



Türkiye, Quick Facts

Country Size

783,356 km²

Population

85,279,553

Language

Turkish

Capital

Ankara

Currency

Turkish Lira

To learn more about
Türkiye please visit:

<https://www.euraxess.org.tr/>



EURAXESS Country in Focus: TÜRKİYE

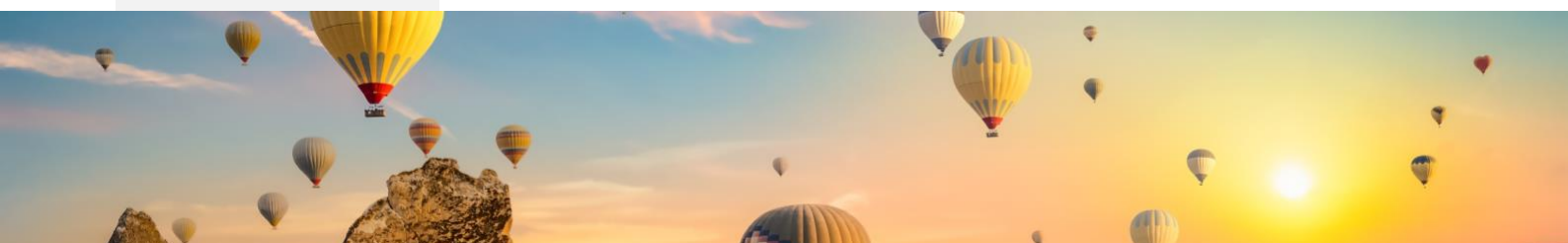
EURAXESS – Researchers in Motion is an initiative of the European Research Area (ERA) that addresses barriers to the mobility of researchers and seeks to enhance their career development. This pan-European effort is currently supported by 43 countries, of which we will profile Türkiye in this quarterly e-newsletter.

National Research Landscape

Türkiye is a dynamic ecosystem characterised by a diverse array of actors and a strong emphasis on technological innovation. The national landscape is shaped by public research institutions, universities, and private-sector companies, all contributing to the country's robust research and development (R&D) activities. The Turkish government plays a pivotal role in fostering this environment, providing extensive funding for research, development, and innovation (RDI) projects in line with national targets and priorities.

As a country at the crossroads of Europe and Asia, Türkiye hosts 208 universities, both public and private, which are home to a large number of researchers, including an increasingly international researcher community. In 2022, a total of 221,811 individuals worked as full-time equivalent (FTE) R&D personnel. Looking at the distribution by sector in 2022, 61.3% of this total were in financial and non-financial companies, 34.2% in higher education, and 4.5% in the general government sector, including non-profit organisations.

The Turkish R&D landscape is further enriched by various public research organisations, technology parks, and private-sector R&D centres. Notably, TÜBİTAK, the Scientific and Technological Research Council of Türkiye, plays a critical role in shaping and funding the national research agenda. Several other sector-specific research institutes and centres of excellence also contribute significantly to the Turkish R&D ecosystem.





TÜBİTAK is the leading agency in research funding, supporting projects in universities and other organisations, and serving as the Bridgehead Organisation for EURAXESS.



<https://www.tubitak.gov.tr/en>

The country has made a steadfast commitment to enhancing its research capabilities, with consistent growth in R&D spending as a percentage of GDP (GERD) in recent years, signalling Türkiye's strategic focus on bolstering innovative capacity.

The government's proactive approach to funding R&D projects – fostering innovation and creating an attractive environment for research – is clear evidence of its determination to strengthen Türkiye's position as a global player in research and innovation. Evidence of this can be seen in the total patents granted to Turkish researchers, which reached 10,335 in 2022 – 6,928 foreign patents and 3,407 domestic patents.

○ **STI Framework**

TÜBİTAK funds research projects carried out in universities and other public and private organisations, supporting researchers and students through scholarships, grants and fellowships. Other key players in research funding include the Turkish Energy, Nuclear and Mineral Research Agency, the Ministry of Health, the Ministry of Agriculture and Forestry, the Ministry of Transport and Infrastructure, and the Council of Higher Education, all of which provide funds for research related to their respective fields of action. The government's support for the public research system is not only financial but also strategic. The high-level advisory policy group affiliated to the President in science, technology, and innovation (STI) is called the Science, Technology and Innovation Policy Council (STIPC). Under the auspices of STIPC, technology roadmaps have been prepared (see later for details).

