Private Sector Interaction in the Decision Making Processes of Public Research Policies

Country Profile: Turkey

1. Political, institutional and economic framework and important actors

The Turkish R&D spending amounts to Euro 1.28 bn. (0.66% GDP). The Public Sector accounts for 50.6%, the Private Sector for 41.3% and other sources for 8.1% of GERD.¹ The Higher Education Institution (HEI) sector² is the most important performer of research (64.3% of GERD), significantly above EU and OECD averages. The Public Sector (7.0%) and Private Sector (28.7%) are less important performers compared to EU and OECD average.

Turkey possesses a developed and established public university system. However, the research base, including both public research institutions and industrial research, still needs to be developed. In the national policy context, this issue has gained importance only recently. Research policies now emphasise the identification of research and innovation focus areas and the design and implementation of appropriate policies and framework conditions conducive to research and innovation.

The Turkish economy is characterised by a strong manufacturing sector (e.g. assembly and in-licensing), but less by industrial structures based on high technology.

Recent developments show improving scientific performance and a growing international orientation of the scientific community. But the need to improve the transformation of scientific results into industrial innovation persists. Turkey is still a rather knowledge- and technology-importing economy.

In this system, a multitude of actors interact on several levels (See Figure 1).

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1. Source: OECD MSTI database; EUROSTAT 2006; 2002 data;  
2. note: performance figures of HEI in the Turkey are composed of public and private HEIs
a. Political/governmental authorities and intermediate bodies

The highest-level policy making institution in Turkey is the Supreme Council of Science and Technology (SCST), chaired by the Prime Minister. Members include representatives of different ministries, government bodies, universities and NGOs as well as the Private Sector. The main responsibilities of the council are the determination, direction and co-ordination of research and technology policies of different public actors. But to some extent, these reflect also Private Sector research requirements and strategies. The Council decides on the policies designed and proposed by the Scientific and Technical Research Council (TUBITAK), approves action plans for the implementation of policies, assigns responsible bodies and coordinators for each policy measure and follows and coordinates the implementation of policy actions. SCST is the most important and influential Turkish research technology and policy making institution. Most policy actions decided by SCST are implemented and put into force by the government.

On the operational level, TUBITAK is responsible for the design and formulation of Turkish science and technology policy. TUBITAK also provides the secretariat for the Supreme Council of Science and Technology. TUBITAK is affiliated to the Prime Minister.

Other organisations responsible for related research and innovation policy activities include the Atomic Energy Agency of Turkey (TEAK) which focuses on nuclear research and the State Planning Organisation (DPT) which is responsible for budgetary allocation.

Other actors active in formulating research and technology policy related proposals are the Turkish Academy of Sciences (TÜBA), the Higher Education Council (YÖK) and the Interuniversity Board (ÜK). However, these organisations have no decisive powers, but rather act as advisors to respective government institutions or prepare proposals.

The Technology Fund of Turkey (TTGV) is mainly providing financial support for industrial research. Financial instruments cover a wide range from seed capital provision to loans and rants for industrial research projects.

b. Research performing institutions

Turkey has 77 universities, of which 53 are public, spread over the country. Universities represent about 60 percent of Turkey’s total R&D spending and employ 70% of Turkish researchers (FTE). Under the auspices of TUBITAK, R&D institutes operate in a broad range of science and technology fields. In total, Turkey possesses approximately 90 public research institutes, of which 12 are engaged in industrial R&D. TUBITAK Marmara Research Centre (TUBITAK-MAM) conducts contractual research for industry in the fields of materials and chemistry, ICT, genetic engineering and biotechnology, energy systems and environment, food technology, and earth and marine sciences. TUBITAK-MAM also operates an incubator and a TechnoPark for high-technology enterprises in the wider Istanbul region.

c. Private Sector

Traditionally, the awareness of the importance of R&D and innovation has not been high among Turkish enterprises. The recent economic crisis of Turkey has led to further cuts in Private Sector R&D investment. Therefore, a critical mass of Private Sector R&D infrastructure is still missing with a few exceptions (large multinational corporations). At the same time, most SMEs do not possess the necessary human and financial resources and skills to perform R&D.

