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ÜNİVERSİTE - SANAYİ İŞBİRLİĞİ
MERKEZLERİ PLATFORMU

**THE R&D ECOSYSTEM IN TURKEY:
RECENT DEVELOPMENTS**

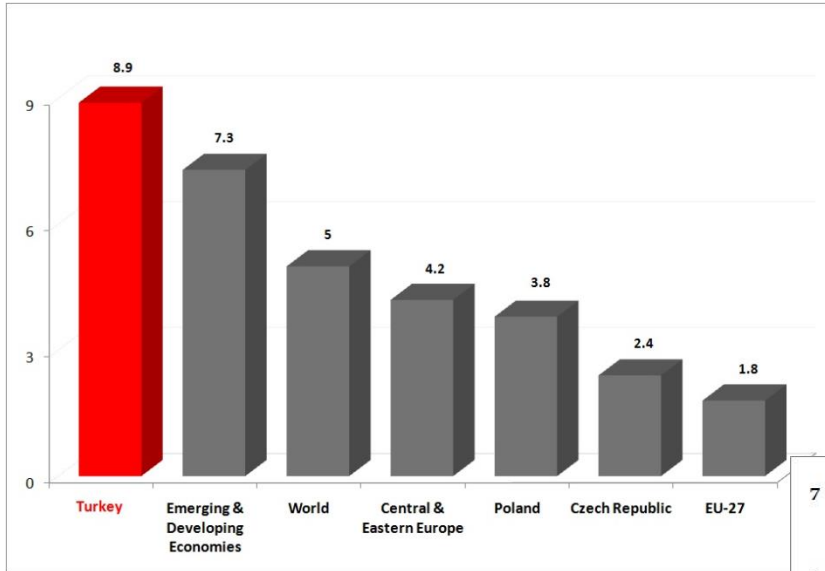
Fazilet Vardar Sukan
Ege University – EBILTEM
USIMP Secretary

TURKEY OVERVIEW

GDP	USD 772 billion (2011-Current Prices)
GDP Per Capita	USD 10,444 (2011)
Exports Value	USD 135 billion (2011)
Imports Value	USD 241 billion (2011)
Foreign Direct Investment	USD 15.9 billion (2011)
Number of Companies with Foreign Capital	29,283 (2011)
Inflation Rate	10.4% (CPI-2011)
Major Exports Markets	Germany (10.3%); Iraq (6.2%); UK (6.0%); Italy (5.8%); France (5.0%) (2011)
Major Imports Sources	Russia (9.9%); Germany (9.5%); China (9.0%); USA (6.7%); Italy (5.6%) (2011)



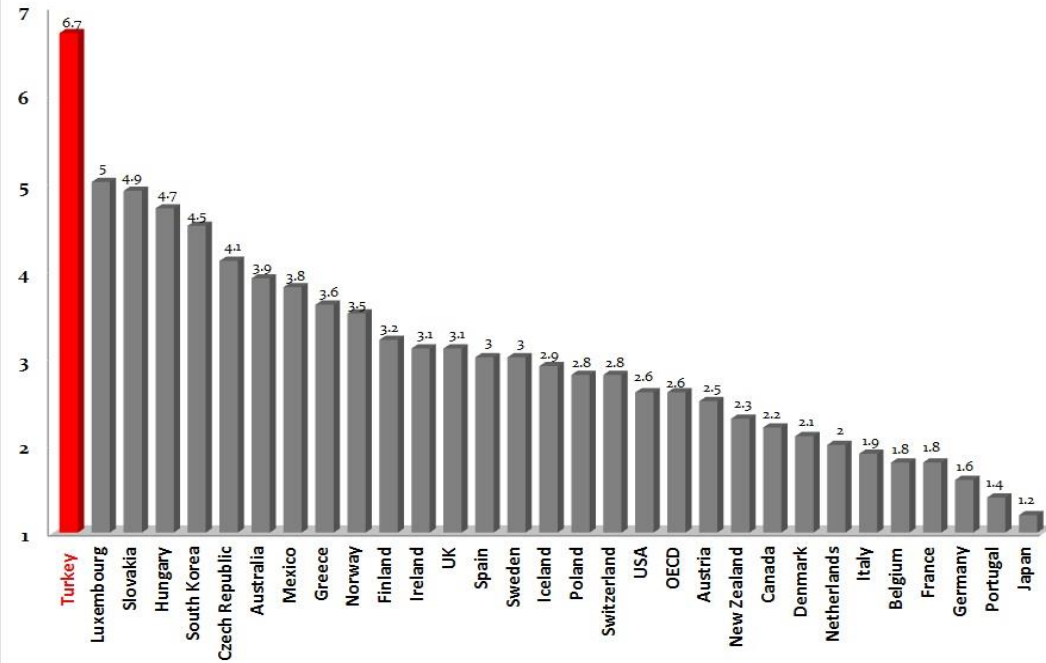
2010 STATISTICS



*Annual Average Real GDP Growth
OECD Countries 2011-2017*

2010 Real GDP Growth (%)

Source: IMF World Economic Outlook April 2011, Turkish Statistical Institute (TurkStat)



WHERE TURKEY IS?



