTI Strategy.

# Objectives

The RTI Strategy sets out the strategic direction for the next ten years in the form of overarching objectives in order to (1) become an international innovation leader and strengthen Austria as an RTI location, (2) focus on effectiveness and excellence, and (3) focus on knowledge, talent and skills.

Thus, three essential and overarching objectives are named, which indicate the clear and focused orientation of the RTI Strategy. Concrete target values characterise the orientation of the RTI Strategy and facilitate the measurability of the achievement of objectives.

## Objective 1: Become an international innovation leader and strengthen Austria as an RTI location

- Rank improvement in international indices (European Innovation Scoreboard (EIS): from top 8 to top 5; Digital Economy & Society Index (DESI): from top 13 to top 5; Global Innovation Index (GII): from top 19 to top 10);
- Attract 5–10 new leading RTI-intensive firms and further develop existing ones;
- Increase the number of companies that perform R&D on an on-going basis by 20%;
- Bring Austria into a stronger position in the European value chains by participating in at least 3 additional “Important Projects of Common European Interest” (IPCEIs—currently participation in 2);
- Exploit the opportunities of digitalisation for society, the economy, climate protection and administration in Austria and drive forward digital transformation with determination.

## Objective 2: Focus on effectiveness and excellence

- Successively increase R&D expenditure relative to GDP, to make Austria one of the top 5 countries in international innovation rankings (currently in 7th position according to the OECD ranking);
- Expand the venture capital pool (including five corporate venture funds to be established in Austria), to raise venture capital expenditure from 0.02% to 0.1% compared to GDP;
- Increase the number of commercially successful academic spin-offs by 100%;
- Achieve top 10 ranking for European Research Council (ERC) grants (per resident);
- Intensify participation in Horizon Europe and consolidate Austria’s top 3 ranking in terms of success rate;
- Raise the success rate for the business enterprise sector under Horizon Europe from 18.2% to at least 20%.

## Objective 3: Focus on knowledge, talents and skills

- Increase the proportion of graduates in science, technology, engineering and mathematics (STEM subjects) by 20%, and the proportion of women amongst graduates in technical subjects by 5%;
- Secure a top 3 ranking in the Institute for Management Development (IMD) World Talent Ranking (currently ranked 4th);
- Create incentives for researchers to pursue entrepreneurial careers;
- Advance two Austrian universities into the top 100 (the Times Higher Education World University Ranking currently places one in the top 200);

- Increase the proportion of academic and research personnel recruited from abroad to 45%, particularly at universities;
- Double the number of Austrian students of STEM subjects who complete a study programme or study semester abroad with support from funding programmes.

## Key fields of activity

In order to achieve the objectives in the next ten years, eight fields of activity are defined. These address clearly specified priorities and are assigned to the objectives. However, the fields of activity are interconnected and work in tandem. Consequently, the individual fields of activity contribute to the achievement of several objectives, despite the fact that in this document they are principally assigned to a specific objective.

### Fields of activity for Objective 1: Become an international innovation leader and strengthen Austria as an RTI location

For Objective 1 (“Become an innovation leader and strengthen Austria as an RTI location”) the key fields of activity are:

#### **Expand research and technology infrastructure (RTIS) and facilitate access**

- Integrate national RTIS into European and international large-scale research infrastructure projects;
- Evidence-based planning and long-term competitive financing models for participation in European and international research infrastructures;
- Create flexible access to RTIS for science and industry;
- Expand data infrastructures and data management, with due regard for the business secret of companies.

#### **Increase participation in EU missions, EU partnerships and IPCEIs**

- Pursue active mobilisation of stakeholders as well as funding and support for Austrian participation in EU missions and partnerships;
- Define national areas of strength and future-oriented themes (e.g. digitalisation, Tech4Green, production, energy, health and transport) and reinforce these at European level;
- Establish an evidence-based monitoring system and a flexible mechanism for adjusting the focus of participations;
- Consolidate Austria’s position in strategically important value creation chains through participation in IPCEIs.

### **Promotion and strategic targeting of internationalisation**

- Selection of international priority countries and expansion of targeted bilateral and multilateral research cooperations;
- Increased visibility for Austria as a location for research and innovation, and appropriate positioning of the country's image;
- Pursue expansion and settlement in Austria of internationally active technology companies, supported by appropriate instruments.

