

The Researchers Report 2012

Country Profile: Turkey



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1. Key data

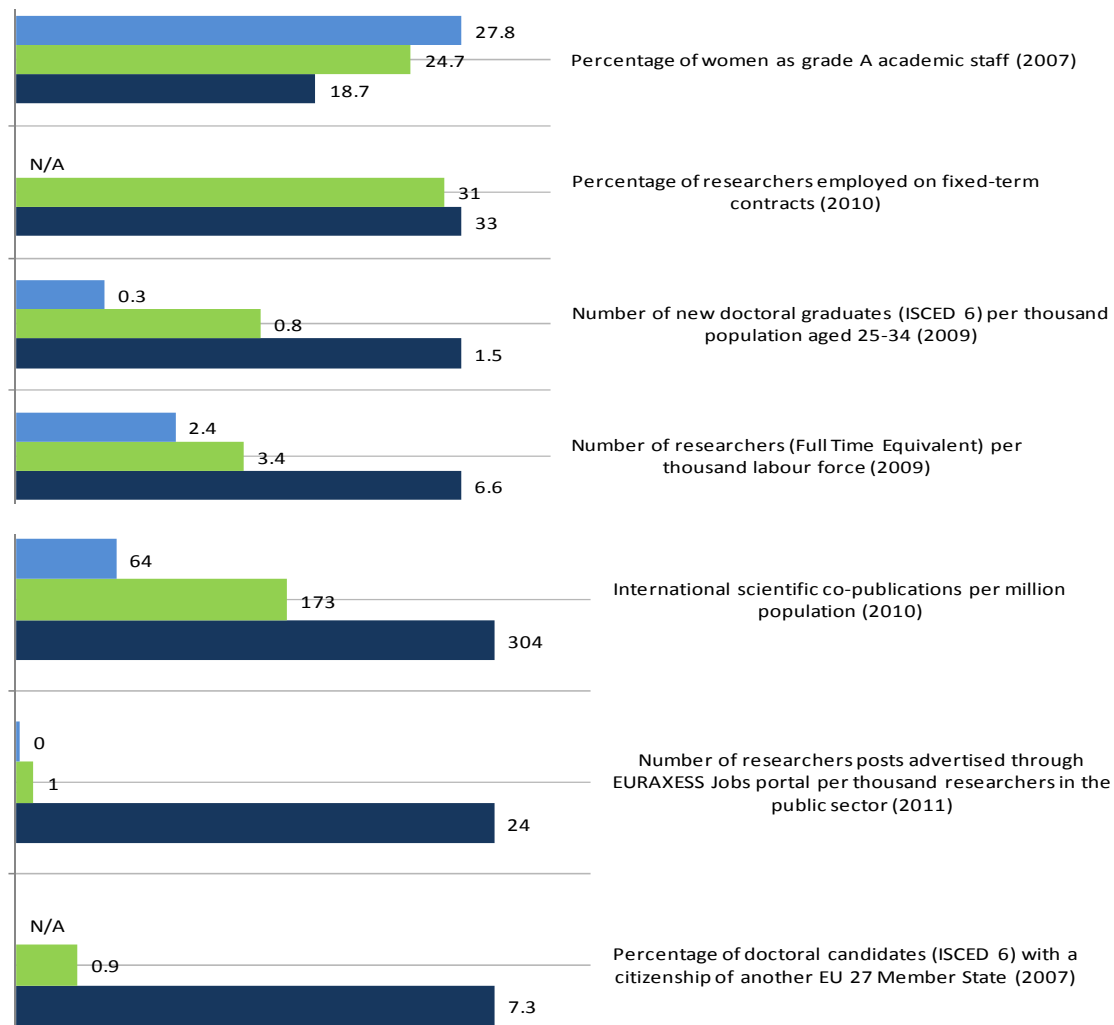
National R&D intensity target

“The most recent figures for Turkey on R&D intensity are 0.85% for 2009, which represents a noticeable increase compared to the value in 2000. Over the period 2000-2009, the Gross Domestic Expenditure on R&D (GERD) in Turkey experienced an average annual real growth rate of 10.1%, which is the fourth highest growth rate in Europe. Although Turkey's R&D intensity is still far below the EU average, Turkey is in a positive catching-up process. In 2009, business expenditure on R&D in Turkey actually increased by 6.1%. The National Science, Technology and Innovation Strategy 2011-2016 was adopted in December 2010 by the Supreme Council of Science and Technology. The strategy focuses on human resources development for science, technology and innovation, transformation of research outputs into products and services, enhancing interdisciplinary research, highlighting the role of SMEs, R&D infrastructures and international cooperation. Besides these horizontal aspects, automotive, machinery and production technologies, ICT, energy, water, food, security and space were determined as focus areas. In line with this, the strategy puts special emphasis on keeping the balance between focused areas and bottom-up research.”¹

