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ETP: European Technology Platforms - A challenge for Turkey's strategic innovation agenda

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Invited Paper

Abstract:
Innovation is a priority of most countries in the world. Many of the national policies and strategies are aimed at innovation via support schemes, technology platforms, techno parks, incubators, financial initiatives and R&D.
Turkey must innovate to be more competitive in a global economy with a view to continually improve the quality of life of its citizens. Lack of innovation has been and remains a significant and serious obstacle with an impact on the competitiveness and growth of companies in many sectors of the Turkish economy.
The 'First Action Plan for Innovation in Europe'[1], the document developed by the European Commission in 1996, provided a common systematic approach for innovation policy in EU. The political leaders in Europe are responding to these challenges mainly along the objectives of the renewed Lisbon strategy for growth and jobs in light of which the key policies and programs have been reviewed since 2005. (EID, 2007)
The foundation of "Technology Platforms" denotes the importance of Europe's innovativeness by stressing that 'Europe's future depends on innovation reference to renewed Lisbon's strategy. Also they are provide to be important constitutions in the development of European research policy to better accordance for the needs of industry.
Technology Platforms are becoming mandatory tools for proposing new research ideas under the Seventh Framework Programme. Working through technology platforms is new way of collaboration and they are expected to be flexible action forums. They make various interested parties, especially industry, more closely committed to planning and to the resulting research work.
Turkey must define priority actions to achieve a broad-based innovation strategy. Technology Platforms are such an action that enables innovation and competitiveness environment not to missed that is parallel to "national innovation policy documents"[2]
Main aim of this article is to assess national/European technology platforms with an integrated approach to national technology, R&D and innovation policies.
Turkey participation to European Technology Platforms requires a paradigm shift more than the narrow domain of research, innovation, science and technology policy.

Keywords: *European Technology Platforms, ETPs, Joint Technology Initiatives, 7th Framework, Innovation, Technology Platforms of Turkey*

(1) First Action Plan for Innovation in Europe,1996 http://cordis.europa.eu/documents/documentlibrary/4INL960517EN.pdf
(2) National Innovation Policy Documents published since 2000 in Turkey by different government organizations.

1. Introduction

In the era of increased globalization, investment in "innovation" is a key to meeting a broad range of challenges and opportunities that our society faces today. On the other hand, R&D is a priority to address issues related to sustainable development, employment and economic growth, technologically innovative economy.

World-class scientific research and development (R&D) is essential for Turkey's future prosperity. The fact that "innovation" is at the heart of economic growth and development.

In today's economy, competitiveness between clusters of innovation is more relevant and remarkable than competitiveness between nations. This context is closely linked through integrated research efforts, cooperation and collaboration among stakeholders.

The term "innovation" is defined broadly. In the 1990s, innovation was about technology, but today it involves much more. Innovation is about reinventing strategies, products and processes and creating new business models and new markets. It also is about selecting the right ideas and executing business strategies quickly and efficiently. (Innovation America, 2007:3)

To maximize our strengths as a nation, government must work together with the industry to secure national policies support innovation. Additionally the commitment of politicians, public awareness of innovation and "national technology platforms" is an important part of the process. So, it is important to raise national awareness of the urgent need to embrace innovation as the Turkey path to maintaining competitiveness.

It will be value adding to take more roles in the European Research Era by collaboration and cooperation via National Technology Platforms and is also an important action in the EU accession process. Working through technology platforms is new way of collaboration and they are expected to be flexible action forums. They make various interested parties, especially industry, more closely committed to planning and to the resulting research work.

In the context of Turkey's integration with the European Union the need for sustaining competitive advantage of industrial enterprises through technological innovation has increased. Participation to "European Technology Platforms" enables to develop and implement short and long run strategies to enhance the innovative capacity of Turkey.

2. Turkey's national technology and innovation policy and current situation

Between 1996-2001, the macroeconomic situation in Turkey was severely affected by the Russian, crisis (1998), the earthquake (1999) and two domestic crises (late 2000 and early 2001). These developments negatively influenced innovation performance of business. (Elci, 2003) Both have weakened the performance of the Turkish economy in many respects. (ETC on Innovation, 2006:20)

One of the reasons for not having a well functioning innovation system in Turkey is that until recent years industrial companies did not feel the need to innovate. The economic crises in 2000 and 2001 have been driving forces

for Turkish industry to attack foreign markets, which increased the number of companies who become aware of the requirements for global competition and innovation. In 2002, economic recovery has started which began to have a positive impact on innovation and R&D in the business sector. (Elci, 2003:21, 92)

Turkey has an institutional structure with a long-tradition of policy development and an "evaluation culture" in the field of technological development and innovation policy. However, a problem arises from weak implementation of the policies both due to lack of commitment by politicians and governments, and insufficient awareness about innovation among firms. (Elci, 2003:83)