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FASTEST DEVELOPING COUNTRIES



**Emerging
Market Global
Players, 2012**

**BRIC + Next 11,
2005**

**Next Group of
Emerging
Markets , 2009**

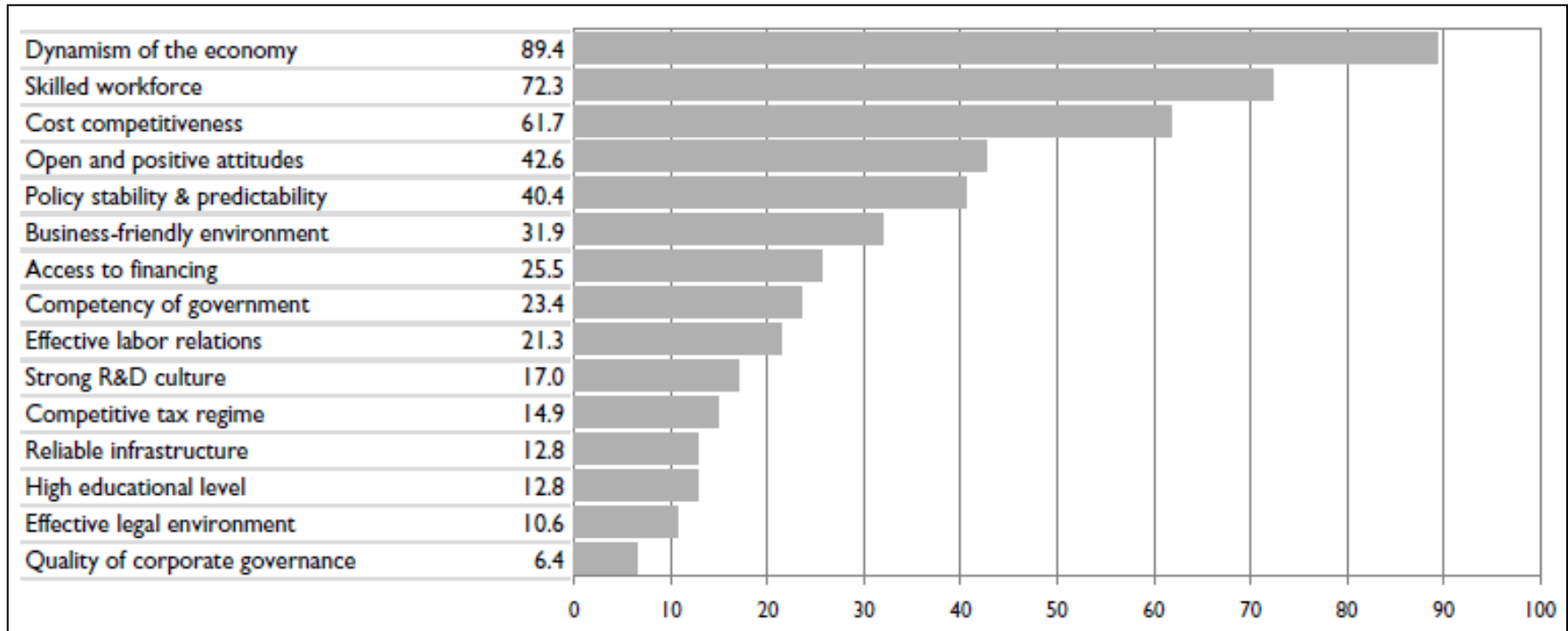
**Markets for
Investors, 2007**

Source: Executive Travel, October 2012
Courtesy of Prof. Hasan Mandal



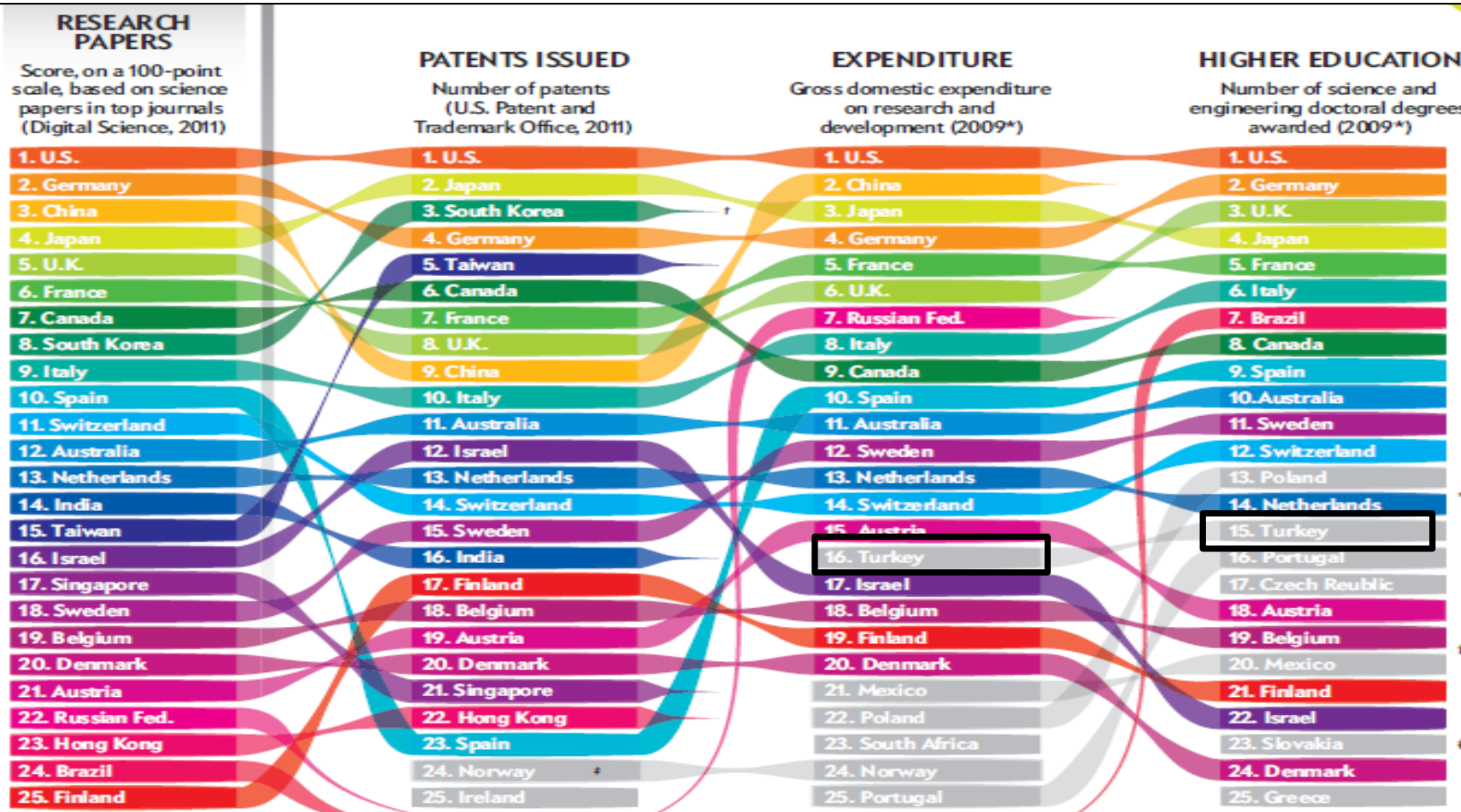
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Key Indicators for Competitiveness –TURKEY