## **Fields of activity for Objective 2: Focus on effectiveness and excellence**

The key fields of activity for Objective 2 ("Focus on effectiveness and excellence") are:

### **Promote excellence in basic research**

- Launch an excellence initiative to strengthen leading-edge research and collaborations extending beyond the boundaries of disciplines, institutions and countries;
- Develop and expand future-oriented fields of research and encourage freedom of scope in research;
- Accelerate the progress with profile building and priority setting, and strengthen knowledge valorisation;
- Establish three research clusters of world-ranking status including an ongoing process of definition for such clusters;
- Strengthen the universities as key institutions of basic research and expand the Institute of Science and Technology Austria (IST Austria), and the Austrian Academy of Sciences (OeAW);
- Increase the share of competitive research funding.

### **Support applied research and its impact on the economy and society**

- Launch a technology offensive, including research, technology and innovation projects as well as support for business start-ups and attracting companies to Austria, in order to strengthen the RTI foundations of innovation-intensive companies and enhance Austria as a production location (focus on crisis-resilience, system-relevant production and technological leadership, digital transformation of the economy, positioning Austria as a champion of digitalisation and Tech4Green, and as a centre for life sciences);
- Increase long-term planning and finance security for applied research, and optimise the conditions (simplify the funding system, provide advice for small and medium-sized enterprises (SMEs) and involve key stakeholders, create more extensive programme lines, strengthen risk financing, boost support for innovations through public procurement);

- Strengthen private sector research with an open attitude to topics and on technology-neutral principles; increase collaboration between science and industry, as well as the valorisation of knowledge and technology (including further development of exploitation management);
- Improve innovation capability and output of small and medium-sized enterprises;
- Increase public awareness of the value of research and innovation;
- Strengthen R&D in (key) technologies in the area of digitalisation, particularly to contribute to the development of new digital products and services and to support the digital transformation of the economy.

#### **RTI for achievement of the climate targets**

- Strengthen research with an open attitude to topics and on technology-neutral principles which addresses the influencing factors, effects and mitigation of the climate crisis and in the areas of climate adaptation and resource efficiency (including by stimulating private funding and participation in EU programmes);
- Develop key technologies to improve climate protection, intensify cross-sector collaboration and implementation of integrated solutions (e.g. in the construction and energy sector, transport etc.), respecting the principle of technology neutrality;
- Develop model regions and large-format experimental areas;
- Expand relevant data collection and use digitalisation as well as networking of stakeholders.

### **Fields of activity for Objective 3: Focus on knowledge, talents and skills**

The key fields of activity for Objective 3 (“Focus on knowledge, talents and skills”) are:

#### **Develop and promote human resources**

- Integrate creativity, critical research thinking and environmental consciousness into education at all levels;
- Strengthen training and continuing education, particularly in STEM subjects;
- Ensure transferability between educational institutions and beyond this, to the business enterprise sector;
- Strengthen gender equality and diversity in R&D and enhance the attractiveness and promotion of research careers, particularly for women, by intensifying equal opportunity programmes and measures in human resources and career planning.

### **Support researchers and students in developing an international outlook**

- Encourage active participation in international mobility programmes (particularly ERASMUS);
- Develop “internationalisation at home” in all levels of the education system;
- Participate in European research programmes (Horizon Europe) and increase participation by higher education institutions in international study programmes (Joint Study Programmes, European Universities, Fulbright);
- Improve the visibility of Austria as a research location and create attractive conditions that will appeal to international talents.

# Budgetary and European framework conditions

## **Research Financing Act and RTI Pacts**

A key element of implementation of the RTI Strategy is the Research Financing Act (FoFinaG): under the terms of the Act, the federal government agrees on a Pact on Research, Technology and Innovation (RTI Pact) every three years. This **RTI Pact** is a key mechanism for operationalisation of the RTI Strategy. It guarantees growth-oriented financing and planning security. The RTI Pact sets out specific measures for implementation of the objectives and fields of activity described in the RTI Strategy. Thus the RTI Pact defines the priorities and budgets for research and innovation for a period of three years. It provides the framework for the performance and financing agreements negotiated with the key institutions named in the Research Financing Act, which is the principal mechanism for realising the RTI Strategy, its objectives and fields of activity.

### **The key non-university research institutions specified in the Research Financing Act are:**

- Austrian Institute of Technology GmbH (AIT)
- Institute of Science and Technology (IST Austria)
- Austrian Academy of Sciences (OeAW)
- Silicon Austria Labs GmbH (SAL)
- Ludwig Boltzmann Gesellschaft (LBG)

### **The key non-university research funding institutions specified in the Research Financing Act are:**

- Austria Wirtschaftsservice Gesellschaft mbH — aws (Austrian Federal Promotional Bank)
- Christian Doppler Research Association (CDG)

- Austrian Science Fund (FWF)
- OeAD GmbH — Agency for Education and Internationalisation
- Österreichische Forschungsförderungsgesellschaft mbH FFG (Austrian Research Promotion Agency)

Projects in the area of RTI are by their very nature medium- to long-term in outlook. By stipulating three-year performance and financing agreements and the resources guaranteed by these, the Research Financing Act not only provides the necessary planning security but also creates flexibility in the implementation, making it possible to respond to new priorities. These agreements are negotiated with the key research and research funding institutions on the basis of “RTI Pacts” and form the most important element of the federal government’s financing and management relationship with the key institutions.

