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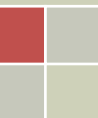
## **IKV BRIEF**

# **TURKEY'S INVOLVEMENT IN EU SCIENCE AND RESEARCH POLICIES**

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# TURKEY'S INVOLVEMENT IN EU SCIENCE AND RESEARCH POLICIES

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## Key Findings

- ✓ Turkey has been substantially increasing its investments in terms of research and science in the last 10 years;
- ✓ Increasing by 300% the number of its researchers, Turkey is a key research area in terms of European ranking;
- ✓ In the context of the strengthening of the capacity of national science and research policies, 57 new research centres have been opened in Turkey;
- ✓ Since 2002, Turkey is actively participating to the research and innovation programmes of the EU in the context of the Framework Programmes;
- ✓ The budget of the 7<sup>th</sup> Framework Programme (2007-2013) – which includes a total of 40 countries including Turkey – has been determined as approximately 50.5 billion euros;
- ✓ The 7<sup>th</sup> Framework Programme is composed of five sub programmes: Specific programme “Cooperation”, Specific programme “Ideas”, Marie Skłodowska-Curie Actions, the Capacities Programme and the Joint Research Centre;

- ✓ Horizon 2020 which is scheduled to continue in the period 2014-2020 represents the continuation of the efforts pursued within the framework of the 7<sup>th</sup> Framework Programme;
- ✓ Horizon 2020, which includes a budget of approximately 80 billion euros is an EU programme which supports R&D and innovation projects;
- ✓ Industrial organisations, SMEs, SME unions, individual researchers, universities, research centres, public institutions, civil society organisations and international organisations can benefit from Horizon 2020;
- ✓ In the context of the “Solutions to Social Problems” heading is included six thematic areas. A budget of 31.7 billion euros has been allocated to these areas.

## Introduction

Turkey has experienced tremendous development these years in many areas and one of these key and strategic areas is undoubtedly research and science. Indeed, in that context, a special attention has been given to create a comprehensive development strategy. Thus, Turkey has drastically increased its investments in terms of research and science, which meant that the share of R&D in the total GDP has augmented significantly. Therefore, Turkey has succeeded in gaining the fifth place in Europe and being ahead of 23 EU Member States in that respect.

Furthermore, acknowledging the key importance of further manpower in terms of research and science, Turkey has raised by 300% the number of its researchers and thus has experienced the most significant increase in that respect across Europe. Moreover, in the context of increasing capacity in terms of national science and research policies, 57 new research centres have been opened in Turkey. Within the framework of this vision, the objective is for Turkey to reach the same level as the EU thanks to strengthened infrastructures.

On the other side, one should note that Turkey still has a long way to go in terms of investments in science and research in contrast to EU Member States. According to statistics released by OECD, in terms of R&D expenditures, Turkey is ranking last among the 46 OECD countries<sup>1</sup>. Whilst Turkey has focused significantly on science and research in the last ten years, its share of gross domestic expenditure on research and development in 2014 was at 1.01%<sup>2</sup>. Moreover, almost half of the total R&D expenditure was performed by the private sector at 49.8% whereas higher education sector was at 40.5% and the public sector at 9.7% respectively. Thus, one can see the necessity for the public sector to increase its expenditure and for joint private and public initiatives in this area. As for the EU, gross domestic expenditure on research and development in

<sup>1</sup> OECD, *OECD Science, Technology and Industry Outlook 2014*, 12 November 2014, <http://www.oecd.org/sti/oecd-science-technology-and-industry-outlook-19991428.htm>

<sup>2</sup> Turkish Statistical Institute, *Research and Development Activities Survey 2014*, 17 November 2015, <http://www.turkstat.gov.tr/PreHaberBultenleri.do?jsessionid=J08XWrYhQwGlvFMf8pTL40TCLCxFMyxmQqfsmhHnvnQk2ZKTsLS2!605860697?id=18661>

2012 accounted for 2.07% of GDP, below the OECD average of 2.40% and well above Turkey's performance of 0.92%<sup>3</sup>. Therefore, whilst there have been significant developments in Turkey's science and research policy, it is of utmost importance to stress that there is still some major reforms to undertake in order to fully integrate with the EU in that area as well.

## **The EU Framework Programmes for Research and Development**

The EU Framework Programmes are key programmes aimed at supporting projects designed to further develop international research and technology. It is important to note that the framework programmes began in 1984 before even the creation of the EU. The programmes are designed with duration of five years and show significant differences in terms of content and as regards the budget which is allocated to them. Its main overarching objective is undoubtedly to further contribute to socio-economic development and to strengthen research capacity in terms of science and technology. It is also of utmost importance to stress that the framework programmes constitute the single largest civil R&D programme in the world. The other objectives of the programmes also include the intensification of Europe's basis as regards science and technology, support for industrial competition and to further stimulate cooperation between Member States and non-Member States in those specific areas.