Key indicators measuring the country's research performance

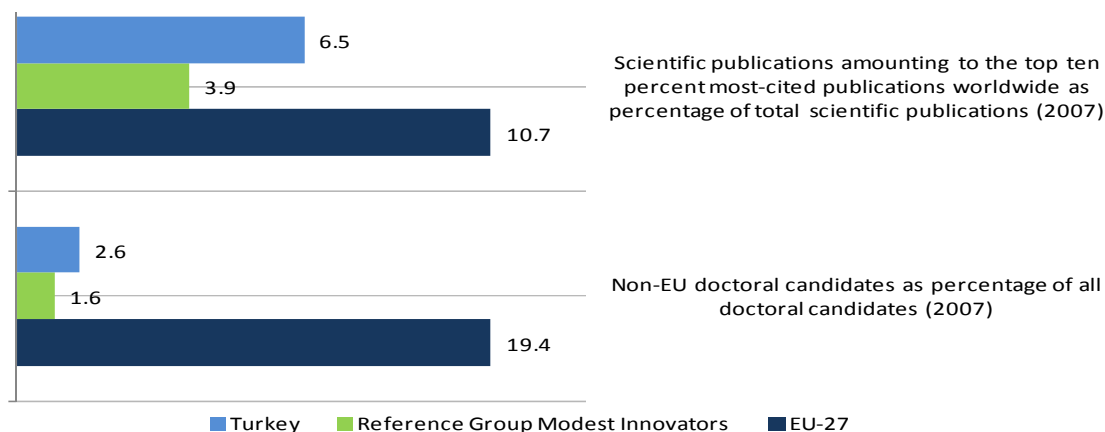
The figure below presents key indicators measuring Turkey's research performance against a reference group and the EU-27 average².

Figure 1: Key indicators – Turkey



¹ European Commission (2011), “Innovation Union Competitiveness Report 2011”.

² The values refer to 2011 or the latest year available.



Source: Deloitte

Data: Based on the average innovation performance, Turkey belongs to the group of Modest innovators showing a performance well below that of the EU-27³.

Stock of researchers

The table below presents the stock of researchers by Head Count (HC) and Full Time Equivalent (FTE) and in relation to the active labour force.

Table 1: Human resources – Stock of researchers

Indicator	Turkey	EU Average
Head Count per 1 000 active labour force (2008)	4.54	9.45
Head Count (2008)	106 423	-
FTE per 1 000 active labour force (2009)	2.38	6.63
Full time equivalent (FTE) (2009)	57 759	-

Source: Deloitte

Data: Eurostat

The national R&D targets of Turkey for 2023, agreed by the Supreme Council of Science and Technology (BTYK) in 2011, are to:

- Increase the number of FTE researchers to 300 000 (compared with 64 341 in 2010);
- Increase the number of FTE researchers in the private sector to 180 000 (compared with 25 342 in 2010).