According to the report "Lisbon Review 2004: An Assessment of Policies and Reforms in Europe" published by the World Economic Forum Report Turkey's performance in key areas including innovation in comparison to EU candidate countries and new member states Turkey lags behind all EU member states and candidate countries in the 'innovation and R&D' sub-index (which corresponds to "developing a European area for innovation, research and development" dimension of the EU's Lisbon Strategy. (ETC on Innovation, 2006)

As a result of the poor economic and innovation performances highlighted above, Turkey performs relatively badly when it comes to national competitiveness. According to the Global Competitiveness Report of the World Economic Forum, Turkey was in 66th position out of 102 countries in the 2005 growth competitiveness index, which is the second lowest ranking of all EU member and candidate states (ETC on Innovation, 2006:15)

One indicator for the innovation performance is the European Innovation Scoreboard 2004, Turkey is one of the lowest-ranking countries in most of the indicators. Weak innovation performance and Turkey's position among the countries that are "losing ground" have been the subjects of major debates in the media since the publication of the 2005 EIS results. It also helped initiate a debate in political circles. As a result, in March 2006, the Supreme Council of Turkey (BTYK) decided to collect internationally comparable data for the EIS to reflect the complete picture of Turkey's innovation performance and to formulate policies and strategies accordingly. (ETC on Innovation, 2006:4)

There is no explicit stand-alone innovation policy in Turkey. While some broader policy areas have innovation implications, such as science and technology policy, industrial policy and SME policy, innovation is not included as distinct theme in any of them. In September 2004, the BTYK approved the main objectives of the latest science and technology strategy:

- Increasing demand for R&D,
- Increasing the number and quality of scientists, vocational and technical staff,
- Increasing GERD as a percentage of GDP.

The following strategic objectives were defined in the implementation plan of the renewed science and technology strategies (2005-2010) approved by the BTYK in March 2005:

- Raising awareness of science and technology,
- Developing scientists,
- Supporting result oriented and quality research,
- Increasing the effectiveness of national science and technology governance,
- Enhancing the science and technology performance of the private sector,
- Developing a research environment and infrastructure and activating national and international linkages of researchers. (ETC on Innovation, 2006:25)

The 2006 Government Programme[3] supports the same objectives and the main target of increasing the R&D investments in the country. The following priorities are set for the year 2006:

- Ensuring that the national innovation system functions well
- Increasing R&D investments and demand for R&D in the private sector
- Enhancing the cooperation between the research community and industry
- Stimulating R&D through public procurement
- Increasing R&D activities in the defence sector
- Increasing international cooperation on R&D, particularly with European countries
- Increasing awareness of science, technology and innovation (ETC on Innovation, 2006:26)

Innovation activities

The new science and technology strategies approved by the BTYK in 2005 were designed as a result of the Vision 2023 Project which involved the largest stakeholders and united them around a shared vision on research and innovation. (ETC on Innovation, 2006)

Turkey has recently experienced an increase in the political commitment in science, technology and research. Starting from the second half of 2004, the Government, through BTYK and TUBITAK, committed itself to increase investments in R&D, and initiated a 'science and technology movement' where a number of actions will be taken to raise awareness of science and technology, to develop scientists, to support result-oriented high quality research, to increase the effectiveness of national science and technology governance, to enhance the science and technology performance of the private sector, to develop research environment and infrastructure and to activate national and international linkages of researchers. (ETC on Innovation, 2006:19)

The Turkish National Innovation Initiative (NII) was launched by the Turkish Industrialists and Businessmen Association (TUSIAD) in partnership of the leading universities, private sector companies and non-governmental organisations, in order to increase the visibility of innovation on the political agenda. NII strategy report analyses the Turkish innovation environment and points to the importance of innovation in the economic development of the country. The National Innovation Initiative's Strategy Document also addresses participation to technology platforms under the Infrastructure-Clusters and Collaboration Networks heading. (TUSIAD,2006)

(3) http://ekutup.dpt.gov.tr/program/2006.pdf

The implementation plan for the new strategies places R&D, scientists and research institutions at the heart of the policies while the importance of the private sector and its innovation activities are not given sufficient emphasis. Innovation is directly linked to R&D, although there are other means and forms of innovation which must be addressed by the policies. Therefore, policy makers need to recognize the systemic view of innovation where innovation is not primarily a result of a science and R&D push. Following this recognition, a third generation innovation policy where innovation is integrated in each policy area (including R&D) should be implemented. (ETC on Innovation, 2006:12)

Participation to "European Technology Platforms" enables to develop and implement short and long run strategies to enhance the innovative capacity of Turkey. A combination of guidelines, direct technical assistance and forums for exchanging ideas and best practices which prepared by TUBITAK will enable stakeholders to attain the goal of creating third generation innovation.