Turkey has been actively participating to the EU Framework Programmes since 2002. Indeed, in 2002, the EU had launched its 6<sup>th</sup> Framework Programme in which Turkey was also included. On the 4<sup>th</sup> June 2014, an agreement was reached between the parties insofar as including Turkey within the framework of the Horizon 2020 programme (2014-2020) and thus an extra budget of 80 billion euros was allocated to Turkey in order to strengthen its research and development capabilities.

## **The 7<sup>th</sup> Framework Programme**

The 7<sup>th</sup> Framework Programme was launched in 2007 in the context of the signature of the Treaty of Lisbon and was designed for duration of 7 years (2007-2013). The budget of the 7<sup>th</sup> Framework Programme (2007-2013) – which includes a total of 40 countries including Turkey – has been determined as approximately 50.5 billion euros<sup>4</sup>. TÜBİTAK was responsible for Turkey's participation in the programme. The 7<sup>th</sup> Framework Programme was designed with the objective of further pursuing the efforts sought in the context of the 6<sup>th</sup> Framework Programme and notably the aim of creating effectively a European Research Area (ERA).

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<sup>3</sup> OECD, *OECD Science, Technology and Industry Outlook 2014*, 12 November 2014, <http://www.oecd.org/sti/oecd-science-technology-and-industry-outlook-19991428.htm>

<sup>4</sup> European Commission, DG Research and Innovation, *FP7 in Brief*, 2007, [https://ec.europa.eu/research/fp7/understanding/fp7inbrief/what-is\\_en.html](https://ec.europa.eu/research/fp7/understanding/fp7inbrief/what-is_en.html)

The 7<sup>th</sup> Framework Programme is composed of five sub programmes as follows<sup>5</sup>:

Heading	Thematic Area
Specific programme "Cooperation"	Health Food, Agriculture, Fisheries and Biotechnology Information and Communication Technologies Transport Nano sciences Energy Environment (including Climate Change) Socio-economic Sciences and Humanities Space Security
Specific programme "Ideas"	Support for individual and collective projects
Marie Skłodowska-Curie actions	Industrial-Academic Partnership Initial training of researchers Life-long learning training and career development Specific Actions to support the creation of a genuine European labour market
Capacities programme	Research infrastructures Research for the benefit of SMEs Regions of knowledge Research potential Science in society Activities of international cooperation
Coordination of research activities	Support for research centres

Following the 7<sup>th</sup> Framework Programme, the European Commission launched the Horizon 2020 programme which is to be pursued in the period between 2014 and 2020.

## The Horizon 2020 Programme

The Horizon 2020 which is to continue for the period between 2014 and 2020 has been designed as the continuation of the 7<sup>th</sup> Framework Programme. The main objective of Horizon 2020 is to stimulate growth and create new employment opportunities in Europe<sup>6</sup>. With a budget of approximately 80 billion euros, Horizon 2020 constitutes a

<sup>5</sup> EUR-Lex, *Seventh Framework Programme (2007 to 2013)*, 2010, <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=URISERV%3Ai23022>

<sup>6</sup> European Commission, *Horizon 2020 in brief: The EU Framework Programme for Research and Innovation*, 2014, [https://ec.europa.eu/programmes/horizon2020/sites/horizon2020/files/H2020\\_inBrief\\_EN\\_FinalBAT.pdf](https://ec.europa.eu/programmes/horizon2020/sites/horizon2020/files/H2020_inBrief_EN_FinalBAT.pdf)

significant EU programme aimed at supporting R&D and innovation projects. Indeed, it is the biggest EU research and innovation programme ever. Furthermore, it is of utmost importance to note that it is currently the single largest civil research programme across the world in that respect. The Commission allocated different budgets for the various projects which are included within the framework of the programme. In contrast to the 7<sup>th</sup> Framework Programme, there is not a change in the fund rates regarding the areas of activities in projects. Essentially, Horizon 2020 also aims at strengthening the global competitiveness of Europe notably by creating a fund for 1 million new researchers.

### Who can benefit from Horizon 2020?

It is envisaged that the budget of approximately 80 billion euros is to be shared with the collective and individual projects coming from across Europe till 2020<sup>7</sup>. Moreover, it is remarked that the budget support would be given through a mechanism of grants. The possibility of projects being provided with financial support is to be assessed through parameters which are as follows: scientific excellence, effect and implementation criteria.

