

Zweiter deutscher Staatenbericht (2025) zur UNESCO-Empfehlung von 2017 zu

Wissenschaft und wissenschaftlich Forschenden

2017 haben sich die damals 195 Mitgliedsstaaten der UNESCO auf weitgehende politische Leitlinien und Grundsätze für Wissenschaftssysteme und die Stellung der wissenschaftlich Forschenden geeinigt: Die UNESCO-Empfehlung zu Wissenschaft und wissenschaftlich Forschenden ist eine Neufassung eines früheren, 1974 verabschiedeten Völkerrechtstextes, der nach 40 Jahren aufgrund neuer Entwicklungen großen Überarbeitungsbedarf aufwies.

Die erneuerte UNESCO-Empfehlung benennt eine Reihe von staatlichen Aufgaben: z. B. zur Gewährleistung der wissenschaftlichen Freiheit, zur Sicherstellung der öffentlichen Beteiligung an der Wissenschaft, zur Unterstützung des „Menschenrechts auf Wissenschaft“, zur Schaffung gerechter und nachhaltiger Arbeitsplätze und -abläufe sowie zur gesellschaftlichen Verantwortung von Wissenschaft und wissenschaftlich Forschenden. Da Wissenschaft als System in hohem Maße national geprägt ist, wissenschaftliches Wissen aber ein globales Gut ist, unterstützt die Empfehlung die Wissenschaft bei ihrer Arbeit, die Menschheit in die Lage zu versetzen, sich und ihre Umwelt besser zu beobachten, zu verstehen und Lösungen für die Bewältigung von Herausforderungen zu entwickeln.

Alle Staaten der Welt können und sollen die Empfehlung nutzen, dazu auch unmittelbar Hochschulen sowie außeruniversitäre und weitere Forschungseinrichtungen. Am besten überführen sie dazu die Vorgaben der Empfehlung in rechtliche Normen oder politische Strategien auf nationaler bzw. institutioneller Ebene. In Deutschland ist dazu neben der Bundes- auch die Landesebene eingeladen. Anders als eine Konvention muss eine UNESCO-Empfehlung nicht direkt in nationales Recht der Mitgliedsstaaten umgesetzt werden, allerdings müssen die Regierungen regelmäßig in Form von Staatenberichten über den Stand der Umsetzung berichten. Dies ist für die UNESCO-Empfehlung zu Wissenschaft und wissenschaftlich Forschenden zum ersten Mal im Jahr 2021 erfolgt.

Für den vorliegenden zweiten Staatenbericht, der Ende März 2025 eingereicht wurde, hat die UNESCO einen Fragebogen entwickelt, der sich nach den zehn *key areas* der Empfehlung gliedert. Bei der Beantwortung dieses Fragebogens haben sich Bund und Länder abgestimmt und dabei auch die zehn Mitglieder der Allianz der Wissenschaftsorganisationen sowie den Stifterverband und die Volkswagenstiftung zu Beiträgen eingeladen. Die Deutsche UNESCO-Kommission hat den Prozess koordinierend unterstützt. Die Antworten auf diesen Fragebogen werden in der Folge unwesentlich redaktionell angepasst und graphisch aufbereitet vorgestellt. Der Bericht ist zur Einreichung bei der UNESCO in englischer Sprache verfasst.

KEY AREA 1. SCIENCE FOR SUSTAINABLE DEVELOPMENT

1. Are there any policy instruments in the Member State to promote peace building through research, development and innovation activities?

a) Are there any legal¹ policy instruments on this topic?

Yes. Since long, Germany has supported programmes and instruments to promote peace efforts through science (for peace research, cp. next question). To name some very few and intentionally diverse examples:

- The German Platform for Civil Conflict Transformation (Plattform Zivile Konfliktbearbeitung, <https://pzkb.de/>)
- Transboundary water management in Central Asia (Grenzüberschreitendes Wassermanagement in Zentralasien), a water management and water diplomacy project (2009-2019) funded by the Federal Foreign Office of Germany: www.giz.de/en/worldwide/15176.html
- The Synchrotron-Light for Experimental Science and Applications in the Middle East (SESAME) laboratory, established under the auspices of UNESCO in the Middle East (Jordan), aims at consolidating scientific excellence in the region and at building cross-border collaboration, dialogue and thus peace in the region: www.sesame.org.jo/
- The “Instituto Colombo-Alemán para la Paz” (www.instituto.capaz.org/en/): To tackle global challenges together, the DAAD has been supporting the establishment of eight Global Centres since May 2021: four each for Climate & Environment and Health & Pandemic Preparedness.

b) Are there any operational policy instruments on this topic?

Yes. There is a whole range of publicly funded institutions that are conducting peace-oriented research. To name a few:

The Institute for Interdisciplinary Research on Conflict and Violence (IKG) at the University of Bielefeld, the Institute for International Law of Peace and Humanitarian Law (IFHV) at the University of Bochum, the Institute for Development and Peace (INEF) at the University of Duisburg-Essen, the Berlin Center for Interdisciplinary Peace and Conflict at the FU Berlin, as well as non-university research institutes such as the Peace Research Institute Frankfurt (www.prif.org/en/), the Institute for Peace Research and Security Policy at the University of Hamburg (IFSH) and the Bonn International Center for Conversion (BICC). Apart from these, there are many other institutions that conduct or fund research on international relations, development, and policy in general that do conduct research on peace-related issues.

As regards funding of programmes directed towards education in peace studies, the German Association for Peace and Conflict Studies lists 9 master's degree study programmes at German public universities: <https://afk-web.de/cms/masterstudiengaenge-im-bereich-friedens-und-konfliktforschung-im-deutschsprachigen-raum/>

¹ Almost every policy-related question in this questionnaire is divided into ‘legal policy instruments’ and ‘operational policy instruments’. While the former term refers to laws and regulations, the latter refers to the set of policy measures, programmes and bodies that are intended to implement the respective policy objective (*editor's note*).

2. Are there any policy instruments focused on environmental regulations that explicitly cover research, development and innovation activities in the Member State?

a) Are there any legal policy instruments on this topic?

Yes. A list of some key environmental legal regulations at the national level that explicitly cover research, development and innovation:

- Federal Nature Conservation Act (BNatSchG)
- Federal Water Act (WHG)
- Circular Economy Act (KrWG)
- Federal Soil Protection Act (BBodSchG)
- Environmental Impact Assessment Act (UVPG)
- Federal Forest Act (BWaldG)
- Animal Welfare Act (TierSchG)
- Federal Climate Protection Act (KSG)
- Renewable Energy Act (EEG)
- Environmental Innovation Program (UIP)

Germany is a federal state in which the 16 *Länder* have key mandates in environmental policies. At state level, there are various more acts and regulations. There are also many more pertinent laws and regulations at EU, Council of Europe and UN level that Germany has ratified which cannot be all listed here.

b) Are there any operational policy instruments on this topic?

Yes. Germany has a long tradition of evidence-based, successful environmental policy-making that has effectively reduced health risks for the population and pressures on the environment. These cover all areas proposed by the Questionnaire's "Helper Text", such as recycling programmes, waste sorting and collection initiatives, pollution control measures, environmental impact assessments (EIAs), emission trading schemes, and monitoring and enforcement mechanisms. It is impossible to list these hundreds or thousands of operational policy instruments.

3. Are there any policy instruments focused on developing and regulating green technologies in the Member State?

a) Are there any legal policy instruments on this topic?

Yes. Germany has a long tradition of evidence-based, successful policy-making on developing green technologies. It is globally recognized that the German "Erneuerbare-Energien-Gesetz" (EEG Renewable Energy Sources Act) of the year 2000 was a key factor of significantly improving the efficiency and reducing the cost of wind and solar energies all throughout the 2000s, with strong effects at the global level.

Similar examples could be provided across several green technologies. As concerns more recent legal instruments, we provide two examples:

- Bundes-Klimaschutzgesetz / Federal Climate Change Mitigation Act (revision 2024):
<https://www.recht.bund.de/bgbl/1/2024/235/VO.html>
- Klimaschutzprogramm 2030 / Climate change mitigation programme 2030:
<https://www.bundesfinanzministerium.de/Content/DE/Downloads/Schlaglichter/Nach>

[haltigkeitsstrategie/klimaschutzprogramm-2030-der-bundesregierung-zur-umsetzung-des-klimaschutzplans-2050.pdf](#)

b) Are there any operational policy instruments on this topic?

Yes. As there exist dozens of such funds and programmes, below we present some selected examples.

The “Future Strategy on Research and Innovation” (previously “High Tech Strategy”, compare in detail in subsequent questions) is geared towards human welfare and “Grand Challenges” such as Health, Sustainability, Climate Change, Energy, Mobility, Urban/rural connections, Security, Future of Work.

Concerning scientific and technological research into climate and land use change and its impacts on water resources, the most important instrument is the FONA Strategy of the BMBF – funding line for ‘Research for Sustainability (FONA)’, established in 2005, which in its new strategy addresses the 17 Sustainable Development Goals (SDGs) of the 2030 Agenda: www.fona.de/en/fona-strategy/index_en.php

The National Hydrogen Strategy includes among other things concrete measures for research, development and regulation of green and low-carbon hydrogen. The overarching goal is a rapid ramp-up of the hydrogen economy. Part of this strategy are the BMBF's hydrogen flagship projects, which aim to remove the technological hurdles for a hydrogen ramp-up on the research side.