○ **Academic System**

Türkiye's academic system is vibrant and diverse, with 208 universities spread across the country. These range from large, research-intensive institutions to smaller, specialised ones, and include both public and private providers. Each plays a unique role in the broader research and education ecosystem. Turkish universities cover a wide range of academic disciplines, contributing significantly to the country's R&D outputs. Furthermore, 23 of these institutions have been designated as '[research universities](#)', highlighting their significant contribution to academic disciplines.

These universities host a considerable number of researchers, including academics and postgraduate students engaged in research. Türkiye's commitment to becoming an international hub for research and innovation is demonstrated by the growing number of foreign researchers in its university system.

The presence of foreign researchers not only contributes to the diversity of research perspectives but also helps strengthen international research collaborations. Universities and their research outputs are critical in driving innovation and contributing to Türkiye's global standing in research.

To date, nine universities from Türkiye (Boğaziçi University, Dokuz Eylül University, Hacettepe University, İzmir Institute of Technology, Koç University, Middle East Technical University, Nevşehir Hacı Bektaş Veli University, Yaşar University, Yıldız Technical University) have informed the European Commission that they endorse the 40 principles of the **European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers**. Three of these universities ([Middle East Technical University](#), [İzmir Institute of Technology](#) and [Koç University](#)) have been awarded the HR Excellence in Research status, allowing them to display the associated logo.



Research Priorities

Türkiye's research priorities are diverse and closely aligned with the country's strategic goals for socio-economic development. The **11th Development Plan of Türkiye** outlines the nation's research priorities and critical technologies. The main objective is to enhance the ability to develop and adapt technology in critical areas that are expected to generate high value-added in the future, ensuring technological transformation and increasing competitiveness in priority sectors.

To achieve this, the Science, Technology and Innovation Policies Board (BTYPK) of the Turkish Presidency, in partnership with the Ministry of Industry and Technology and with the technical assistance of TÜBİTAK, developed a series of technology roadmaps in areas such as Artificial Intelligence, Advanced Materials,

Big Data and Cloud Computing, Engine Technologies, Cybersecurity, and Biotechnological Drugs. These technology sectors were chosen based on their high potential impact, as further identified in the BTYPK Technology Prioritisation Study, and the 2023 Industry and Technology Strategy.



The Development Plan also includes measures to increase human resource capacity in these areas, strengthen research infrastructures, and improve the capacity of the private sector in critical technologies. Moreover, it outlines priority sectors including the chemical industry, pharmaceuticals and medical devices, electronics, machinery and electrical equipment, automotive, rail system

vehicles, and other manufacturing industries such as textiles-clothing-leatherwear, non-metallic mineral products industry, basic metal industry, ship-building industry, and the furniture industry.

Activities have been ongoing since 2021 to determine RDI strategies for the European Green Deal and climate change adaptation, in collaboration with relevant Turkish ministries. Türkiye announced its 2053 Net Zero Emission Target in September 2021, marking a significant step towards green transformation and growth. The Ministry of Industry and Technology and TÜBİTAK are working on a **Green Growth Technology Roadmap**. This initiative aims to design R&D, innovation, and investment projects to help Turkish private-sector organisations adapt to green growth. Upon completion of the roadmap, additional topics will be added for the iron-steel, aluminium, cement, fertiliser, chemical, and plastic sectors.

In 2022, the Ministry of Environment, Urbanisation and Climate Change organised a Climate Council. Under TÜBİTAK's coordination, efforts were made to develop innovative solutions in five main areas: Climate Change, Environment and Biodiversity; Clean and Circular Economy; Clean Accessible and Secure Energy Supply; Green and Sustainable Agriculture; and Sustainable Smart Transportation. With an interdisciplinary approach, 33 priority RDI topics were identified, which are among TÜBİTAK's priorities for 2022-2023. These topics include ground-breaking technologies that will increase efficiency through energy efficiency and the use of green technologies in production processes.

Moreover, some strategic topics include Earthquake Research, Chemical and Biological Defence, Production of Valuable Chemicals from Plant Sources, Monitoring of National Biological Diversity, Biomedical Equipment Technologies, and Epidemiological Studies.