2. National strategies

The Turkish research system is centralised and led by the BTYK. The Scientific and Technological Research Council of Turkey (TÜBİTAK) is responsible for improving the research environment in Turkey, provides scientific advice to the government and acts as the secretariat of the BTYK⁴. The other organisation which has undertaken a similar role is the Turkish Academy of Sciences (TÜBA). Finally, the Supreme Council for Science and Technology (SCST) is the highest level policymaking and coordination body, representing all stakeholders in the policy process. The table below presents key programmes and initiatives intended to implement the strategic objectives to train enough researchers to reach Turkey's R&D targets, to promote attractive working conditions, and to address gender and dual career issues.

Table 2: National strategies

Measure	Description
National Science, Technology and Innovation Strategy 2011-2016 (2010)	The Strategy aims to create more output from existing research capacity and enhance needs-oriented research capacity by sustaining the increased performance in science, technology and innovation gained over the previous five years.
National Science and	The Strategy aims to increase the number of R&D personnel and to improve the

³ European Commission (2011), "Innovation Union Scoreboard 2010".

⁴ Turkey Country Page. Erawatch, Available at:

http://erawatch.jrc.ec.europa.eu/erawatch/opencms/information/country_pages/tr/country?section=Overview&subsection=BasicChar

Accessed 24.04.2012.

Measure	Description
Technology Human Resources Strategy and Action Plan 2011-2016 (2010)	distribution of R&D personnel with respect to professions and sector of employment. The main targets are: 1. Increase the number of personnel in Human Resources in Science and Technology (HRST) and improving the distribution of HRST across sectors; 2. Develop the research culture, the capabilities and experiences of researchers; 3. Improve the work environment of the HRST; 4. Increase the mobility of researchers; 5. Develop the recruitment capacity of R&D personnel. The Strategy brings together researchers, international and national academicians, private sector R&D managers and public sector lab managers and deals with the following issues: obstacles in research, solutions and international good practice, and suggestions and mechanisms to attract international researchers to Turkey.
National Committees	
International Researchers Coordination Committee (IRCC) (no longer operational)	The Committee aimed to make Turkey an attractive destination for international researchers. The Committee was responsible for regulatory issues for international researchers, for instance work and residence permits, contract periods, wages, pensions, academic promotion, education for researchers' children, learning Turkish, health services, supports for scientific projects, Turkish citizenship etc. At the last meeting of the SCST in 2009, the Committee handed over unresolved issues to the Science and Technology Human Resources Coordination Committee (STHRCC).
Science and Technology Human Resources Strategy Advisory Committee (2010)	This Committee was established by TÜBİTAK in 2010 to advise on the efforts in drafting the Science and Technology Human Resources Strategy. The Committee consists of distinguished academicians returned from abroad, private sector representatives, representatives of the Council of Higher Education (YOK), the State Planning Organization and the Ministry of Finance.
Science and Technology Human Resources Coordination Committee (STHRCC) (2009)	The STHRCC is responsible for improving the working environment for researchers in Turkey, such as enhancing governance in higher education institutions, raising researchers' income, and further increasing the stock of qualified researchers as well as encouraging university-industry collaboration.

Source: Deloitte

3. Women in the research profession

Measures supporting women researchers in top-level positions

In 2007, the percentage of women grade A academic staff was 27.8% in Turkey compared with 24.7% among the Innovation Union reference group and an EU average of 18.7%⁵.

4. Open, transparent and merit-based recruitment

Recruitment system

According to Council of Higher Education (HEC) regulations, all open research positions in public universities must be announced on the websites of the universities at least 15 days prior to the application deadline⁶.

EURAXESS Services Network

TÜBİTAK is the EURAXESS Network coordinator in Turkey⁷. Interested researchers can find online information (<http://euraxess.tubitak.gov.tr/euraxess-turkey>) regarding accommodation, day care and schooling, intellectual property rights, language courses, recognition of qualifications, salaries and taxation, social and cultural aspects, social security, pension rights and healthcare, visas and work permits.