With regards to investments in technological improvement and practical roll-out of initiatives for energy efficiency and renewable energy in Germany, the KfW (Kreditanstalt für Wiederaufbau), the main German development bank and one of the leading development banks in the world, is the major financial instrument, in particular as concerns enhancing energy efficiency in areas such as housing / building management and mobility. In 2023, KfW provided funds totaling EUR 111.3 billion, of which 33% was used for climate change mitigation and environmental protection. Its financing is aligned with the United Nations’ Agenda 2030 and contribute to the achievement of the 17 Sustainable Development Goals (SDGs): www.kfw.de/About-KfW/

The Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV) offers a wide range of funding programmes aimed at reducing negative environmental impacts on the basis of various funding programmes. The following programmes are typical examples:

- Marine protection: Funding programme against marine waste (international)
- Economy Export Initiative for Environmental Protection (EXI) – Economy: ‘Sustainability as a competitive advantage’ (international)
- Nature conservation: Natural climate protection measures in companies (domestic | by KfW)
- Promotion of AI lighthouses for the environment, climate, nature and resources (domestic)
- Climate change adaptation: Promotion of measures to adapt to the consequences of climate change (domestic)
- Nature conservation: Natural climate protection in rural communities (domestic)

The “National Strategy for Social Innovation and Social Enterprises” (2023) aims to support businesses that are oriented towards the common good, e.g. by improving access to financial support, investing in the expansion of the ecosystem and improving the legal framework. The programme ‘Nachhaltig wirken - Förderung Gemeinwohlorientierter Unternehmen’ (Sustainable impact - promoting companies for the common good), set up by the Federal Ministry for Economic Affairs and Climate Protection (BMWK), contributes to this by making funds available totalling some 110 million euros (2024 – 2028).

The “Science Platform Sustainability 2030”, established in 2017, improves the interaction of STI with Sustainability Policy Making. The same applies to the work of advisory bodies such as the “Advisory Council on Global Change” (WBGU), the German Sustainability Council and the “Science Platform for Climate Protection” (WPKS).

KEY AREA 2. NEED FOR SCIENCE TO MEANINGFULLY INTERACT WITH SOCIETY AND VICE VERSA

4. Are there any policy instruments to strengthen the social appropriation of scientific knowledge in the Member State?

a) Are there any legal policy instruments on this topic?

No. This is not applicable due to scientific freedom.

b) Are there any operational policy instruments on this topic?

Yes. As concerns Citizen Science, the networking platform www.mitforschen.org (earlier: www.buergerschaffenwissen.de) is the central national platform for Citizen Science in Germany. The platform presents, connects and supports citizen science projects since 2014 and is funded by the BMBF.

Since the year 2000, the BMBF has funded the initiative “Science in Dialogue” (“Wissenschaft im Dialog”, WiD, <https://wissenschaft-im-dialog.de/>) as the most important nationwide structure to foster science communication. WiD offers the annual national forum on science communication. There is also NaWiK (<https://nawik.de/>), the national institute on science communication, and the national association of higher education communication (<https://www.bundesverband-hochschulkommunikation.de/>). All three partners provide together the platform www.wissenschaftskommunikation.de and together or individually they offer several additional nationwide formats such as training, newsletters, etc. All formats receive funding by the BMBF.

See also: White Paper Citizen Science Strategy 2030 for Germany; consortium of several hundred representatives of German science; 2022; English version: <http://zenodo.org/record/7117771>

The “Citizens’ Assembly on Research” in 2022 presented 25 recommendations and five guiding principles on how make future participation processes even more attractive and citizen-friendly. The results fed into BMBF’s Strategy for Participation in Research (2023) that aims to improve the conditions for public participation in research and research policy.

Science communication is supported by many science funding organisations; examples include DFG's Communicator Award, the Gerda Henkel Foundation's science portal L.I.S.A. or the Volkswagen Stiftung's funding of four large science communication research centres.

5. Are there any policy instruments focused on regulating and promoting the development of socially inclusive technologies in the Member State?

a) Are there any legal policy instruments on this topic?

Yes. In Germany inclusion of everyone regardless of their talents or restrictions is a joint endeavour of government and society. It is a widely shared consensus that technologies can assist inclusion. Obviously, the field is very wide, and inclusion of people with different socio-economic backgrounds requires different approaches than those due to age or disability.

In Germany, promoting "Barrierefreiheit" (removing barriers to digital resources according to well-defined standards) is well advanced. The implementation of IT accessibility is regulated by several specifications and guidelines. These intend to ensure that the content and functions of digital services are barrier-free, i.e. can be used and accessed without restriction. Public authorities at federal, state and local level are legally obliged to implement IT accessibility. For the federal administration, these laws and guidelines essentially include

- Disability Equality Act (Behindertengleichstellungsgesetz – BGG)
- Barrier-free Information Technology Ordinance (Barrierefreie Informationstechnik-Verordnung – BITV 2.0)
- European Standard EN 301 549
- Web Content Accessibility Guidelines (WCAG 2.1)
- PDF/UA Standard.

b) Are there any operational policy instruments on this topic?

Yes. The 'Together through Innovation' research programme addresses pressing social challenges that interactive technologies can make an important contribution to overcoming. With a duration of five years (2021 - 2025), the research programme, funded by the BMBF (around 70 million euros p.a.) is embedded in the Future Research and Innovation Strategy. One of the core objectives of the programme is to promote the research and development of user-centric healthcare technologies and social innovations that enable participation for disadvantaged groups. Projects funded under this programme are required to clarify any ethical, legal and social implications from the outset.

As part of its AI strategy, the German Federal Government is committed to the human-centred development and use of AI applications and provides support for the introduction and use of this technology. This is because technological solutions, especially those based on AI, can only be developed, implemented and used on a broad basis to tackle challenges in society and the world of work, if (civil) society actors and citizens are enabled to exploit the enormous potential of AI solutions on an equal footing with companies and administrations.

In this context, for example, the cross-departmental initiative "Civic Coding - Innovation Network AI for the Common Good" (BMAS, BMUV and BMFSFJ) and the Civic Innovation Platform (CIP) offer funding opportunities and support services. Both projects are already making an important and sustainable contribution to social technology design and address inclusion and participation as key crosscutting issues.

KEY AREA 3. ROLE OF SCIENCE IN NATIONAL POLICY AND DECISION-MAKING, INTERNATIONAL COOPERATION AND DEVELOPMENT

3.1. Scientists Advise Government

6. Are there any policy instruments to promote the use of scientific knowledge to inform national policy and decision making in the Member State?

a) Are there any legal policy instruments on this topic?

Yes. According to the Joint Rules of Procedure of the federal ministries (Gemeinsame Geschäftsordnung – GGO), every legislative draft for the Bundestag must contain a statement of reasons (Section 42 (1) GGO); Section 43 GGO lists the content requirements in detail.

Part of the process of the legislative proposal on federal as well as on *Länder* level is usually a hearing of experts/specialists who present expert assessments on the necessity and potential effects of the proposed legislation.

In the field of occupational safety and health there are different committees giving advice to national policy. The Committee on Biological Agents (ABAS), the Committee on Hazardous Substances (AGS) and the Senate Commission for the Investigation of Health Hazards of Chemical Compounds in the Work Area, the so-called MAK Commission of the DFG, provides scientific advice to the federal government or those of the *Länder*, parliaments and authorities on health protection issues in connection with exposure to hazardous biological agents or substances at the workplace.

b) Are there any operational policy instruments on this topic?

Yes. There are plenty of scientific services and advisory boards that inform policy making in Germany. To name some few examples:

- Scientific Services of the Bundestag
- Technology Assessment Office of the German Parliament (Büro für Technikfolgenabschätzung, compare question 26)
- The German Science and Humanities Council for Science and Higher Education
- Departmental research institutes (“Ressortforschungseinrichtungen”) of the federal government
- DAAD Centre for International Academic Cooperation (KIWi, see also question 24)
- Several research institutes, such as those in the Leibniz Association, explicitly include policy advice as part of their mission
- German National Academy of Sciences Leopoldina and other National Academies of Sciences
- Expert Councils such as the Ethics Council, German Advisory Council on Global Change, German Council for Sustainable Development (compare question 3 as well)
- Commission of Experts for Research and Innovation (EFI)
- Policy advice by Scientific Organisations such as the DFG, Max Planck Society, German Academic Exchange Service (DAAD) etc.

- Political Foundations do develop the basis for political decision-making by promoting science, political research and conducting transfer of knowledge between science, politics, the state and business
- Round Tables between state departments and (federal) offices with participation of experts
- Statistical Services
- Publicly funded private non-university / non-academic research institutions
- There are also many initiatives to scientifically advise policymakers led by individual scientists themselves. For instance, with the support of the German Research Foundation, scientists have implemented several so-called 'scientific commissions' which monitor and influence policymaking in areas such as food safety; health hazards of chemical compounds in the work area; the transformation of agricultural and food systems; or animal research.

3.2. Participation in the International Science and Technology Community – Science Diplomacy

7. Are there any policy instruments establishing regulations on the transfer of technology at national and international level in the Member State?

a) Are there any legal policy instruments on this topic?

Yes. Due to the regulatory competences of the federal *Länder* and the extensive autonomy of the universities, explicit federal regulations on technology transfer are limited to the Higher Education Framework Act.

Technology transfer is regularly based on a corresponding agreement (cf. Guidelines on the application of Article 101 of the Treaty on the Functioning of the European Union to technology transfer agreements: [https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52014XC0328\(01\)](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52014XC0328(01)))

At European level, the Technology Transfer Block Exemption Regulation (TTBER) sets out key rules for technology transfer activities: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014R0316&qid=1738101217727>

In the case of technology that can be used to manufacture weapons and armaments, the export/ transfer of technology requires authorisation from the Federal Office of Economics and Export Control (BAFA): https://www.bafa.de/SharedDocs/Downloads/DE/Aussenwirtschaft/afk_merkblatt_exportkontrolle_bafa.html

b) Are there any operational policy instruments on this topic?

Yes. With regard to regulatory bodies and agencies that oversee and facilitate the process of technology transfer, those with a more national focus, i.e. dealing with technology transfer within or from Germany, need to be distinguished from agencies that promote the transfer of technology in a more international setting.