Looking forward, the **12th Development Plan of Türkiye (2024-2028)** currently being prepared will lay the groundwork for long-term sustainable development targets and serve as the strategic framework for the steps to be taken to make Türkiye a global player in accordance with its **2053 Vision**.

A Specialised Commission on **Strengthening the R&D and Innovation Ecosystem**, which has been established as one of the 60 issues-based commissions within the 12th Development Plan preparations, aims to analyse the current national RDI ecosystem and develop policy actions to increase its efficiency, taking into account global trends.



○ **Investments in Research and Innovation**

Promoting innovative entrepreneurship and technological/innovation-driven research is a priority STI policy. The Turkish government has been providing extensive funding for RDI projects in line with national targets and priorities. According to a 2021 Research and Development Activities Survey, which was revised in March 2023 by the Turkish Statistical Institute (TURKSTAT), gross domestic expenditure on R&D reached 36.6 billion PPP\$ in 2021 – a 16% increase compared to the previous year. The share of GERD increased to 1.40% in 2021; private-sector (business enterprises) contributions exceeded 61%.

The targets for industry and technology have been determined within the scope of the 2023 **Industry and Technology Strategy** and its so-called 'National Technology Robust Industry' (National Technology Move) targets focusing on High Technology and Innovation, Digital Transformation and Industry Move, Entrepreneurship, Human Resources, and Infrastructure.

The current Development Plan also references both the Strategy and the National Technology Move, leading to various roadmaps (AI and augmented reality, big data, internet of things, cybersecurity, energy storage, advanced material, robotics, micro/nano/optoelectronics, biotechnology, quantum, sensor technologies, additive manufacturing technologies, as well as the infrastructures and qualified human resources (including skills, training) needed in these areas. Accordingly, green and digital transformation has become one of the key elements of Türkiye's more recent economic development plans.

○ **Innovation Aspects**

The recent **Priority R&D and Innovation Areas Study** covering the years 2022-2023 by TÜBİTAK covers a total of 264 priority topics, half of which are within the scope of digitalisation. One in three of the digital topics is AI-related, while a quarter can be regarded as green technologies.

The combined green and digital technology priorities are grouped under three main pillars:

- 1) **The first pillar** – RDI Topics in Priority and Key Technologies – includes six new technology roadmaps on AI, advanced materials, big data and cloud computing, motor technologies, cybersecurity, and biotechnological pharmaceuticals. These were prepared within the auspices of the Turkish Presidency's Science, Technology and Innovation Policies Council, in cooperation with the Ministry of Industry and Technology and with technical support from TÜBİTAK.
- 2) **The second pillar** focuses on RDI Topics for the Compliance to EU Green Deal and Adaptation to Climate Change.



- 3) **The third pillar** – Strategic and Needs-Oriented RDI Topics – is based on national priorities such as earthquake research, biodiversity, biomedical equipment, etc.



○ **Business Enterprise Sector**

A selection of prominent private-sector innovation and entrepreneurship initiatives are given below:

Technology Oriented Industrial Move integrates target-based, end-to-end approach in co-operation with the Ministry of Industry and Technology, TÜBİTAK and KOSGEB. The objectives of the initiative include global competitiveness, economic and technological sovereignty, high added-value production, and achieving a 'great leap' in previously mentioned critical technologies. Specific calls cover digital developments and the transformation of manufacturing, mobility, medical and chemical products.

National Techno-Entrepreneurship Strategy 'Turcorn 100' Programme (Turkish Unicorns) provides tailor-made support to future Turcorn candidates with global ambitions, to help them navigate the Turkish technology entrepreneurship ecosystem.

Ministry of Industry and Technology, Women Entrepreneurship Initiative is a new scheme scheduled for launch in 2023. As part of the Startup Council, the Initiative will help keep the issue of equal opportunities for women on the agenda and promote women-

focused activities.

KOSGEB SME Technological Product Investment Support Programme helps SMEs develop and commercialise innovative products resulting from RDI activities as a means of boosting Turkish competitiveness and prosperity.

KOSGEB Advanced Entrepreneur Support Programme provides financial support to newly-established businesses in the field of manufacturing and informatics. Entrepreneurs who have completed the Traditional and Advanced Entrepreneur training can apply to the programme.