The main organisations which may directly benefit from Horizon 2020 are industrial institutions, SMEs, SME unions, individual researchers, universities, research centres, public institutions, civil society organisations and international organisations.

As for the three criteria which would determine the possibility of granting financial support for projects within the framework of Horizon 2020, they are as follows:

- ✓ **Excellent Science:** Horizon 2020 will bolster the EU's position as a global leader in science; attracting new brains and helping European scientists collaborate and share ideas across Europe, thus contributing in boosting Europe's competitiveness and creating new job opportunities through various programmes (European Research Council, Marie Skłodowska-Curie actions, Research infrastructures, new and developing technologies)<sup>8</sup>.
- ✓ **Industrial Leadership/Partnership:** In order to bring to a more advanced level European industry in certain areas, researches which are to be managed in a multi-disciplined and multi-partnership manner (nanotechnologies, advanced tools, advanced manufacture, information and communication technologies, biotechnology, space, renovation in SMEs and access to risk financing);
- ✓ **Societal Challenges:** Disciplined and multi-partnership researches in issues which affect directly society and citizens (environment, energy, food security, health, security, social sciences and transport).

### What are the differences of Horizon 2020 in contrast with the 7<sup>th</sup> Framework Programme?

In the context of Horizon 2020, the three different programmes which composed the 7<sup>th</sup> Framework Programme have been merged into one. Furthermore, one should not that

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<sup>7</sup> Ibid.

<sup>8</sup> Ibid.

the Competitiveness and Innovation Framework Programme (CIP) and the European Institute of Innovation and Technology (EIT) are also included within the framework of Horizon 2020. Moreover, it should be stressed that the rules for participation to Horizon 2020 have been significantly facilitated in comparison with the 7<sup>th</sup> Framework Programme. Indeed, the programme thus shows a simpler architecture which makes it effectively easier for participants to identify where funding opportunities exist and a single set of participation rules (eligibility, evaluation, Intellectual Property Rights, etc.) applying to all components of Horizon 2020 has been established. There are also simpler that take into account the stakeholders' preference for the reimbursement of actual costs<sup>9</sup>.

Horizon 2020 is composed of six priority areas within the framework of "Societal Challenges<sup>10</sup>". A budget of approximately 31.7 billion euros has been designed for these areas.

Heading	Priority Area
<b>Societal Challenges</b>	<ul style="list-style-type: none"> <li><b>-Health, demographic change and wellbeing</b></li> <li><b>-Food security, sustainable agriculture and forestry, marine and maritime and inland water research and bio-economy</b></li> <li><b>-Secure, clean and efficient energy</b></li> <li><b>-Smart, green and integrated transport</b></li> <li><b>-Climate action, environment, resource efficiency and raw materials</b></li> <li><b>-Europe in a changing world – inclusive, innovative and reflective societies</b></li> <li><b>-Secure societies – protecting freedom and security of Europe and its citizens</b></li> </ul>

<sup>9</sup> European Commission, *Factsheet: Rules under Horizon 2020*, 23 October 2013, [http://ec.europa.eu/research/horizon2020/pdf/press/fact\\_sheet\\_on\\_rules\\_under\\_horizon\\_2020.pdf](http://ec.europa.eu/research/horizon2020/pdf/press/fact_sheet_on_rules_under_horizon_2020.pdf)

<sup>10</sup> European Commission, *Horizon 2020 in brief: The EU Framework Programme for Research and Innovation*, 2014, [https://ec.europa.eu/programmes/horizon2020/sites/horizon2020/files/H2020\\_inBrief\\_EN\\_FinalBAT.pdf](https://ec.europa.eu/programmes/horizon2020/sites/horizon2020/files/H2020_inBrief_EN_FinalBAT.pdf)



## Turkey's Level of Alignment with the EU in Science and Research

As it is known, Chapter 25 of the EU Acquis which is Science and Research was opened to negotiations on 12 June 2006 during the Austrian Presidency and closed provisionally the same day. Till this day, it has been the only chapter that has been closed within the framework of the accession negotiations between Turkey and the EU. In the 2015 Progress Report on Turkey published recently by the European Commission, it has been noted that Turkey's level of preparation in that area is "well advanced"<sup>11</sup>. All Member States and candidate countries can benefit from the EU's research programmes and Turkey is no exception in that matter. In that context, the report also highlights Turkey's progress in strengthening its research and innovation capabilities at the national level aimed at further facilitating its full integration into the European Research Area (ERA). Nonetheless, the report also explains that important financial resources will have to be deployed for Turkey to be able to reach its own 2023 targets and to also improve its ranking in the Innovation Union Scoreboard. Therefore, the report makes the following recommendations to Turkey for the upcoming year:

- Strengthen the role of Universities in the organisation of research and innovation, in particular through stepping up the cooperation with the industrial world and SMEs;
- Increase national funding and allocate it in line with ERA actions and principles<sup>12</sup>.