With national focus, the following bodies are of relevance:

- The Federal Office of Economics and Export Control (BAFA, see above)
- The Federal Funding Advisory Service on Research and Innovation

- The Federal Agency for Disruptive Innovation, or SPRIND, which is an institution founded by the Federal Ministry of Education and Research (BMBF) and the Federal Ministry for Economic Affairs and Climate Action (BMWK) to accelerate the search for visionary ideas, their development and market launch.

On an international level, the GIZ (Deutsche Gesellschaft für Internationale Zusammenarbeit) promotes the transfer of technologies that contribute to a sustainable development worldwide.

As stated above, the German development bank KfW also funds the use of (digital) technology internationally in order to support the transformation in line with the United Nations' Sustainable Development Goals.

The "Senior Expert Service" has been supporting the transfer of know-how in development cooperation since 1983, amounting to more than 37,000 voluntary senior expert assignments in 170 different countries: https://new.ses-bonn.de/fileadmin/user_upload/Redakteure/Materialien/Flyer_AG/Flyer-E_Nutzen_Sie_Unser_Expertenwissen.pdf

8. Are there any policy instruments in the Member State to strengthen regional and international cooperation and networking for the promotion of science, technology and innovation (STI) activities?

a) Are there any legal policy instruments on this topic?

Yes. The Germany Federal Ministry for Research and Education has adopted its "Internationalization Strategy" for German sciences with one chapter on tools for promoting cooperation with the Global South. As stated above, Germany as a EU Member State, is part of the European Research Area (ERA), for which the EU agrees on joint research topics and target parameters for research and innovation. The ERA has two main dimensions:

- The framework (funding) policy to foster research and innovation: Since 1984, the EU Framework Programme for Research and Innovation (currently Horizon Europe 2021-2027) currently has a budget of 95.5 billion euro running for a period of seven years. Horizon Europe is the largest research funding programme in the world.
- The EU's research policy strives to foster coherence between national research and science systems, in order to achieve common goals by fostering strategical and political cooperation in research policy issues within the ERA.

Bilaterally with other countries, the main instrument are the Science & Technology Cooperation (WTZ) Agreements. Joint bilateral or multilateral research projects - predominantly application-oriented, scientific and technological projects - of mutual interest are promoted on the basis of these WTZ agreements. A list of all current WTZ agreements can be found here (German only): www.kooperation-international.de/dokumente/abkommen-und-erklarungen/detail/info/verzeichnis-der-abkommen-zur-wissenschaftlich-technologischen-zusammenarbeit-wtz-abkommen/

The German Research Foundation DFG allows and supports international cooperation in nearly all of its funding programmes. Typically, the international part of a project is not funded by the DFG, but exceptions are possible. For joint funding of international projects, DFG has MoUs with about 60 partner organisations around the world: <https://www.dfg.de/en/research-funding/funding-opportunities/funding>

b) Are there any operational policy instruments on this topic?

Yes. There are dozens/hundreds of specific policy instruments already in existence and more are under development in Germany. Since it is not suitable to list them all, the following short selection focuses on some of the most important instruments:

All scientific organisations in Germany are highly active in regional and international research cooperation and in networking for the promotion of science, technology and innovation. One example is the DFG that, in order to connect and advance excellent research in Germany at the global level, is active at various international levels: It promotes international cooperation in all of its funding programmes, it maintains relationships with a large number of foreign partner organisations, etc. As a politically independent funding organisation, the DFG also plays a strategic role in international research policy. It is institutionally represented in various scientific and science policy organisations and committees at European and global level.

With their programmes for researchers, the German Academic Exchange Service (DAAD) and the Alexander von Humboldt Foundation (AvH) fund international research mobility and create and maintain strong international research networks and thus contribute in a specific way to international research collaboration. This includes programmes in development cooperation funded by the German Ministry for Economic Cooperation and Development (BMZ), such as the AvH Georg Forster Programme, which permits scientists from developing and emerging countries to conduct SDG-relevant research in Germany.

Furthermore, the DAAD has a worldwide science diplomacy network of more than 50 regional offices with which it represents German universities across the globe. It supports Germany's foreign policy by funding academic exchange and networking, advises decision-makers in academia, science and politics, and conveys German perspectives within international dialogues (https://static.daad.de/media/daad_de/der-daad/wer-wir-sind/daad_strategy2030.pdf).

As the National Agency for EU Higher Education Cooperation, the DAAD implements projects on behalf of the European Union with European and international partners. Together with its European partners, it contributes to shaping the European education and research area and strengthens European perspectives in international academic cooperation. In this way, it also contributes to the European Union's integration and foreign policy.

As Germany's National Academy of Sciences, the Leopoldina represents German science in the international academy dialogue. Through bi- and multilateral as well as regional and global partnerships, the Leopoldina fosters scientific exchange and contributes to independent policy advice on key global issues. Internationalism is central to the Leopoldina's structure: a quarter of its 1,700 members come from over 30 countries.

The German Commission for UNESCO in 2024 has adopted and published a position paper "Equitable Scientific Cooperation Worldwide" with recommendations to the German science system on how to make cooperation with the Global South more equitable.

In addition, the European Research Area and its HORIZON framework have dozens of operational policy instruments (see question 8.a).

KEY AREA 4. PROMOTION OF SCIENCE AS A COMMON GOOD

9. Are there any policy instruments at the national level focused on promoting and encouraging open science?

a) Are there any legal policy instruments on this topic?

Yes, there are.

- The “Zukunftsstrategie” or “Future Research and Innovation Strategy”; Federal Ministry for Education and Research (BMBF); developed in cooperation with advisory bodies of the ministry such as the Experts’ Commission EFI, the Hightech Forum, the Innovation Dialogue and the OECD Review of Innovation Policy Germany; predecessor: Hightech Strategy in 2006, 2010, 2014 and 2018; 2023; English version of the Executive Summary:
http://www.bmbf.de/SharedDocs/Publikationen/DE/FS/747580_Zukunftsstrategie_Forschung_und_Innovation_en.pdf
- Open Data Strategy; German Federal government; 2023; covers specifically also research data; English version:
<https://bmdv.bund.de/SharedDocs/DE/Anlage/K/driving-progress-with-data.pdf>
- Open Access in Germany, Joint Guidelines; Federal Government and the *Länder*; 2023; English version:
http://www.bmbf.de/SharedDocs/Publikationen/DE/FS/772970_Open_Access_in_Deutschland_en.pdf
- Open Access Strategy; German Ministry for Education and Research; 2016;
https://www.bmbf.de/SharedDocs/Publikationen/DE/1/24102_Open_Access_in_Deutschland.pdf
- National Strategy on Open Educational Resources; Federal Ministry for Education and Research (BMBF); 2023; German version (translation currently not available):
www.bmbf.de/SharedDocs/Publikationen/DE/3/691288_OER-Strategie.pdf
- Health Data Utilisation Act – Gesundheitsdatennutzungsgesetz (GDNG)
- The adoption of a Research Data Law at national level is currently subject to the inter-ministerial consultation.

b) Are there any operational policy instruments on this topic?

Yes. It has to be highlighted that the STI policies of the European Union and its associated instruments, entities and funding programmes, in particular Horizon Europe and the European Research Council, are very important for the German STI system. The European Open Science Cloud (EOSC) with its recently (October 2024) launched service platform EOSC EU Node will likely be the most important Open Science platform in Europe, and therefore for Germany.

There are hundreds specific open science policy instruments already in existence and more are under development in Germany. Since it is not suitable to list them all, the following short selection focuses on some of the most important instruments:

- The German Ministry for Education and Science (BMBF) has added an open access clause to governmental funding practice rules that makes open access and FAIR data

a precondition of project funding. Additional funding programmes target the transition towards an open access culture in German science.

- The National Research Data Infrastructure (Nationale Forschungsdateninfrastruktur, NFDI) has been founded in 2019, upon initiative of the Council for Information Infrastructures (RfII). The goal of NFDI is to establish a nation-wide, decentral and ever-growing network of infrastructure and services for research data management according to agreed standards and the FAIR principles. One key goal is to foster the re-use of research data in and across all disciplines. NFDI has been established as a private-law organization and has currently more than 300 members. 27 NFDI consortia in different scientific disciplines are funded (with up to 90 million Euro per year until 2028) by the national and the state governments. The NFDI is considered as the main German (in-kind) contribution to the European Open Science Cloud (EOSC).
- GO FAIR is an international initiative with focus on Europe that has been jointly created by France, Germany and the Netherlands, with a shared funding of all three governments and a shared coordination office by the three countries. GO FAIR has as key purpose to promote the FAIR principles in the context of the EOSC.
- The German Research Foundation's (Deutsche Forschungsgemeinschaft - DFG) funding programme 'Open Access Publication Funding' is of great significance to promote Open Science. The Programme grants a fixed allowance for the publication of research results via Open Access to research institutions (not individuals). In 2024, grants worth more than 38 million Euro have been awarded (funding rate of 93%).
- To foster equity along the lines of the UNESCO recommendations, Diamond Open Access and publicly funded infrastructures for Open Access are supported by the DFG as well, e.g. the National Service Center for Diamond Open Access: www.dfg.de/en/news/news-topics/announcements-proposals/2025/ifr-25-07:https://diamond-open-access.de/en/sedoa/.
- Further DFG funding programmes target establishing and developing infrastructures for research data management and – since 2024 – for research software also.

10. Are there any policy instruments in the Member State focused on regulating indigenous knowledge systems, specifically ensuring the right of traditional, indigenous, local, and other knowledge sources to be properly credited and acknowledged, and to benefit from their contributions to STI (including the sharing of associated intellectual property and community benefits)?

a) Are there any legal policy instruments on this topic?

Yes. While there are no policy instruments at the national level, Germany has ratified 91 international treaties (compare WIPO database) that are relevant for IPR protection.