Research and development

R&D *activities are conducted by* Turkish industry and when share of R&D expenditures in GDP by the industrial sector is compared with developed countries it is quite low. On the other hand, there is a gradual increase in total Gross Domestic Expenditure on R&D (GERD) as a percentage of GDP. (Erawatch, 2006, TSI, 2006)

The reasons for the increase in industrial R&D activities and R&D personnel can be explained by:

a- relations with the EU and especially the rapidly changing market conditions under the influence of globalization forced the companies invest in R&D and innovation.
b- state support programmes for R&D projects of the industry helped the companies invest in R&D. Those programmes not only provide financial support but also raise awareness on industrial R&D and innovation through supplementary activities. Therefore, the number of companies conducting R&D with or without financial support has increased. (Elci, 2003:19)

On the other hand, there is a need to focus on raising awareness on innovation. While doing that, it is important to develop a common understanding on the concept of innovation. In general, definition of innovation has been given a narrow perspective and is mostly linked with research and development (R&D). A broader definition of innovation should be established and disseminated. (Elci, 2003:83)

3. European technology platforms

The 2005 industrial R&D scoreboard indicates that private investment in R&D in the EU is too low: the top 700 companies outside the EU increase their R&D investment by a much higher percentage than their EU counterparts (about 7% and 0.7% respectively). (ETP, 2006a)

EU governments and their leaders have committed themselves to stimulating an increase in investment in research and innovation. Not only should the scale and impact of investment in research be increased for Europe to strengthen its position as a technologically innovative economy,

but it is recognized that there is significant added value in coordinating activities at the European, national and regional levels. In bringing together a wide range of public and private stakeholders, European Technology Platforms (ETPs) are set to play a key role in this respect. (ETP, 2006a:5)

Technology platforms have been an innovation in EU research policy. They bring together all interested parties in a particular sector, or areas. These areas are chosen for their strategic importance or their potential contribution to the European Union's goals of knowledge-based growth, competitiveness and employment. (TP, 2004) *(Table 1.)*

A EUROPEAN TECHNOLOGY PLATFORM

INPUTS	PLATFORM ACTIVITIES	OUTPUTS	BENEFITS
Financial: • Framework Programmes • European Investment Bank • Commercial Banks • Structural Funds • Industrial Investment • Member State & Regional Investment. **Non-Financial:** • High-level People • Organisational and Time Commitments • Political effort, • Etc.	**Phase I:** • Development of Road Map – vision, strategy and Action Plan. **Phase II:** • Oversight / Supervision of implementation of Action Plan by industry, government and researchers.	• Focussed Research Initiatives. • Coherent & Stable Legislation & Standards. • Consistent EU & Member State Policies. • Education & Training Programmes, • Political / Market Initiatives, • Etc.	• New Products & Services, • Industrial Competitiveness • Integrated EU Markets, • Improved Employment Prospects, • Better Trade Prospects

***Table 1**: A European Technology Platform (EURAB, 2004)*

The primary objective of an ETP is to boost European industrial competitiveness. It achieves this by defining research and development priorities, timeframes and action plans on a number of strategically important issues where achieving Europe's future growth, competitiveness and sustainability objectives is dependent on major research and technological advances in the medium to long-term. ETPs focus on areas of significant economic impact and high societal relevance where there is strong public interest and scope for genuine value added through a European level response. (ETP, 2006a:5)

The European Commission promoted the concept since 2003 and then has provided, as appropriate, guidance and support as it sees ETPs as playing an important role in helping to identify new research priorities. The importance of ETPs in the European research era is reflected by the strong political backing that they have received at the highest level. (ETP, 2006a)

European Technology Platforms get together related stakeholders to ensure successful innovation and the rapid and effective delivery of the benefits of

European R&D by defining a common "vision and strategic research agenda" before all else. (Figure 1)