One should not that Turkey's participation in Horizon 2020 as an associated country would undoubtedly be of critical importance in further contributing to its alignment with EU legislation in the area pertaining to science and research. The report commends its developments in terms of overall participation to the programme but also notes the need to further improve Turkey's presence in areas such as societal challenges and also the necessity to involve SMEs in a more systematic way and achieve more success in the first pillar of Horizon 2020 which is devoted to Scientific Excellence. The report also commends Turkey's actions in stimulating and supporting transfer of technology but deems that such policy actions are as of yet not "sufficiently in line with ERA principles and actions" and thus need further boost<sup>13</sup>. In that context, it is reminded that the current level of investment in terms of research in Turkey accounts to approximately 0.95% of its GDP which is below the EU average which corresponds to 2.07%. One should note though that Turkey's objective in that respect within its 2023 targets is to reach 3% by 2023. As regards to the Innovation Union, the report notes Turkey's actions in terms of contributing to further stimulation and cooperation between Academia and Industry and reminds that the Innovation Union Scoreboard for 2015 described Turkey

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<sup>11</sup> European Commission, *Turkey 2015 Report*, 2015, [http://ec.europa.eu/enlargement/pdf/key\\_documents/2015/20151110\\_report\\_turkey.pdf](http://ec.europa.eu/enlargement/pdf/key_documents/2015/20151110_report_turkey.pdf)

<sup>12</sup> Ibid.

<sup>13</sup> Ibid.



as “modest innovator” in comparison to its EU counterparts<sup>14</sup>. As regards the Ministry for EU Affairs of Turkey, in its National Action Plan for EU Accession (Phase 2: June 2015-June 2019), it underlines the necessity to pursue the work on monitoring, assessing and supporting the participation in the Horizon 2020 Programme<sup>15</sup>. The overarching aim is to contribute in maximising the benefits for Turkey of its participation in the programme. These activities are coordinated by the Ministry for EU Affairs and the Scientific and Technological Research Council of Turkey.

## Conclusion

In conclusion, one can say that Turkey’s science and research policy can be further strengthened within the framework of its participation in the Horizon 2020 programme. In that context, it has clear opportunities to also engage other partners such as SMEs and thus also stimulate its own economy through the strengthening of research and development capacity. Taking into account Turkey’s participation in the EU Framework Programmes, it should be underlined that Turkey’s own 2023 targets can contribute to its better integration into a common European community of research and science. Indeed, the 2023 targets include also further opportunities for the industrial world and benefits for SMEs. One should remind that Turkey’s main goal regarding the 2023 targets in terms of research and innovation is to increase its budget allocated in that area by 3% till 2023. One should note that it is indeed an ambitious objective as the EU average is below that number but not beyond reach if the necessary efforts and political will is given in that respect. Furthermore, it also aims at creating 300,000 additional jobs in that sector by that time<sup>16</sup>. Turkey’s successful integration to Horizon 2020 will undoubtedly have a tremendous effect at home for its own research and science community. With a highly competitive and growing economy, Turkey has the potential for further progress but it will need to reach its R&D and innovation objectives to be successful. Indeed, in the 21<sup>st</sup> century, more and more, in order to give an added value to Turkey’s exports, it is of utmost importance that it is fully included in the world of new technologies and transform into an information society.

Therefore, in the upcoming years, Turkey could undertake the following action in order to increase its rapprochement with the EU in terms of science and research:

- Take steps to facilitate its full integration into the European Research Area;
- Continue to increase significantly its expenditure allocated to R&D;
- Strengthen the role of its higher education in terms of research and innovation, notably by increasing its cooperation with the industry and SMEs;

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<sup>14</sup> Ibid.

<sup>15</sup> Ministry for EU Affairs of the Republic of Turkey, *National Action Plan for EU Accession (Phase 2: June 2015-June 2019)*, 2014, <http://www.ab.gov.tr/files/napii13012015.pdf>

<sup>16</sup> Wedekind, Gerben K., *Turkey’s Research, Development and Innovation Targets for 2023: Realistic or Far-fetched?*, Vol. II, Issue 8, pp.19-29, *Centre for Policy and Research on Turkey (ResearchTurkey)*, London, October 2013, <http://researchturkey.org/?p=4239>

- Build on public-private partnerships on specific projects relating to research and innovation.