An important text for the regulation of indigenous knowledge systems and the acknowledgement of traditional, indigenous, local and other sources of knowledge and for ensuring that these sources benefit appropriately from the sharing of this knowledge, exists in the context of the Convention of Biological Diversity (CBD): the (EU) No 511/2014 as well as the Nagoya Protocol and the Global Biodiversity Framework (GBF) Target 13 as well as the decision 16/2 on Digital Sequence Information (DSI) on Genetic Resources under the CBD, as Germany is a party to the CBD and the Nagoya Protocol. The National Biodiversity Strategy 2030 (nationale Strategie zur Biologischen Vielfalt 2030, NBS) addresses the implementation of Target 13 and of the multilateral benefit-sharing mechanism established in Decision 16/2.

The WIPO Treaty on Intellectual Property, Genetic Resources, and Associated Traditional Knowledge adopted in May 2024 is under consideration.

b) Are there any operational policy instruments on this topic?

Yes. In German development cooperation, vulnerable groups including indigenous populations receive particular attention. This includes the BMZ-funded Georg Forster Programme with the AvH, which is sensitive to respective applications and research topics, in alignment with SDG 10.

KEY AREA 5. DIVERSITY, NON-DISCRIMINATION AND EQUALITY IN SCIENCE EDUCATION AND EMPLOYMENT

5.1. Non-Discrimination and Diversity

11. Are there any policy instruments in the Member state to ensure that, without discrimination on the basis of race, colour, descent, native language, religion, political or other opinion, national origin, ethnic origin, social origin, economic or social condition of birth, all individuals enjoy equal opportunities for the initial education and training needed to qualify for research and development careers?

a) Are there any legal policy instruments on this topic?

Yes. There are no legal policy instruments specific for the initial education and training needed to qualify for R&D careers; however, more generally, Article 12 the German Basic Law protects the right to freely choose an occupation or profession, place of work and place of training: www.gesetze-im-internet.de/englisch_gg/englisch_gg.html#p0065.

Furthermore, the General Act on Equal Treatment (Allgemeines Gleichbehandlungs-Gesetz - AGG) forbids discrimination on the grounds of race or ethnic origin, gender, religion or belief, disability, age or sexual orientation in relation to vocational guidance and training (§§ 1, 2 sec. 1 no. 3 AGG): www.gesetze-im-internet.de/englisch_agg/index.html

b) Are there any operational policy instruments on this topic?

Yes. The aim of the "Startchancen" programme for a better educational start in life is to decouple academic achievement from social background, and ensure greater equality of opportunity. Particular support is to be given to around 4,000 schools and vocational schools which are attended by a high proportion of socially disadvantaged students: www.bmbf.de/EN/Education/School/StartchancenProgramme/startchancenprogramme_node.html.

The 'Arbeiterkind' (Child of a worker) initiative is privately organised, and thus not a state policy instrument, but it is funded by the BMBF and nine state / *Länder* ministries for science. The programme encourages pupils from families without an academic background to be the first in their family to study. www.arbeiterkind.de/.

The Federal Ministry of Education and Research (BMBF) has funded the Diversity at German Universities initiative of the German Rectors' Conference (HRK) from 2022 to 2024:

www.hrk.de/fileadmin/redaktion/hrk/02-Dokumente/02-06-Hochschulsystem/Diversitaet/Abschlusspublikation_Vielfalt_2024.pdf (German only).

Germany, through the BMZ, is actively involved in ensuring opportunities for the initial education and training needed to qualify for research and development careers in developing and emerging economies. For instance, the AvH Georg Forster programme supports post-doctoral early-career researchers from disadvantaged backgrounds in particular. The In-Country/In-Region scholarship programme implemented by the DAAD supports the training of future professionals and managerial staff in developing countries, in particular university teachers.

It aims to promote the participation of women and vulnerable groups in particular, and to strengthen the organisational, financial, and personnel capacities of the partner institutions. Support is available for postgraduate programmes and for doctorates.

The DFG states that “no person is to be prevented or excluded from pursuing an academic career because of non-scientific factors” (www.dfg.de/bias/en). For this reason, “evaluation and decision-making processes such as when assessing funding proposals submitted to the DFG must be based solely on scientific criteria. At the same time, unavoidable, exceptional personal circumstances – where they apply – are to be taken into account exclusively to the benefit of the researcher.” Reviewers and decision board members are informed and instructed accordingly (e.g. General Guidelines for Reviews, p. 4f, www.dfg.de/bias/en, www.dfg.de/diversity/en).

12. **Are there any policy instruments in the Member state to ensure that, without discrimination on the basis of race, colour, descent, native language, religion, political or other opinion, national origin, ethnic origin, social origin, economic or social condition of birth, all individuals who qualify for research and development careers enjoy equal access to available employment, education and opportunities for conducting scientific research?**

a) Are there any legal policy instruments on this topic?

Yes. In addition to what is stated in question 11.a), the General Act on Equal Treatment forbids discrimination on the grounds of race or ethnic origin, gender, religion or belief, disability, age or sexual identity in relation to conditions for access to dependent employment and self-employment, including selection criteria and recruitment conditions, whatever the branch of activity.

The DFG’s Code of Conduct “Guidelines for Safeguarding Good Research Practice” sets out the overarching requirements that apply to research work including aspects of inclusion and diversity. Internal implementation of these guidelines in a legally binding manner is the mandatory basis for the DFG’s funding of research institutions.

b) Are there any operational policy instruments on this topic?

Yes. The initiative “Diversity at German Universities” of the German Rectors' Conference (HRK) from 2022 to 2024 supported German universities in achieving diversity targets by promoting individual diversity strategies and concepts and making diversity and its institutional added value visible (see question 11).

With regards to science funding, compliance with the ‘Research-Oriented Standards on Gender Equality and Diversity’ is a decision-relevant criterion when approving funding for

DFG research alliances (www.dfg.de/fogd). The Standards were extended to include the aspect of diversity in 2022, in order to advance the equal participation of all individuals in science and research – including the aspect of intersectionality.

The DAAD adopted a Diversity Agenda in 2022, designed to increase participation of previously underrepresented social groups in international academic exchange (www.daad.de/en/the-daad/intersecting-dimensions-topics/diversity/). The agenda sets a range of goals, including financial support for scholarship holders with special needs or the design of diversity-sensitive funding programmes and application procedures. It also comprises measures to support German higher education institutions in achieving their diversity goals by providing publications as well as space for political and academic discussions regarding the inclusive design of higher education cooperation. As part of its overall strategy, the DAAD is further supporting activities relating to open-mindedness and tolerance at German HEIs.

Germany, through the BMZ, is actively involved in ensuring equal access to employment, education and opportunities for conducting scientific research in developing and emerging economies (also see question 11.b).

5.2 Gender Equality

13. Are there any policy instruments in the Member State specifically focused on regulations and strategies to strengthen gender equality in access to education within the fields of STI?

a) Are there any legal policy instruments on this topic?

Yes. The „Bundesgleichstellungsgesetz - BGleG“, i.e. the Act on Equal Opportunities for Women and Men in the Federal Administration and in the Federal Courts, aims at an equal participation of women and men in all areas of the federal government, including organisations in which the federal government is directly or indirectly involved.

b) Are there any operational policy instruments on this topic?

Yes. There are many initiatives and programmes to support women and girls in STEM education, both on secondary and tertiary level in Germany nationally. There are also many programmes on the state / *Länder* level.

One central programme that has been a very successful public-private-partnership for 25 years is the so-called “Girls’ Day”: Every year technical enterprises, enterprises with technical departments and technical training facilities, universities, and research centres are invited to organise an open day for girls. The vocational choices of girls are influenced in a very positive way. For tens of thousands of companies, Girls’ Day has become an important instrument of their recruitment policy.

Girls’ Day encourages the social environment of girls and young women – i.e. families, school, media and employers – to participate in the campaign and change their attitudes towards vocational orientation. Girls’ Day achieves a uniquely broad effect. It is therefore considered the largest career orientation project for female students ever. Girls’ Day – ‘Future Prospects for Girls’ is funded by the BMBF (Federal Ministry for Education and Research) and BMFSFJ (Federal Ministry for Family Affairs, Senior Citizens, Women and Youth): www.girls-day.de/ueber-den-girls-day/was-ist-der-girls-day2/english

Germany, through the BMZ, is actively involved in ensuring gender equality in access to education within the fields of STI in developing and emerging economies (also see question 11.b). In all its programmes, BMZ aims to bridge the gender gap in particular, including in STI programmes.

14. Are there any policy instruments in the Member State specifically focused on regulations and strategies to strengthen gender equality in access to employment within the fields of STI?

a) Are there any legal policy instruments on this topic?

Yes. The federal and *Länder* governments have concluded an agreement to implement the main features of the Bundesgleichstellungsgesetz in the research institutions jointly funded by the federal and *Länder* governments - the Gender Equality Implementation Agreement (AV-Glei). The framework agreement, which was amended in 2016, is supplemented by individual agreements to be concluded between the funding bodies and the individual scientific organisations and institutions: www.gwk-bonn.de/fileadmin/Redaktion/Dokumente/Papers/AV_Glei.pdf

b) Are there any operational policy instruments on this topic?

Yes. A central policy instrument in this regard is the “Professorinnenprogramm” (female professors programme) of the federal and *Länder* governments. In 2023-2030, the federal and *Länder* governments will provide a total of 320 million euros for the programme: www.gwk-bonn.de/fileadmin/Redaktion/Dokumente/Papers/Verwaltungsvereinbarung_Professorinnenprogramm_2030_2022.pdf

The Bundesgleichstellungsgesetz (cp. above, 14.a) includes also targets for the civil service. For example, all federal authorities and courts will have to commit to setting and reporting on specific targets for increasing the proportion of women at management level.

Within the framework of the “Pact for Research and Innovation”, the agreement on annual increases in funding to the scientific organisations DFG, FhG, HGF, Leibniz Association and MPG, these increases imply the obligation to set concrete and ambitious targets for the recruitment of female junior and senior researchers.

