



**Rat für Forschung und
Technologieentwicklung**

Annual Report

2022

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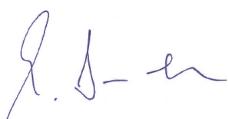
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Over the past year we once again found ourselves faced with unexpected, unprecedented crises, whose consequences will be felt for some years to come. The Russian war on Ukraine ended an era of peace between the countries of the European continent and caused inflation driven by colossal energy costs, which impacts all areas of our lives. Austria – in tandem with Europe – must meet these new challenges courageously and future-oriented.

Science, research, technology development and innovation offer new solutions and opportunities to combat crises and emerge from them stronger than before. In terms of energy supply, climate action, combating the scarcity of specialists, competitiveness and increasing trust in science and democracy, they make an important contribution to making Austria and Europe more resilient and emboldened.

As an Austrian Government advisory body, the Austrian Council for Research and Technology Development (RFTE) has made important proposals in this respect over the past year. This Austrian Council Annual Report for 2022 documents the recommendations and statements made by the Council and provides an overview of the topics dealt with. The main focus here once again was the “Report on Austria’s Scientific and Technological Capability”, which provides a critical overall view of the Austrian RTI system, and with the new digital, web-based RTI monitor harnesses the report’s full information potential.

Over the course of its more than twenty-year existence, with its active role the Austrian Council has consistently proven its value as an important stimulus provider and critical companion of the Austrian RTI policy. In view of the immense challenges, thrown up not only by both the tasks we are faced with and in particular the hereby accelerated green and digital transformation, the contribution the Council makes is extremely valuable. We therefore thank the members of the Council Board, who constantly support the Austrian Government’s RTI policy with their thorough and invaluable expertise.



Dr. Magnus Brunner
Federal Minister for Finance



Leonore Gewessler, BA
Federal Minister for Climate Action,
Environment, Energy, Mobility,
Innovation and Technology



Univ.-Prof. Dr. Martin Kocher
Federal Minister for Economics and Labour



Ao. Univ.-Prof. Dr. Martin Polaschek
Federal Minister for Education,
Science and Research

Ladies and Gentlemen,
Dear Readers,

Since March 2020 one crisis appears to follow another and we are faced with unexpected or social, geopolitical and economic challenges that we thought we had already dealt with. At the beginning of 2022, when we thought we would gradually return to normality following two years of the SARS-CoV-2 pandemic, the Russian attack on Ukraine in February put an abrupt end to any such hopes. Suddenly it was no longer just about dealing with the repercussions of a global pandemic and learning the lessons from and deriving the correct responses to it, it was also about war in Europe – and with it a concomitant energy and economic crisis, not seen on the continent since the end of the Second World War.

In an age of multi-crises, which test the limits of our society's resilience, create instability in our social fabric, reveal adverse systemic dependencies and demand immense transformative efforts, we must act all the more decisively, quicker, and above all evidence-based.

Identifying Austria's circular economy potential

Climate change is without doubt one of the most immediately urgent crises. In the age of the circular economy, the Council's 2022 work programme is therefore a key systemic instrument for the green transformation. The Council's action-oriented work also essentially built here on two substantive commissioned studies, which honed in on Austria's circular economy capability and the systematic interaction of decarbonisation and the circular economy in Austrian industry.¹

The approach to quantifying circular economy capability in Austria shows how circulation-oriented development activities in the Austrian innovation system play both an absolute and relatively subordinate role. Based on the lithium ion batteries case example, as a model the study illustrates the broad economic, social and RTI policy efforts required for the transformation to the circular economy.

The second study shows clearly how the circular economy can systematically contribute to decarbonisation: The greatest circular economy potential awaits in the energy-intensive industries – such as iron and steel, cement and concrete, plastics, paper and aluminium. Where primary raw materials are replaced by secondary, the percentage of energy-intensive primary production can be considerably reduced and energy and resource efficiency can be significantly increased. The energy savings achieved here have a verifiable direct impact on the emission of greenhouse gases.

Both commissioned studies confirm the need for a systemic approach repeatedly called for by the Council, which networks the numerous stakeholders more intensively, to be able

¹ *Transformation towards the circular economy – capability, industry and RTI policy funding*, study commissioned by the RFTE, Vienna: WIFO 2022, see page 47; *Systematic interaction of decarbonisation and the circular economy using the example of Austrian industry*, study commissioned by the Austrian Council, Leoben: University of Leoben 2022, see page 49.

to introduce coordinated, structure policy measures, via which the circular economy think-and-act principle is effectively implemented horizontally.

Striving for technological sovereignty

Systemic efforts, however, also require the intensifying geopolitical upheavals that increasingly put one particular topic front and centre – technological sovereignty, and with it the question as to how sovereign we must and can be in developing and applying one or several technologies and which technologies should be the centre of focus here. This firstly means we must be aware of our own values, must define the basics for state ability to act, and must identify existing dependencies. Building on this consensus, three steps must be taken on the path to technological sovereignty: (I) Evaluate and appraise, (II) establish the basic ability to use a key technology and (III) master these and their application, to gain design competence.

The Council introduced the Technology Sovereignty Forum to promote this discussion in Austria and in line with specific application cases.² At the launch in November 2022 experts from the worlds of science, research and administration got to grips with the quantum technologies topic, and in particular quantum information technologies – an area in which Austria is very well positioned and has immense potential to become a technology-leading nation.

With the forum, which will continue in 2023, the Council established an open platform on which the relevant stakeholders of the RTI system formulate Austrian interests and can jump into the European debate – and in cooperation with European partners such as the Fraunhofer Society. The Council consequently highlights the networking dialogue and offers stakeholders a goal-oriented, but result-open platform for collaboration and communication.

² See *Technology Sovereignty Forum*, page 62.

New instruments for evidence-based decisions

The previously named challenges can only be successfully met when political decision makers and stakeholders have reliable, contextualised and prepared information at their disposal. With the *Report on Austria's Scientific and Technological Capability 2022* the Council therefore introduced the digital RTI monitor, to make an important contribution for evidence-based policy-making in Austria. The innovation policy correlations and impacts are made visible and comprehensible because the indicators for measuring the Austrian RTI system's capability were linked here for the first time with the goals of the RTI Strategy 2030 and the Government's impact goals.

The objective of the RTI monitor is to provide stakeholders a basis for strategic-systemic actions and enable them to classify Austria's performance in the international context and in comparison with the innovation leaders. The RTI monitor, very positively received by the RTI community, will be substantially expanded in 2023 with the green transformation and technology sovereignty topics.

A second digital instrument – named ECTO³ – was presented by a commissioned study on Austria's transformation opportunities in the *tech for green* area.⁴ Austria's goal to be climate-neutral by 2040 on one hand requires the ambitious decarbonisation of current production methods in established industries, but on the other hand it also requires the promotion of new green technologies and products. In this monitor green products will therefore be identified, which are currently not produced to any appreciable degree and which represent an opportunity for Austria to position itself as future-oriented. Ambitious schedules and a faster transition to a climate-neutral economy are the key to building market leadership with green technologies.

Data as key for the future

These instruments, which use the possibilities of digital techniques and technologies, are based on a vast array of heterogeneous and complex data from numerous sources, and in their usability and processing illustrate ideal examples for the not to be underestimated importance of data, because the correct use of data enables us to meet current and future challenges and shape the future. Truly using these growing resources strategically and effectively, however, also requires an extensive infrastructure and coordination. The Council therefore set out the most important measures and areas of action for an urgently required national data strategy and common good-oriented data use, and recommends these be coordinated and monitored at the highest political level.⁵

3 *Economic Complexity and Green Transformation Opportunities [ECTO]*, URL: ecto.rfte.at.

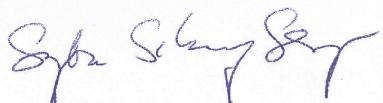
4 *Transformation opportunities for Austria in the "Tech for Green" area*, study commissioned by the RFTE: CSH 2022, see page 51.

5 *Recommendation for a national data strategy to optimise common good-oriented data use and evidence-based policy advice*, RFTE 2022, see page 25.

Outlook

In times of instability, complexity and urgency we must act decisively, quickly and evidence-based. Since its foundation in 2001, in advising the Federal Government the Austrian Council has made a crucial contribution to RTI policy decision-making and to promoting Austrian performance in research, technology and innovation.

The requirements and framework conditions on which the RTI policy is based, however, develop continuously and are subjected time and again to massive need for change. The Council therefore welcomes the Government's decision to reform the Austrian council bodies. Consolidation enables networked-thinking of the big issues and challenges, and systemic solutions can be worked out – for a sustainable Austria in the European Community.



Univ.-Prof.ⁱⁿ Dr.ⁱⁿ

Sylvia Schwaag Serger

Chairperson



DIⁱⁿ Dr.ⁱⁿ

Sabine Herlitschka, MBA

Deputy Chairperson

Recommendations & statements

Recommendation on the use of the funds of the Future Fund Austria for 2022

RECOMMENDATION 17/6/2022



See recommendation:
fti-monitor.rte.at/docs/pdf/R240080.pdf

Based on the decision of the 80th meeting, on 30 May 2022 the Foundation Board of the National Foundation RTD invited the Austrian Council in accordance with § 11 para. 1 item 1 of the RTD National Foundation Act to submit a recommendation on the use of the Future Fund Austria's funding for 2022.

With the establishment of the Future Fund Austria, following the withdrawal of financing by the Foundation RTD in 2021, a key measure of the government programme 2020 to 2024⁶ for funding research, development and innovation was introduced and funding for the years from 2022 to 2025 was secured. The Foundation RTD was therefore authorised to distribute funds of EUR 140 million per year. Another EUR 6.3 million are also available for 2022 from the funds of the National Foundation RTD, which have not yet been allocated.

The objectives for use of the funds were defined in the RTD National Foundation Act.⁷ The Austrian Government defined the research priorities for 2022 on the basis of the RTI Strategy 2030 for the following goals: Goal 1 – To join the international leaders and strengthen RTI location Austria; Goal 2 – To focus on efficiency and excellence; Goal 3; To promote knowledge, talents and skills. A total of twelve priority areas were defined in these goals and a funding corridor was specified for each.

Both, the objectives and the Government's priority setting, provide a basis here for the Austrian Council's advice and preparation of the recommendation for allocating the funds of the Future Fund Austria.

⁶ Aus Verantwortung für Österreich. Government programme 2020–2024. Page 216.
bundeskanzleramt.gv.at/dam/jcr:7b9e6755-2115-440c-b2ec-cbf64a931aa8/RegProgramm-lang.pdf

⁷ FTEG §2. (2)

Recommendation

On this basis the Austrian Council makes the following recommendation to award the funding of the Future Fund Austria in the set research priorities for 2022: For allocation in 2022 a total of EUR 146.3 million in funds are available for funding the applications – 19 applications in all from the preferred funding organisations with a total application volume of EUR 181.599 million were submitted.

EU partnerships

With European partnerships the European Commission and public and/or private partners implement a joint research and innovation programme in the “One Health”, “Animal Health” and “Personalised Medicine” areas with the goal of creating long-term European research networks in topical areas that are also nationally relevant. Austria’s participation in these partnerships is planned within the framework of a cabinet presentation. A co-financing share of up to 30% on the EU side is provided for with a participation by Austrian scientists – administered via the Austrian Science Fund (FWF) as part of the “International Programme”.

For funding the significantly increasing number of applications with international research cooperations, the Council recommends promoting participation in EU partnerships with EUR 8 million of the funds of the Future Fund Austria.

Digital Europe

With this priority a co-financing for the participation of Austrian stakeholders in major European projects for innovations with digital technologies in the European DIGITAL Europe programme will also be enabled. DIGITAL Europe is embedded in a complex and comprehensive European funding landscape and enables both European and national programme synergies. The co-financing share is 50%. With the funds the Quantum Communication Infrastructure (QCI), Testing and Experimentation Facility for Manufacturing, Testing and Experimentation Facility for Agri-Food and SME funding in the cybersecurity area in particular will be co-financed by the National Coordination Center (NCC).

The evaluation of the submitted projects will be organised by the European Commission. The quality assurance at national level is performed based on the prioritisation of national focus points and prioritisation of selected projects – administered via the Austrian Research Promotion Agency (FFG).

The Austrian Council recommends participation of Austrian stakeholders be promoted with EUR 10 million from the funds of the Future Fund Austria (FFA).

For the EU partnership and Digital Europe priorities the Council notes that co-financing from EU projects should not be provided in the future via the Future Fund Austria, but rather should be funded with department funds.

Pandemic Preparedness

In the “Pandemic Preparedness” priority a funding programme for cross-border cooperation projects of companies and research institutions in the participating countries within the EUREKA network (45 countries + European Commission) is proposed. The Eureka-Call Pandemic Preparedness will be initiated by the two partner countries, Austria and Israel, but it is also open to other members of the network as well as non-members, if they bring with them an added value and their own financing. The goal of the Eureka-Call is to fund transnational, economy-related research and development projects for fighting pandemics in the participating countries.

With the experiences of recent years, continuous pandemic preparedness, which enables swift action in a cross-countries network, must essentially be supported and should be established for the long term. Based on the prioritisation of the applied for programmes, however, the Council recommends this programme not be funded with the allocation of funds in 2022.

Clinical Research

The Ludwig Boltzmann Gesellschaft GmbH project, “Setting up a clinical research group based on the model of the new clinical research groups funding programme”, was submitted in the clinical research priority. The research location will be expanded here in the area of clinical research and become internationally more attractive and an existing funding gap will be closed.

With its recommendation to fund the application with the funds of the FFA, the Council supports establishing clinical research in Austria more intensively and setting up a further clinical research group. Due to the existing underfunding in the area of clinical research in Austria, significant positive effects with regard to the professionalisation and increase in quality of clinical research at Austrian medical universities, improvements in the area of interdisciplinary cooperations and especially a boosting of the career options of participating researchers and talented young researchers must be expected.