TÜBİTAK directs its main private-sector support programmes towards SME development, while encouraging big firms to participate in more internationally funded activities.

Specific calls by TÜBİTAK on green growth and earthquake research – e.g. **Industrial R&D Projects Grant Programme** and **SME R&D Startup Support Programme – 2023 Earthquake Zone Special Calls** – aim to increase R&D localisation in required technology fields, enhance technology and product development expertise, contribute to the economic growth of project outputs, and ensure the effective use of public resources in accordance with the country's needs and national objectives by enhancing the R&D capacity of SME-scale businesses.

Other TÜBİTAK calls, including the **Entrepreneurship Support Programme – BiGG Green Growth Call**, support activities from the idea stage to market readiness, so entrepreneurs can transform their technology and innovation-oriented business ideas into enterprises with high added value and the potential to create skilled employment. This, in turn, fosters startup companies that have internationally competitive power to develop innovative, high-tech products and services.



In addition, through the **Implementing Agency Call on Capacity Building for Innovation and Entrepreneurship Programme**, TÜBİTAK supports the agencies that will act as the main interface between entrepreneurs and itself. As a result of the latest call, 147 Implementing Agencies were selected through to 2026.

Also, two **BIGG+ SME Mentor Interface Calls** were announced, in 2019 and 2022. The programme supports mentoring to improve RDI capacities and SME commercialisation activities via creating a pool of experts in relevant fields.

Türkiye is also a member of **Global Cleantech Innovation Programme (GCIP)** and TÜBİTAK will be implementing GCIP Phase II in Türkiye to help SMEs and startups in the fields of renewable energy, energy efficiency, water efficiency, waste management, green buildings, smart transportation, and advanced materials.



Moreover, the **Venture Capital Support Programme (Tech-InvesTR)** was established as a collaboration between TÜBİTAK and the Ministry of Treasury and Finance to encourage the funds to invest in early-stage, technology-based companies that will boost the country's economy and improve the venture capital ecosystem. The five funds established within the framework of the Tech-InvesTR programme have already invested around TRY 674 million in 57 different startups, as of the end of February 2023.

○ **Academy-Industry Relations**

To facilitate and promote academy-industry collaboration, the government has introduced several initiatives and instruments (centres and tax incentives) for companies investing in RDI activities, in partnership with universities. These measures have significantly boosted academy-industry relations, contributing to the growth and dynamism of Türkiye's research and innovation ecosystem.

Co-creation is the joint production of knowledge and innovation between combinations of industry, research, government, end users and also civil society active in the R&D ecosystem. Türkiye uses co-creation as a tool for effective collaboration, especially addressing societal challenges and global risks.

TÜBİTAK focuses on mobilising RDI foundations and human resources within the scope of co-creation models. Platform-based RDI initiatives, such as the **High Technology Platforms** support and **Industry Innovation Networks Mechanism (SAYEM)**, are the main instrument to achieve it. TÜBİTAK formulated appropriate evaluation criteria, which highlights research team competence as a whole, as well as complementary individual research projects in high- tech platforms.

Moreover, the **Digital Innovation and Collaboration Platform** was created under the coordination of Digital Transformation Office (DTO) to bring together public institutions, industrial organisations, R&D infrastructures, and university research bodies that carry out R&D implementation and dissemination activities in a range of fields. These include AI, data science, robotics and closely-related technology fields capable of creating economic, technological and societal value, and further realising multidisciplinary projects.

Türkiye Technohub Platform, which is also coordinated by DTO, has a registry of all stakeholders (as of April 2023, 3117 startups and scale-ups) including public institutions, private-sector companies and startups, technology development zones, technology transfer offices and universities operating in the field of technology entrepreneurship.

Co-creation through
High Technology
Platforms and Industrial
Innovation Networks

[Support Programme for Centres of
Excellence \(TÜBİTAK 1004\)](#)

[Industrial Innovation Networks
Mechanism \(SAYEM\)](#)



TÜBİTAK also provides diverse support for different needs within the R&D ecosystem, based on co-created commercialisation principles. These include TÜBİTAK's **Order-Based R&D Programme**, through which technology developer SMEs transform their solutions into outputs with commercial value by collaborating with customer firms. With TÜBİTAK's **Patent-Based Technology Transfer Support**, patented technologies are helped to make the transition to market. Via this support, 50 technologies have been "transferred to the industry", which are now protected by 58 national and 26 international patents with a total value of TRY 45 million.