5. Education and training

Doctoral graduates by gender

The table below shows the number of doctoral graduates in Turkey by gender as a ratio of the total cohort population.

⁵ See Figure 1 "Key indicators – Turkey".

⁶ Overall progress in EPR implementation, December 2009, Annex II.

⁷ Ibid.

Table 3: Doctoral graduates by gender

Indicator	Turkey	EU average
New doctoral graduates (ISCED 6) per 1 000 population aged 25-34 (total) (2009)	0.3	1.5
Female Graduates (ISCED 6) per 1 000 of the female population aged 25-34 (2009)	0.3	1.4
Male Graduates (ISCED 6) per 1 000 of the male population aged 25-34 (2009)	0.4	1.6

Source: Deloitte

Data: Eurostat

Funding of doctoral candidates

TÜBİTAK has a wide range of funding programmes for both students and graduates aiming to develop their careers, skills and experience. The table below presents the scholarship schemes available for students and researchers in Turkey.

Table 4: Funding schemes for students and doctoral graduates

Measure	Description
Graduate scholarships	
International PhD Fellowship Programme	A PhD fellowship programme for graduate students who are pursuing their PhD studies at research centres or universities abroad.
International Research Fellowship Programme	A research fellowship programme for PhD students who are registered in PhD programmes in Natural Sciences, Medical Sciences, Engineering and Technological Sciences, and Social Sciences and Humanities, at universities or research centres in Turkey to perform research abroad that cannot be performed within the infrastructure in Turkey.
National Scholarship Programme for MSc Students	A scholarship programme for students following a Master of Science in a university in Turkey.
National Scholarship Programme for PhD Students	A scholarship programme for students pursuing PhD studies in a university in Turkey.
National Summer School Support Programme for Turkish Master and PhD Students	Summer schools are organised to develop knowledge on currently used techniques in the fields of Natural Sciences, Medical Sciences, Engineering and Technological Sciences, and Social Sciences and Humanities.
PhD Fellowships for Foreign Citizens	Highly qualified students who are intending to complete their PhD studies in Turkey are entitled to travel and research grants in the fields of Natural Sciences, Medical Sciences, Engineering and Technological Sciences, and Social Sciences and Humanities.
Research Fellowships for Foreign Citizens	Highly qualified foreign PhD students/researchers are awarded research fellowships to conduct part of their research in Turkey. Travel and research grants are allocated for those studying/carrying out research in the fields of Natural Sciences, Medical Sciences, Engineering and Technological Sciences, and Social Sciences and Humanities.
Post-doctoral	
Post-doctoral Research Scholarships	- National Postdoctoral Research Scholarship programme targeting scientists who perform research in Natural Sciences, Medical Sciences, Engineering and Technological Sciences, and Social Sciences and Humanities in Turkey; - International Postdoctoral Research Scholarship programme targeting scientists who perform research abroad in Natural Sciences, Medical Sciences, Social Sciences and Humanities, and Engineering and Technological Sciences.
Visiting Scientists Fellowship Programme	Scientists working at universities or research centres abroad, in the fields of Natural Sciences, Medical Sciences, Engineering and Technology, and Social Sciences and Humanities at public or private institutions, are encouraged to visit Turkey by taking part in seminars, conferences, lectures, research and technological innovation.

Source: TÜBİTAK website

In addition, the State Planning Organization (SPO) funds universities to develop researcher human resources development programmes which aim to train PhD graduates according to national priorities, and the needs of the universities and industry⁸.

⁸ Overall progress in EPR implementation, December 2009, Annex II.

Measures to increase the quality of doctoral training

In Turkey, almost all universities aim to improve the quality of their education and research activities in line with the Bologna Process. Governance reform in Turkey has mainly focused on developing the 'Quality Management Standards for HEIs' issued by the Council of Higher Education (YOK). The YOK approved the fields of education and programmes under National Qualifications Framework in January 2011 as part of the Bologna process. Four universities were selected for the pilot implementation⁹.