Many joint federal and *Länder* funding programmes, such as the Excellence Strategy and the Programme for the Promotion of Early Career Researchers, require applicants to submit concepts and implementation strategies to improve equal opportunities.

The annual statistical surveys provided by the Joint Science Conference of the Federal *Länder* (GWK) on the proportion of women in science, academia and research provide an important data basis for all gender equality policy consultations. Data on appointments at universities (development statistics), for example, are currently not collected anywhere else in Germany: www.gwk-bonn.de/fileadmin/Redaktion/Dokumente/Papers/Heft_91_Homepage_Stand_07_10_2024.pdf

Beyond ensuring compliance with the ‘Research-Oriented Standards on Gender Equality and Diversity’ in its decision-making (www.dfg.de/resource/blob/175866/31c2a3aca49b1048a4d80c77c232a251/fogd-2022-en-data.pdf), the DFG offers several instruments to strengthen gender equality within its funding programmes, such as providing a Standard Allowance for Gender Equality Measures, a Gender Inclusion Funding for Spokesperson and regulations for family-related absences of project leaders, employed

researchers and in fellowships (including care): www.dfg.de/en/basics-topics/basics-and-principles-of-funding/equal-opportunities/applicants-funding-recipients.

As part of its strategy, the DAAD is placing a special emphasis on gender equality and increasing women's representation in leadership positions. The empowerment of women in particularly relevant social domains in which they are currently underrepresented is being addressed within DAAD's programme design: https://static.daad.de/media/daad_de/der-daad/wer-wir-sind/daad_strategy2030.pdf.

Germany, through the BMZ, is actively involved in ensuring gender equality in access to employment in developing and emerging economies (also see question 11.b). In all its programmes, BMZ aims to bridge the gender gap in particular, including in STI programmes.

Similarly, the Volkswagenstiftung, Germany's largest private, non-profit organization engaged in the promotion and support of academic research, offers the possibility to apply for equal opportunity funds within the regular application process. These funds support measures that serve to compensate for disadvantages at an individual level and/or aim to strengthen diversity in the education and research system in general:

<https://www.volkswagenstiftung.de/en/equal-opportunity-funds>

15. What is the percentage of female researchers in relation to the total number of researchers when measured in headcounts (HC) in the professional domains listed below? | *Data source: UIS*

- Total: 29.4 %
- Business enterprise: 15.6 %
- Government: 38.3 %
- Higher Education: 41.4 %
- Private non-profit: Unknown

(Data source: UIS, 2022 / 2021)

KEY AREA 6. ANY SCIENTIFIC CONDUCT IS SUBJECT TO UNIVERSAL HUMAN RIGHTS STANDARDS

16. Are there policy instruments in the Member State that are specifically designed to ensure the integration and respect of human rights principles and standards within the scientific process?

a) Are there any legal policy instruments on this topic?

Yes. Germany is State Party to almost all UN, Council of Europe, EU and other Human Rights Treaties. These obligations are fully translated into all sectors of society. The freedom of sciences, research and teaching is protected by Article 5 3 of the German Basic Law:

https://www.gesetze-im-internet.de/englisch_gg/englisch_gg.html#p0035.

b) Are there any operational policy instruments on this topic?

Yes.

17. Are there any policy instruments in the Member State designed to ensure that the scientific advancement and its benefits are equitably shared?

a) Are there any legal policy instruments on this topic?

Yes.

b) Are there any operational policy instruments on this topic?

Yes.

KEY AREA 7. ANY SCIENTIFIC CONDUCT IS SUBJECT TO UNIVERSAL HUMAN RIGHTS STANDARDS

18. Are there any policy instruments with a focus on protecting and promoting academic freedom and the freedom of scientific research in the Member State?

Yes. Academic freedom and freedom of scientific research are protected by Article 5 para. 3 of the German Basic Law, which reads: “Art and science, research and teaching are free. The freedom of teaching does not dispense from loyalty to the Constitution.” (www.gesetze-im-internet.de/gg/art_5.html)

Art. 13 EU Charter of Fundamental Rights also states that “The arts and scientific research shall be free of constraint. Academic freedom shall be respected.” (<https://rm.coe.int/16806f53e6>)

b) Are there any operational policy instruments on this topic?

Yes. Not on an institutional level, due to the fully sufficient overriding constitutional freedom. Any possible violation of this fundamental right can be brought before the courts for review, including the Federal Constitutional Court.

19. Are there any policy instruments restricting academic freedom and the freedom of scientific research in the Member State?

a) Are there any legal policy instruments on this topic?

No.

b) Are there any operational policy instruments on this topic?

No.

20. Are there any policy instruments in place that establish monitoring and redress mechanisms for infringements of academic freedom and the freedom of scientific research in the Member State?

a) Are there any legal policy instruments on this topic?

Yes. In the Academic Freedom Index 2024, Germany has the value of 0.93 and is safely situated in the top 10 percent. Since academic freedom and the freedom of scientific

research are constitutionally protected as a personal and individual right, any possible infringement that is not addressed within academic institution can be subject to standard legal procedures of the Member State Germany, i.e. civil litigation and judicial review, including possible redress. A possible violation of this fundamental right can also be brought before the Federal Constitutional Court.

Inner-institutional procedures plus standard legal procedures have proven to be sufficiently effective to safeguard academic freedom. There is no separate independent national monitoring.

b) Are there any operational policy instruments on this topic?

Yes. In 2019, the Alliance of Science Organizations has organized a campaign to further strengthen academic freedom in Germany and globally. The campaign resulted in a final memorandum (available in German language only: <https://wissenschaftsfreiheit.de/abschlussmemorandum-der-kampagne/>).

In 2024, the German Federal Ministry for Education and Research organized a national science year on the topic of “freedom”, with a focus on academic freedom.

With effective and efficient procedures in place that have a very convincing result in terms of an actual high degree of academic freedom within the Member State Germany, operational policies mostly address the freedom and safety of scientists from other countries that face threats to their life and safety.

Since 2015, the German government (together with German and international private foundations) funds the “Philipp Schwartz-Initiative”, implemented by the Alexander von Humboldt Foundation for scientists at risk. It collaborates with the global Scholars at Risk network, the IIE Scholar Rescue Fund and the Council for At-Risk Academics. The Philipp Schwartz-Initiative provides around 100 to 120 fellowships per year for research stays in Germany of 24 months (+possibly 12 months co-funded extensions)

The DAAD is helping to advance academic freedom by means of a specific range of funding options for refugees and other vulnerable people. As part of its efforts, it offers several programmes. Some examples: The Hilde Domin programme (www.daad.de/en/studying-in-germany/scholarships/daad-funding-programmes/hilde-domin-programme/) is aimed at students and doctoral candidates at risk. The "Leadership for Africa" programme (www.daad.de/en/the-daad/intersecting-dimensions-topics/sustainable-development/funding-programmes/funding-programmes-for-students-a-z/leadership-for-africa/) provides refugees from West, East and Central Africa in particular with a safe path to studying in Germany. Both programmes are funded by the Federal Foreign Office.

21. Are there any policy instruments in the Member State with a focus on regulations to protect and promote the safety/security of scientific researchers?

a) Are there any legal policy instruments on this topic?

Yes. The safety and security of scientific researchers has excellent legal and policy safeguards, in particular as regards safety in the workplace (as all other workers and employees). Some of the most relevant laws:

- occupational health and safety law
- maternity protection law

- hazardous substances ordinance
- statutory accident insurance (public sector accident insurance) regulation
- Technical rules for hazardous substances (TRGS) by the Federal Ministry of Labour and Social Affairs
- General Act on Equal Treatment (which contains i. a. safeguards against discrimination, including sexual harassment, in the workplace)
- Criminal Code (which contains i. a. safeguards against insult and defamation e.g. on social media)

b) Are there any operational policy instruments on this topic?

Yes. In 2023, Germany established the hotline “SciComm Support” that provides scientists with advice and support in case of attacks and unobjective conflicts in science communication (e.g. on social media). This hotline, offered by the “national association for university communication” (www.bundesverband-hochschulkommunikation.de) and “Science in Dialogue” (see question 4) also offers trainings and workshops: <https://scicomm-support.de/en/>.

In 2022, the public statutory insurance against accident in the workplace has published the very comprehensive “Guidelines for safety in research: Guidelines for research institutes and research projects” (in German language only: www.th-wildau.de/files/Arbeitssicherheit/VBG_Forschung_BA_mf.pdf). These guidelines address issues such as working with robots or typical chemical substances in use in research laboratories.

A completely different aspect of safety concerns preventing any undesired drain of knowledge and technology to other countries, the unlawful foreign interference in education and research, the spying on staff as well as the misuse of civil research for military and other purposes.

In addition to internal scientific guidelines, the Federal Ministry for Education and Research (BMBF) has set up a stakeholder process, including the research organisations, the *Länder* and the intelligence services, on “Research Security” aimed at a Memorandum of Understanding and a package of measures.

22. Are there any policy instruments in the Member State with Trade unions for Science, Technology and Innovation personnel (researchers, technicians, administrative) as their target groups/beneficiaries?

a) Are there any legal policy instruments on this topic?

Yes. Article 9 of the Constitution of the Federal Republic of Germany allows all German citizens to form associations and trade unions. Paragraph 3 of the article specifically states with regard to trade unions: “The right to form associations for the protection and promotion of labour and economic conditions is guaranteed for everyone and for all professions.”

Accordingly, German workers and employees offer a high degree of self-organization in trade unions, in international comparisons. There are many well-established trade unions that have STI personnel as their members. The trade unions “Gewerkschaft Erziehung und Wissenschaft” (GEW) with 280,000 members is the largest specialized trade union for teachers, educators, researchers, and technicians; the “Vereinte Dienstleistungsgewerkschaft” (ver.di) with some 2 million members from several types of services the

largest also covering STI. It is the trade unions that negotiate collective agreements (Tarifvertrag) with the employers.