The Private Sector is represented by Chambers of Industry which are located countrywide. Among these chambers, especially the Istanbul Chamber of Industry (ISO) is very active in research and innovation policy. The Turkish Industrialists’ and Businessmen’s Association (TÜSİAD) contributes white papers and other inputs to policymaking, participates in several boards and promotes research and innovation through the dissemination of information, awareness-creating actions and innovation/technology excellence awards. The interests of SMEs are represented by the Small and Medium Size Industry Development Organisation (KOSGEB). The associations prepare position papers to government and communicate research and innovation policy measures to their members.
Non-profit foundations like the **ICT Foundation of Turkey (TBV)** and the **Economic Development Foundation (IKV)** established by the industrial, commercial and financial sectors carry out activities for providing and disseminating information and brokerage events on R&D, technology, commerce and finance, etc.

2. National research policy decisions and Private Sector involvement

As described in the previous chapter, the Turkish National Science and Innovation System is still in an early development stage and has been hit further by a deep economic recession in 2000/2001. Hence Private Sector research infrastructure is still underdeveloped. Due to the historical development, informal relations play a dominant role in policy decision making. Furthermore, frequent staff exchange between Private Sector and Public Sector takes place which enhances Private Sector interaction and personal networks.

**Instigation stage and Design stage**

In the instigation of research policies, the Private Sector is regularly involved through consultations, mainly with SCST but also with TUBITAK. Specific projects aiming at long-term research policy decisions (e.g. the **Vision 2023** project and the related technology foresight study) also involve the Private Sector intensively. This project was unique for Turkey so far and provided the Private Sector with the opportunity to contribute in Delphi-study-related sub-projects to the definition of directions for the future national technology development.

At this stage, the Private Sector participates mostly through its associations which prepare white papers and participate in debates. In the case of the technology foresight exercise, the Private Sector was invited to participate officially in hearings and in joint working groups for the definition and ranking of focus areas. Other policies under development favour informal involvement or the submission of white papers, because they do not imply official hearings or working groups. In the case of the National Innovation Plan, the Private Sector took the first initiative to promote policy development in specified areas by identifying action fields and developing own policy proposals.

Forecasting is used as another form of input to policy design processes. The Private Sector is asked for its opinions, needs and detailed requirements. Another common form of involvement used by Public Sector actors in the design stage of research policies is the bottom-up collection of ideas for research projects from stakeholders, including the Private Sector.

Through such involvement in Public Sector research policy decisions, in a number of cases networks and informal relations between the Public Sector and the Private Sector have emerged. Actors involved in such interactions often play a role as advisors to government.

At the design stage, different Private Sector groups are involved. Industry associations, private universities and representatives of privately managed TechnoParks are the most influential interest groups. Involvement of these actors is actively sought and initiated by the Public Sector, using more formal channels. Involving the Private Sector at this stage is considered as a success factor for the efficient and effective resource distribution, but still needs to be developed.

Private Sector involvement at the instigation stage is perceived as being conducive to the performance of the Turkish economy and the National Science and Innovation System. To account for the need to develop the industrial R&D base, much attention is given to the early involvement of the Private Sector in developing and implementing awareness campaigns. In the long run, the Private Sector involvement especially in the instigation stage is likely to increase.

The rather limited level of Private Sector R&D and innovation related activities hinders a stronger Private Sector demand for technology and innovation and for related policies. First approaches are under development, especially focusing on large industry; start up companies and the creation of awareness among the large number of SMEs.
Implementation and assessment/revision stage

In the course of overall research policy implementation, staff exchange programmes, (e.g. industrial PhD programmes) are used. In the framework of the TTGV Industrial Technology Programme, external consultants are involved in the Private Sector application assessment / evaluation procedures. Other Private Sector involvement occurs in TTGV activities such as the creation of Venture Capital Funds, the provision of Technology Support Services, Technology Development Finance and the establishment of Technology Service Centres. In all these programmes, TTGV plays a rather instigating and accompanying role, shares cost with the Private Sector and/or involves the Private Sector in information dissemination and proposal assessment.