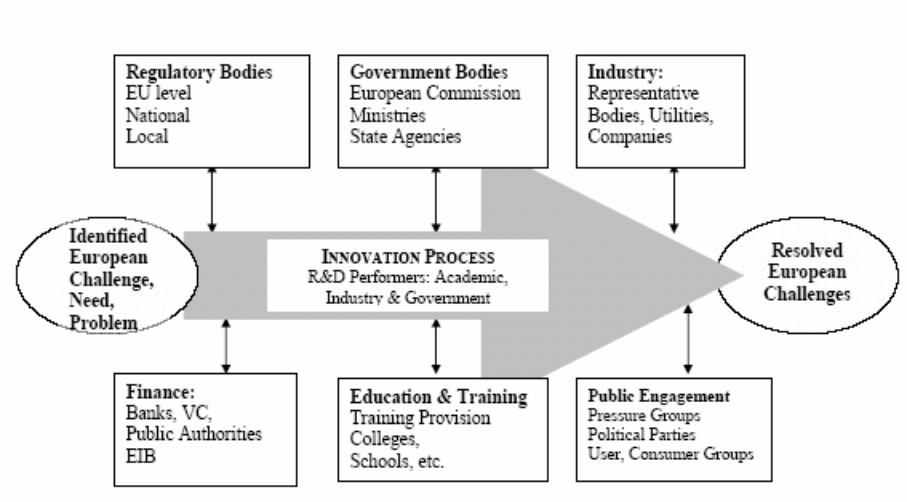

Figure 1: *ETPs Stakeholders (EURAB, 2004)*

Objective of technology platforms

A European Technology Platform is, in reality, a European Innovation Initiative which is mission-oriented to solve a major European challenge / need / problem. It draws together the main stakeholders – industrialists, governments, legislators, consumers and users, politicians as well as researchers - from across Europe – even globally – who, working together, can provide the solutions (EURAB, 2004:7).

Technology platforms were developed to foster effective public-private partnerships. Through this cooperation, technology platforms can define the necessary research and technological priorities for that sector in the medium to long- term and to coordinate European and national, as well as public and private, R&D investments. In doing so, technology platforms can make a significant contribution to the development of a European Research Area (TP, 2004).

According to European Research Advisory Board (EURAB, 2004) platforms should be;

A Response to Major European Challenges: The Platforms are mission oriented and address *major* European economic-environmental-technical-social challenges. They are not short-term, problem solving devices.

A Strategic European Initiative: Platforms should be set up only when there is a well-defined, European strategic need for such an instrument, and European added value can be clearly justified.

Politically Highly Visible: To affect change across national, industrial, technological boundaries, Platforms must create strong political support and be highly visible at a European, even at a global level.

Industry Led: To be effective, Platforms must be driven by actors from the applications / problem end of the innovation process.

Well planned and executed: There must be a Road Map with a longer-term vision, a sound strategy for achieving this vision and a detailed action-plan for carrying out the necessary activities.

Codes of Practice on Transparency and Openness are implemented by all Technology Platforms and are unanimously agreed to be helpful in achieving the TP Objectives. *Participation of NGOs and public administrations* is assured by all Technology Platforms using different structures and means depending on the topic of the TP.. All TPs have developed *Strategic Research Agendas* or are in the process to do so, the implementation of these SRAs is starting, which coincides well with the timeframe for FP7. (Altmann, 2005)

Technology platforms: Current areas and participants
Some 20 ETPs have now published a "Vision" document and the majority have also completed or developed an advanced draft of their Strategic Research Agenda (SRA). These platforms are now preparing to move to the third stage of development – implementation. (ETP, 2006a:7)(Table 2)

Also key factors for success of implementation of technology platforms (ETP, 2006) can be summarized as follows;

- Industry-led and competitiveness-driven
- Wide stakeholder involvement
- Flexibility
- Concrete deliverables
- Active role of "Mirror Groups"
- Communication-dissemination
- Financial engineering for funding. (It is needed to mobilize a range of public & private funding sources e.g. industry, national & regional research programmes, structural funds.)

European Technology Platforms (ETPs) are actively bringing together stakeholders to define common and ambitious Strategic Research Agendas (SRAs) in strategically important areas. As such, they are set to play a key role in structuring the European Research and Innovation Area and in demonstrating the added value of cooperation.

Through their SRAs, ETPs are providing an input to the development of European research policy. In addition to their input in the formulation of the Seventh Framework Programme, they are playing a role in shaping national, regional and other international research priorities, as well as private sector programmes. (ETP, 2006a:14)

These will vary from one sector to another, but will include research institutions, national and regional public authorities, financial institutions, users groups, regulatory authorities, policy-makers, NGOs. In each case, industry is "the driving force". (TP, 2004)

The normal model is that the scope and rules of the platform are defined by core firms in the sector, then others are free to join. Market building measures, including the participation of regulators and users, are part of the concept but their precise nature is likely to be specific to each sector. Anticipatory regulation becomes feasible in this context. European Commission (2006:22). It is vital also to increase the productivity of R&D in Europe through a focus on excellence and a willingness to cut sub-standard

or low priority research to free up resources to be spent on the best. European Commission (2006:24).

Table 2**:** *European Technology Platforms,* (ETP, 2006a:15).