The Austrian Council recommends the application be funded with EUR 8.56 million from the funds of the FFA.

Research Infrastructures

Modern research infrastructures are essential assets for providing top quality research, and creating new knowledge and new technologies. The overwhelming demand for special funds for the R&D infrastructure funding of the three tenders already called for within the framework of the National Foundation RTD clearly demonstrates that the basic funds of the research organisations and also acquired project funds are insufficient to enable the required financing. The funds of the National Foundation and the Future Fund Austria can at least make a small contribution here – to date approximately EUR 40.6 million were funded in the Calls already made (approximately 15% of the application amount for R&D infrastructures). In this context the Council would once again point to the need for long-term plannable research infrastructure funding.

The Austrian Council recommends a further, 4th tender of the R&D infrastructure programme be funded with EUR 20 million.

Artificial Intelligence

For the artificial intelligence priority, in cooperation with the FWF, the FFG and the aws, three modules are proposed, which together form the “AI Austria Initiative” programme. The modules will be implemented in mutual consultation. For this the “AI basic research” module of the FWF includes the funding of individual projects in the AI topical area and the ESPRIT programme, which equates with a career funding programme for postdocs. For the FFG’s “Application-oriented AI research” module the “Leitprojekt – Austrian AI in Action” and “Stiftungsprofessur – Edge AI” instruments are proposed. “Austrian AI in Action” aims here to network several institutions at various research locations and to promote the use of shared infrastructures. An endowed chair as part of Edge AI, installed at an Austrian university, will be set up for application areas such as Industry 4.0, climate-neutral city, Smart City, intermodal mobility, remote power grids or related topics. Three instruments for companies are proposed in the aws module. AI-Start possibly lays the foundation stone for longer-term cooperation of companies and research institutions, AI-Adoption opens up to-date unexploited innovation opportunities and AI-Wissen produces sustainable knowledge building.

The Council believes the relevance of these research and business areas is a very high priority. Added value can in particular be created with the cooperation of the three research funding organizations and the linking of research data and results to AI technologies. It is therefore recommended the cooperative implementation of the three modules be accompanied by a jointly designed monitoring of the funding institutions, to optimally utilise the possible positive effects of this programme. The Austrian Council recommends funding the AI Austria Initiative with EUR 12 million. The total volume of the jointly designed application includes EUR 2 million for the FWF, EUR 4 million for the FFG and EUR 6 million for the aws.

Chip-manufacturer Austria

In the “Chipschmiede Österreich” (“Chip-manufacturer Austria”) priority a joint programme proposal, “Semiconductor Lab2Fab”, was submitted by the aws and the FFG. The objective of the new Lab2Fab funding programme is to support the Austrian semiconductor industry and related sectors with the implementation of multi-year research and development projects, and to trial upscaling right up to setting up the industrial production of semiconductor products. The focus of the funding is both on supporting R&D activities and on anchoring the results in production. This measure will have a sustainable effect on the Austrian and European semiconductor industry and, with the increase in resilience and supply security it entails, on other industry branches as well. Small and medium-sized enterprises in particular will benefit here.

The Austrian Council recommends the Fab2Lab programme be funded with EUR 12 million, EUR 6 million each for the FFG and the aws, from the funds of the FFA.

Data-driven research via society

With the “Data:Research:Austria” application the Austrian Academy of Sciences (ÖAW) proposes a funding programme that will in particular support socially-relevant basic research on the basis of existing databases. Two goals are pursued with the programme: (1) Promotion of the data-driven research (Roadshow) of the ÖAW together with Statistik Austria and the AUSSDA (Austrian Social Science Data Archive) at selected university/research locations. (2) Funding of projects at research institutions across Austria for “data-driven research”, which, with an intelligent and propositions-supported linking of archived materials, from scientific studies (for replica studies, for example), surveys, register data, etc., will open up big databases for their key issues and therefore provide consistent and efficient analysis of existing databases.

The Council supports the programme initiatives for improving the (secondary) use of databases and recommends funding the programme with EUR 9 million.

Excellent research groups

The funding of excellent basic research is an essential factor for the medium and long term and a requirement for radical innovations. SRA projects and their results are often also a nucleus for applied research centres (CD Labs, COMET Centres). Special research areas (SRA) and research groups (RG) are two key programmes for education in excellence areas of basic research. Both programmes specifically support profiling and priority setting and the international competitiveness of science location Austria, and therefore strengthen the Austrian innovation system. Both programmes increase international visibility and promote structure formation processes (human capital, infrastructure).

The Austrian Council recommends these important pillars of competitive research funding be financed with EUR 20 million from the funds of the Future Fund Austria for 2022.

Due to the structural importance of SRA and RG projects and the need for continuous funding, which was not continuously provided in recent years within the scope of the National Foundation, the Council recommends the future financing of these programmes be guaranteed by increasing the FWF's core financing, and not continued with the funds of Future Fund Austria.

Application-oriented basic research

With this priority the Christian Doppler Society makes the application to guarantee the financing of Christian Doppler Labs (CDL) with the funds of the Future Fund Austria. The CDLs are a very successful model to monitor research results, from basic research through to application. With the labs in application-oriented basic research, economic, scientific and socio-political goals are pursued and Goal 2 "To focus on efficiency and excellence" of the RTI Strategy 2030 is explicitly addressed. The applied for CDLs research relevant issues in the following areas: Digitisation, Life Science and Tech for Green. Especially highlighted here is the fact that a CDL for researchers offers the opportunity to complete their dissertation project with the required deadline certainty in a university employment relationship. A CDL also offers the opportunity to apply for a career position at a university – for the applicants (mostly) – and therefore access to an academic career. The research work also results in a higher number of patent applications.

The Austrian Council recommends funding the CDS application with EUR 14.8 million.

The Council also points out that the funding by the Future Fund Austria (previously the National Foundation) makes a significant contribution to the core financing of the CDS. To ensure long-term financing security it is therefore proposed an evaluation be performed, with the objective of increasing the potential of this successful funding model in research area Austria and to propose an optimum number of CDLs to be continuously set up. On this basis a long-term secured financing form should support the future development of the CDS.

Disruptive/radical innovation

Two applications were submitted for this priority. With the “Disrupt for a better future” application by the FFG, a three-stage process (Creation – Development – Growth) is pursued, which open-theme in stage 1 “Creation” sounds out disruptive ideas; with stage 2 “Development” specifically supports projects with disruptive potential with suitable funding instruments, to enable the move into new markets. With stage 3 “Growth” a combination of instruments are available to reach a next scaling level. All phases will be continuously accompanied by a coaching team during the entire innovation process. The project is also being coordinated to file the application was submitted in cooperation between the aws and the FWF.

The “Transformation to an economic, ecological and socially just food system” application, submitted by the aws together with the FWF, differs in its thematic focus on food systems. In the areas of production, processing, distribution, marketing, consumption and disposal of foods these are responsible for approximately one third of global greenhouse gas emissions, and therefore also form a very broad innovation area.

The use of established instruments (Citizen Science, 1000 Ideas Programme) to identify radical innovation ideas, and increased dynamism to form cooperations are planned by the FWF (as part of #Connecting Minds). Pillar 1 is extended at the aws as follows: “Transformation requires an ecosystem” – with the modules, agenda setting, creating awareness, initiating cooperations, matchmaking, creating experimental spaces, and pillar 2: “Transformation requires financing”, with the programme application. In pillar 2 for this two new programmes “aws CREATE & EXPLORE” and “aws DEVELOP & IMPLEMENT” are proposed, with which businesses will be supported, to pursue and establish innovative solutions.

Both applications focus on promising new approaches to accompany innovative ideas from development through to implementation, however the Council believes the existing concepts should be revised again.

The Austrian Council recommends providing seed funding to develop a new joint programme concept by the FWF, FFG and aws. For this the agencies will be provided EUR 200,000 each, which can be used for both own human resources and for the integration of international experts. So the funds for 2022 can be taken up, the jointly designed concept will be presented within a maximum of 4 months (from the Foundation Council meeting – allocation of the funds of the FFA 2022⁸) to an international evaluation jury, based on whose report a funding decision will be made. Altogether EUR 15 million from the funds of the FFA are planned for 2022.

Young talent funding

Applications of the following institutions were submitted for this priority:

- **Austrian Academy of Sciences (ÖAW)**
 - APART – GSK
 - DOCmed grants
- **Austrian Research Promotion Agency (FFG)**
 - Industry-related dissertations
- **Austrian Science Fund (FWF)**
 - doc.funds

—————> Austrian Academy of Sciences (ÖAW)

With the Austrian Academy of Sciences APART-GSK programme the continuation of a successful funding programme is proposed for the 1st postdoc phase, especially for the humanities, social and cultural sciences (HSC). The programme closes a funding gap in the frequently critical career phase between doctorate and professor. Selecting the scholarship holders undergoes a highly-competitive process here, in which highly-talented potential carriers in the HSC field of knowledge are chosen for research location Austria. Based on international participation, the programme sustainably promotes “brain gain” and “brain circulation” in Austria’s HSC sciences.

The Austrian Council recommends funding the APART-GSK programme application of the ÖAW with EUR 4 million.

Similar to the APART-GSK grants, the “DOCmed grants” programme proposal provides for individual funding for those (in this case for human medicine or dentistry graduates) who want to do MD-PhD studies and with them aim to be clinician scientists. The Council recognises the importance of the programme for funding talented young researchers in the clinical research sector, and for the quality of professional selection and processing.

8 81st Foundation Council meeting on 29 June 2022.

In the recommendation for the funding of the FFA for 2022, however, the new funding format of the LBG “clinical research groups” (CRG) was given preference, whereby there is a disciplinary overlapping with the “DOCmed grants” programme, and actually with the difference that the DOCmed grants are individual funding and with CRGs the young talent funding as part of the research happens in a clinical research field. In both programme applications, however, the funding targets the building up of management staff in clinical research. The Council suggests possible synergies of both programme ideas be utilised for the important strengthening of clinical research in Austria.

→ **Austrian Research Promotion Agency (FFG)**

In supplementing and delimiting dissertations at universities (basic research), industry-related dissertations in the field of applied and industrial research are applied for. Talented young researchers will be offered the ability to do scientific research in an Austrian company or non-university research institution, practice-oriented and in cooperation with universities. The application was submitted in the young talent funding to achieve Goal 3 of the RTI Strategy 2030, “To promote knowledge, talents and skills” priority.

In the specific programme the Council sees a very important instrument for promoting talented young researchers in industrial sectors. To continue the established programme it is however recommended that the focus of the programme be intensified more on the careers of researchers. As important criteria the results of the evaluation⁹ performed with regard to a successfully completed dissertation should be considered for a restructuring of the programme. The Austrian Council suggests the following measures: (1) Extending the project period in which the dissertation is written. To guarantee a dissertation is successfully completed, a project period of two to three years appears too short to meet the essential requirements for a positive conclusion. The evaluation performed in 2020 showed that fewer than 20% completed their dissertation by the end of the project period. (2) With selection and definition of the research method, which typically must have a clearly applied component, more attention should be paid to the fact that academic quality requirements and the requirements for a dissertation can also be met (with the appraisal of a general validity of the applied methodology and therefore the selected research method, among other things). If this is not sufficiently provided for, the danger exists that a positive evaluation of the dissertation cannot be achieved. (3) The majority of the funded dissertations concentrate on some of the bigger non-university research institutions. Possibilities to address researchers in companies more intensively and to support companies should be improved. (4) Publishing publications is a key component of dissertations. This can conflict with claims protected by patent law, whereby a successful conclusion can be delayed. (5) There is also the challenge here that, in addition to the dissertation, doctoral students, depending on the specialist area, must also successfully complete courses in their doctoral studies at universities. There should therefore be improved coordination between companies/research institutions and universities, with early incorporation of the universities at which these dissertation projects are performed, with regard to the criteria to be met.

⁹ repository.fteval.at/550/

A suitable new concept for this will be developed, and as already commented on in this application, the programme will be further developed in this respect in cooperation with the FWF. EUR 2 million from the funds of the Future Fund Austria for 2022 will be reserved to implement the programme, based on a new concept. The Council also proposes the programme volume be increased in the future, in accordance with any increased demand.

→ **Austrian Science Fund (FWF)**

The highly competitive doc.funds programme, funded by the FWF, is an established, successful and essential programme for funding young scientists at research centres with the right to award doctorates. Five tenders have to date been financed with the funds of the National Foundation. With this application to the Future Fund Austria the costs for two further tenders are quoted. The quality standards in PhD courses at universities set here-with bring high added value for training highly qualified young scientists. The structured doctoral programmes could also precipitate and stabilise a professionalisation and structuring process in PhD courses here in many places. This positive process at the universities must be continued and strategically expanded. With a successful “basic programme” of this kind for promoting science careers, however, a sustainable long-term financing form should be found in the medium term.

The Council recommends the necessary funds for further tenders be funded with EUR 10 million with the funds of the Future Fund Austria and the programme be continued at any rate. The Council believes the competitive application of the submitting organisations makes an important contribution as an essential element for quality assurance and increasing quality in PhD courses. This should be maintained under all circumstances. To continue this successful programme the Council recommends appropriately beefing up the core financing of the FWF for the subsequent tenders, so the plannability and financing of this programme can also be secured for the long term, which previously was not continuously provided on the basis of the financing via the funds of the National Foundation.