Some STI personnel are employed as public servants, not as employees or workers. Public servants may have similar associations comparable to trade unions. They do not have the right to strike and their salaries are defined by parliament, not by collective agreement.

b) Are there any operational policy instruments on this topic?

Yes. Due to the high degree of legal protection as an unconditionally guaranteed fundamental right, and the effective functioning of trade unions, there is no need for operational policy instruments.

23. How do you plan to engage with the new UNESCO Programme on the Freedom and Safety of Scientists mandated by the 42nd session of the General Conference (document 42 C/54)? What issues and challenges are considered priority in the Member State? Please also provide a list of main institutions working on this topic in the Member State.

In order to promote German engagement with the new UNESCO programme, the German Commission for UNESCO has ensured consistent participation in the two-weekly meetings organized by the UNESCO Secretariat.

In November 2024, the German Commission for UNESCO has organized an exchange session of its Programme Committee on Science with the relevant entity of the UNESCO Secretariat.

Currently, two threats are most intensively discussed: unlawful foreign interference in research as well as online/offline threats to scientists working on issues perceived by some in the population as being “controversial” such as pandemics, peace or the climate catastrophe.

Institutions working on the topic of Scientific Freedom in Germany (including members of the Alliance of Science Organizations):

- German National Academy of Sciences Leopoldina
- German Research Foundation
- Max Planck Society
- Fraunhofer Society
- Helmholtz Association
- Leibniz Association
- German Academic Exchange Service (DAAD)
- Alexander von Humboldt Foundation
- German Science and Humanities Council
- HRK - Conference of rectors with 270 member universities
- Stifterverband
- Volkswagen-Stiftung

KEY AREA 8. ETHICS OF SCIENCE

24. Are there any legally-binding codes of ethics or ethical conduct policies for scientific researchers in the Member State?

Yes. Due to academic freedom, the many existing Codes of Conduct that are relevant for scientific research in Germany are not a body of law in the strict sense, but rather canons for self-regulation. Since non-compliance with such Codes of Conduct has serious legal consequences, the question is answered with “yes”.

The English-language term “Research Integrity” has a corresponding German-language term with a wider meaning and a very high significance in Germany: “Gute wissenschaftliche Praxis” (= “Good Research Practice”). The German Research Foundation (DFG) has established its “Guidelines for Safeguarding Good Research Practice” already in 1998 – and has continuously updated them, most recently in 2022. Internal implementation of these guidelines in a legally binding manner is the mandatory basis for the DFG’s funding of research institutions; These have become a blueprint for most German universities and research institutions. They either apply the DFG code of conduct unchanged or establish their own code of conduct based on the DFG text (and update it correspondingly).

On the DFG’s Research Integrity portal, the principles of research integrity undergo a process of continuous elaboration involving the research communities themselves: <https://wissenschaftliche-integritaet.de/en/> The DFG text is not only one stand-alone text but has been further elaborated by rules of procedure and an ombuds committee with its own secretariat that operates nationwide and is available to advise anyone with a connection to the German research system: (<https://ombudsgremium.de>).

The DFG also provides training to ombudspeople at universities and research institutes and makes available teaching materials and a standard curriculum so as to ensure that students are introduced to good research practice early on in their studies (www.dfg.de/en/basics-topics/basics-and-principles-of-funding/good-scientific-practice).

The Alliance of German Science Organizations has recently formed <https://ombudsgremium.de/>, an association that provides services to the science system concerning scientific fraud. Altogether, there are more than 1,000 ombudspeople on good research practice in German research institutes and universities.

The DAAD Centre for International Academic Cooperation (KIWi) offers individual advice, networked expertise and targeted support for navigating the field of international scientific collaboration. Focus topics are “Risks and Security”, “Legal Frameworks”, “Science Diplomacy”, “Research, Innovation and Transfer” as well as “Matchmaking and International Networks”.

Since the EU Horizon funding also plays a key role for German scientific researchers, the relevant European Code of Conduct also is of significant relevance: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/european-code-of-conduct-for-research-integrity_horizon_en.pdf

In medical research, there are additional regulations such as the European Medicines Agency’s Guideline for good clinical practice.

25. Are there any policy instruments with a focus on regulating the ethics of science and technology (incl. bioethics and AI) in the Member State?

a) Are there any legal policy instruments on this topic?

Yes. Much of the legal instruments are set at the European and transnational level:

- The Helsinki Declaration
- The EU Clinical Trials Regulation of 2014
- The EU Medical Device Regulation of 2017
- The EU In vitro Diagnostics Regulation of 2017
- The EU General Data Protection Regulation (GDPR) of 2016
- The EU Artificial Intelligence Act of 2023
- The 2019 Ethics guidelines for trustworthy AI developed by the European Commission's independent High-Level Expert Group on Artificial Intelligence
- The UNESCO recommendation on the Ethics of AI
- The Council of Europe's Framework Convention on artificial intelligence and human rights, democracy, and the rule of law of 2024

At national level, the German Stem Cell Act (Stammzellgesetz (StZG)) and the Embryo Protection Act (Embryonenschutzgesetz (ESchG)) regulate biomedical research in relation to the handling of human embryonic stem cells and human embryos. The Stem Cell Act sets limits on research with human embryonic stem cells and the Embryo Protection Act sets certain limits on the research on human embryos, e.g. the research of in vitro embryos prior to their intrauterine transfer.

While since 2001, there is an independent national Ethics Council (www.ethikrat.org) focused mainly on bioethical challenges, practical ethical guidance to research work is delivered mostly by independent ethics commissions at the level of the 16 *Länder* (state medical associations, Landesärztekammern) and by ethics committees of individual universities, research institutes or hospitals.

b) Are there any operational policy instruments on this topic?

Yes. Because of academic freedom, there are hundreds of ethics commissions and ethics committees in German universities, research institutes or hospitals that are operating according to often similar but hardly ever identical rules and regulations. Some of the committees have the task to take decisions on research projects or on medical treatments, others have a supervisory role. There is a huge variety of formats of professional training, guidelines, recommendations, etc.

26. Are there any policy instruments to promote 'responsible research and innovation' in the Member State?

a) Are there any legal policy instruments on this topic?

Yes. Responsible Research and Innovation (RRI) is the term used by the EU Horizon programme to describe processes to better consider research impacts on the environment and society. While the RRI terminology has been developed with considerable contributions from Germany, its implementation in Germany cannot be described in a straight-forward way (the Fraunhofer Society is an exception, it has implemented formats such as the Fordatis system, the ethical evaluation of internal research projects, or "citizen's cafés").

The RRI concept is mainly covered in Germany already by the institutions set up to ensure “good research practice” (c. above) and by the institutions dealing with technology assessment in Germany (Technikfolgenabschätzung).

Therefore, there are no separate, specific legal instruments on RRI in Germany.

Germany is one of the very few countries in which the national parliament has a permanent committee that is tasked with technology assessment (the Bundestag’s Ausschuss für Bildung, Forschung und Technikfolgenabschätzung).

b) Are there any operational policy instruments on this topic?

Yes. The Bundestag’s specialized permanent committee (compare 26.a) has its very own secretariat support structure, the Office of Technology Assessment at the German Bundestag (TAB). TAB is supported by the Institute for Technology Assessment and Systems Analysis (ITAS) in Karlsruhe which also provides leading support to the European Technology Assessment Group (ETAG) of the European Parliament.

As concerns good research practice and other ethical issues, compare the questions 25 and 24.

KEY AREA 9. HUMAN CAPITAL FOR SCIENCE

9.1 Employment

27. Are there any policy instruments aimed at protecting and promoting the job security of R&D personnel?

a) Are there any legal policy instruments on this topic?

Yes. Germany has a very well-established “Dismissal Protection Act” (“Kündigungsschutzgesetz”) of 1951, which was updated most recently in 2021. The law limits the freedom of contracts of civil law for companies/organizations with more than ten employees with a longer term in favour of the employee in the case of termination of employment relationships to socially justified terminations.

This law is applicable to R&D personnel employed by publicly funded research institutes as well as to personnel in private-sector laboratories.

Moreover, collective agreements also contain provisions on protection against dismissal.

The German Academic Fixed-Term Contract Act contains special fixed-term options for the academic sector. At the same time, however, it contains specifications for the duration of the fixed-term contract in order to protect academic personnel from very short contract terms. The agreed fixed-term period must be calculated in such a way that it is appropriate to the qualification sought. If academics are employed on a fixed-term basis as part of a third-party funded project, the agreed fixed-term period should correspond to the approved project period. In addition, the contract term is automatically extended by periods not taken

up due to maternity and parental leave, reduction in working hours to care for relatives and for a number of other reasons.

b) Are there any operational policy instruments on this topic?

Yes. In 2016, the Federal Government and the *Länder* launched the “Tenure-Track Programme” with the aim of establishing tenure-track professorships across German universities and higher education institutions. The programme seeks to establish predictable and transparent career paths for Junior Academics.

The “Pact for Research and Innovation” is a joint funding initiative of the German federal government and the 16 *Länder* which provides long-term financial stability to the major German research-performing organisations and the main national agency for research funding: The Max Planck Society, the Fraunhofer Society, the Helmholtz Association, the Leibniz Association and the German Research Foundation (DFG).

Since the first iteration of the Pact in 2005 and up until 2030, the “Pact for Research and Innovation” ensures an annual budget growth of 3 percent and thus budgetary stability and reliability for these science organizations (which in turn commit to overall strategic goals such as increased international cooperation, more technology transfer and more gender equality).