Executive Opinion Survey asked respondents to select 5 that they perceived as the key attractiveness factors of their economy, from a list of 15 indicators. The chart shows the percentage of responses per indicator.

The best in Science in the World



Source: October 2012, ScientificAmerican.com
Courtesy of Prof. Hasan Mandal

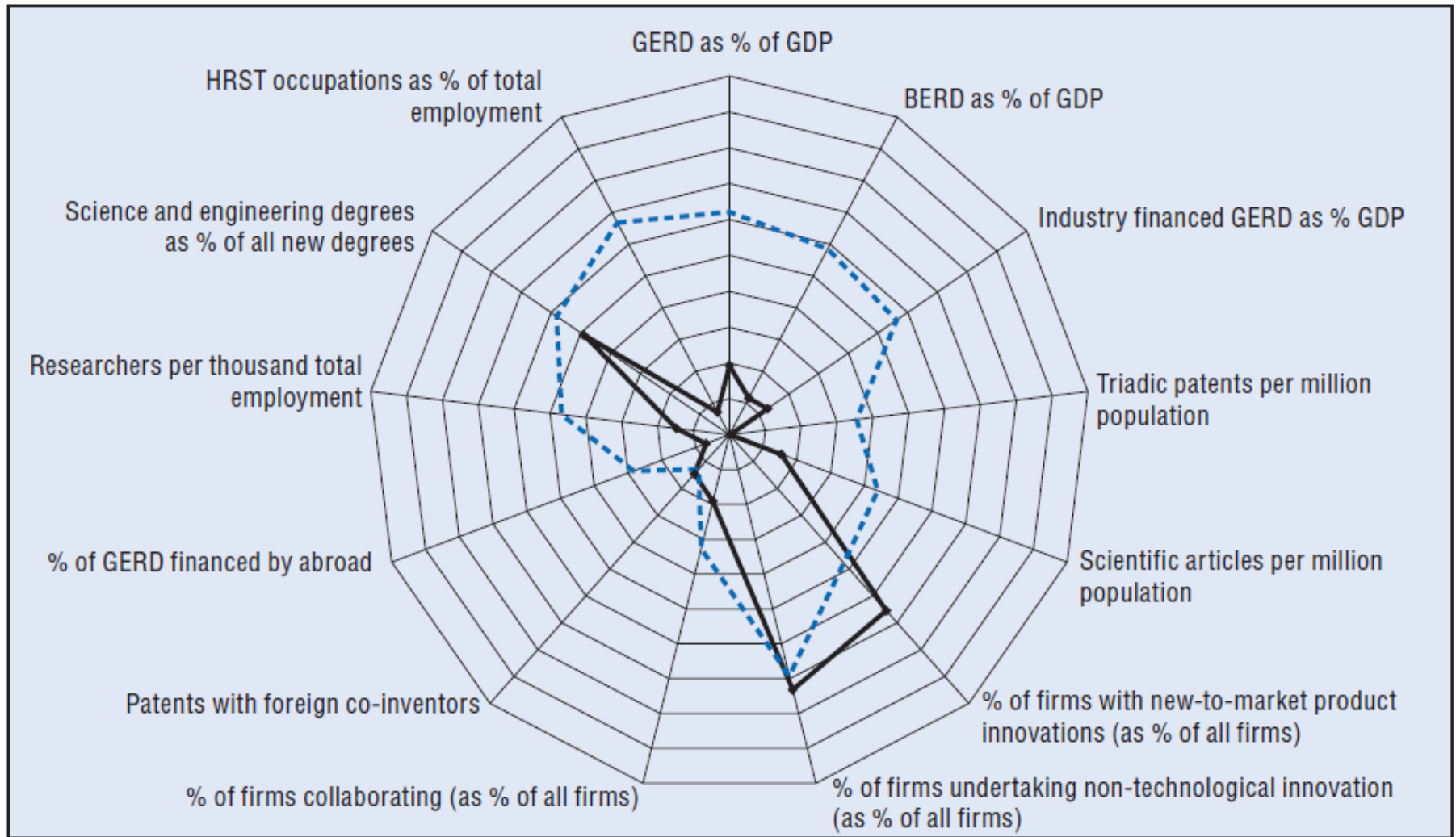


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INNOVATION INDICATORS

— Turkey

- - - Average

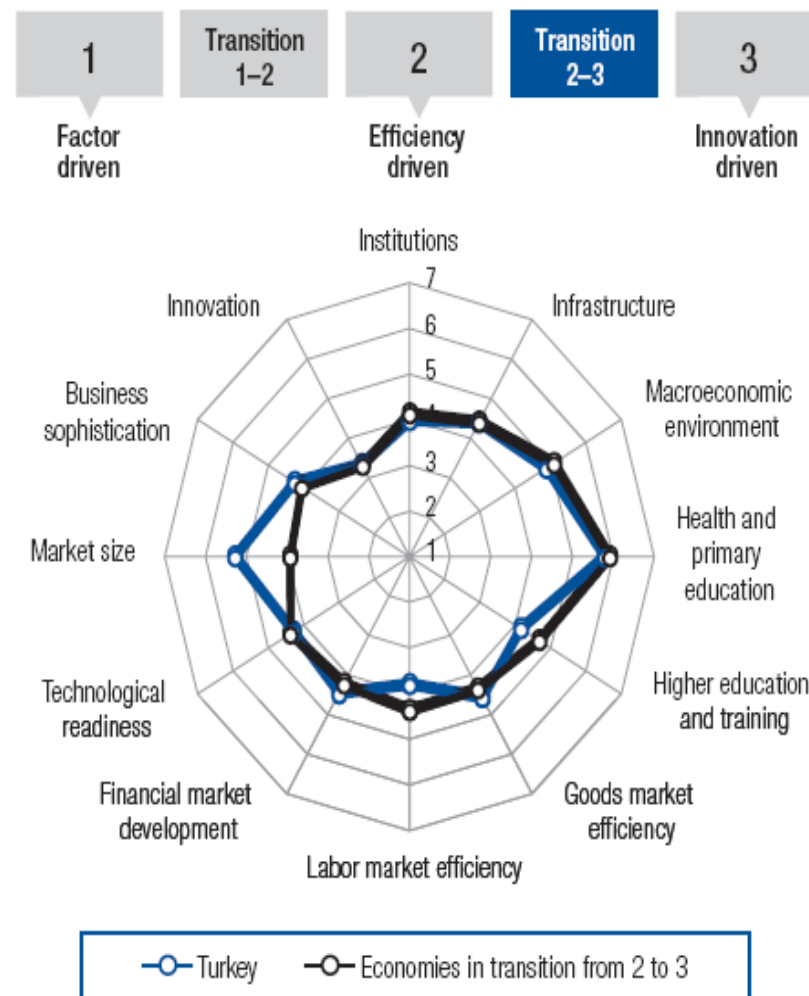


WEF GLOBAL COMPETITIVENESS REPORT (2012 – 2013)