Throughout the period covered by the strategy, new topics of relevance to the RTI Strategy may be identified and corresponding new measures and priorities can be set, always on the understanding that the directional objectives and fields of activity set out in the RTI Strategy are neither obstructed nor neglected. Furthermore medium- to long-term plans should continue to be pursued.

## Future Austria Fund

The National Foundation for Research, Technology and Development is to be further developed to become an “Future Austria Fund”. This will create a funding instrument to complement the RTI Pact, allowing strategic priority-setting for important future-oriented research fields and technologies in basic and applied research. The Future Austria Fund will be provided with guaranteed funding. Priorities will be set annually by the federal government.

## Leveraging the opportunities of a common Europe

The principle of “Leveraging the opportunities of a common Europe” forms a key instrument for implementation of the RTI Strategy. This concerns collaboration with the best researchers in Europe, funding for studying abroad, acquiring additional research funding by participating in European programmes and Structural Fund support (Smart Specialisation) and much more.

**Horizon Europe** will be relevant for almost the entire duration of the RTI Strategy. It is the largest coordinated research programme in the world; Austrian research institutions and research funding institutions participate in this programme and align their activities towards it.

With Horizon Europe the EU is continuing its approach of strategic orientation of the research programme and increased focus on the major societal challenges.

Figure 2: Overview of the structure of Horizon Europe

Pillar I Excellent Science	Pillar II Global Challenges and European Industrial Competitiveness	Pillar III Innovative Europe
European Research Council	Clusters: > Health > Culture, Creativity and Inclusive Society > Civil Security for Society > Digital, Industry and Space > Climate, Energy and Mobility > Food, Bioeconomy, Natural Resources, Agriculture and Environment	European Innovation Council
Marie Skłodowska-Curie Actions		European Innovation Ecosystems
Research Infrastructures		European Institute of Innovation and Technology
		Joint Research Centre (non-nuclear)
<b>Widening Participation and Strengthening the European Research Area</b>		
Widening Participation and spreading excellence		
Reforming and Enhancing the European R&I System		

Source: Figure 1-34 Austrian Research and Technology Report 2020, based on: Austrian Research Promotion Agency (FFG) (2020).

Austrian RTI stakeholders will have the best possible opportunities to participate in the newly-established EU missions and EU partnerships, as well as in shaping them: this will be supported by a strategic approach at the national level and an efficiently coordinated portfolio of funding.

The **European Research Area ERA** will be strengthened, to further increase the impact of European research and innovation. Attractive career opportunities for researchers and the rapid and efficient conversion of the products of research into applications are important objectives of the ERA. Austria's active participation in the ERA will therefore be pursued with determination.

# Monitoring and evaluation system for the RTI Strategy

## Monitoring

The RTI Strategy provides direction for the federal government, particularly for the ministries whose areas of responsibility include research, technology and innovation. Progress towards achieving the objectives specified in the RTI Strategy is regularly monitored and evaluated. This ensures that any aberrations can be addressed rapidly and appropriately.

Starting in 2021 the implemented measures will be constantly analysed with regard to progress towards the objectives defined in the RTI Strategy 2030. These findings will be included in the development of the three-year RTI Pacts.

## Evaluations

Strategic planning, achievement and implementation of RTI policy can be optimised by scientifically rigorous evaluations. In practical terms this allows the **steering elements** of government activities **to be improved** with regard to their relevance, efficiency, effectiveness, impact, sustainability and coherence. Internal and external evaluations of selected programmes monitor the extent to which the intended effects have been achieved.

**At the half-way point** of the ten-year strategy, an external evaluation will be carried out to assess the progress made in terms of the defined objectives and indicators. At the end of the period of the RTI Strategy 2030 a corresponding external **ex post evaluation** will be conducted.

The findings of these evaluations and monitoring programmes will be addressed, in order to learn from them, and where appropriate to make processes more efficient and effective, to intervene in a management sense and to adjust target dimensions.

In consultation with all Austrian research, technology and innovation policy decision-makers, the existing culture of evaluation is constantly reviewed, to allow for systemic learning.