PRIORITIES	INSTITUTION	APPLICATION TITLE	FUNDING RECOMMENDATION IN € MILLIONS
01 EU partnerships	FWF	EU partnerships	8
02 Digital Europe	FFG	Digital Europe Co-Financing	10
03 Pandemic Preparedness	FFG	Eureka Initiative Pandemic Preparedness	0
04 Clinical research	LBG	Clinical research groups	8,56
05 Research infrastructures	FFG	R&D infrastructure	20
06 Artificial intelligence	aws	AI AT Initiative – companies & growth module	6
06 Artificial intelligence	FFG	AI AT Initiative – application-oriented AI research module	4
06 Artificial intelligence	FWF	AI AT Initiative – AI basic research module	2
07 Chip-manufacturer Austria – R&D in the semiconductor area	aws	Semiconductor Lab2Fab	6
07 Chip-manufacturer Austria – R&D in the semiconductor area	FFG	Semiconductor Lab2Fab	6
08 Data-driven research via society	ÖAW	Data:Research:Austria	9
09 Excellent research groups	FWF	SFB And FG	20
10 Application-oriented basic research	CDG	Application-oriented basic research in Digitisation, Life Sciences, Tech4Green	14,8
11 Disruptive/radical innovation	aws	Transformation to economic, ecological and socially just food systems	0,2
11 Disruptive/radical innovation	FFG	Disrupt for a better Future	0,2
11 Disruptive/radical innovation	FWF	Transformation to economic, ecological and socially just food systems	0,2
11 Disruptive/radical innovation		Disruptive transformation	15*
12 Young talent funding	FFG	Industry-related dissertations	2*
12 Young talent funding	FWF	doc.funds	10
12 Young talent funding	ÖAW	APART-GSK	4
12 Young talent funding	ÖAW	DOC-med	0
Amount recommended		TOTAL	145,96
* of this, subject to recommended FFA 2022 funding			17

* of this, subject to recommended
FFA 2022 funding

Recommendation for Immediate Need for Action to Secure the Research and Innovation Capacity of Ukraine

RECOMMENDATION 15/9/2022



See recommendation:
fti-monitor.rfe.at/docs/pdf/R240083.pdf

The war that has been caused by the invasion of Russian troops into Ukrainian territory is bringing enormous suffering to people in Ukraine and is devastating the country. It is also a major threat to its future due to loss of intellectual capital and capacity. A major brain drain from Ukraine would impair its ability to educate future generations, to innovate, and to succeed economically.

In view of this danger, the European Council highlights the necessity to put in place appropriate support to allow Ukraine to maintain and regain its higher education and scientific capacities¹⁰. To prevent irreparable damage, it is of utmost importance to secure adequate working conditions for students and scientists in Ukraine now. Only if they are able to continue their work will students and scientists remain in Ukraine, and refugees be able to return soon.

On its own, the Ukrainian government will not manage to prevent a massive loss of intellectual capital. For example, the budget for the National Research Foundation of Ukraine, which was projected at €35m for 2023, had to be frozen, leaving Ukrainian researchers without access to project funding for research. Immediate actions and measures are therefore needed to complement the aid that most European countries already provide to refugee students and scientists, and to individual cooperation agreements that have been established with research and higher education institutions.

In view of this situation, European STI policy councils call on their governments for these immediate actions:

¹⁰ Council of the European Union: Statement by the Council on Russian military aggression against Ukraine and its impact on R&I. 10125/22, Brussels, 10 June 2022.

→ **Secure ability of National Research Foundation of Ukraine (NRFU) to fund research**

- **Action:** Together with European partners, provide monetary support to NRFU for the next three years to continue competitive research funding and provide a mid-term perspective for Ukrainian researchers to stay in the country.
- **Action:** Provide assistance to NRFU in recruiting experts from European countries if requested.

→ **Initiate Research Infrastructure Initiative for Ukraine**

- **Action:** Provide substantial budget for a three-year programme to supplant research equipment at Ukrainian research and higher education institutions that has been lost or is inaccessible due to the war.
- **Action:** Provide expertise to aid in programme design, and in procurement processes.

→ **Assist future oriented transformation of Ukrainian research and innovation**

- **Action:** Provide expertise to advise on the future design of the ecosystem and the processes that lead to the transformation of the system.

The Austrian Council for Research and Technology Development recommends to implement these actions immediately in a collective effort of willing European countries. It calls on the European institutions to join this effort.

The Austrian Council is willing to advise Ukraine, as required and within the limits of its capacities, in its effort to rebuild and transform the Ukrainian system of higher education, research and innovation in years to come.

Recommendation on the use of the funds of the Future Fund Austria for 2022 – section “Disruptive/radical Innovation”

RECOMMENDATION 7/11/2022



See recommendation:
fti-monitor.rfe.at/docs/pdf/R240081.pdf

In its recommendation on the use of the funds of the Future Fund Austria for 2022 dated 17 June 2022, for the “Disruptive/radical innovation” research priority, the Austrian Council recommended reserving funds of EUR 15.6 million to revise the applications submitted in this research priority as part of a joint concept. The Foundation Board of the National Foundation RTD considered this with the allocation of the funding. On 4 July 2022 the Foundation Board of the National Foundation RTD therefore asked the FFG, FWF and aws to revise the submitted “Disrupt for a better future” and “Transformation to an economic, ecological and socially just food system” applications in accordance with the explanations of the Austrian Council, with the inclusion of international expertise.

The institutions sent the revised funding applications in good time to the National Foundation RTD. In accordance with §11 (1) item 1 of the National Foundation RTD Act, the RTD Foundation Board asked the Austrian Council for a recommendation on the use of funds of the FFA for the revised applications of the FFG, the FWF and the aws for the “Disruptive/radical innovation” funding priority.

Recommendation

The “Disruptive/radical innovation” research priority of the Future Fund Austria aims to remove path dependencies with a new combination of technologies and by opening up new markets. In an intensive discussion process with the inclusion of experts at national and international funding agencies, the existing programme proposals of the preferred funding agencies, the Austrian Research Promotion Agency (FFG), the Science Fund (FWF) and Austria Wirtschaftsservice GmbH (aws), were specified in several process steps. The results of this iterative process were discussed with representatives of the Austrian Council (AC). The revised joint concept was then presented in a workshop to representatives of the AC and discussed in detail with experts from international funding agencies.

This “Disrupt for a better future” application, submitted by the FFG, the FWF and the aws, combines the findings and international experiences resulting from this, and endeavours to achieve the goal of driving forward disruptive/radical innovations in Austria, with mutually enriching and complementing methods.

In the submitted concepts of the agencies, instruments are also presented, which on one hand are suitable (i) to gather and filter innovative ideas, (ii) initiate and enable interdisciplinary/inter-technological collaborations („Explore“ pillar) and (iii) fund the implementation of activities with transformative potential („Funding“ pillar). The difference of the presented methods is essentially in that at the beginning a thematically open method is pursued (FFG), or, with the “food system” example, a thematic framework is specified for one of the major social challenges (FWF, aws).

A regular exchange of experiences between the funding agencies, which already happened with the creation of the concepts and will be continued for the full period of the programme development, is an integral component of the programme management and further development of the general services and coaching services of the agencies. The Council therefore believes that, with a wide-ranging combination of instruments and measures, the „Disrupt for a better future“ programme and the complementary used models provide an innovative programme concept. The combination of more flexible and more accurate criteria here to select suitable ideas with innovative, radical potential presents one of the major challenges with the implementation of the funding programme here in both models and makes an important contribution to a successful programme sequence.

The Austrian Council recommends

1. to fund the project “Disrupt for a better future” of the Austrian Research Promotion Agency (FFG) with EUR 10 million;
2. to fund the project Disrupt for a better future – “Transformation to an economic, ecological and socially just food system” range of topics – basic research focus of the Science Fund (FWF) with EUR 1.5 million;
3. to fund the project Disrupt for a better future – “Transformation to an economic, ecological and socially just food system” range of topics – companies & growth research focus of Austria Wirtschaftsservice GmbH (aws) with EUR 3.5 million;

The lump sum for funds provided for the revision of the programme concepts totalling EUR 0.6 million, will, following deduction of the actually incurred costs of the respective agencies, be added accordingly to the recommend funding amounts, aliquot to the respective funds recommended for allocation.

Recommendations for a national data strategy to optimise common good-oriented data use and evidence-based policy advice

RECOMMENDATION 24/11/2022



See study:
fti-monitor.rfte.at/docs/pdf/R240082.pdf

Extensive digital transformation processes change all life areas – the education system, the working world, communication, the sciences, public administration, political decision-making processes, economy and industry, leisure and many more. Digitally managed data and the possibilities for scientific analysis of big data volumes connected with it have immense potential to develop added value for our society. Digital platforms also create new communication, information and participation paths. The areas of application range from social media and online media through to the use of top quality services for companies and the general public (as digital management and participation, for example), and to scientific research on public sector data records. New possibilities to better analyse complex challenges, such as global pandemics, through to climate and energy crises on a scientific basis, and to support political decision makers in determining and evaluating evidence-based policy options emerge here¹¹. Data and the use of data therefore have a major influence on our social set of values and their democratic further development.

In a multi-stage process, the Austrian Council has discussed and examined both connected opportunities and hazards here with science and research experts, representatives of the Future Operations Platform and representatives from the world of politics and administration. Four dimensions were identified as especially relevant, which must be observed, regulated or even further developed in a new data world: Data Governance, Data Infrastructure, Data Modelling and Data Communication. Each of these dimensions is in itself an already broad area of action – the most relevant priorities were picked out according to the expertise of integrated participants, discussed, and goals and measures derived from these. The results produced are described in detail in the, “Data excellence: Strategies for Austria”¹² position paper as goals and recommendations for action, among other elements. The goals and measures formulated herein primarily address the public sector and will, where logical and possible, also be applied in private organisations. They are the basis for the Austrian Council’s recommendations, and together with them will support an innovative and common good-oriented use of data.

¹¹ See *Supporting and connecting policy-making in the member states with scientific research*. Commission staff working document. SWD(2022) 346 final. EC, 25 Oct. 2022. knowledge4policy.ec.europa.eu/file/staff-working-document-supporting-connecting-policymaking-member-states-scientific-research_en

¹² Position paper: Data excellence: Strategies for Austria. Schürz, S. et al. (2022). As commissioned by the Austrian Council and in cooperation with representatives of the Future Operations Platform. Process support: Centre for Social Innovation (CSI). fti-monitor.rfte.at/docs/pdf/M300021.pdf

Recommendations

The Austrian Council recommendations, whose implementation can make an important contribution to improving the Austrian data ecosystem, are divided into three priority areas:

- A) Policy prioritisation of a national data strategy
- B) Development of an extensive data infrastructure and qualification of appropriate data stewards
- C) Development of an overarching communication strategy to promote a positively connotated view of the opportunities and potential of using and sharing data.

→ **A) Policy prioritisation of a national data strategy**

Policy prioritisation must not be just a buzzword. Setting up a state secretariat for digitisation sends an important signal. Building and expanding digital infrastructures and services, for modernisation and administration, for example, are front and centre here. An urgently required national data strategy for Austria, which provides a here-and-now answer to the real challenges of the day and acts as a strategic guardrail for the items called for here, however, has to date not been implemented.

Three important European legislative initiatives illustrate basic framework conditions. The General Data Protection Regulation¹³ (GDPR) regulates the processing of personal data of natural persons by natural persons, companies or organisations in the EU. With the Data Governance Act¹⁴ (DGA), wider availability and further use of data is promoted and a trustworthy environment for using data for research and the creation of innovative new services and products will be set up. The Data Act¹⁵ (DA) currently being prepared aims to maximise the value of data in the economy, by ensuring that a broader range of stakeholders have control over their data and more data is available for innovative use, while at the same time incentives for investments in data generation are maintained.

At national level in sub-areas of public administration and for public sector data, successful digitisation projects have already been initiated and the legislative basis has been improved. An own sub-chapter is dedicated to innovation through transparency and access to scientific data in the current government programme, which was published at the beginning of January 2020.¹⁶ In another 20 or so chapters of the government programme, measures form a priority in the area of digitisation and availability of digital data, and range from the improvement of data quality and data transfer with an extensive transparency

¹³ Regulation (EU) 2016/679 (General Data Protection Regulation)
eur-lex.europa.eu/legal-content/DE/TXT/?uri=CELEX%3A32016R0679

¹⁴ Regulation (EU) 2022/868 (Data Governance Act)
eur-lex.europa.eu/legal-content/DE/TXT/?uri=CELEX%3A32022R0868

¹⁵ Proposal for a regulation, COM (2022) 68 final (Data Act)
eur-lex.europa.eu/legal-content/DE/TXT/?uri=COM%3A2022%3A68%3AFIN

¹⁶ Innovation through transparency and access to scientific data. Government programme 2020–2024. Aus Verantwortung für Österreich. Page 311

database for a modern research funding system, to the expansion of digital management, to improve the ability to digitally manage official transactions for the general public and companies, through to top quality, graduated, nationwide and close-to-home provided healthcare based on higher data quality. The expansion of technology infrastructures for extensive data management is also a key area of action in the RTI Strategy 2030.¹⁷ Data infrastructure-based solutions for data calculation, analysis, storage, transfer and access will then be created, with which RTI location Austria will be strengthened and can join the international leaders. An essential component of this infrastructure, the Austrian Micro Data Center¹⁸ (AMDC), housed at Statistik Austria, went online on 1 July 2022. As a central facility the AMDC will ensure data protection-compliant access to microdata and open up controlled but functional and extensive access to microdata, register data and public sector data for science¹⁹.

The Austrian Council recommends ensuring the development of an Austrian data strategy at the highest government level and provision of sufficient investment resources for implementation measures.

In the interests of an efficient implementation of necessary measures, it must be ensured that already existing initiatives at national and European level²⁰ are analysed and, where logical, own-financed initiatives are expanded and built on these. These strategy processes in particular must be planned in accordance with the European data strategy²¹, the DGA and DA and prepared at national level. With the entry into force of the DGA on 23 June 2022, national implementation must follow within a 15 month transition period. The subject matter and area of application of the DGA include, (a) the conditions for the further use of data, (b) the registration and supervisory framework for the provision of data transmission services, (c) a framework for the voluntary registration of institutions that collect and process data for altruistic purposes and (d) a framework for the appointment of a European data innovation council.²²

Efficient planning requires the coordination and bundling of already running processes to modernise data management in the area of public administration. Due also to the ever increasing administration costs, with increasingly lower staff density, a high level of automation in data management must be afforded the highest priority wherever possible. This must be swiftly guaranteed with clearly defined responsibility at government level, to ensure efficient planning of required technical and human resources.