New technologies leading to radical change in a sector, if developed and deployed appropriately and in time:
The European Hydrogen and Fuel Cell Technology Platform (HFP)
ENIAC - European Nanoelectronics Initiative Advisory Council
NanoMedicine - Nanotechnologies for Medical Applications
Reconciliation of different policy objectives with a view to sustainable development
Plants for the Future
Water Supply and Sanitation Technology Platform (WSSTP)
The European Technology Platform on Photovoltaics
Technology Platform on Sustainable Chemistry
European Technology Platform for Global Animal Health (GAH)
ERTRAC European Road Transport Research Advisory Council
ERRAC European Rail Research Advisory Council
WATERBORNE Technology Platform
(Supported by ACMARE Advisory Council)
Forest Based Sector Technology Platform
EuMaT - European Technology Platform for Advanced Engineering Materials and Technologies
The European Technology Platform on Industrial Safety
Food European Technology Platform “Food for Life”
New technology based public goods or services with high entry barriers, uncertain profitability, but high economic and social potential
The Mobile and Wireless Communications Technology Platform (eMobility)
Innovative Medicines for Europe
Integral Satcom Initiative (ISI)
Ensuring the development of the necessary technology breakthroughs to keep at the leading edge of technologies in high-technology sectors which have significant strategic and economic importance for Europe
Embedded Systems (ARTEMIS)
ACARE - Advisory Council for Aeronautics Research in Europe
The European Space Technology Platform (ESTP)
The NEM Initiative - European Initiative on NETWORKED and ELECTRONIC MEDIA
Networked European Software and Services Initiative (NESSI)
EUROP, the European Robotics Platform
Photonics21 - The Photonics Technology Platform
New technologies applied to traditional industrial sectors
ESTEP - The European Steel Technology Platform
The European Technology Platform for the Future of Textiles and Clothing (ETP-FTC)
MANUFUTURE - Platform on Future Manufacturing Technologies
The European Construction Technology Platform (ECTP)

Technology platforms form an effective vehicle for the course of action that we propose, allowing flexible use of resources and the opportunity to combine market creation and technological development. National governments to be selective about which platforms they invest in, ensuring first that there is a genuine need and commitment. (European Commission 2006:22)

ETPs bring together a wide range of stakeholders, including key industrial players, small and medium enterprises, the financial world, national and regional public authorities, the research community, universities, non-governmental organisations and civil society.

They generally follow a three stage process of development:
European Technology Platforms:Three Stages (ETP, 2006)
Stage 1: Stakeholders get together: Stakeholders, led by industry, come together to agree a common vision for the technology.
Stage 2: Stakeholders define a Strategic Research Agenda: Setting out the necessary medium-to long term objectives for the technology.
Stage 3: Stakeholders implement the Strategic Research Agenda with the mobilization of significant human and financial resources.

As expressed in Second Status Report ETP (ETP 2006a) “their influence on industrial and research policy, ETPs interact with each other and have a positive impact on a wide range of other community policies, including industry, sustainable development, health and transport, as well as on a range of broader societal issues.”

“In practice, the positive impact of ETPs is even more far-reaching: ETPs can play a role in shaping standards and in creating networks and associations at European, national and regional level; they can provide significant input in identifying and overcoming unnecessary regulatory and administrative barriers to commercializing the results of research in Europe; and they can contribute to the definition of future education and training needs to help ensure the effective implementation of the technologies developed”. In addition to their significant influence on setting priorities for community funded research programmes, ETPs are also impacting positively on other national and regional research initiatives. As such, they are set to play a key role in shaping research and innovation policy. (ETP, 2006a:6)

Mobility in organisation and knowledge means cutting across established structures to allow new linkages to be made that are well-adapted to emerging knowledge-based industries:
• European technology platforms are needed to create and to take advantage of innovation-friendly markets.
• Clusters provide an important setting for mobility and a multiplier for other measures. It is important to ensure that clusters are defined in terms of new market and knowledge relationships and not traditional sectors. Effective multi-level governance arrangements are needed. European Commission (2006:25).

Public authorities are actively involved in ETPs as policy-makers and funding agencies, as well as promoters and consumers of technologies. Most Member States are taking steps to raise awareness within their industries, research organizations and academic circles and many have carried out strategic analyses to identify the most important platforms to be targeted. Given the importance of the committed involvement of national authorities, some ETPs have set up Member State “Mirror Groups”. Composed of experts nominated by the Member States, Mirror Groups aim to facilitate coordination and provide an effective two-way interface between platforms and complementary activities at a national level. (ETP, 2006a)

European Technology Platforms (ETPs) (CORDIS,2006)

- provide a framework for stakeholders, led by industry, to define research and development priorities, timeframes and action plans on a number of strategically important issues where achieving Europe's future growth, competitiveness and sustainability objectives is dependent upon major research and technological advances in the medium to long term.
- Play a key role in ensuring an adequate focus of research funding on areas with a high degree of industrial relevance, by covering the whole economic value chain and by mobilising public authorities at national and regional levels. In fostering effective public-private partnerships, technology platforms have the potential to contribute significantly to the renewed Lisbon strategy and to the development of a European Research Area of knowledge for growth. As such, they are proving to be powerful actors in the development of European research policy, in particular in orienting the Seventh Research Framework Programme to better meet the needs of industry.
- Address technological challenges that can potentially contribute to a number of key policy objectives which are essential for Europe's future competitiveness, including the timely development and deployment of new technologies, technology development with a view to sustainable development, new technology-based public goods and services, technological breakthroughs necessary to remain at the leading edge in high technology sectors and the restructuring of traditional industrial sectors.