At the same time, there have also been strong discussions in the public, with very out-spoken contributions from early-career scientists, with the aim of providing more tenure-track positions, less timebound project-based employment and generally more perspectives and security for early-career scientists. The hashtag #IchBinHanna has been a major rallying point since 2021 for discussions in recent years to reform the Wissenschaftszeitvertrags-gesetz (Academic Fixed-Term Contract Act). The response to #IchBinHanna by large parts of politics and by the Alliance of Science Organizations has been rather critical and reluctant, protecting the universities and research organisations as qualification systems and not as typical employers. Nevertheless, future-oriented proposals have been made by university leaders, e. g.: https://www.hrk.de/fileadmin/redaktion/hrk/02-Dokumente/02-01-Beschluesse/2024_06_HRK-MGU-JA-Leitlinien-Karrierewege.pdf

9.2 Mobility, Promotion and Career Development

28. Are there any policy instruments in the Member State with a focus on regulations on national, regional, and international levels on the mobility of science, technology and innovation personnel, including researchers?

a) Are there any legal policy instruments on this topic?

Yes. Germany has a visa regime which applies across the board of all professions – and it has specialized rules for specific types of professions. There are specific, simplified visa regulation for scientific researchers (that meet the characteristics of EU regulation 2016/801) (§18d, e, f AufenthG). Prerequisites for an extendable visa of at least one year are essentially a contract with an accredited research institution and the research institution’s guarantee of covering all relevant costs.

b) Are there any operational policy instruments on this topic?

Yes. The DAAD is a 100 years old organization that is legally an association of all German universities and their student bodies. Since its foundation in 1925, it has supported more

than 2.9 million academics in Germany and abroad. The DAAD is the world's largest funding organization for the international mobility of students and researchers; annually it provides much more than 100,000 non-repayable fellowships. Furthermore, the DAAD has been responsible for implementing the Erasmus+ programme and its predecessor programmes since 1987.

The Alexander von Humboldt Foundation promotes international mobility as well, but focused on senior researchers, with some 850 to 1,000 fellowships annually.

Another (faith-based) provider of international academic mobility is the Katholischer Akademischer Ausländer-Dienst.

Erasmus, the EU's student mobility funding scheme is also of the highest importance for academic mobility in Germany, since it has been shown that student mobility leads to higher mobility after graduation (then, e.g., as researcher). EURAXESS, an EU platform for researchers, entrepreneurs, universities and businesses to interact with each other, covers mobility-related topics for researchers and entrepreneurs.

Germany is state party to the 1997 Lisbon Convention on the Recognition of Qualifications concerning Higher Education in the European Region, jointly elaborated at the time by UNESCO and the Council of Europe. In recent years, many new initiatives have been created to facilitate the recognition of professional and academic qualifications (e.g. anabin database, www.anerkennung-in-deutschland.de). In 2023, the Central Office for Foreign Education ("Zentralstelle für ausländisches Bildungswesen") received more than 76,300 applications, evaluating university degrees from 165 countries, using "Statements of Comparability".

The statutes of the German Research Foundation (Deutsche Forschungsgemeinschaft, DFG) stipulate that it pays particular attention to the promotion of researchers in the early stages of their careers. To this end, the DFG offers a number of funding programmes that promote the qualification of researchers not only for an academic career. These funding programmes encourage international mobility and early independence. In addition, the DFG has developed recommendations and guidelines to support early career researchers.

9.3 Education and Training in S&T

29. Are there any policy instruments in the Member State that aim to ensure lifelong learning opportunities for scientific researchers?

a) Are there any legal policy instruments on this topic?

Yes. The German system for promotion of continuing vocational education and training is regulated in Book III of the Social Code (SGB III). It provides the Federal Employment Agency with a broad range of funding tools for unemployed persons and employees, which support lifelong learning. Support options include, for example, covering continuing education costs (such as costs for training courses, travelling expenses, costs of accommodation and board, childcare costs) or providing wage subsidies for employers. The promotion of continuing vocational training is not limited to specific sectors or groups of people. Employee support is open to all employees and their employers. If an employment relationship is subject to social security contributions, the funding instruments can also support the lifelong learning of scientific researchers.

In addition, there are legal regulations of the German *Länder*. For example, in the populous German state of North Rhine-Westphalia, any employee and worker (which of course includes researchers) has the legal right to five days per year (different number for part-time) for life-long learning (in offers that receive proper recognition).

b) Are there any operational policy instruments on this topic?

Yes. Annually, there are tens of thousands of offers for life-long learning formats for scientists, in short-term courses (of a few days) or longer formats. Such training is available in leadership, good research practice, quality assurance, cybersecurity, AI, big data, science communication, research data management, methodological questions, specific questions as regards research content, etc. Such offers are often organized by umbrella associations of research institutes, sometimes in cooperation with private-sector training providers.

9.4 Work Conditions

30. Are there any policy instruments in the Member State that aim to ensure decent labour conditions for STI workers?

a) Are there any legal policy instruments on this topic?

Yes. There are dozens of effective laws in Germany (many with a constitutional basis) that ensure decent labour conditions for all workers and employees in all professions and sectors. For example, generally binding collective agreements (Tarifverträge) ensure working hours and fair wages. From already a very high level of labour conditions, constant improvements have been observed in recent years through national and EU legislation as well as by court decision.

Compare questions 21 and 22.

b) Are there any operational policy instruments on this topic?

Yes. Since most practices under this item are legally effectively protected, there are few operational instruments strictly necessary. One example is mental health: Since 2017, German health insurance companies have been advising and supporting all organizations and companies (including research institutes) workplace health promotion, through joint regional coordination offices.

Compare questions 21 and 22.

31. Are there any policy instruments in the Member State aimed at ensuring safety for STI personnel working in dangerous environments, including environments where hazardous substances are used?

a) Are there any legal policy instruments on this topic?

Yes. The German “Occupational Health and Safety Act” and its Ordinance on Hazardous Substances (GefStoffV) require carrying out a risk assessment for hazardous substances at the workplace.

Compare questions 21 and 22.

b) Are there any operational policy instruments on this topic?

Yes. Each German organization or company with more than 20 full-time equivalent employees is required to establish its very own “Occupational Safety and Health Committee” (ASA) as a body for occupational safety (Section 11 of the Occupational Safety and Health Act - ASiG). Each ASA needs to meet at least once every three months.

With regard to workers in high-risk areas, the employer must ensure, that these workers are appropriately qualified in accordance with the Ordinance on Hazardous Substances. Specific requirements are set forth in the Technical rules for hazardous substances (TRGS) by the Federal Ministry of Labour and Social Affairs.

9.5 Performance Appraisal

32. Are there any policy instruments in the Member State ensuring professional recognition for science, technology, and innovation workers?

a) Are there any legal policy instruments on this topic?

Yes. The professional recognition for innovators is fully developed by the Law on Employee Inventions (Gesetz über Arbeitnehmererfindungen) and the practice-oriented arbitration practice of the Arbitration Board at the German Patent and Trademark Office.

b) Are there any operational policy instruments on this topic?

Yes. There are hundreds of government-funded grant programmes that reward innovative research and technological advancements as well as awards and honours for outstanding contributions.

KEY AREA 10. ENABLING ENVIRONMENT FOR SCIENCE, RESEARCH AND INNOVATION

10.1 Infrastructure and R&D services

33. Are there any policy instruments in the Member State with a focus on regulations for the national research and innovation system?

a) Are there any legal policy instruments on this topic?

Yes. Because of the constitutional academic freedom and because of the shared responsibility between the national and the state level, there are only a few laws on the national research and innovation system, such as:

- Education Assistance Act (Bundesgesetz über individuelle Förderung der Ausbildung, Bafög)
- Academic Fixed-Term Contract Act (Wissenschaftszeitvertragsgesetz)
- Academic Statistics Law (Gesetz über die Statistik für das Hochschulwesen sowie für die Berufsakademien)
- Scholarship Programme Law (Stipendienprogramm-Gesetz)

b) Are there any operational policy instruments on this topic?

Yes. There are hundreds of guidelines, research agendas, accreditation systems, funding programmes in Germany.

34. Are there any policy instruments in the Member State to strengthen the coordination, networking and integration processes that promote synergies among the different actors of the national scientific, technological and productive innovation system?

a) Are there any legal policy instruments on this topic?

Yes. All university laws in the 16 *Länder*, almost all funding programmes by the 17 governments – i.e. on federal and *Länder* level – or the DFG and especially the PFI (Pakt für Forschung und Innovation) expect and support cooperation and synergies between the different institutions of the German Science System, be it private or public.

Furthermore, in Germany, the most important organisations for science and research are cooperating very closely via the forum Alliance of Science Organisations (see About the Alliance - Allianz der Wissenschaftsorganisationen). The Alliance is an important platform for dialogue between the organisations; it issues joint statements in cases where research and science are affected as a whole and where it is necessary to speak with one voice on issues of science policy. The Alliance takes different forms of action for this purpose. These mainly include statements and press releases as well as open letters to federal politicians. Furthermore, the Alliance finances jointly supported initiatives, such as the initiative “Understanding Animal Experimentation”. In addition, the Alliance regularly sets up working groups that deal in depth with issues and challenges of the science system, covering topics such as publishing, science communication and research infrastructures.

Hightech-Strategie 2025 (HTS 2025) – The federal government's flagship strategy fosters collaboration between research institutions, industry, and startups to drive innovation.

Innovation and technology funding programmes (e.g., ZIM, KMU-innovativ) – These funding programs support R&D cooperation between Fraunhofer, SMEs, and industry partners.

Clusters and Competence Networks (e.g., Spitzencluster, Kompetenzzentren) – Initiatives like the "Spitzencluster-Wettbewerb" promote regional and sectoral innovation clusters, enhancing synergies among stakeholders.

Fraunhofer-Verbundstrukturen & Industry Cooperation (e.g., Fraunhofer Clusters of Excellence, AI4Germany) – Internal and external networking programs integrate Fraunhofer's research with industry and academia.

German Science and Innovation Centers (DWIH) – Strengthens international cooperation and integration of Fraunhofer within global innovation networks.

b) Are there any operational policy instruments on this topic?