¹⁷ RTI Strategy 2030: Austrian Government's strategy for research, technology and innovation areas of action, Goal 1: Join the international leaders and strengthen Austria as an RTI location. Key areas of action. Page 8. bundeskanzleramt.gv.at/dam/jcr:1683d201-f973-4405-8b40-39dded2c8be3/FTI_strategie.pdf

¹⁸ Recommendation on the implementation of the Austrian MicroData Center and for the further development of a national research data strategy. Austrian Council (2021). fti-monitor.rfte.at/docs/pdf/R240077.pdf

¹⁹ The regulatory release of register data for research remains a requirement for opening up register data for research.

²⁰ Worthy of mention here are, among others: European Data Spaces (EDS). digital-strategy.ec.europa.eu/en/library/staff-working-document-data-spaces; EOSC technical infrastructures (eosc-portal.eu/); Gaia-X (gaia-x.eu/); FAIR Data (forschungsdaten.at/); Data Intelligence Offensive – DIO (dataintelligence.at/). For further examples see: Data Excellence: Strategies for Austria position paper. Best practice examples. Page 42. Centre for Social Innovation as commissioned by the AC (2022).

²¹ Commission Communication, COM(2020) 66 final (data strategy) eur-lex.europa.eu/legal-content/DE/TXT/?uri=CELEX%3A52020DC0066

²² Regulation (EU) 2022/868 (DGA), ch. 1, art. 1 (1)

The Austrian Council recommends targeting a swift decision-making process for naming “responsible offices” and the creation of an independent “central information point”.

Requirements at national level include naming one or more authorities or relevant offices, which will be responsible for the data transmission services (“responsible offices”²³). A legally and functionally independent and impartial office, which can perform its assignments fairly and non-discriminatory, is an essential condition with selection and appointment here. Responsible offices must have the required expertise as well as sufficient staffing and financial resources. A “central information point”²⁴ must also be set up to provide information on databases and to accept enquiries and applications concerning the further use of data.

The Austrian Council believes the expansion of the AMDC under the auspices of Statistik Austria is a sustainable and cost-effective option to set up an independent, central information point. A detailed listing of existing databases with regard to quality and availability would be possible and information on external data collections and owners could be quickly integrated.

The Austrian Council recommends enabling access to public sector register data in all federal ministries.

Regulated in the Research Organisation Act²⁵ (FOG) is the access to public sector registers by those empowered to legislate at the Federal Minister for Education, Science and Research and in agreement with the respective responsible federal minister.²⁶ Access to further registers²⁷ was enabled by regulation at the Federal Minister of Education, Science and Research²⁸. For the most extensive possible access to public sector data for scientific research, the Council calls on further ministries to examine all registers and make register research-compatible registers accessible by regulation.²⁹ Scientific evaluations could then be made more precisely with data protection, digital administration would be more efficient, and evidence-based policy advice would be improved.

The Austrian Council recommends closing data gaps to enable and support evidence-based policies.

While the opening and use of existing registers is an essential step for science and research to promote evidence-based policies, the creation and opening of new registers and the expansion of existing registers is also urgently advised. The Covid-19 pandemic and its far-reaching effects have not only shown a defective data basis and infrastructure

23 Regulation (EU) 2022/868 (DGA), ch. 1, art. 7

24 Ibid., ch. 1, art. 8

25 Regulated in the Research Organisation Act (FOG), Federal Law Gazette. No. 341/1981 as amended by FLG I no. 116/2022

26 Ibid., § 38b

27 Mobility and cooperation database of the OeAD, school types register, examination activity data of students at universities and teacher training colleges

28 Regulation by the Federal Minister of Education, Science and Research on register research in the area of action of the Federal Minister of Education, Science and Research (register research regulation, BMBWF – RFV-BMBWF); published 28 Oct. 2022

29 Ibid., § 2d para. 2 item 3

with regard to medical data³⁰ – they have also illustrated the need to collect relevant information for efficient crisis management and a future-oriented industrial policy³¹. Data and secure data infrastructures are also an essential component for strengthening technology sovereignty in key technologies at national and European level.³² The importance of a research funding database, whose setting up the Council has recommended several times, must therefore be reiterated once again.^{33,34}

→ **B) Development of an extensive data infrastructure and qualification of appropriate data stewards**

The use of top quality digital data is a valuable resource in enabling complex solutions for the democratic further development of our society. For many decisions, be they in economics, politics or at healthcare policy level, with an increasing level of networking at European and global level, there is a high degree of growing dependence on the availability of top quality digital data. At the moment combating the effects of the Covid-19 pandemic and the scarcity of energy resources are just two examples of how the use of data to protect health or the use of resources at national/international level can be improved. Traffic data, environmental data, population data, labour market data and many more are now indispensable foundations for evidence-based administration and policies and have an impact on our everyday lives. It is therefore urgently necessary to provide resources for the training and development of experts required for this at the interfaces to and in public administration. The public sector must demonstrate a role model effect in this transformation process.

The Austrian Council recommends the development of an comprehensive “data map” to support the dynamic expansion of the Austrian data infrastructure and to build here on existing institutions and initiatives and utilise available resources as best possible.

A central information point ideally acts as an interoperability platform, via which data can also be retrieved and analysed, and which helps harmonise metadata standards. Data storage is performed both centrally and remotely here, on externally available data collections of other data owners (“responsible offices”), for example. The recommended “data map” should also be continually extended. The registers of federal administration bodies, official authorities and institutions, as well as social insurance agencies, but also advocacy groups, health care facility bodies, data from research and development and others, for example, should also be integrated in this respect. The removal of existing technical gaps and clos-

30 Initiative to create an independent national medical data authority
csh.ac.at/wp-content/uploads/2021/05/20210515NationaleMedizindatenstelleFF.pdf

31 See Recommendation for Austrian industrial policy realignment. Austrian Council for Research and Technology Development (2021). fti-monitor.rfte.at/docs/pdf/R240078.pdf

32 See 10 theses on technology sovereignty – basis for discussion. Austrian Council for Research and Technology Development (2021).

33 Recommendation on setting up an all-Austria public sector research funding database. Austrian Council (2011). rat-fte.at/files/rat-fte-pdf/einzelempfehlungen/2011/111124_Empfehlung_gesamtoesterreichische_FoFoe_Datenbank.pdf.

34 Recommendation for setting up a nationwide database to illustrate research inputs and outputs. Austrian Council for Research and Technology Development (2018). fti-monitor.rfte.at/docs/pdf/R240054.pdf.

ing of structural gaps by developing metadata standards and quality assurance processes are essential in ensuring the interoperability of a growing data infrastructure. Transparent and clear data usage and protection conditions are a basic requirement here, as they are for the use of all personal (sensitive) data.

*The Austrian Council recommends **promoting qualified data stewards to set up and expand sector and topic-specific responsible institutions.***

Data stewards will be established, similar to data protection officers and in addition to open data officers, within the department and also individual public or private organisations, which act as data owners. Essential factors for the professionalisation of data stewardship were worked out as part of the FAIR³⁵ Data Austria³⁶ project at Austria's universities and can support the training, continued training and further training models of data stewards.³⁷

*The Austrian Council recommends **intensifying the cooperation with European data infrastructure initiatives, which are important and beneficial for Austria.***

The Common European Data Spaces concept must be emphasised here³⁸. The creation of data spaces in nine strategic areas was announced for this in the European data strategy: Health, Agriculture, Industrial & Manufacturing, Energy, Mobility, Green Deal, Finance, Public Administration, Skills; as well as the bases for appropriate technical infrastructures (EOSC³⁹, GAIA-X⁴⁰, etc.). To increase existing possibilities for Austria it makes sense to analyse the topical areas in which a collaboration with existing initiatives would be beneficial and important and which relevant organisations can be considered for this. The Council therefore suggests bundling experiences from existing initiatives and cooperations and participating in strategically relevant European initiatives and with institutions responsible for this with sufficient financial and staffing resources.

35 FAIR: Findability, Accessibility, Interoperability, and Reuse of Data: go-fair.org/fair-principles/

36 See also forschungsdaten.at/fda/

37 Data Stewardship in the Making. What Austrian Universities look for? Hasani-Mavriqi, I. et al. (2022) Graz University of Technology. repository.tugraz.at/records/p9fvw-rke48

38 See also dataspaces.info/common-european-data-spaces/

39 See also eosc.eu/

40 See also gaia-x.eu/

→ **C) Development of an overarching communication strategy to promote a positively connotated view of the opportunities and potential of using and sharing data**

The public discussion on data, from use to processing through to protection, focuses heavily on data misuse and security gaps, and therefore primarily on the risks and hazards of the data ecosystem. This must be actively countered here. The lack of trust is based in large part on the fact that commercial data usage practices of companies with complicated business conditions, for example, generate a certain degree of powerlessness with consumers vis-à-vis Internet companies. A loss of trust with customers is also generated when companies' data leaks are made known. The use of the digital offering by consumers, however, remains (mostly) unchanged. One possible explanation could be the absence of alternatives for the use of digital services (social networks, credit cards, etc.) and the fact that participation in social life appears limited without these services or impossible without them.⁴¹ By contrast here, with some sections of the population there is a steady rejection of the use and storage of data (personal), even if such use is subject to strict data protection regulations. The establishment of standards, legislative regulation or measures for the quality assurance of data in this respect is clearly insufficient to compensate for this loss (latent) of trust.

The Austrian Council recommends developing an overarching communication strategy to make data visible as an important basis of efficient public administration and evidence-based policy advice.

The benefits and possibilities of data use for the good of society are mostly invisible. Various measures to implement active communication to promote the acceptance of using data are proposed by experts, such as (i) increased visualisation of data research successes (positive success stories), (ii) setting up a citizens' council, (iii) the initiatives of a parliamentary survey on data sovereignty and (iv) the use of data for the common good.

The Austrian Council recommends special attention be paid to ensuring the protection of data, especially sensitive data in public sector areas, and sufficient financial and personnel resources be provided for both the technological equipping and staffing of relevant data-distributing organisations.

A common good-oriented use of data and protection against misuse or theft, especially of sensitive data, are not only a major responsibility and challenge – they are also essential for our cohabitation and a functioning democracy. It is therefore of key importance for a national data strategy to promote economic, ecological and social justice and to identify and prevent developments that cause a digital divide. Uneven access and heterogeneous availability of technologies for different population groups consequently result in digital

41 Vertrauensinfrastrukturen der digitalen Gesellschaft (digital society trust infrastructures). Uhlmann, M. et al. (2019); from, *Beiträge zur Verbraucherforschung*, volume 9. Pages 17-42. Bala, C. and Schuldzinski W. (Hrsg.). Verbraucherzentrale NRW, Düsseldorf. DOI:10.15501/978-3-86336-922-4

divides – home-schooling and home office, for example, caused massive divergences among the general public during the Covid-19 pandemic in particular.⁴²

Numerous initiatives for better processing and use of data at universities, non-university institutions, in public administration in different departments and public/semi-public companies and organisations were and are being implemented at national level. The Council therefore believes synergies must be urgently leveraged from already existing knowledge and the benefits and use of data must be enabled and further improved with clearly defined and regulated access to databases. Adequate resources must be provided to analyse existing initiatives and to identify relevant organisations, whose necessary knowledge and positioning in the system qualify them to achieve comprehensive coordination.

42 Kosten von Schulschließungen zur Pandemiebekämpfung (costs of school closures to combat the pandemic). Kocher, M. G. and Steiner, M. (2020). IHS Policy Brief no. 20/2020, November 2020. irihs.ihs.ac.at/id/eprint/5529/1/lhs-policy-brief-2020-kocher-steiner-corona-schulen.pdf

Statement on planned corporate form, FlexCo/FlexKapG

STATEMENT 31/3/2022



See statement:
fti-monitor.rfte.at/docs/pdf/C280024.pdf

In its annual Report On Austria's Scientific And Technological Capability the Austrian Council has repeatedly pointed out the weak start-up dynamic and unfavourable framework conditions for scaling innovation-based start-ups. In addition to the importance of such companies for the development of highly-qualified jobs and productivity growth, they also play a crucial role, and especially for the *twin transition* towards a digital and sustainable economy. Together with other stakeholders in this context, the Council has repeatedly highlighted the function of risk capital⁴³ (vis-à-vis the effects of insufficient availability and willingness to invest that is generally too low) and the excessively rigid corporate form for growth-intensive start-ups in Austria.

The Austrian Council welcomes the Federal Government's current activities to define a new corporate form for investment and innovation-intensive start-ups. The intention in particular to develop a corporate form and provide it with the right framework conditions is fully supported by the Council. Should this succeed, two major challenges for domestic start-ups with regard to their scaling options would then be addressed – attractiveness for specialists and the acquisition of risk capital. With the impact direction chosen in the joint work by BMJ, BMDW and stakeholders of the start-up scene, that is, the focus on the participation of employees, the Austrian Council believes facilitations in the start-up process and the attractiveness of Austrian start-ups for investors, the concept of the now named FlexCo/FlexKapG (previously "Austrian Limited") corporate form basically goes to the core of the problem.

On the matter of the welcome developments of recent years (see the *unicorns* that have also become scaled companies with risk capital, Bitpanda, GoStudent, TTTech Auto or Tricentis) and in view of the fact that private risk capital in Austria in the medium term will also come from abroad, an attractive corporate form is extremely important for both investors and company founders alike.