Background of technology platforms

The first European Technology Platforms (ETPs) emerged in 2002-2003. Since then, the concept has been taken up widely and there are now 29 ETPs up and running. These span a wide range of technologies which are key to Europe’s future growth and competitiveness objectives.

Many initiatives have demonstrated strong support to ETPs like The European Parliament, the Committee on Research, Industry and Energy (ITRE), The European Research Advisory Board (EURAB) and welcomed the concept as an important tool to bring together a range of stakeholders. (ETP, 2006a)

The five year assessment of the Sixth Framework Programme endorses the establishment of a limited number of ETPs. The European Commission has taken account of the outputs of their work in developing research policy, including notably when formulating its proposals for the Seventh Framework Programme (FP7) and the associated Specific Programmes. This has been a valuable way of ensuring the industrial relevance of the proposed content of the themes. The 7th Framework Programme is better tailored to meet industry’s needs. (ETP, 2006a:7)

As well as the Seventh Framework Programme (FP7) research themes, the work of European Technology Platforms (ETPs) is also impacting positively on several other areas aimed at boosting European research efforts, efficiencies and major objectives under FP7. (ETP, 2006a:10)

The three-stage process of development followed by European Technology Platforms (ETPs) has proven to be an effective and appropriate model to elaborate a common vision and research agenda for the technologies concerned. While many of the well-established platforms are ready to

implement their Strategic Research Agendas (SRAs), initiatives are continuing to emerge in new areas. (ETP, 2006a:12)

Technology platforms have an important role to play in efforts to boost research and technological development in Europe and to leverage knowledge for economic growth. The First Annual Scoreboard on Investment in R&D shows how much the EU has to do to reach its target of investing 3% of GDP in research and development. (TP, 2004)

The initiative to set up an ETP comes from industry and platforms are developed entirely by their stakeholders. Therefore, under the Seventh Framework Programme, ETPs will continue to define their own operational modalities and activities furthermore and the Commission services will maintain their role of facilitation and encouragement. For the implementation of their SRAs, platforms will be eligible for financial support through the regular funding schemes. The Commission will also to continue to facilitate the coordination and the sharing of best practice on key issues such as openness and transparency, SME participation and third country involvement, financial engineering and cross-platforms interaction, for example through communication activities and the organisation of inter-platform meetings. (ETP, 2006a:12)

Determination of European research priorities by ETPs
The Seventh Framework Programme will be implemented through the Specific Programmes and the more detailed Work Programmes, prepared on an annual basis, defining topics on which proposals will be invited. As part of this process, ETPs could play a role in providing inputs to the Commission services on the priorities for the Work Programmes, complementing other sources of advice. (ETP, 2006a:12)

This will help to ensure that the Framework Programme continues to take account of the evolving needs and priorities of ETPs so that it can continue to play an appropriate role in supporting the implementation of SRAs.

Extended platforms defined as a core instrument in report European Commission (2006:21), European technology platforms are a key organisational innovation in the creation and exploitation of innovation-friendly markets. These assemble all interested parties in strategically important sectors for the EU so as to foster effective public-private partnership and bring together key stakeholders, under the leadership of industry, around a shared vision for the development and deployment of the technologies concerned.

A key function has been to define the necessary research and technical priorities in the medium-long term for the sector. This may influence and create new coalitions in funding in FP7 (either as JTIs or as foci for collaborative projects), national and regional programmes (including joint programmes between several member states) and Structural Funds, as well as take advantage of the increased interest of the European Investment Bank in the area of high-tech and financially risky projects in the field of technology.

4. National technology platforms and Turkey's agenda
National Technology Platforms have potential mechanisms to be the locomotive for industry driven innovation Turkey. Under the increasing

threats of global competition Turkish firms should be proactive in defining their research needs and be active in innovation process.

A shared vision, commitment, awareness on innovation among stakeholders and effective implementation for technology policies is a must for success in innovation. Clear roles and responsibilities should be defined for implementing bodies of national technology platforms unique to topic and cooperation structure. Additionally impacts and results of every strategic research agenda should be monitored and evaluated systematically and continuously by national innovation policy secretariat TUBITAK.

In innovation policy actions, creating awareness in society should be given higher priority for promoting innovation and actions like technology platforms.

It is important to understand the different roles and opportunities at the macro and micro levels. Foundation of technology platforms and strategy research agenda implementations are both needed to base on the following principles.

- Driven by 'related industry and practitioners' needs.
- Facilitating to build consensus and commitment among platform stakeholders
- Anticipating change in global developments about technology and platform related areas.
- Trying to close the gap between research and innovation.
- Promoting dialogue and synergy between stakeholders.