To promote the R&D human resources based on co-creation, TÜBİTAK provides support to university-industry consortiums composed of 49 universities and 210 firms, helping to train 1162 PhD candidates under the [Industrial Doctorate Fellowship Programme](#). With the [International Fellowship for Outstanding Researchers Programme](#), 190 top researchers have been integrated into the Turkish ecosystem, including private R&D/design centres and techno-parks. TÜBİTAK also continues to support 82 researchers, carrying out pioneering research in Türkiye, under **TÜBİTAK's National Outstanding Researchers Programme**.

Funding Tools/Opportunities

As previously stated, TÜBİTAK is a major funding source in the country, providing grants, scholarships and awards for researchers at various stages of their careers, from undergraduate students to experienced scientists. These funding opportunities cover a wide range of fields and support both individual researchers and research teams.

Several other ministries and government agencies also provide funding for research and innovation activities. For example, the Ministry of Industry and Technology offers funding for industrial R&D projects, while the Ministry of Energy and Natural Resources provides funding for energy-related research. There are also numerous funds available for startups and SMEs engaged in innovative activities.

Furthermore, Türkiye has been increasing its participation in international funding programmes, such as the **EU's Horizon Europe Research and Innovation Funding Programme**. These programmes provide Turkish researchers more opportunities to collaborate with international partners and gain access to additional funding.

TÜBİTAK has the [National Coordination Office of EU Framework Programmes](#) and Türkiye is an Associated Country to Horizon Europe. This means all researchers can take advantage of various opportunities under Horizon Europe to carry out research in the Turkish Research Area.

- [Marie Skłodowska-Curie Actions \(MSCA\) Funding Opportunities](#)
- [European Research Council \(ERC\)](#)

National Schemes for Frontier Research Projects

- TÜBİTAK 2247-A: [National Outstanding Researchers Programme](#)
- TÜBİTAK 2247-D: [National Early-Stage Researchers Programme](#)
- TÜBİTAK 2247-B: Funds ERC applicants that received 'A' or 'B' scores from the second evaluation phase (but were not funded)
- [The International Fellowship for Outstanding Researchers Programme](#) (2232): Similar to Marie Skłodowska Curie Actions in Horizon Europe, the goal of the programme is to attract outstanding researchers to conduct their research activities in Türkiye. The researchers are further encouraged to submit proposals to the EU Framework Programmes.





- The allocation of Funds to the MSCA COFUND: TÜBİTAK promotes and supports higher education institutions' applications for the MSCA COFUND programme by undertaking beneficiary financial contributions. A specific budget was allocated by TÜBİTAK to co-finance research universities in Türkiye receiving funding from the MSCA COFUND 2020 call.
(Gazi University in 2021, İzmir High Technology University (IZTU) and Middle East Technical University (METU) in 2022 were all successful applicants. Within the scope of the programme, 22 researchers in the field of additive manufacturing technologies, 10 in biomedical research, and 20 in green and blue transformation research are receiving training.)

Reasons to Choose Türkiye

Türkiye offers numerous reasons for researchers choosing to carry out research there. Firstly, it is home to a dynamic and growing research community. Researchers have the opportunity to work in well-equipped research institutions, engage with highly qualified colleagues, and participate in cutting-edge research projects. Türkiye's geographical position and rich history also offer unique research opportunities, especially in fields such as archaeology, history, and environmental sciences.

Türkiye is committed to internationalising its research community. This commitment is evident in its policies to attract foreign researchers, such as providing attractive research funding, establishing international research partnerships, and creating an inclusive and welcoming environment for researchers from all over the world. Furthermore, the country's vibrant culture, warm hospitality, and high quality of life add to the appeal of conducting research in Türkiye.

Türkiye's strategic focus on innovation provides researchers with opportunities to see their research translated into practical applications. The strong academy-industry relations, combined with supportive government policies, create an environment conducive to innovation. This focus on innovation means that researchers can not only contribute to the advancement of knowledge but also make a tangible impact on society and the economy.

The main ongoing policy debates around the Turkish government's support for RDI human resources can be highlighted in two key areas: fostering talent and addressing brain drain, and enhancing the quality of research and innovation in Türkiye. In addition, target-oriented, co-creation-based models are clearly visible in two key areas.