⁴³ See also: Austrian Council (2019): Recommendation for the mobilisation of risk capital to secure sustainable innovation and growth, Vienna (rat-fte.at/files/rat-fte-pdf/einzelempfehlungen/2019/191016_Empfehlung_Wagniskapital.pdf)

In a corresponding recommendation⁴⁴ circa 2018 the Council referred to some of the essential aspects in this respect. Based on the ongoing consultations on the arrangement of the new FlexCo/FlexKapG, the Council once again emphasises some of the most important elements, without which a new corporate form for start-ups will not achieve any of the desired effects:

Omission of the obligatory inclusion of notary services (with capital increases or share transfers, for example)

- An internationally competitive form of employee participation
- An unbureaucratic and digital option to start a company, and not just for one-person companies
- Debureaucratisation of the inspection obligations at the register court
- A free arrangement of share classes
- The ability to use articles of association entirely in English

The Council emphasises the importance of full consideration of the requirements of the start-up and investor scene when it comes to the design and implementation of the planned new corporate form, FlexCo/FlexKapG. At any rate implementing a simply slightly modified version of already existing corporate forms, such as limited company, should be prevented. The Council supports the requests of the domestic start-up scene and wishes all participants the courage for a cooperative but above all radical redefinition, without which a new corporate form would only bring cosmetic changes and in the worst case would be entirely obsolete.

44 Austrian Council (2018): Recommendation for the improvement of the framework conditions for starting innovative companies in Austria, Vienna (rat-fte.at/files/rat-fte-pdf/einzelempfehlungen/2018/180322_Empfehlung_Rahmenbedingungen%20fuer%20Gruendungen.pdf)

Statement on the draft of the all-Austrian university development plan 2025-2030

STATEMENT 15/9/2022



See study:
fti-monitor.rfte.at/docs/pdf/C280025.pdf

Basic consideration

For the 2025 to 2030 period the all-Austrian university development plan (GUEP) emphasises “social responsibility as the framework for action”. The basis of the current GUEP draft is provided by six system goals, with implementation priorities and numerous measures. Important and urgent social challenges are highlighted with the “More conscious integration of the sustainability principle in university development and profiling” and “Active shaping of the digital transformation” priorities. The universities have key tasks here as essential pillars of education, research and development in the Austrian science and economy area. Tasks, whose performance requires a dynamic further development of higher education management and all core areas of the universities – teaching, research and the “Third Mission”.

In addition to highlighting social responsibility as the framework for action and guiding principle, in the current edition of the GUEP there is a focus on the “expansion of research areas and collaborations”, the “creation of interdisciplinary designed studies”, “young talent funding and a balanced gender representation”, the “implementation of the goals of the RTI Strategy 2030”, as well as “cooperation and interconnection between the universities and further higher education partners”.

The Austrian Council welcomes the initiatives connected here for stronger “networking” in the expansion and further development of the higher education area, whereby the use of synergies of the universities and further higher education partners are afforded a key priority in the development planning.

To be able to perform their role as “lead social institutions and stabilising economic anchor of a region” in the Austrian innovation system, they must be positioned to do so. The receipt and building up of resources necessary for this require long-term secured financing, as was already specified in the last government programme⁴⁵. Due to current develop-

45 Government programme 2020–2024: Aus Verantwortung für Österreich. Page 304. Science and research: “Science and research are the basis for social progress and innovation. The Austrian Government is committed to guaranteeing the best possible funding and planning security in the coming years for the domestic universities, their employees and students, to ensure and further develop scientific and academic freedom. We therefore also intend to make Austria an attractive location for teachers and students in the future.”

ments on the money market, the Council also sees the urgent need to make an appropriate adjustment to the financing for teaching, research and the expansion of research infrastructures, in particular to also emphatically further pursue the goals of the RTI Strategy 2030. Strengthening the research performance at universities is an essential component in this respect. The investment in educating and training highly qualified graduates of course is also one of the basic requirements to continue in international competition.

The current and persisting crises, such as the Covid-19 pandemic, the war in Ukraine, or in particular combating human-made environmental destruction, also require broad and comprehensive integration of the universities. Wide-ranging socio-economic and ecological transformation processes connected with this also require strong commitment by science, together with the body politic and society, to create solutions to further develop a balanced and socially just society. Education, research and development at universities, at higher education institutions, form the backbone to meet the respective challenges, such as the immense consequences of climate warming, upheavals on the labour market or solutions for energy supply.

The Austrian Council believes scientific and research-led policy advice must be urgently professionalised for this. The challenges⁴⁶ listed by way of example require closer cooperation on both the political side and on the science side, to enable socially and future-oriented decisions. In the GUEP this should also be highlighted as “social responsibility” of the universities and higher education institutions, as should the dialogue between science and society, and should be supported more intensively on the public sector side^{47,48}.

Experiences from the cooperation with already institutionalised expert committees, for integration/migration or the Covid-19 Commission, for example, should be analysed in this respect and improved instruments should be further developed. Interdisciplinary and co-operative research methods must also be equipped for this with sufficient resources.

Digitisation or the digital transformation plays an important role in meeting the major challenges, and measures to resolve issues stipulated in the GUEP for shaping the digital transformation are firmly supported by the Council. To be able to accept social responsibility, all universities and all science areas are called on to contribute with their know-how to meeting current and future challenges, at disciplinary and interdisciplinary levels. The body politic is also called on here to shape and improve framework conditions in line with the challenges.

46 See also: Recommendation, “Sense of Urgency in the RTI Policy”. AC, Nov. 2021. fti-monitor.rfte.at/docs/pdf/R240079.pdf

47 See Report on Austria’s Scientific and Technological Capability 2022. Page 62. Recommendations for action, B.2 Academic research. AC, 2022. fti-monitor.rfte.at/docs/pdf/L100011.pdf

48 See Government programme 2020–2024. Aus Verantwortung für Österreich. Page 313. Knowledge transfer, international participations and research infrastructures: “*Strengthening and expansion of outreach activities (science communication) to increase awareness of the benefit of research and development for the general public (inclusion in performance agreement)*”. bundeskanzleramt.gv.at/dam/jcr:7b9e6755-2115-440c-b2ec-cbf64a931aa8/RegProgramm-lang.pdf

Council's position on system and implementation goals in the GUEP

The all-Austrian university development plan 2025 to 2030 must be prioritised as a "strategic planning document of the BMBWF drafted to achieve the goals to further develop the universities". While the Council believes the creation of the overarching framework for action and the goals and projects set out therein form a framework which can guide the further development of the universities as an holistic approach, for the system goals and areas of action the Council stipulates that higher level control based on the listed measures does not appear realistic.

A list of numerous measures in the individual areas of action gives the impression of "any kind of selection", which can be made by the universities and used for performance negotiations. Neither quantitative, temporal nor organisational frameworks are illustrated as planning goals. In the introduction it is stated that since the first edition of the GUEP in 2015, the implementation status of the goals included therein is raised every three years. In this draft, however, reference to this is not made in any of the formulated goals or measures. Presentation of data-supported analyses of output values, already achieved successes or goal definitions was also entirely dispensed with. Only in the financing section are key data for university financing, job creation, supervision ratio, examination activity and the number of completed studies described.

The Council also specifies that a better basis for development planning of the universities can be created by prioritising the goals according to systemic requirements and a weighting of the measures and, where beneficial and possible, quantifiable aims and objectives. The illustration of a temporal goal horizon and a focus on the most relevant areas of action in the individual system and implementation goals should also form the basis for both quantitative and qualitative monitoring in the GUEP.

Re System goal 1: Further development and strengthening of the higher education system

As described in the GUEP, in addition to the universities of applied sciences and teacher training colleges, with a share of approximately 74 percent of all students in Austria, the universities are the most important tertiary education institutions.⁴⁹ The expansion of study places at universities of applied sciences contributes here to a small increase in the share of students at universities of applied sciences. Strategic higher education planning with regard to future required capacities at the different institutions is not discussed in the GUEP.^{50,51}

Important implementation goals for the further development and strengthening of the higher education system are specifically aimed at the networking among higher education institutions. The digital transformation enables new paths to follow in this respect and can provide new stimuli for the universities' profiling. New routes are currently being estab-

49 Note: As part of the higher education plan (HoP), which also addresses the private universities, reference to this should also be made in the GUEP.

50 See Recommendations for the RTI policy in the 27th legislative period (AC, 2019). fti-monitor.rfte.at/docs/pdf/R240070.pdf

51 See Recommendation for the further development of the universities of applied sciences sector in the Austrian education and science system (AC, 2017). fti-monitor.rfte.at/docs/pdf/R240046.pdf

lished at some higher education institutions with the sustainability topic and active inclusion of the SDGs. Digital teaching methods, new offers for further education, development of courses/short courses, among other elements, could be used even more for profiling here. Examples, which thinking ahead are formative via the focus on research priorities, and can therefore increase the visibility of a higher education institution location, are also named under implementation goal 1b.

Re System goal 2: Stronger university research

The Austrian universities operate research at the highest level and are key institutions for basic research in particular. They therefore play a key role for innovation and prosperity in the state and make an important contribution to Austria's international competitiveness. Research funding is an essential requirement in this respect. The areas of action for acquiring research funding listed in the GUEP are all very welcome and are necessary activities for every university to fund research, but they are insufficient. The competitive funding of basic research is significantly underfunded in Austria compared with research-active countries.⁵² With the beginning of the excellence initiatives an improvement of the situation is indeed targeted, however compared with research-strong nations the funds available at national level for project-oriented research funding remain behind that of the respective comparison countries. The Austrian Council believes the GUEP should refer to the underfunding of project-financed basic research as an obstacle for internationally successful research work and should focus more on competition-oriented financing at the universities.

Re System goal 3: Improvement of the quality and efficiency of university teaching

An entirely new spectrum for transferring information and knowledge was opened up with the options digitisation offers. Further changes in teaching, which it will bring in the coming years, represent as yet unknown challenges for both producers and recipients of knowledge content. The Council therefore believes the formulated goal, "to increase the visibility and recognition of good teaching and professionally support teachers", should be afforded greater focus. Stronger motivation systems/incentives in teaching should be created and models developed in this respect, to accelerate the "further development of the quality of university teaching".

The numerous measures listed in the areas of action under system goal 3 to improve the quality and efficiency of university teaching provide a rough idea of the mammoth task the universities must perform here. On the basis of the example listing of measures, seen for itself each area of action shows how diverse the possibilities are and how important a structured approach is. The Council believes it is therefore necessary to invest more intensively in the development of professional teaching and learning settings, to suitably develop the numerous measures. The recently announced "Education innovation needs education research" initiative of the BMBWF with funding of EUR 8.8 million is an important impetus in this respect.

52 See RTI monitor - Austrian Council. B.2. Academic research: Project-financed basic research. fti-monitor.rfte.at/B/B.2

The Council believes the further development of models for continued and further education at universities are an important aspect in this context, as addressed in the, "Maintenance and expansion of offers for 'job-outs' creation of special offers that target upskilling and reskilling" and "Creation of training and further training offers in the AI area, especially for the transfer of basic AI knowledge" measures. Stronger focus on the research and development of new formats in further education is highly recommended due to the current and still unforeseeable disruptive changes, in the professional and working world, for example.

Re System goal 4: Promotion of scientific and artistic young talent, as well as equality and social inclusion

The areas of action and implementation goals named for the promotion of scientific and artistic young talent, as well as equality and social inclusion, must be supported fully and entirely. Attractive career options, especially for women in science, are unfortunately still not simply a matter of course. Gender equality is not a university or technical college-specific subject, but while it is regrettably remains difficult with academic careers to pursue balanced promotion, successes cannot be expected in other professional fields. A comprehensive equality policy, which incorporates all sectors and is oriented on European requirements, is required to achieve medium to long-term progress in this area.⁵³ More activities, more information to manifest gender equality as a key value in a just society should be provided by the universities/colleges and therefore flow quicker into society.

Re System goal 5: Expansion of the knowledge and innovation transfer and location benefits

Supporting the implementation of Open Science under Goal 5 is on one hand, as specified in the implementation goals, closely connected with the expansion of and participation in European and international IT infrastructures. On the other hand so too are the lack of skills or even the absence of supporting services to use already existing infrastructures. Just as in numerous other areas and sectors, supplementary formats and services to support digital applications or the use of already available technologies must also be created and further developed in the universities' knowledge transfer.

The intensification of the knowledge and technology transfer, as well as entrepreneurship, has been supported in many initiatives by the universities/colleges, ministries and others for some years now. Indicators to evaluate the international networking of higher education institutions indicate an above-average development in the European comparison. Priorities of some universities promote this development in their internationalisation strategies. An increase in the cooperation and participation activities, however, requires additional resources, both staffing resources and funds for participating in international collaborations. Potential for the further optimisation of sustainable value creation is provided here at any rate.

⁵³ See RTI monitor cross-cutting issues; Gender equality, AC, 2022. fti-monitor.rfe.at/B/C.5

The listed areas of action must be supported by efficient funding measures. The services offered are also only as efficient here as the suitable people provided for the support. Higher education institutions/universities should increase the development of attractive career options for this and („alternative“) research careers in the knowledge transfer area should be enabled.

Re System goal 6: Internationalisation and mobility increase

The promotion of international mobility and internationalisation for higher education institutions is strategically important. Available statistics and studies on student mobility⁵⁴ and international students⁵⁵ for Austria in the European comparison indicate good participant numbers in the available programmes, both with outgoing and incoming students. The completion of a semester abroad or an internship abroad by at least approximately 10 percent of students, however, also shows potential to improve, especially due to the very sharply falling numbers in the last two years due to the Covid-19 pandemic. Experts say there is also catch-up requirement with the institutional networking of international higher education institutions in particular and with the mobility of non-scientific higher education staff. The implementation goals to increase internationalisation and mobility named in the GUEP can also serve as a guiding principle here. The objectives provided by the university mobility and internationalization strategy 2030 in this respect also open up areas of development. Further measures, which go beyond the agenda of the universities, must however also be implemented to improve international visibility. These range from better funding, to not only create networks (research), but to also invest and maintain them for the long term and to maintain scientific relations right through to strategic planning and preparation of target areas, regions and countries. This is not only a higher education task, but rather it also applies in a network with research-funding organisations and research policies. Proposals for this were already worked out for the RTI Strategy 2020 with numerous experts. Implementation of proposed measures, however, has to date only been minimal or not at all. Policy commitment is largely lacking. Necessary resources for building up suitable structures and staff over a longer period would be required to successfully implement activities to increase Austria's visibility as a science and research country.