Incentives are provided for research projects, carried out by consortia with the participation of companies settling in TechnoParks and universities. Companies settling in TechnoParks are granted a 10 year tax exemption.

Private Sector involvement in the implementation stage is of formal nature with important contributions at the beginning. Involvement sought by both Public and Private Sector is likely to increase in the next years.

Through participation in the design of direct research policy measures mainly by TUBITAK and TTGV the Private Sector is regularly involved in early stage preliminary assessment of policy measure. In the assessment of research and technology policy programme proposals, involvement refers more to the collection of opinions rather than to result- and impact-based assessment. A systematic revision of research policy-oriented policy instruments and measures is not yet applied consistently.

Observations: Possible barriers and current initiatives

In addition to the Five-Year Development Plans and other ongoing public initiatives, the Private Sector (e.g. TUSIAD) prepares an Innovation Plan for Turkey. The National Innovation System’s framework conditions receive highest priority therein, specifically the creation of awareness for R&D and innovation among Private Sector enterprises, relevant educational measures (targeting intellectual property, innovation and technology management and entrepreneurship) and financial instruments to support industrial R&D.

The Vision 2023 Project has been initiated to overcome the major problems of science, technology and innovation policy making and their implementation in Turkey. These include a lack of a shared vision and commitment of the actors, specifically respective ministries, academia and the Private Sector. Therefore, a high level of participation and commitment is sought to ensure the quality and acceptance of project results.

The World Bank plays an important role as partner in recent projects to improve the financing of research, innovation and technology development and to strengthen research infrastructures in both the Public and the Private Sector.

Apart from the efforts of funding organisations, university-industry linkages are promoted through joint centres, opened in cooperation with sectoral associations, and through programmes developed by the chambers of industry in co-operation with YOK to provide academics with the opportunity to work for industrial companies.

Recently, Technoparks were established by universities and research centres. Such Technoparks are managed mainly by KOSGEB (Technology Development Centres - TEKMERs) in co-operation with technical universities. In addition, private incubators were established by foreign High Tech companies.

The Turkish National Science and Innovation System needs to catch up from a rather early development stage and needs to mobilise especially its SMEs. R&D and the necessary awareness of innovation are underdeveloped in most enterprises (except large multinational companies). Hence a radical improvement of the National Science and Innovation System

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3 Submitted project applications are assessed by private consultants.
and its framework conditions is necessary to catch up with the average of European countries.

Several important policy decisions affecting the Private Sector are still in the planning and design phase. By tradition, the Turkish industry is characterised by a large share of rather small companies and a tendency of large companies towards an in-licensing and manufacturing focus. Hence much research is focused on process innovation, e.g. manufacturing process technologies. Intellectual property-related issues gain importance for the Turkish National Science and Innovation System. While the legal framework is established sufficiently, there is still a deficit in IP enforcement. Here, the Private Sector (especially via industry associations, namely TUSIAD) contributes to improving the situation, as the World Bank does.

3. Other important policy decisions with Private Sector involvement

Due to the described deficits and current development stage of the Turkish National Science and Innovation System, no regional policies have been developed so far.

4. Types of Private Sector involvement and degree of use

Private Sector involvement varies depending on the stages of research policy making. The Private Sector seeks to be involved especially in the instigation stage and the design of national research and innovation framework conditions. Categories of Private Sector involvement instruments mainly used are as follows:

- **Staff interaction** between the Public and the Private Sector is not developed sufficiently. Industrial research programmes and especially industrial PhD programmes are expected to increase further in number in the near future.

- **General dialogue**, initiated by policy makers, is used occasionally. Such dialogue focuses on the definition of technology fields in the framework of technology foresight activities and, to a limited extent, on the design phase preparation. General dialogue is also initiated with reference to mid- to long-term general framework conditions, e.g. intellectual property enforcement and awareness creation.

- **Informal involvement** in research policy decision processes, initiated by policy makers, is part of the design and implementation stages. The Private Sector is involved in an advisory role with no decision power. Private Sector opinions are submitted for example in the form of white papers and general official statements of industry associations.