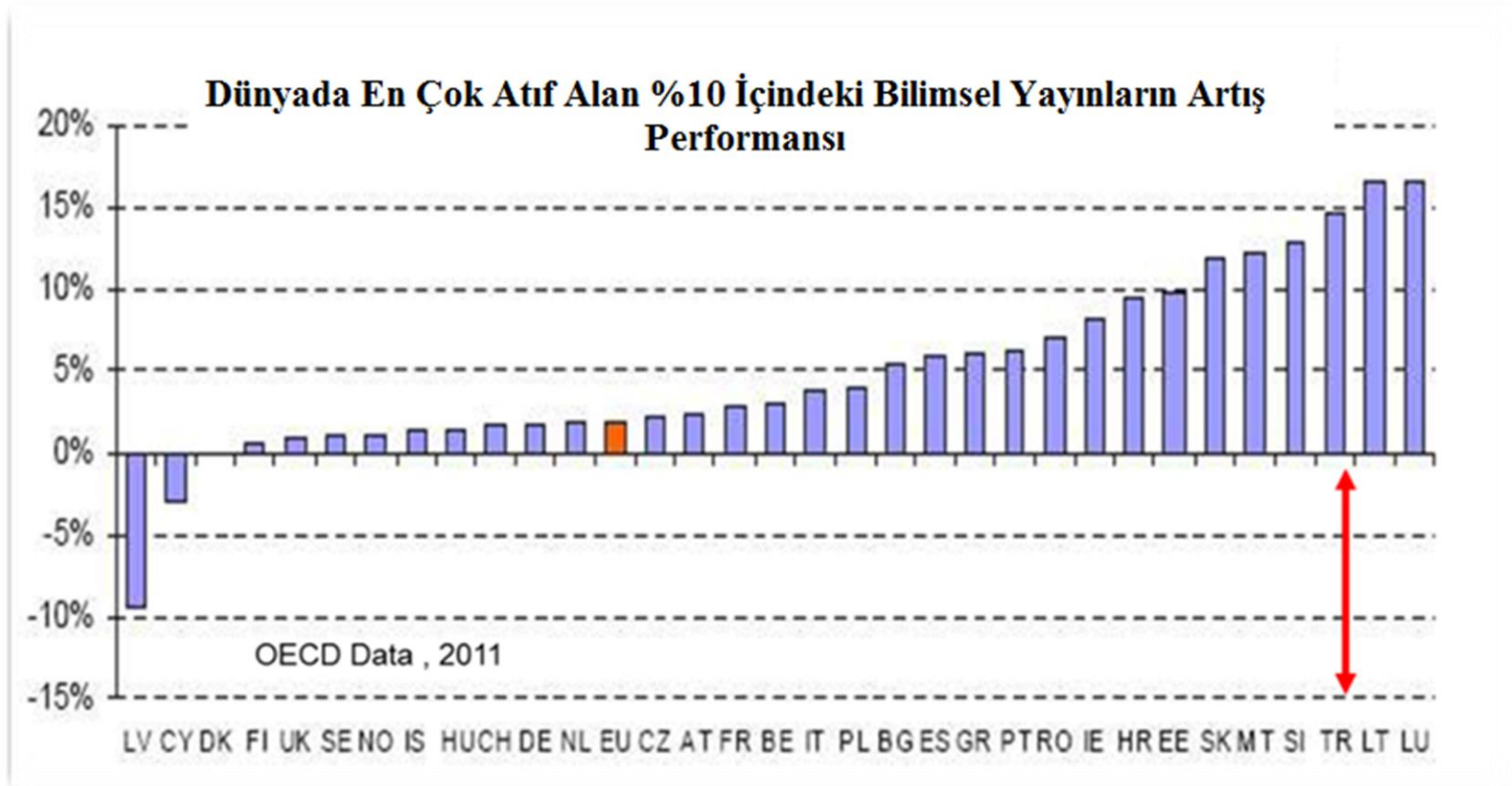
The Global Competitiveness Index

	Rank (out of 144)	Score (1–7)
GCI 2012–2013	43	4.5
GCI 2011–2012 (out of 142).....	59	4.3
GCI 2010–2011 (out of 139).....	61	4.2
Basic requirements (36.2%)	57	4.8
Institutions	64	4.0
Infrastructure	51	4.4
Macroeconomic environment	55	4.9
Health and primary education.....	63	5.8
Efficiency enhancers (50.0%)	42	4.4
Higher education and training.....	74	4.1
Goods market efficiency	38	4.6
Labor market efficiency	124	3.8
Financial market development	44	4.5
Technological readiness.....	53	4.3
Market size.....	15	5.3
Innovation and sophistication factors (13.8%)	50	3.8
Business sophistication	47	4.3
Innovation.....	55	3.3

Stage of development



INCREASE IN SCIENTIFIC PUBLICATIONS