Yes. There are hundreds of such programmes in Germany.

35. Are there any policy instruments to strengthen infrastructure for research laboratories in the public and private sectors in the Member State?

a) Are there any legal policy instruments on this topic?

Yes. Germany hosts many large-scale infrastructures for STI. Some of these infrastructures are hosted by Helmholtz research institutes (e.g. DESY Synchrotron Hamburg); these are not corroborated by law. But there are also other large-scale infrastructures such as EMBO, the European Molecular Biology Organization in Heidelberg, which is an intergovernmental organization.

Examples of policy and funding instruments targeting research infrastructure topics:

- The BMBF has recently launched a prioritisation process on large research infrastructures (proposals are currently under review):
- Relevant programmes (> 600 Mio. Euros p.a., provided through a federal-state agreement) to strengthen research infrastructure at universities are comprised in the AV-FGH on research buildings, major research instrumentation, and national high-performance computing by the Joint Science Conference (Gemeinsame Wissenschaftskonferenz – GWK).
- The DFG offers funding programmes targeting the utilisation of scientific instrumentation, for example “Major Instrumentation Initiatives” or “Core Facilities” DFG, German Research Foundation – Scientific Instrumentation and Information Technology The web link provides also information on State financed major instrumentation.
- There are laws to promote R&D infrastructure and investment in private companies, in particular through tax incentives (e.g. Forschungszulagengesetz).

b) Are there any operational policy instruments on this topic?

Yes. Obviously, international standards for the accreditation of laboratories are applied in Germany.

36. Are there any policy instruments in the Member State to foster the link between STI's demand and supply sides?

a) Are there any legal policy instruments on this topic?

No.

b) Are there any operational policy instruments on this topic?

Yes. Freedom of scientific research has a constitutional guarantee in Germany (as stated repeatedly in this questionnaire). This implies an important dimension of (at least publicly funded) research: The orientation towards gaining knowledge and insight for pure curiosity and creativity, beyond any market dynamics of supply and demand.

Therefore, there is no legal policy coordinating STI's demand and supply sides (36.a).

However, it is also true that in Germany, the STI sector has its own dynamics of supply and demand. There are many funding programmes, structures and organizations that promote innovation.

For example, the Technical Universities in Germany and the Universities of Applied Sciences/Fachhochschulen in particular but also every other type of university in Germany is obliged by the university laws of the 16 *Länder* to contribute to transfer and innovation. This is done via research and cooperation with the private sector but also and foremost by educating roughly 2.9 Mio students in scientific knowledge, entrepreneurship and founding principles, many in dedicated entrepreneurship courses.

The Fraunhofer Society with its network of some 80 institutes doing application-oriented research has the explicit legal task to perform research that is immediately of benefit to companies and to society. Some 60% of these institutes' budget is raised through research contracts with the private sector.

The brand-new National Agency for Breakthrough Innovation (SPRIND), established in 2019, initially until 2029, and legally corroborated in 2023, supports more than a dozen project and a few innovation competitions.

The Stifterverband also provides much support at the interface of research and companies, in programmes such as “Science Entrepreneurship”, “Impact of Science” and “Systemic Design of Research and Innovation”.

37. Are there any policy instruments in the Member State to foster the link between protect science and scientific researchers in the context of emergencies, including in instances of conflict?

a) Are there any legal policy instruments on this topic?

Yes. The German Law on Civil Protection and Disaster Relief (ZSKG), most recently updated in 2020, applies to the entire population and all public infrastructure.

b) Are there any operational policy instruments on this topic?

No.

10.2 Public Funding for R&D

38. Are there any operational policy instruments in the Member State to support the following mechanisms?

a) Competitive research grants

Yes.

b) Grants for collaborative research and development.

Yes. Due to the very high number, it is absolutely impossible to list these instruments, see for a selection of initiatives: STIP-Compass Portal of the OECD: <https://stip.oecd.org/stip/> (currently showing the 2023 edition. The 2025 edition will be available from October 2025).

The funding grants (competitive and collaborative) of the German Research Foundation (DFG) alone amount to several dozens. The DFG funding portfolio includes a wide range of funding instruments for research projects and research infrastructures. A distinction is made between funding for individual researchers and funding for institutions, according to the requirements and objectives of the research to be conducted.

Within the various instruments for individual research projects (Sachbeihilfe) or Individual Researchers DFG, German Research Foundation – All Funding Programmes, 17,000 projects were in funding in 2024 while 4,430 positive funding decisions were taken in this year, all on a very competitive basis with success rates around 25%.

Two of DFG's major collaborative and extremely competitive programmes:

- Collaborative Research Centres (Sonderforschungsbereiche) are long-term university-based research institutions, in which researchers work together within a multidisciplinary research programme. Cooperation with non-university research institutions are expressly encouraged: <https://www.dfg.de/en/research-funding/funding-opportunities/programmes/coordinated-programmes/collaborative-research-centres>.
- Research Training Groups are established by universities to promote early career researchers. Their key emphasis is on the qualification of doctoral researchers within the framework of a focused research programme and a structured training strategy. The aim is to prepare doctoral researchers for the complexities of the job market in science and academics and simultaneously to encourage early scientific independence: <https://www.dfg.de/en/research-funding/funding-opportunities/programmes/coordinated-programmes/research-training-groups>.

Since 2006, Clusters of Excellence within the German Excellence Strategy have stood for cutting-edge research in German universities. These collaborative and productive centres not only interact with various cooperation partners in Germany and internationally, they also offer outstanding opportunities for research careers.

Additionally, the federal – and state – departments do fund research projects with specific thematic foci that are of interest for political reasons such as the SDGs (see question 3). With the establishment of the Interdisciplinary Social Policy Research (FIS) funding network, the Federal Ministry of Labour and Social Affairs is helping to strengthen research and teaching in the field of social policy at German universities (universities and universities of applied sciences).

The HORIZON programme also supports collaborative research projects within Europe with a very large fund (see question 8)

39. What is the annual total gross expenditure on Research and Development as a percentage of Gross Domestic Product (GDP) in the Member State?

Germany critically evaluates the success of policy interventions according to internationally agreed indicator systems such as (for example, as regards competitiveness) the European Innovation Scoreboard, the Global Competitiveness Index, the Global Innovation Index.

In 2023, Germany invested 3.1% of its GDP in research and development (www.stifterverband.org/forschung-und-entwicklung; www.destatis.de/Europa/DE/Staat/EU-Staaten/Deutschland.html).

2.11 are from the private sector, 0.57 from universities and 0.45 non-university non-profit. After a constant increase of GERD since the year 2006 (2.7) until 2019 (3.5), the GERD figure has recently declined again to 3.14 (2021) and 3.13 (2022).

Beyond GERD, every year, Germany provides comprehensive and detailed overviews of the German STI system. Reports with comprehensive statistical data (where appropriate, according to EU, OECD and UIS guidelines) are published reliably.

For example, the biannual Federal Report on Research and Innovation (BuFi, since 1965) of some 500 pages (Executive Summary of 50 pages is available in English) provides a thorough, evidence-based overview of the German STI system, of its inputs and outputs, and specifically on whether policy interventions are successful or not. Data on inputs are completely disaggregated, for example according to funding goals, funding provider, funding type, funding recipient, research topic, research discipline, and geography (state). Data on scientists are disaggregated (for example) by gender, discipline, and geography (state). The most recent report has been published in 2024: www.bundesbericht-forschung-innovation.de/de/Bericht-herunterladen-1714.html.

10.3 Publications and Patents

40. Are there any policy instruments with a focus on upholding Intellectual Property Rights in the Member State?

a) Are there any legal policy instruments on this topic?

Yes, there are.

- Patent Law (Patentgesetz), most recently updated in 2021
- Trademark Law (Markengesetz), most recently updated in 2024
- Utility Model Law (Gebrauchsmustergesetz), most recently updated in 2021
- Design Law, most recently updated in 2021

There are other IPR legal instruments (such as the Copyright Act, Urheberrechtsgesetz) which however are less relevant for STI.

b) Are there any operational policy instruments on this topic?

Yes. There are dozens of funding and incentives programmes; as one example, the Federal government's programme WIPANO, promoting technology and knowledge transfer through patents, norms and standardization for the commercial exploitation of innovative ideas from universities and companies.

There are also offices for technology transfer and start-up promotion at many universities that provide advice on IP issues.

Trends and Priorities Section

41. Are there any important, recent trends affecting science and scientific researchers in the Member State?

Yes. Most issues have been described in previous questions in detail:

- Threats to the life and security of scientific researchers working under authoritarian regimes
- Unlawful foreign interference in research (while trying to promote openness)
- Maintaining reliable funding for STI in budgetarily increasingly complex conditions
- Further improving open access to scientific publications

- Threats to safety of scientific researchers on/offline in Germany, especially as regards to issues that parts of the population consider “controversial”.
- Improving access for vulnerable groups and minorities, including women and people with disabilities.

42. Looking ahead to the period until 2029, has the Member State identified priorities for improving the conditions for science and scientific researchers?

Yes. Identifying such priorities was exactly the task of the 2023 national “Future Strategy on Research and Innovation”. It focused on a mission-oriented approach that enables targeted research and innovation for sustainable solutions to social challenges (six missions: resource efficient and circular economies, climate change mitigation and adaptation, health for all, digital and technological sovereignty, space and ocean research, societal resilience and diversity). It focused on strengthening research transfer in order to bring innovations into everyday life more quickly. It also focused on more cooperation through pooling resources in the cross-departmental mission teams.

43. Are there any specific external causes that may impede the implementation of the 2017 UNESCO Recommendation on Science and Scientific Researchers in the Member State?

No.

Impressum

Herausgeberin

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Stand

März 2025

Gestaltung

Deutsche UNESCO-Kommission e.V.



Gefördert durch:



Auswärtiges Amt