European Technology Platforms strategic targets are showing parallelism and overlap with some of Turkey's National Innovation Policy Documents highlights include;

- Enhance and strengtened cooperation and coordination among firms in the industry and R&D institutions.
- Creation and exploitation of innovation-friendly markets
- Bridging the gap between high level policy objectives and reality.
- Enhancing collaboration between actors in the country (University, enterprises, public and private sectors etc., R&D Centres)
- Existing strategic initiatives that targets common goals for innovation, technology and R&D.
- Creation of synergy and co-operation and synergy among such organisations for promoting innovation.
- Empowerment of existing strong competitive clusters
- Innovations in services and production.
- Increasing investments in human resources for innovation[4]
- Enhancing university-industry co-operation[5]
- Increasing innovation activities of the private sector[6]
- Identifying potential research areas for future prosperity of Turkey.
- Defining future education and training needs
- Reinforcing synergies with other research support programmes.

(4),(5), (6) ETC on Innovation, 2006. They are also main innovation policy challenges for Turkey.

It is necessary to identify future challenges of innovation and research activity and analyze such areas of expertise which will foster the well-being in society and the competitiveness of business and industry by means of scientific research and innovation activities.

National Technology Platforms have been stimulating collaborations between university/research centre and industry in their programmes which have been proved to be successful. Increasing the level of co-operation requires a change in culture both for the research community and for the business sector which must be achieved by education, training and awareness raising activities as well as some initiatives and legislative improvements to encourage such co-operations.

5. Conclusion

European technology platforms cutting across established structures to allow new linkages to be made through the instruments. The misson of the platforms is to supply a mobility between organisation and to create a collective knowledge can be increased by leads of the industry.

The reports of vision 2023 and NIIs targets will enable taking steps on the way to innovation. Technology platforms will help to contribute for focusing the research needs which present a high degree of industrial relevance.

Irrespective of what happens in the Financial Perspectives, technology platforms are also set to become powerful actors in EU research policy. The expectation that the technology platforms should be the champions of knowledge for growth (Potočnık, 2005:5,6).

Firstly, because they will contribute to focusing our research funding on areas of research which present a high degree of industrial relevance. It is not, in first place, a question of channeling more FP money to industry, but rather of ensuring that EU research responds to industry's needs.

The Strategic Research Agendas are precisely the tools we need for that. They have already significantly inspired the identification of research themes for the Seventh Framework Programme.

Secondly, technology platforms can cover the whole economic value chain – from knowledge production to transforming that knowledge into successful technologies and processes, products and services.

It would be expected that technology platforms to address all innovation challenges in a coherent way, so that at the end of the process, the results from research are taken up in the market and Europe can increase its innovative capacity to transform excellence in science into increased economic value.

This is why it will be believed the leadership role, as industrialists, in technology platforms is essential. It ensures that platforms are focused on potential future markets for key technologies and that they give the necessary impulse to realize Europe's potential in cutting edge technologies.

In this regard, openness and transparency are important in ensuring the participation of regulators and other stakeholders. This promotes widespread awareness of the opportunities and challenges that key sectors represent in the knowledge economy.

Thirdly, though certainly not least importantly, technology platforms can mobilize public authorities at national and regional levels to participate in this joint effort.

The European Framework Programme is only one source of research funding. As industrialists, you are only too well aware of the need to create better synergy between European and national investments, and between public and private efforts.

The Framework Programme will support the implementation of Strategic Research Agendas through the work programmes under the various research themes. These themes will have greater flexibility to use a simpler set of instruments to respond to specific needs.

In some areas, there may be an opportunity and a need to establish a long term public private partnership of a scale and scope that cannot be supported through the normal procedures and instruments of the Framework Programme. In such cases, the Commission will be ready to propose, for decision by the Member States, the establishment of **Joint Technology Initiatives.**

A Joint Technology Initiative must not only make a unique contribution to Europe's industrial competitiveness in strategic technologies. It must also show clear evidence that the normal instruments of the Framework Programme would not achieve the desired outcome. A technology platform does not necessarily need to lead to a Joint Technology Initiative. In the majority of cases, a technology platform can be implemented most effectively using the normal instruments of the Framework Programme.

The idea that technology platforms are only successful if they lead into a Joint Technology Initiative is therefore unquestionably a false one. In presenting its proposal for the Seventh Framework Programme, the Commission has identified a limit*ed number of areas where a Joint Technology Initiative could have particular relevance.*

This list is not final and it is not finite. It is quite possible that, in the future, other Joint Technology Initiatives could be proposed.

It is now for the industries involved in the six areas identified to build a case to demonstrate that their Strategic Research Agendas meet the criteria for a Joint Technology Initiative. It is also for them to show that implementation of a Joint Technology Initiative will lead to concrete deliverables that will impact positively on Europe's industrial competitiveness.