Increase in scientific publications in the last 30 years is 8 fold of the world average

Courtesy of Prof. Hasan Mandal



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TECHNOLOGICAL LEVEL - EXPORTS

	2002	2010	Change
High	6.2 %	3.4%	-2.8%
High to Medium	24.3%	32.2%	+7.9%
Medium to Low	22.8%	31.8%	+9.0%
Low	46.8 %	32.6%	-14.2%

WHAT ARE THE TARGETS?



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2023 TARGET: One of the top 10 Largest Economies

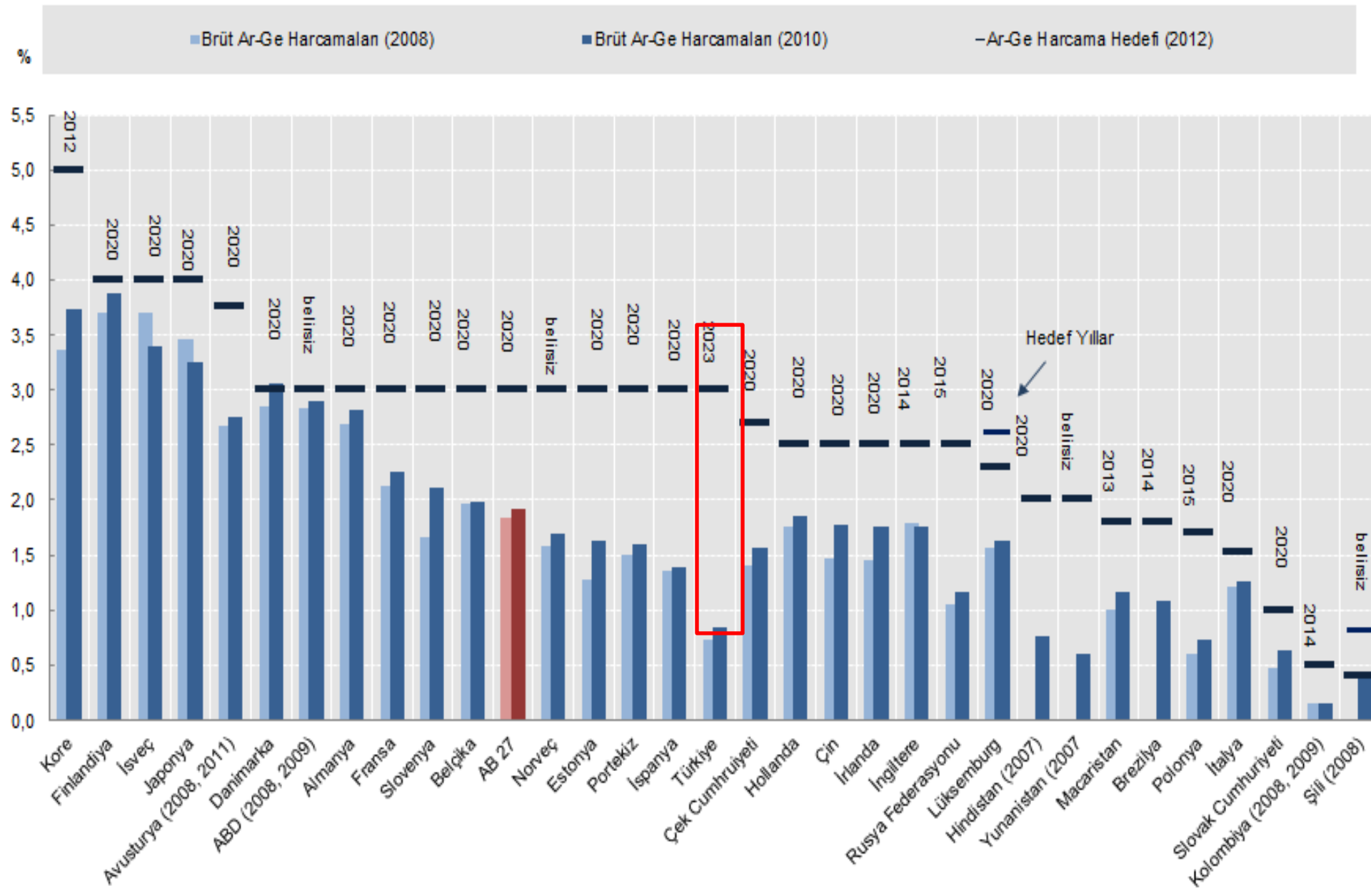
- **Percentage of Total R&D Expenditure in GDP:**
 - **%3 (currently %0.86)**
- **Percentage of Private sector R&D Expenditure in GDP :**
 - **%2 (currently %0.37)**
- **No of Total FTE Researchers:**
 - **300.000 (currently 92.801)**
- **Ratio of Private Sector FTE Researchers to total:**
 - **%60 (currently %48.9)**