6. Working conditions

Autonomy of institutions

There are 164 Turkish universities of which 61 are privately owned. Universities employ 111 495 academic staff and the total number of students is some EUR 3.8 million.

In Turkey, every university has a budget for its personnel's salaries and their regular activities. For the year 2011, the total budget of the universities was around EUR 5.2 billion, which approximately corresponds to 3.4% of the total state budget¹⁰.

Career development

In Turkey, the majority of the researchers (65%) are employed in universities, while around 2 000 researchers work in one of the 100 public research institutions¹¹.

Social security benefits (sickness, unemployment, old-age)

Turkey has bilateral social security agreements with 21 countries. Citizens of countries which have signed social security agreement with Turkey based on the principle of reciprocity can certify that they are subject to insurance in their own country¹².

7. Collaboration between academia and industry

In Turkey, the Public Research Grant Committee (KAMAG) aims to increase the number of scientists and researchers as well as to enhance the relationships between public institutions, universities and industry.

The Engineering Research Grant Committee (MAG) funds national scientists in the fields of mechanical, chemical, metallurgical, civil, industrial, textile and mining engineering, and architecture in order to generate information and technology and transform the results into services and/or products for public use in connection with universal developments and national priorities.

In addition, the Technology and Innovation Funding Programmes Directorate (TEYDEB) facilitates cooperation between industry and academia to encourage active involvement in technology development and innovation activities. There are currently five technology groups in TEYDEB to improve collaboration activities between academia and the business sector:

1. Machinery and Manufacturing;
2. Electrical and Electronics;
3. Materials, Metallurgical and Chemical;
4. Biotechnology, Agricultural, Environmental and Food;
5. Information Technologies.

8. Mobility and international attractiveness

In 2007, non-EU doctoral candidates were 2.6% of all doctoral candidates in Turkey compared with 1.6% among the Innovation Union reference group and an EU average of 19.4%¹³.

⁹ Turkey Country Page. Erawatch, Available at:

http://erawatch.jrc.ec.europa.eu/erawatch/opencms/information/country_pages/tr/country?section=Overview&subsection=BasicChar
Accessed 24.04.2012.

¹⁰ Ibid.

¹¹ Ibid.

¹² Overall progress in EPR implementation, December 2009, Annex II.

¹³ See Figure 1 "Key indicators – Turkey".

The Turkish government is developing bilateral and multilateral agreements for research promotion through TÜBİTAK. The International Cooperation Department is responsible for the management of TÜBİTAK's international programmes:

- bilateral cooperation with a variety of countries at intergovernmental or inter-institutional level, such as common research projects, financial support for several different types of activities i.e. common scientific meetings, exchange of scientists, scientific visits, etc;
- cooperation with Regional and International Organisations, such as COST (European Cooperation in the field of Scientific and Technical Research), ESA (European Space Agency), ESF (European Science Foundation) and EMBC (European Molecular Biology Conference), and regional organisations, such as Organization of the Black Sea Economic Cooperation and international organisations like NATO, OECD and UNESCO. As part of these collaborations, Turkish scientists participate in events, develop science and technology policies, support and conduct research and development activities, and play a leading role in the creation of a science and technology culture with the aim of improving the competitive power and prosperity of the country;
- cooperation with the European Union (EU), such as the 7th Framework Programme (2007-2013).

Inward mobility (funding)

In the past, foreign researchers conducting projects funded by TÜBİTAK were at a disadvantage compared to Turkish researchers, as they were not entitled to obtain the 'Project Incentive Bonus'. The relevant regulation was recently amended.

In addition, the www.workpermit.gov.tr website provides extensive information on the procedures for receiving a work permit¹⁴.

¹⁴ Overall progress in EPR implementation, December 2009, Annex II.