Joint Technology Initiatives would be directly co-funded by the Framework Programme and Member States must agree to their launch. The Commission will therefore only propose Joint Technology Initiatives in cases where we can convincingly demonstrate to Member States, and to the tax paying public at large, that this makes sense.

Knowledge for growth must be and will be at the core of the Seventh Framework Programme. Making the programme more relevant for industry is a vital part of this, and technology platforms have an important role to play in making this happen. Technology platforms are, and will continue to be, essential partners in our European research and innovation policy, irrespective of whether or not they lead to Joint Technology Initiatives.

The expectations from technology platforms vis-à-vis the Framework Programme are very strong, and these expectations are legitimate. Thus,

the expectations vis-à-vis the technology platforms are equally strong (Potočnık, 2005).

On the other hand, Turkey's science and technology strategy enhance useful integration of the science and technology infrastructure with industrial needs and collaboration between universities and industry. National technology platforms should be acted a key role in this integration and will be great challenges for Turkey to create an environment conducive to innovation.

With the shift towards the knowledge society, changing technologies, working styles and the continuous evolution of information, increased competence people's knowledge and skills need continuous development. Under the discussion above education and skilled human are critical strategic priorities in the way to accelerating the innovation and promote competitiveness and economic prosperity.

Changing Turkey's position in the global environment and growing investments in innovations -private and public- makes innovation foresight necessary. We have to utilize our good innovation policy experiences from company level to national level. Turkey's business environment is becoming increasingly global and competitive. To exist in the international arena it is crucial necessary to adopt a new development policies and strategies that maximizes the rate of innovation and competitiveness. There has to be much to build on, and it is time to act now.

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Avrupa teknoloji platformları: Türkiye'nin stratejik yenilikçilik gündemi için bir fırsat

"Yenilikçilik" dünyadaki pek çok ülkenin önceliği durumundadır. Ulusal politika ve stratejilerin bir çoğu teknoloji platformları, teknoparklar, inkübatörler, finansal girişimler ve ar-ge yoluyla yenilikçiliği hedeflemektedirler.

Türkiye, global ekonomide daha rekabetçi olarak vatandaşlarının yaşam kalitesini sürekli geliştirebilmek için yenilikçi olmak zorundadır. Yenilikçilik eksikliği halen Türk ekonomisindeki pek çok sektördeki firmanın büyümesini ve rekabetçiliğini önemli ve ciddi bir engel olarak etkilemektedir.

1996 yılında Avrupa Komisyonu tarafından geliştirilen "First Action Plan for Innovation in Europe" isimli belgede, Avrupa Yenilikçilik Politikalarına genel, sistematik bir bakış açısı sağlanmıştır. Avrupa'daki siyasi liderler konuya 2005 ten beri gözden geçirilen temel politikalar ve programlar ışığında, yenilenmiş Lisbon stratejisinin büyüme ve iş ile ilgili amaçları doğrultusunda yaklaşmaktadırlar. (EID,2007)

Teknoloji Platformlarının kurulması, Avrupa'nın geleceğinin yenilikçiliğe bağlı olduğunu ve önemini, Lisbon Stratejisine atıfla vurgular. Ayrıca teknoloji platformları

Avrupa araştırma politikalarının, endüstrinin ihtiyaçlarına uygun olarak geliştirmesinde önemli oluşumlardır.

Teknoloji Platformları, 7. Çerçeve Programı altında araştırma fikirleri önermek için zorunlu araçlardan biri haline gelmektedir. Platformlar aracılığı ile çalışmak yeni bir işbirliği yoludur ve sözkonusu platformların esnek hareket forumları olması beklenmektedir. Teknoloji Platformları daha yakın planlama ve araştırma çalışmaları yapmak üzere özellikle endüstriden pek çok ilgili tarafı bir araya getirmektedirler.

Türkiye geniş tabanlı bir yenilikçilik stratejisini başarmak için öncelikli faaliyetlerini tanımlamalıdır. Teknoloji Platformları, "ulusal yenilikçilik politikası belgelerindeki hedeflere paralel olarak kaçırılmaması gereken, yenilikçilik ve rekabetçilik ortamlarını mümkün kılan türden öncelikli hareketlerdendir.

Bu makalenin temel amacı Avrupa Teknoloji Platformları'nı ulusal teknoloji, araştırma geliştirme ve yenilikçilik politikalarına bütünleşik bir bakış açısı ile birlikte değerlendirmektir.

Türkiye'nin Avrupa Teknoloji Platformlarına katılımı; araştırma, inovasyon, bilim ve teknoloji politikaları ilgi alanlarında dar bir bakış açısı yerine bir paradigma değişimini gerektirmektedir.