54 Uni: data: International Mobility

55 Engleder, J., Unger M. (September 2020) *International Mobility*. Additional report of the Student Social Survey 2019, sozialerhebung.at/images/Berichte/Studierenden-Sozialerhebung_2019_Zusatzbericht_Internationale-Mobilitaet.pdf; Unger, M. Schubert, N., Dibiasi, A. (October 2020) *International Students*. Additional report of the Student Social Survey 2019, sozialerhebung.at/images/Berichte/Studierenden-Sozialerhebung-2019_Zusatzbericht_Internationale-Studierende.pdf

Statement on the federal law on the promotion of quality journalism in print and online media (233/ME)

STATEMENT 12/12/2022



See statement:
fti-monitor.rfe.at/docs/pdf/C280026.pdf

The Austrian Council (AC) would like to say thank you for the opportunity to appraise the draft of a federal law on the promotion of quality journalism in print and online media (*Qualitäts-Journalismus-Förderungs-Gesetz, QJF-G*). This statement was sent to medienrecht@bka.gv.at and to the Executive Committee of the National Council.

Foreword

The AC welcomes the Austrian Government's plans to secure journalist jobs and content diversity in the print and online area with this law to be reviewed. As correctly specified in the explanations on the law's text, "journalists working in the print and online area and the content they create must be [protected] for the long term as an essential structural and functional principle for democracy under changing economic and media framework conditions"⁵⁶.

Quality journalism and media plurality are key pillars of the fourth estate and make an important contribution to the public democratic discourse. More recently during the SARS-CoV-2 pandemic it was made clear how important independent and fact-based journalism, diligent research and a broad-impact, all generations-reaching transfer of evidence-based knowledge are – both offline and online.

⁵⁶ See preamble to the draft law, page 3.

The AC therefore provides a statement on § 4 para. 1 item 1 and § 2 item 4 lit a and d as follows:

I. Ad § 4 para. 1 item 1

The standardised requirement in § 2 para. 1 item 1 PresseFG should be supplemented in the QJF-G with the term “universal medium”⁵⁷ and so “[make] clear that a wide-ranging content variety of topics is required [...]. According to § 4 para. 1 item 1, one funding criterion is that the content “[must] predominantly serve to inform and form opinion across the areas of politics, economy, society, culture and sports (universal medium)”.

The AC is however of the opinion that such a definition cannot be complete without the science and research area and would send a false social signal. The Council therefore emphatically recommends the respective § 4 para. 1 item 1 be changed as follows:

According to its content it must primarily serve to inform and form opinion on the areas of politics, economics, science and research, society, culture and sports (universal medium) and under no circumstances be simply used as a medium dedicated to customer or member information or as a means of publication for a representation of interests.

In view of the alarmingly high scepticism towards science in Austria – most recently determined in the Special Eurobarometer of the European Commission⁵⁸ – but also the need to anchor science and research as key to meeting current and future social challenges in the public eye, it is essential that we add science and research to the currently required areas of politics, economy, society, culture and sports.

III. Ad § 2 item 4 lit a and d

The specific definition of the term, “online medium” as, “exclusively online available, electronically processed content” for clear delimitation from online content of daily and weekly newspapers and magazines and the quantified share of editorial content of the total offering of the online medium is welcomed.

The AC however believes the requirements in lit a and d, which, according to initial research even some established and recognised online media would not meet, are problematic.

The arbitrary appearing minimum of 30 million characters per year must be seen as clearly too high. With tactical *content duplication* and other manipulative methods eligibility for funding can be achieved, without creating qualitative added value here as understood by this law. Such a metric does not provide any information on worthy of funding quality, but rather only on the quantity of the content offering.

⁵⁷ For the basic problems of the term “universal medium” see mediana – conference on media, culture and democracy, “Position paper on the reform of media promotion”, 5.5.2017 [mediana.at/wp-content/uploads/sites/2/2017/05/Positionspapier_170505.pdf]

⁵⁸ “European citizens’ knowledge and attitudes towards science and technology”, European Commission 2021. (europa.eu/eurobarometer/api/deliverable/download/file?deliverableId=79916)

The Council therefore recommends this criterion be changed as follows:

§ 2 Z 4 lit a

"The editorial content always accounts for at least 50 percent of the total content and in a calendar year runs to at least one million characters per hired journalist (full-time employee).

The minimum of 300,000 unique users per month must be seen as clearly too high. Media plurality and quality can be strengthened by also promoting target group-specific online media. The latest *State of the Media* report shows for Germany, for example, that more than half of journalists (52.7%) report on five or more topical areas, whereby genuine specialisation is no longer possible.⁵⁹ Editorial offices and online media that specialise should therefore be considered worthy of funding. This would not only take into account the further changed media behaviour in the general public, but rather journalists' specialisation would also be guaranteed and promoted.

Online media in particular speak to groups of the general public whose primary used information sources do not contain news services. Many of these online media are also dedicated to specialist topics, whose journalistic distribution is desired – such as those in the STEM and innovation areas and the range of topics connected with them.

The Council therefore recommends this criterion be changed as follows:

§ 2 item 4 lit d

As an individual offering the online medium has at least 150,000 unique users per month, [...].

Basically clear, verifiable criteria are correct and important, however the Austrian Council recommends these minimum requirements be re-evaluated. On the basis of radically changed media habits it is also clear at any rate that the possibilities of digital journalism, such as podcasts in particular, must also be considered. § 2 item 4 li a and d in its current form must be seen as innovation-inhibiting.

⁵⁹ 2022 *State of the Media Report – Germany*, Cision 2022, p. 11.

II

Creating knowledge

Studies and reports

Data Excellence: Strategies for Austria



See position paper:
fti-monitor.rfte.at/docs/pdf/M300021.pdf

Data are a raw material for innovations and the new currency of the digital transformation. The functioning of all areas across science, economy, society or politics depends without alternative on functioning data collection, analysis and user-oriented provision and use of data. The design, operation and use of shared data rooms pose many questions here, which are rooted in an open social negotiation process. The processing and forwarding of data, data sovereignty, data protection, legal and technical aspects of usage concepts, to name just a few topics, are also constantly discussed in this respect.

Austria therefore requires a modern national data strategy so the connection is not lost in an increasingly complex, digitised world, and to play a pioneering role in sub-areas at the least.

With this mission statement, together with the Future Operations Platform team, the Austrian Council initiated a multi-stage discussion process. Objectives of this analysis included, among others, finding out which obstacles must be observed when handling data and which institutions, people or even technological changes can contribute to a solution. Linked herewith was the task of developing starting points and recommendations for a national data strategy. The corresponding issues were dealt with in the discussion with experts. A team from the Centre for Social Innovation was commissioned to ensure professional process monitoring.

Four relevant data excellence dimensions were defined in a first step: Data Governance, Data Infrastructure, Data Modelling and Data Communication. The topical areas were prepared, the facets connected with them were specified with numerous experts of selected knowledge areas in a first workshop and an intended target situation was worked out within each dimension.

Building on this in a second expert workshop an intensive discussion was held, to define important measures in each of the topical areas, which must be dealt with in a national data strategy. The participants from the different discussion fora were then asked to substantiate the results from the different dimensions. The worked out goals and measures were consolidated in the *Data Excellence: Strategies for Austria*⁶⁰ position paper.

⁶⁰ *Data Excellence: Strategies for Austria*. Schürz, S. et al. (2022). As commissioned by the Austrian Council and in cooperation with representatives of the Future Operations Platform. Process support: Centre for Social Innovation (CSI). fti-monitor.rfte.at/docs/pdf/M300021.pdf.

The quality assurance of the position paper followed as national consultation. In this feedback loop the participants of the workshops, invited experts and representatives of ministries were asked to expand on the named goals and measures with their statements and comments. Based on this the Austrian Council addressed the most urgent measures to the Federal Government in the *Recommendation for a national data strategy to optimise common good-oriented data use and evidence-based policy advice*⁶¹.

The goals and recommended measures formulated in the position paper primarily address the public sector and will, where logical and possible, also be applied in private organisations. For an Austrian data strategy it is therefore key that a regulatory framework and roles distribution for the better use of different databases for the common good be established at national level. This in particular includes,

- the development of suitable security, quality and metadata standards,
- the creation of access rules and information/communication obligations,
- compliance with the applicable legislative framework, in particular data protection law,
- compliance with ethical standards,
- creation of an overview of all data of public offices,
- setting up data stewards at national and institutional level, which ensure the implementation of data governance, and
- the creation of framework conditions for technical and organisational implementation, that is, the setting up and sustainable operation of the necessary data infrastructures.

For the transformation process it is also necessary and important to focus on both already available and still to be created resources, which are indispensable for the efficient and financeable implementation of a national data strategy. Addressed here in particular are public sector data and their benefits for science and society. However, for a sustainable successful transformation it is also just as important to mobilise essential stakeholders and effect broad acceptance and with it a culture change.

⁶¹ fti-monitor.rfte.at/docs/pdf/R240082.pdf

Transformation to the circular economy – capability, industry and RTI policy funding



See study:
fti-monitor.rfte.at/docs/pdf/S260061.pdf

The importance of circular economy concepts lies in the solution for climate and environment policy issues. The resource efficiency increased with a circular economy essentially means striving for higher value creation with lower use of natural resources. The three key pillars of the transformation to a circular economy are: (i) More efficient use of resources, (ii) the extension of product life cycles and (iii) the reduction of production output and waste minimisation. Quantifying relevant innovation efforts for Austria by WIFO as commissioned by the AC in this respect clearly shows that circular-oriented innovation activities to date only play a lesser role in absolute figures and pro rata in the Austrian innovation system. The overall costs for R&D projects funded by the FFG in the circular economy area are only a very low percentage of the total costs funded by the FFG (between 3% and 4.5%). The technology areas examined in the study also show an absolute and relatively low number of patent applications. If we consider the forward citations on these inventions, however, then internationally this low figure is opposed by high technological and commercial importance (approximated by the PageRank citation rankings).

The study concludes that the introduction of individual instruments, twisting and turning on individual fine tuning points (the establishment of a higher CO₂ tax or setting up a general R&D funding programme, for example) alone will not be sufficient to drive forward the circular economy with the required acceleration. At a general industry policy level the transformation requires extensive innovation activities, both in the adoption and in the development of suitable technologies, of new business models, regulatory further developments, social awareness building and training and further education measures. The European framework conditions must also be considered here. On the basis of the specific case example of lithium ion batteries (LIB), the study therefore illustrates the challenges faced in establishing a circular value creation chain. The wide-ranging economic, social and RTI policy methods, which are required for a transformation towards a circular economy, are shown by way of example here. Produced are the following four implications for the Austrian RTI policy:

1. The transformation towards a circular economy requires a *whole of government* approach, that is, increased coordination of various players (stakeholders and ministries with various remits, for example) to be able to introduce extensive measures, coordinated and effectively in several structure policy areas. This of course applies both in Austria and at European level. Institutions such as the new Climate Lab with the Circularity Lab set up for it, for example, can act as coordination bodies to network different stakeholders and industries and sectors.
2. RTI activities can be expanded both on the funding side and on the performance side, whereby this would also include higher financial resources and prioritisations. This is shown both generally for circular economy activities and specifically for lithium ion batteries, with which the Austrian value creation share in the automotive area, for example, is especially high and its industrial policy prioritisation would therefore also have to be considered.
3. Traditional thematic funding approaches in Austria are generally based on a *bottom-up* approach. In accordance with the implementation of the missions, formulating specific goals for funding activities and to actively address and network possible funding recipients for this, would therefore have to be considered to achieve specific advances with regard to defined technological goals. The improvement of the LIB “Design for Recycling” would be an example here. This would also correspond with the trend of ARPA-oriented⁶² funding agencies, such as the European Innovation Council, or the Wellcome Leap Fund. The smaller Austrian environment must also be considered here, in terms of a test to see if there is enough potential in the country itself to truly make technological advances with regard to a goal, or if this activity would be better domiciled at European level from the outset. At any rate this requires a rethinking at the Austrian funding agencies, with a stronger active programme management role.
4. With regard to funding models the LIB example illustrates the possible potential of cooperations between science and business. In Austria COMET centres are funded independently from the respective subject matter. One consideration would be to consciously set up COMET centres in the future to meet specific scientific-technological challenges. Such considerations must, however, be oriented on Austrian strength areas, and existing competencies that enable research and development at EU level at the least must be available.

Systematic interaction of decarbonisation and the circular economy using the example of Austrian industry



See study:
fti-monitor.rfte.at/docs/pdf/S260062.pdf

With a share of approximately 22% of gross value creation, Austrian industry crucially secures Austria as a business location. As planned for in the current government programme 2020-2024⁶³, Austria is also striving to achieve climate neutrality by 2040. The simple fact of the matter is that, with its energy-intensive and non-energy-intensive sub-sectors, Austrian industry is responsible for approximately 37% of the gross domestic energy consumption (~400 TWh) and approximately one third of the greenhouse gases produced in Austria.⁶⁴ A stronger circular economy is one of several levers to reduce energy consumption and lower emissions.

As part of the study the researchers of the *Lehrstuhl für Energieverbundtechnik*⁶⁵ and *Lehrstuhl für Abfallverfahrenstechnik und Abfallwirtschaft*⁶⁶ at the University of Leoben examined circular economy technologies and measures and their effects on energy consumption and emissions. To illustrate the systemic interaction of decarbonisation and the circular economy using the example of Austrian industry, the study's authors considered various areas throughout the value creation chain and examined the following issues here:

- Which technologies of the circular economy system have industrial relevance and potential in Austria?
- Which effects of energy and resource saving can be achieved with the use of material flow potentials?
- Which sub-sector future technologies and material flows must be accelerated to achieve significant energy and resource effects?