- The Private Sector is **formally involved** through participation in advisory boards, e.g. the Supreme Council for Science and Technology. Involvement here refers concentrates on the identification of future focus areas for national research policy.

- **Joint activities** between the Public and the Private Sector on the operative level are essential in the framework of TechnoParks. Private Sector engagement is stimulated through public funding or tax exemptions under the precondition of establishing joint research with universities which host such TechnoParks.

- **Proactive involvement** sought and initiated by the Private Sector usually refers to instigation and design of mid- to long term measures related to national innovation framework conditions.

Different types and degrees of involvement are explained in more detail in Table 1 on page 7. Overall, the Private Sector is involved at early stages of research policy making with varying intensity. But even at the instigation stage, Private Sector involvement remains at a comparably low level compared with most other ERA countries.
5. Examples of transferable approaches and experiences

The following examples of Turkish research policy approaches are representative.4

5.1 “National Innovation Plan”

TUSIAD initiated the development of a national innovation plan. This plan will be developed in a number of joint Public- and Private Sector working groups, focusing on aspects of National Science and Innovation System framework conditions. Based on the requirements of the Private Sector and academia, policy measures will be proposed to the government during 2006. As part of the council for competitiveness, working groups preparing the national innovation plan consist of high level representatives from the Private Sector and academia (both private and public universities). Ministries and other Public Sector actors are not involved in the definition process itself.

5.2 Technology Foresight

The Turkish technology foresight study is an example for long term national research strategy definition. Under the auspices of SCST, a steering committee, comprising Public Sector representatives from all ministries and related organisations, non-governmental organisations, Private Sector associations and chambers and academia representatives was established. Private Sector representatives were also involved in workshops and panels which investigated research fields and technologies and in vision building exercises. In this process, technology priority technology areas as well as action fields with an immediate potential for further investigation and policy measures were identified and ranked. An important role of the government was to manage and coordinate the foresight process and to ensure a high level of stakeholder involvement.

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4 Representative examples to highlight good practices. Not intended to serve as a comprehensive list and description.
### Appendix 1: Overview of identified instruments for Private Sector involvement and their use in Turkey