IS IT REALISTIC?



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R&D EXPENDITURES AND TARGETS (OECD, 2012)



WHAT IS BEING DONE?



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TOOLS

R&D Support Funds

- *KOSGEB - 1990*
- *TEYDEB – TÜBİTAK - 1995*
- *TTGV - 1995*
- *Technology Development Zones – 2001*
- *EU FUNDS- 2002*
- *SAN-TEZ – MINISTRY OF SCIENCE, INDUSTRY AND TECHNOLOGY - 2007*
- *R&D Centers - 2008*
- *Techno-Entrepreneurship - 2009*



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TOOLS

- **TECHNOPARKS – Ministry of Science, Industry and Technology**

49 Technology Development Zones

2.138 companies,

18.462 personel,

5.599 R&D projects,

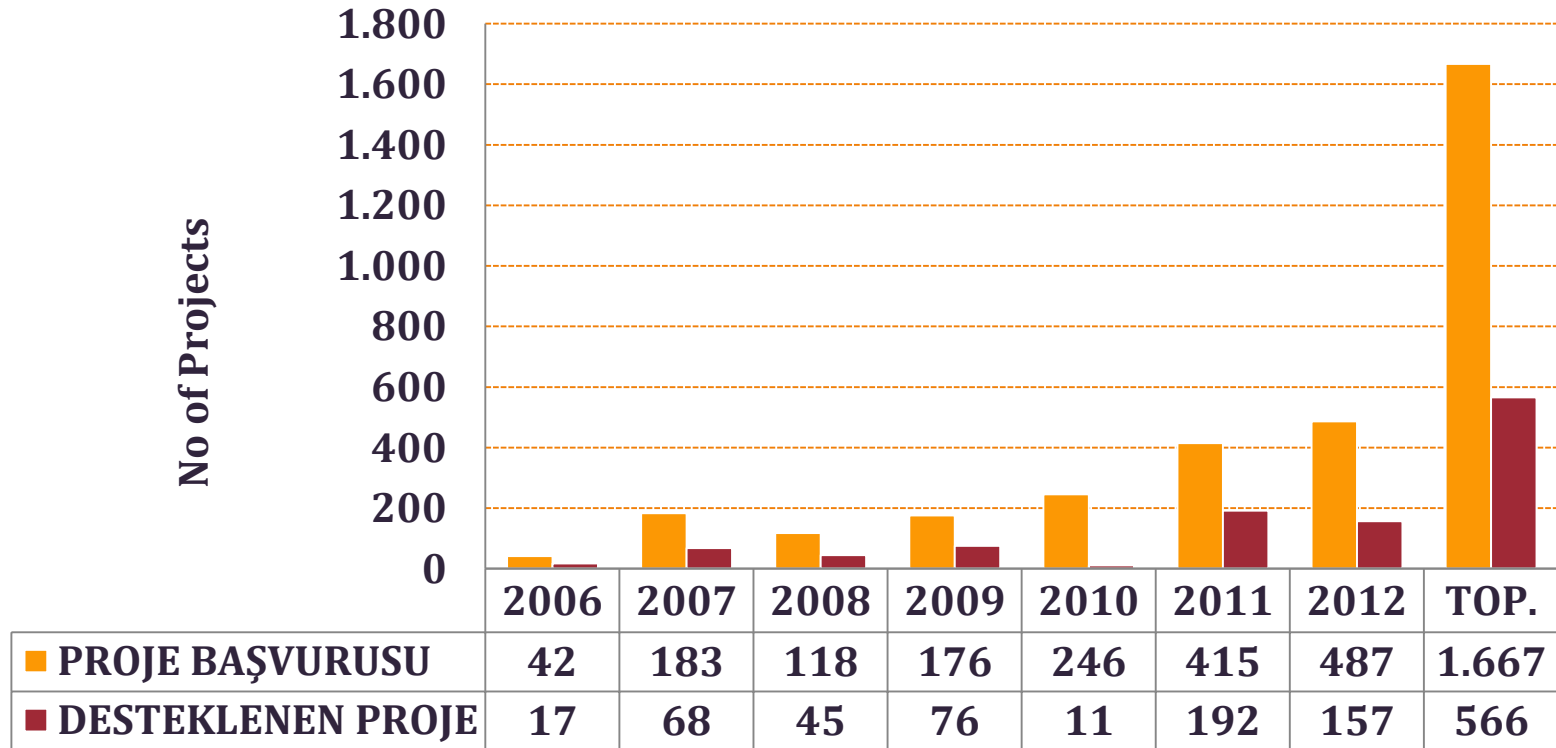
680 billion USD EXPORTS

322 Patents

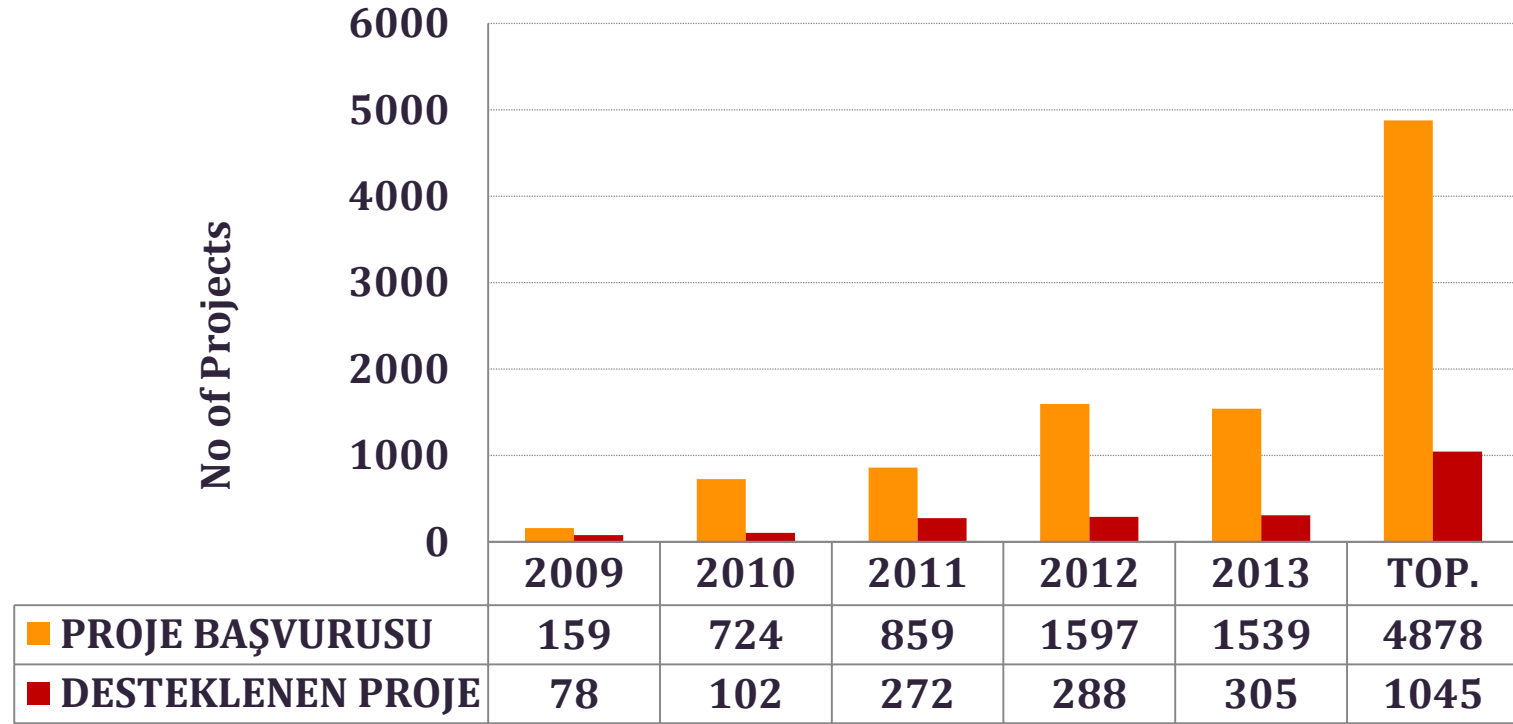


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SANTEZ PROJECTS



TECHNO-ENTREPRENEURSHIP



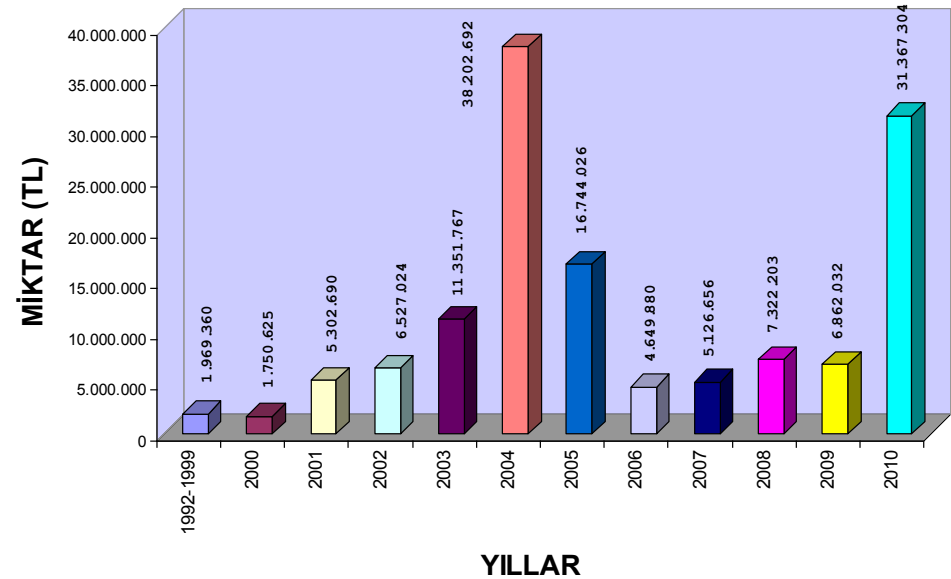
KOSGEB R&D SUPPORT - 1992-2010

1. R&D and Innovation Support Program

2. Industrial Application Program

Funds for

- Workshop / Rental
- Durables, consumables, subcontracting costs
- Personnel costs
- Project DEvelopment
- Seed capital