The results of the study make it clear that the greatest circular economy potential is in the energy-intensive sub-sectors (iron and steel, cement and concrete, plastics, paper, aluminium). The substitution of primary raw materials with secondary raw materials significantly reduces the share of energy-intensive primary production in raw materials industry. The circular economy is therefore an essential factor for energy and resource efficiency.

⁶³ See *Aus Verantwortung für Österreich*, government programme 2020-2024 (bundeskanzleramt.gv.at/bundeskanzleramt/die-bundesregierung/regierungs-dokumente.html)

⁶⁴ See BMK study, Austria's climate neutrality by 2040 – contribution by Austrian industry, September 2021 (bmk.gv.at/dam/jcr:0ac604d1-7928-492f-991a-4845dce78c27/Begleitstudie_Endbericht.pdf)

⁶⁵ Lehrstuhl für Energieverbundtechnik (unileoben.ac.at/universitaet/lehrstuhle/institute/department-umwelt-und-energieverfahrenstechnik/lehrstuhl-fuer-energieverbundtechnik/)

⁶⁶ Lehrstuhl für Abfallverwertungstechnik und Abfallwirtschaft (unileoben.ac.at/universitaet/lehrstuhle/institute/department-umwelt-und-energieverfahrenstechnik/lehrstuhl-fuer-abfallverwertungstechnik-und-abfallwirtschaft/)

The effects on greenhouse gas emissions correlate in many areas with energy savings. A circular economy as the only measure is not, however, sufficient for climate neutrality.

With regard to the level of technological maturity it was seen that many circular economy-relevant technologies already illustrate a high degree of maturity. Research and pilot systems must be transferred in multiple numbers to a commercial phase. Some technologies are however still at the beginning of the research stage. Further research activities are therefore required to exploit the respective potential.

Technological and systemic developments are also clearly identifiable in waste management. With data-based sorting technologies on individual part basis and flexibly arranged treatment systems, the volume of produced recyclable materials and their quality improves continuously. Waste management makes a significant contribution to securing industry's raw material supply via secondary raw materials. The development of a linear through to a circular economy system is promoted by the creation of aptly named industry-related recycling loops outside of the waste management system.

Transformation opportunities for Austria in the “Tech for Green” area



See study:
fti-monitor.rfte.at/docs/pdf/S260063.pdf

As part of the decarbonisation strategy and transformation, on one hand existing industry branches must be equipped for climate-neutral production methods, while on the other hand new green technologies and products must be identified and their production must be promoted. As commissioned by the Austrian Council, the Complexity Science Hub (CSH) Vienna carried out an explorative study to examine the potential of Austrian companies for the development of new green products and technologies.

In the Theory of Economic Complexity⁶⁷ each country has *capabilities* that allow it to produce different products. These capabilities include, for example, the physical assets of the country, qualified workers, established technologies, existing infrastructures or a stable legal system. Based on the knowledge that some products require similar and others completely different technological and social conditions, an aptly named product space can be created. The distances of individual product groups in this product space represent the similarity of the underlying technologies and their requirements.

In its study the CSH focuses on existing research projects and identifies specific green products (product groups, for example), which are relevant for the green transformation and for whose production Austria has favourable conditions. The transformation opportunities are analysed based on a big data method, which focuses on Austria's export trade data. The identified potential products are broken down here according to federal states and the material requirements (primary raw materials) necessary for this are critically discussed. The results are visualised via a dashboard⁶⁸, which is provided via the RTI monitor.

The results of the study show that the identified green products tend to be complex products. According to their product classification, these are largely (57%) machines and components, as well as electronic equipment. The identified products have an environmental benefit with regard to waste water treatment and reduction. Other products on the other hand refer to the generation of green energy or reducing energy consumption. The results also show that 41 of 75 products in Austria are already produced competitively. Five of these products from the export category excel with high complexity and a global sales market. These are (i) automatic control instruments, (ii) pumps for fluids, (iii) fans and compressors, (iv) devices for thermostatic controlled valves, and (v) devices for measuring the properties of fluids.

67 César A. Hidalgo: Economic complexity theory and applications ([researchgate.net/profile/Cesar-Hidalgo-2/publication/348762363_Economic_complexity_theory_and_applications/links/61a74b22686431d938f7e11/Economic-complexity-theory-and-applications.pdf](https://www.researchgate.net/profile/Cesar-Hidalgo-2/publication/348762363_Economic_complexity_theory_and_applications/links/61a74b22686431d938f7e11/Economic-complexity-theory-and-applications.pdf))

68 Economic Complexity and Green Transformation Opportunities (ecto.rfte.at/)

The identified products were also examined for their dependence on critical materials. It was determined that three of the five products named contain critical materials such as indium, chromium or cobalt. These primary raw materials are mined by a small number of countries and their export is controlled. To be prepared for possible supply shocks, manufacturers should check for circular economy recycling possibilities (use of secondary raw materials).

Finally it can be seen here that the capability to produce the identified green products is spread unevenly across Austria. A "Green Adjacent Possible⁶⁹ (GAP)" for the respective development potential was created for this for each federal state. Fine differences can then also be recorded in the presented product portfolio, to identify specific green development options depending on the business location. This potential was also compared with countries with a similar economic structure, such as Germany and Switzerland.

69 The CSH determines green products that are closest in the global product space to Austria's current position. The group of adjacent products is called the "Green Adjacent Possible".

International activities

Delegation visit to Sweden

22–23 MAR. 2022

Sweden has long since been a leading innovation nation in Europe and the world. With its innovation performance and competitiveness the country regularly achieves top places in global rankings – in the *Report On Austria's Scientific And Technological Capability Sweden* is also disproportionately often in the group of the global top 3. Sweden is especially strong in two priority areas that the Austrian Council considers highly relevant: Education and mission orientation. The Austrian Council therefore organised a delegation visit to interact directly with key stakeholders of the Swedish RTI system and to discuss current challenges and solutions in these areas. The delegation consisted of the Council members, Klara Sekanina, Helga Nowotny and Silvia Schwaag Serger, and representatives of the BMK, BMBWF, BMDW, FFG, FWF and aws. The trip was accompanied for media purposes by journalists from ORF, Kurier and Wiener Zeitung.⁷⁰

The agency system in Sweden

The Swedish RTI system incorporates a high number of agencies, which are highly specialised and therefore are very close to their customers, whereby the stimuli initiated by the agencies can take effect quicker. However, the qualities of the agency system also require good cooperation between the agencies themselves for extensive and effective strategy development. The universal principle is therefore also called *samarbete* – collaboration. The system produced as such excels with its openness, trust and mutual support.

Representatives from Vinnova, the Swedish innovation agency, provided a detailed insight into their extensive activities on Missions and the Swedish research council (Vetenskapsrådet), also acting as funding agency, presented its initiatives in the Missions and Education areas. Further visits took the delegation to Formas, the funding agency for sustainable development, which is very much committed to mission-relevant issues, and the Swedish university council (Universitets- och högskolerådet), which presented its work on the digitalisation of the higher education sector. The agency for public procurement (Upphandlingsmyndigheten), which focuses on innovations, presented its new platform for innovative public procurement, Afori.

To further promote and expand the already established collaboration concepts, Vinnova also opened up the *samverket*: The idea behind this “creative collaboration space” for the public sector is that the cooperation across and beyond organisation borders simply falls

70 The Austrian Council thanks Martin Glatz (business delegate, AußenwirtschaftsCenter Stockholm) and Mikolaj Norek (Head of Innovation and Technology Nordics, Advantage Austria) for their friendly support and the thorough introduction to the Swedish RTI system.

into place when people meet regularly in an innovation environment. *Samverket* should therefore be understood as an experimental lab and *third place* for innovative collaboration between agencies, ministries, administration and other system-related public institutions.

Ministries and administration

To conclude, the Swedish measures for digitalisation in education were illustrated and in the Ministry of Economics there was a discussion on the current national priorities of both countries (among other goals Sweden intends to be a fossil-free welfare state with appropriate innovation partnership programmes by 2045). The delegation visit was closed by the higher education authority (Universitetskanslersämbetet), which is responsible for monitoring and quality assurance in the higher education sector.

Austrian Research and Innovation Talk, Chicago, Illinois, USA

■ 17/9/2022

The Austrian Research and Innovation Talk (ARIT) is the Austrian Government's science and technology conference in North America. The Office of Science and Technology Austria (OSTA) has been organising ARIT in various states across the whole of North America since 2003. The Austrian Council has been an OSTA cooperation partner since 2020.

ARIT 2022 was held on 17 August 2022 in Chicago hailing the motto "Strengthening trust in science and democracy". The starting point was the hypothesis that trust in science and democracy is in crisis. With the COVID-19 pandemic in particular it became clear what role science plays in developing well-founded political measures in the interest of society. It also became clear how important the public's trust is in science and scientists, who support the decision-making process, and how quickly and significantly this trust can be shaken by science-hostile or political forces. Some of the key issues of our modern society ARIT 2022 handled are, for example: How can scientists secure the public's trust in an age of increasing misinformation with their own communication? How can access to knowledge and science be very generally democratised and access hurdles be removed? How can scientists proactively enable people and legislators to make fact-based decisions in different political areas?

ARIT 2022 therefore focussed on discussions about the dissemination of misinformation, effective science communication and the issue of how the scientific community can bridge divides and convert imbalances into growth opportunities.

International Councils Meeting

■ 20-21 OCT. 2022

Once a year the European Research Councils meet to discuss the developments of the respective innovation systems and work programmes. In 2022 the International Councils Meeting was organised by the Swiss Science Council (SSC) and held at the ERF Lausanne. The RTI Councils of Belgium, Denmark, Germany, Estonia, Finland, Lithuania, the Netherlands, Portugal, Switzerland and the Czech Republic were represented.

Events

Data Excellence Workshop

26 JAN., 30 MAR. 2022

The *Data Excellence* project was planned in successive process steps. The two half-day sessions, entitled *Data Excellence: Strategies for Austria* and with numerous experts, formed a centrepiece of the project. The interest and the intensive discussion of the participants in the topical areas dealt with significantly contributed to working out solutions to meet existing challenges in the four priorities: Data Governance, Data Infrastructure, Data Modelling and Data Communication.⁷¹

The content and goals of the project were planned in several meetings of a core group made up of participants of the AC and representatives of the Future Operations Platform. The entire process was accompanied and moderated by the team from the Centre for Social Innovation. The CSI team's process organisation and moderation made an important contribution to successfully managing the two workshops in an innovative and dynamic online format.

Presentation of the RTI monitor and the Report on Austria's Scientific and Technological Capability 2022

8 JUNE 2022

With the annual *Report On Austria's Scientific And Technological Capability*, since 2012 the Austrian Council has been offering RTI system stakeholders and political decision makers an evidence-based foundation for introducing specific measures. With the web-based RTI monitor⁷² the Austrian Council took the continuously changing requirements into account and presented a freshly thought-out digital report in addition to the established print version. The RTI monitor utilises the digital possibilities to exploit the report's information potential. For the first time the indicators will be correlated with the goals of the RTI Strategy 2030. Not only will systemic correlations then be visible – direct and indirect leverage effects on the individual strategy goals will also be clear. On one hand this allows the RTI goals to be located in the RTI system areas and on the other hand the leverage effects on the goal achievement, coming from the RTI system areas, can be highlighted.

To quickly illustrate the data and information from various presentation forms, users can

⁷¹ See *Data Excellence: Strategies for Austria*, page 45.

⁷² AC RTI Monitor (fti-monitor.rte.at/)

then have individual or composite indicators displayed or analyse them dynamically over a period of time and in relation to the respective innovation leaders, the EU and the top three countries. All visualisation elements and calculated values are also available for download, as are the recommendations, statements, strategy documents and studies of the Austrian Council relevant for the respective RTI areas. The printed report is also linked with the web-based RTI monitor: Via the QR codes in the report, the readers go directly to the RTI system indicator or the RTI Strategy 2030 goal they want in the RTI monitor- and therefore to the extensive data, resources and functions.

As a new RTI cross-cutting issue the circular economy was incorporated into the performance report for the first time. The importance of circular economy concepts is in particular rooted in the fact that solutions for environmental and climatological issues are developed on their basis, and also open up new economic scope and place key economic principles, such as more efficient use of resources, for example, front and centre.⁷³ The performance report takes this into account to the extent that a corresponding set of indicators for monitoring is now provided for the stakeholders. According to the European Innovation Scoreboard (EIS), at the time⁷⁴ of laying out the report the innovation leaders are the countries that have already ranked in the leader group for some years now: Denmark, Finland and Sweden. New to the group is Belgium, while the Netherlands and Luxembourg are no longer among the innovation leaders.⁷⁵

In addition to the challenges of the green and digital transformation, the 2022 annual report also focused on the Austrian Recovery and Resilience Plan⁷⁶ (RRP), which, following positive evaluation by the European Commission in July 2021, was subsequently adopted by the EU's Council of Finance Ministers. Among other components, the RRP includes a high level of transformative investments, which are aimed at climate and digitization goals, such as environmentally friendly mobility and broadband expansion, for example. The national COVID aid measures attach even greater importance compared to the RRP.⁷⁷ They should in particular protect companies and employees against the negative effects of the crisis; however, they only earmark a small amount of funding for research, innovation and transformation. From the transformation point of view the investment premium is the most interesting part of the national stimulus package and is practically unique in its objective, its regulations and its scope within the European Union.