First, the ongoing debate on attracting and retaining top talent in Türkiye's research and innovation ecosystem involves a diverse range of stakeholders, including government bodies, such as the Ministry of National Education and the Ministry of Industry and Technology; research institutions, such as the Council of Higher Education (CoHE) and TÜBİTAK, as well as private-sector actors, including businesses and non-government organisations. Several initiatives have been launched to strengthen the domestic talent pool. The 11th Development Plan (2019-2023) outlines strategies to improve the quality and relevance of education and training programmes, with the goal of producing highly skilled human resources for research and innovation. The CoHE 100/2000 Doctoral Scholarship programme offers financial support to outstanding doctoral students,



fostering the development of a new generation of researchers. TÜBİTAK programmes, such as the Research Fellowship Programme for International Researchers and International Fellowship for Early-Stage Researchers, provide support for domestic and international researchers at various stages of their careers. In addition to these initiatives, the 5G and Beyond Joint Graduate Support Programme has been designed to attract international talent by offering joint graduate degrees in collaboration with renowned foreign universities, focusing on cutting-edge research areas such as 5G technology and beyond. The TÜBİTAK International Fellowship for Outstanding Researchers aims to attract top-level researchers from around the world by offering competitive funding packages and research support. Furthermore, there is a growing emphasis on supporting underrepresented groups in the research and innovation landscape. The Policy Principles for Increasing the Participation of Women Researchers in TÜBİTAK Processes is an example of an initiative that seeks to address gender imbalances by promoting equal opportunities for women researchers and ensuring that their perspectives are integrated into research and innovation activities. This focus on diversity and inclusivity is an essential part of Türkiye's strategy to create a vibrant and dynamic research and innovation ecosystem.



Second, stakeholders including government bodies, research institutions, academia, and private-sector actors are actively discussing ways to enhance the quality of research and innovation in Türkiye by focusing on various dimensions, such as strategic sectoral improvements, educational reforms, academia-industry collaboration, inclusivity, and technology adoption. Initiatives such as the National Science, Technology and Innovation Strategy and Action Plan (2019-2023) aim to bolster Türkiye's research and innovation ecosystem by identifying priority areas and setting specific targets in sectors like energy, transportation, agriculture, and health. This plan seeks to align research funding and infrastructure investments with national development goals, ensuring that resources are directed toward high-impact research and innovation activities. The **Türkiye Education Vision 2023** is another significant

initiative that focuses on educational reforms to produce a highly skilled workforce capable of contributing to research and innovation. This vision encompasses a wide range of objectives, including curriculum development, teacher training, assessment and evaluation of student performance in STEM, as well as career guidance for students in both the public and private sector. To bridge the gap between academia and industry, programmes such as TÜBİTAK's Career Development Programme and the Industrial Doctorate Fellowship Programme have been introduced. These initiatives facilitate knowledge transfer, encourage researchers to work on industry-relevant projects, and foster collaborative research between academic institutions and businesses. Inclusivity and accessibility in education and research are also receiving attention through programmes like the Barrier-Free University Awards, which recognise universities that create accessible and inclusive environments for students with disabilities. These initiatives contribute to Türkiye's ongoing efforts to improve the quality of its research and innovation ecosystem and strengthen its position as a global player in science, technology, and innovation.

These policy debates are shaping the direction of Türkiye's STI human resources system, with stakeholders exploring various options to create a more attractive research and innovation ecosystem. The outcomes of these discussions have the potential to transform Türkiye's approach to research and innovation, addressing talent attraction and retention, and improving research quality in the country.

**Contact details and list of important links**

TÜBİTAK is the coordinator of EURAXESS in Türkiye and the EURAXESS Bridgehead organisation. Please do not hesitate to contact euraxess@tubitak.gov.tr for further questions. Our contact points will be happy to provide further assistance.

<https://www.euraxess.org.tr>

<https://ufukavrupa.org.tr/en>

<https://www.tubitak.gov.tr/en>

<https://www.studyinturkiye.gov.tr/>

<https://goturkiye.com/>

Visuals:

Resources: <https://www.freepik.com/> and [shutterstock.com/tr](https://www.shutterstock.com/tr)