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Intensity of use</th>
<th>Initiated by</th>
<th>Used for</th>
<th>Used in</th>
<th>Examples and remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insight studies, roadmapping, foresight</td>
<td>Occasional</td>
<td>Public Sector</td>
<td>Awareness &amp; identification of emerging technologies &amp; trends</td>
<td>✓ ✓</td>
<td>Technology foresight exercise</td>
</tr>
<tr>
<td>Conferences</td>
<td>Frequent</td>
<td>Both sides</td>
<td>Discussion platform</td>
<td>✓ ✓ ✓</td>
<td></td>
</tr>
<tr>
<td>Brainstorming / task forces</td>
<td>Frequent</td>
<td>Public Sector</td>
<td>Identification of priorities and possible policy actions</td>
<td>✓</td>
<td>Technology foresight exercise</td>
</tr>
<tr>
<td>Evaluation studies</td>
<td>Beginning to use</td>
<td>Public Sector</td>
<td>Program review, identification of policy needs</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Advisory groups</td>
<td>Beginning to use</td>
<td>Public Sector</td>
<td>Participation in design, evaluation, etc.</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Informal consultations</td>
<td>Frequent</td>
<td>Both sides</td>
<td>Exchange of viewpoints between stakeholders</td>
<td>✓ ✓</td>
<td>Biotechnology Program</td>
</tr>
<tr>
<td>Formal consultations</td>
<td>Occasional</td>
<td>Public Sector</td>
<td>“Official” opinion</td>
<td>✓</td>
<td>SCST</td>
</tr>
<tr>
<td>Task force</td>
<td>Beginning to use</td>
<td>Private Sector</td>
<td>Joint policy development</td>
<td>✓ ✓ ✓</td>
<td>Innovation Plan</td>
</tr>
<tr>
<td>Participation in decision making bodies (observer status)</td>
<td>Frequent</td>
<td>Public Sector</td>
<td>Decision involvement</td>
<td>✓</td>
<td>SCST</td>
</tr>
<tr>
<td>Participation in decision making bodies with (co-) decision right</td>
<td>Not common</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Administrative / supervisory boards</td>
<td>Frequent</td>
<td>Public Sector</td>
<td>Private Sector representatives involved in important institutional decisions</td>
<td>✓</td>
<td>SCST</td>
</tr>
<tr>
<td>Initiation of networks</td>
<td>Not common</td>
<td></td>
<td></td>
<td></td>
<td>TechnoParks, TTGV Industrial Technology Program</td>
</tr>
<tr>
<td>Co-financing of projects / programmes</td>
<td>Frequent</td>
<td>Public Sector</td>
<td>Sharing of cost / risks</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Public Private Partnership</td>
<td>Beginning to use</td>
<td>Public Sector</td>
<td>Pooling of resources</td>
<td>✓ ✓</td>
<td>Industrial PhD. Program</td>
</tr>
<tr>
<td>(Temporary) Staff exchange</td>
<td>Beginning to use</td>
<td>Public Sector</td>
<td>Enhance mutual understanding and mobility</td>
<td>✓</td>
<td>Industrial PhD. Program</td>
</tr>
<tr>
<td>Staff mobility</td>
<td>Not common</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Statements, studies, white papers, etc.</td>
<td>Occasional</td>
<td>Private Sector</td>
<td>Express views, recommend changes, influence decisions</td>
<td>✓ ✓</td>
<td>Industry association white papers</td>
</tr>
<tr>
<td>Dialogue platforms</td>
<td>Not common</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research funding</td>
<td>Frequent</td>
<td>Public Sector</td>
<td>Initiate / support research in desired areas</td>
<td>✓</td>
<td>TTGV</td>
</tr>
</tbody>
</table>

Table 1: Overview of instruments used for Private Sector involvement
Appendix 2: Sources and Literature

1. General and country information


2. Important actors

http://www.ttgv.org.tr  Technology Development Foundation of Turkey (TTGV)

http://www.tubitak.gov.tr/btpd/btpd_rapor/btpd_tbvtp_eng.html  Supreme Council of Science and Technology

http://www.tubitak.gov.tr  Scientific and Technical Research Council (TUBITAK)

http://www.dpt.gov.tr  State Planning Organisation (DPT)

http://www.treasury.gov.tr  Under-Secretariat of Treasury (HM)

http://www.dtm.gov.tr  Under-Secretariat of Foreign Trade (DTM)

http://www.sanayi.gov.tr  Ministry of Industry and Trade (MoIT)


http://www.turkpatent.gov.tr  Turkish Patent Institute (TPE)

http://www.turkak.org.tr  Turkish Accreditation Agency (TURKAK)

http://www.tse.org.tr  Turkish Standards Institute (TSE)

http://www.meb.gov.tr  Ministry of National Education (MoNE)

http://www.yok.gov.tr  Higher Education Board (YOK)

http://www.yok.gov.tr/uak  Inter-universities Council

http://www.mam.gov.tr  Marmara Research Centre (MAM),

http://www.tuba.gov.tr  Turkish Academy of Science (TUBA)

http://www.tobb.org.tr  Union of Chambers of Commerce and Industry (TOBB)

http://www.tusiac.org.tr  Turkish Industrialists’ and Businessmen’s Association (TUSIAD)

http://www.iso.org.tr  Istanbul Chamber of Industry (ISO)

http://www.tbv.org.tr  ICT Foundation of Turkey (TBV)

http://www.ikv.org.tr  Economic Development Foundation (IKV)

3. Other


*Innovation Policy Profile, Turkey* http://www.cordis.lu/innovation-policy/studies/geo_study3.htm#workingdocs


Country Profile: Turkey


OECD, *MSTI database*; Paris 2005


4. Further information and feedback

This country profile has been prepared by Dr. Dirk Meissner. For further information and feedback, please contact the responsible author under Dirk.Meissner@proneos.com