Based on the 2022 indicators, on the whole we see the image of an open national economy with good international ties, which intensively (open-theme) promote RTI activities with companies in particular and therefore, in addition to other factors, also achieve good

⁷³ See Reinstaller, Meyer, Peneder (WIFO:2022): Transformation to the circular economy – capability, industry and RTI policy funding, study commissioned by the Austrian Council (fti-monitor.rfte.at/docs/pdf/S260061.pdf)

⁷⁴ Reporting date, 2 February 2022.

⁷⁵ See Report on Austria's Scientific and Technological Capability 2022, page 12 et seq. (fti-monitor.rfte.at/docs/pdf/L100011.pdf)

⁷⁶ Austrian Recovery and Resilience Plan 2020-2026 (see: oesterreich.gv.at/nachrichten/allgemein/EU-Aufbauplan.html).

⁷⁷ WIFO monthly report 94 (1): Federal budget and public debt in the COVID-19 crisis. Estimated budget 2021 and medium-term financial framework 2021 to 2024, pages 53-65. (wifo.ac.at/jart/prj3/wifo/resources/person_dokument/person_dokument.jart?publikationsid=66832&mimeType=application/pdf)

performance with economic and social indicators. To date the RTI system has addressed challenges such as the green transformation and the digital transformation considerably less theme-specific. In the chapter on location and industry policy, the 2020-2024 Austrian government programme,⁷⁸ announces the development of a strategic measures plan for environmental technologies and for the circular and recycling economy for the first time. The objectives of the RTI circular economy strategy still being drafted when laying out the report were anchored both in the performance report and in the RTI monitor.

Together with the RRP, the increase in the public sector environment and energy R&D financing, which is a positive development for the climate and environment area⁷⁹ compared to the previous year, marked the beginning of a new phase of the Austrian RTI system, in which even more effective efforts to manage the transformation grow in importance. This is all the more important, as Austria continues to score poorly with the key impact indicators in the environment area compared with the innovation leaders and the top 3 countries. In the areas of international ties⁸⁰ and effectiveness⁸¹ Austria's level is above that of the innovation leaders. The greatest weaknesses in the core RTI system, however, include the area of start-ups⁸² and digitisation⁸³ with the RTI cross-cutting issues. Austria is also behind the innovation leaders in the areas of education⁸⁴ (primary and secondary), tertiary education⁸⁵ and academic research⁸⁶. Particularly significant here too is the gender equality deficit⁸⁷, where the situation has even further deteriorated compared with previous years.

The report makes it clear that it is no longer sufficient to fine tune individual points of the RTI system separately. It is now a collective responsibility to swiftly address the necessary systemic change while safeguarding the respective European values. As in other countries, for Austria the crisis not only means an accelerated structural change – it also opens a *window of opportunity* to actively steer this change. However, from this point of view in particular, the stimulus packages also offer more scope for improvements. More agile measures, aimed at a radical change and which accelerate stronger interaction between the various players, are required.

⁷⁸ Government programme 2020-2024 (bundeskanzleramt.gv.at/dam/jcr:7b9e6755-2115-440c-b2ec-cbf64a931aa8/RegProgramm-lang.pdf)

⁷⁹ See RTI monitor, environment and climate (fti-monitor.rfte.at/B/C.2)

⁸⁰ See RTI monitor, international ties (fti-monitor.rfte.at/B/A.3)

⁸¹ See RTI monitor, effectiveness (fti-monitor.rfte.at/B/D.1)

⁸² See RTI monitor, start-ups (fti-monitor.rfte.at/B/B.4)

⁸³ See RTI monitor, digitisation (fti-monitor.rfte.at/B/C.1)

⁸⁴ See RTI monitor, education (fti-monitor.rfte.at/B/A.2)

⁸⁵ See RTI monitor, tertiary education (fti-monitor.rfte.at/B/B.1)

⁸⁶ See RTI monitor, academic research (fti-monitor.rfte.at/B/B.2)

⁸⁷ See RTI monitor, gender equality (fti-monitor.rfte.at/B/C.5)

Der Bericht macht deutlich, dass es nicht mehr reicht, an einzelnen Stellschrauben des FTI-Systems separiert zu drehen. Es liegt in der kollektiven Verantwortung, die notwendigen systemischen Veränderungen unter Wahrung der europäischen Werte rasch anzugehen. Wie in anderen Staaten bedeutet die Krise für Österreich nicht nur einen beschleunigten Strukturwandel, sie öffnet auch ein *window of opportunity*, um diesen Wandel aktiv zu steuern. Die Konjunkturpakete bieten jedoch gerade unter diesem Gesichtspunkt noch Raum für Verbesserungen. Es braucht agilere Maßnahmen, die auf einen radikalen Wandel abzielen und eine stärkere Interaktion zwischen den unterschiedlichen Akteur:innen forcieren.

Innovation in the age of the circular economy (Alpbach)

 24 AUG. 2022

Austria's ambitious plan to be climate-neutral by 2040 can only be successfully implemented with far-reaching and systemically effective measures. It requires actions in a number of areas. Not only must society therefore be broadly integrated and research funding be aligned goal-oriented – it also requires innovation and technology development to implement radical changes.

One of these necessary changes is the holistic transformation of our linear economy into a circular economy. The AC has therefore defined this topic as a work priority to strategically support political decision makers and stakeholders in this key project and with the respective content. As a first specific step, on the fringe of the European Alpbach Forum the AC presented the first results of the studies commissioned by the AC to stakeholders of the RTI community. These studies examine the potential of innovation in establishing the circular economy and the systemic correlations that have an effect here. The event hailed the motto, "Innovation in the age of the circular economy", and was held at the Alpbach recycling centre.

Presented and discussed with the participants present during the event were: (i) Circular economy technology routes for industry,⁸⁸ (ii) material flows in the industrial circular economy,⁸⁹ (iii) circular economy product spaces and development potential,⁹⁰ (iv) opportunities for location Austria on the path to circular businesses and (v) transformation to the circular economy in the Austrian innovation system⁹¹.

88 See page 49

89 See page 49

90 See page 51

91 See page 47

Workshop

“Releasing transformative potential” ~~workshop~~

 4/11/2022

The Austrian Council focused in this workshop on Austria achieving the goal of climate neutrality by 2040 on the important topical areas of circular economy, climate, energy and green mobility. Together with stakeholders of the RTI system – including representatives from ministries, funding agencies, the Federal Environment Agency, *Klimafonds* and other organisations, as well as scientists – potential for the green transformation was discussed on the basis of the latest study results. Agile interfaces in politics, administration, economy and science were identified here under the *collaborative innovation* guiding principle and discussed with the participants.

The “Swiss Cargo sous terrain”⁹² project kicked off the event. Daniel Wiener, member of the administrative board, presented the vision of the green infrastructure project, the implementation of the institutional interfaces required here and the biggest challenges in planning this subterranean digital freight logistics system. With the project an important milestone in the introduction of CO₂-neutral cities in Switzerland will be set in place.

In the panel representatives from politics, science, business, administration and the AC then discussed various issues hailing the motto “Breaking Down Silos”. The Partnerships Director of the Climate Lab recently initiated (by *Klima- und Energiefonds* and *BMK* together with *Wien Energie*, *EIT Climate-KIC* and *Impact Hub*), was also at the workshop. After the podium discussion the agile interfaces that are still required to remove existing hurdles and consequently release transformative potential quicker, were worked out together in smaller groups covering the topics of energy and climate, circular economy, mobility and indicators. The results of the discussions were then presented.

Following up on the workshop the participants were provided an interactive “sharing workspace”. Along with access to the results of the discussions, all interested were motivated to share further ideas to overcome the most pressing challenges.

⁹² Cargo sous terrain (cst.ch/)

Business location Austria: A challenge for scale-ups

23 NOV. 2022

On November 2022 a podium discussion on the topic of scale-ups in Austria was held in the *Marmorsaal* hall of the Federal Ministry of Economics and Labour.

For some years now the AC has been working in its *Report On Austria's Scientific and Technological Capability and the RTI monitor*, among other activities, on the issue of the capability of the innovation system in the area of start-ups and corporate growth. An area which, however, shows the biggest weaknesses of the innovation system. In recent years there has also been significant growth at what are now called *unicorns* and *soonicorns* (so companies that are assumed to have the potential to be *unicorns*). Nevertheless, scaling is still lower than that socially necessary and with regard to the potential impact of recently founded technology companies on the *twin transition* it is also below the required level. Not least of all the greater availability of risk capital in other countries results in companies emigrating in the scaling phase, closer to their investors, for example, or to more suitable locations due to other *pull* factors. As such migrations are not exclusively to the USA and into Silicon Valley, for example, but rather in part to other EU countries as well, it must be assumed that despite the well-developed state funding and the availability of state risk capital, there are negative factors in Austria, which either prevent or impede scaling or favour emigration, which to date have not been sufficiently considered in the RTI and economic policy.

With the assistance of four experts (Sylvia Schwaag Serger, Chairperson of the AC; Petra Dobrocka, co-founder and COO of byrd; Isabella Hermann-Schön, member of the EIC Jury and Managing Partner at Round2Capital; Werner Wutscher, member of the Start-up Council and Investor), who, with up close and personal experience or their very own experience are familiar with the conditions both in Austria and internationally, the Austrian Council's event once again got down to the brass tacks of the issue.

Moderated by Jakob Steinschaden (founder and CEO of TrendingTopics), the following questions were discussed:

How do scalings happen in Austria? What instruments can support scale-ups? Which factors that identify a start-up can a scaling include? Which factors in Austria favour a scaling and which hinder it? Do domestic start-ups/scale-ups therefore also have disadvantages in international competition for investments? How will the current multi-crises impact on the scale-up landscape in Europe?

During the event the experts once again and unanimously emphasised the enormous importance of scale-ups for the business location and the tasks of the body politic to create

framework conditions, to regularly produce successful scale-ups. Key here increasingly are the appropriate attitudes and activities of major research institutions, such as the universities, for example, but also non-university research as well.

Also emphasised once again were the recommendations and requirements of the AC and other stakeholders of the RTI system to optimise the current situation, by creating the possibility of attractive employee participation via tax breaks for investors, for example, right through to increased entrepreneurial education already in the school stage.

Technology Sovereignty Forum

25 NOV. 2022

The kick-off event of the Technology Sovereignty Forum with the special quantum information technologies topic was held in Vienna on 25 November 2022. On the basis of current especially intensive discussions on the issue of how sovereign a state (or a federation of states) must and can be with regard to these technologies, the AC had already chosen the issue of technological sovereignty as the focus point of its work programme. The sovereign (not autonomous or even self-sufficient) development and application, without one-sided structural dependence on other economic areas, of those technologies that Austria and the EU define for themselves as critical for prosperity and welfare, competitiveness and state capacity for action, are front and centre here.

The forum's task is to have a continuous discussion with Austrian stakeholders and to develop perspectives together. This is important to create the necessary conditions (framework conditions and competencies) and to enter into scientific-technological partnerships on an equal basis in Europe and worldwide. Austria will then position itself better on the basis of these shared perspectives with its strengths and specialisations as an innovation and business location and make its contribution to European efforts to achieve technological sovereignty. The goal of the Technology Sovereignty Forum initiated by the AC is to formulate, bundle and bring Austrian interests into the European debate. Discussions are held result-open for this and the participating stakeholders are instructed to set their own goals and topic priorities.

To have the discussion as practice-related as possible and to come up with initial ideas for measures etc., during the first Technology Sovereignty Forum the discussion was about the quantum information technologies use case. With increasing technology maturity, these become increasingly more important for the implementation of higher-performance and more resilient digital infrastructures. Well-funded public programmes currently promote the integration of these future key technologies in information networks and high performance data centres. Innovations in the areas of quantum communication and quantum computing within this development represent a paradigm change compared with estab-

lished technologies. Austrian stakeholders are important players in setting up appropriate ecosystems and coordinate European and cross-border lighthouse projects.

Following two keynotes by Jakob Edler (member of the AC and Director of the Fraunhofer ISI) and Andreas Tünnermann (Professor at Friedrich-Schiller University Jena and Director of the Fraunhofer IOF), in work groups the participants discussed key issues together, such as: What are the strengths, weaknesses, opportunities and challenges of the Austrian RTI system in quantum information technologies? Which strategic derivations are possible and beneficial from the combination of strengths/weaknesses in view of the opportunities and challenges identified? Which policy areas/areas of action are relevant for achieving technological sovereignty? Which instruments are therefore both especially effective and complex in implementation? Where is urgency recommended on the basis of these discussions? Where are *quick wins* possible and where are the recommendations now already implementable at policy area level etc.?

The discussion illustrated, among other things, that quick wins are in particular seen in the area of qualified immigration. Companies with corresponding development activities and potential (growth potential) in some cases continue to fail with the current regulations when hiring specialists. Parallel here a further aspect in the human resources topical area was also discussed – the training opportunities available in Austria and the speed (or better still the lack of speed) with their restructuring and modernisation, in the direction of quantum technology-relevant competencies included.

Linked with greater expense, but at least very well anchored as an RTI policy topic, and at the same time extremely effective, is the topic of demand-oriented measures, that is, public procurement and (included therein) the public sector as *lead user*. Resources would also now have to flow into the development of market ideas and the analysis of higher-potential, more resilient value creation chains and their structure.

The networking, the “bridge-building”, between research and industrial application was identified as promising for the research organisations and businesses in the area of quantum technologies and at the same time also as a very effective tool. In particular because of the still not definitively defined application cases, intermediary organisations and measures must now be strengthened (and not only in the context of cooperative research projects), to promote long-term collaborations, while mapping activities to network available competencies must also be intensified (now and for the medium-term).

The mapping point and inclusion of businesses’ intervention requirements will then also be the subject matter of the second Technology Sovereignty Forum in the second quarter of 2023.

III

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Speaker for RTI mission orientation, Foresight, robotics and artificial intelligence, STEM education

~~At the end of 2021, with Dr. Johannes Gadner and Margarete Rohrhofer, two long-standing and deserving colleagues, have left the office. We wish both of them all the best for the future.~~

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