KOSGEB TECHNOLOGY DEVELOPMENT CENTERS

28 Centers in different Provinces



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TOOLS

- **CENTRES OF EXCELLENCE – State Planning Institute (Ministry of Development)**

171 Centers within Universities providing R&D infrastructure

- **INDUSTRIAL R&D CENTERS – Ministry of Science, Industry and Technology: Law 5746**

Special subsidies and tax exemptions for 134 Industrial Centres, 14. 837 total staff



TOOLS

- ***TECHNOLOGY PLATFORMS - 2006 (TÜBİTAK-İŞBAP)***
- ***INDUSTRIAL DOCTORATE PROGRAM (DPT)***
- ***REGIONAL DEVELOPMENT AGENCIES – 2006***
- ***UR-GE Cluster Support (Ministry of Economy) - 2010***



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MAJOR CHANGES IN THE R&D&INNOVATION ECOSYSTEM - in the last 5 years

- Law for Support of R&D Activities - *5746 (28/2/2008)*
- Establishment of Ministry of Science, Industry and Technology *(July 2011)*
- Amendment of the by-Laws for the Ministry of Science, Industry and Technology - *KHK/635 (02/06/2011)*
- National Science, Technology & Innovation Strategy *(2011)*
- Amendment of Turkish Scientific and Technological Council TUBITAK, Legislation *(August 2011)*
- Decisions of the 23rd Science & Technology Supreme Council *(December 2011)*



National Science, Technology & Innovation Strategy (2011-2016)

Mission-oriented approaches in areas with strong R&D and innovation capacity

Automotive

Machine Manf.

ICT

Need-oriented approaches in areas with a demand for gaining acceleration

Defense

Space

Energy

Water

Food

Bottom-up approaches including basic, applied and frontier research

Development of Human Resources for STI

(The mobilization of human capital towards the strategic approach)

Stimulate the Transformation of Research Results into Products and Services

(For research results to create added value to the economy based on new products, process and services)

Diffusion of a Multi-Actor and Multi-Discipline R&D Cooperation Culture

(To steer the system towards intersectoral and interdisciplinary interactions)

Invigoration of the Role of SMEs within the National Innovation System

(To integrate more SMEs into being R&D and innovation actors in the system)

Boost the Contribution of R&D Infrastructures to TARAL's Knowledge Production

(For existing and new research infrastructure to provide a foundation to the strategic approach)

Activation of International STI Cooperation in the Mutual Interests of the Country

(For international STI cooperation to be formed in ways that support the strategic approach)

23rd SCIENCE & TECHNOLOGY SUPREME COUNCIL DECREES

(December 2011)

- National Innovation System 2023 Targets [2011/101]
- Setting up a Coordination Board to Secure Integrity, Coherence and Target Oriented Approach in the R&D, Innovation and Entrepreneurship Support Mechanisms [2011/102]
- Developing Policy Tools to Activate and Increase the Number of R&D Intensive Start Ups [2011/103]
- Developing Policy Tools to Trigger Innovation and Entrepreneurship in the Universities [2011/104]
- Promotion Entrepreneurship Culture [2011/105]
- Improving Public Procurement and Public Right of Use in such a way to Foster Innovation, Localization and Technology Transfer [2011/106]
- Promotion of Science Centers [2011/107]
- Developing Policy Tools to Stimulate Domestic Patent Licensing [2011/108]



STRATEGIES FOR THE IMPROVEMENT OF R&D&INNOVATION SYSTEM (Plan for 2014-2018)

1) Development of Human Resources

- Qualitative and Quantitative increase in FTE reseachers

2) Improvement of Support Mechanisms targeted at the Private Sector

- Increase in effectiveness / efficiency and scope

3) Improvement of Support Mechanisms targeted at the Public Sector and Universities

- Increase in effectiveness / efficiency of existing mechanism and establishing new tools for fostering university-industry collaborations

4) Improvement of Governance & Coordination at Innovation Ecosystem Level

- Improvent of the definition of roles, performance critria, inter-relations, areas of collaboration and coordination of the efforts all key-players.



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MAJOR CHANGES IN THE R&D&INNOVATION ECOSYSTEM- continued

- Amendment of the PATENT Law (*Pending*)
- Amendment of the HIGHER EDUCATION Law (*Pending*)
- Amendment of the Legislation for the CENTERS of EXCELLENCE -Regulations for use of public funds and governance (*Pending*)
- Support Mechanisms for TTOs (*TUBİTAK 1513 Program, November 2012*)
- Amendment of the Legislation for Technology Development Regions (*Pending*)



DEVELOPING POLICY TOOLS TO ACTIVATE AND INCREASE THE NUMBER OF R&D INTENSIVE START UPS *[2011/103]*

- Support mechanisms for start-ups
- Establishment of risk capital funds
- Facilitating start-ups and licensing

KARAR

Ar-Ge yoğun başlangıç firmalarının etkinleştirilmesi ve sayılarının artırılması amacıyla,

- Ar-Ge yoğun başlangıç firmalarının fikir aşamasından pazara ulaşmasına kadar geçirdikleri evreler dikkate alınarak, bu evrelere uygun aşamalı destek mekanizmalarının geliştirilmesi, bu firmaların sayısının artmasını tetikleyecek ekosistemin oluşturulması ve bu firmalara danışmanlık hizmetlerinin sunulmasına karar verilmiştir. Bu karar doğrultusunda gerekli politika araçlarının geliştirilmesine yönelik çalışmalar, TÜBİTAK tarafından Bilim, Sanayi ve Teknoloji Bakanlığı, Maliye Bakanlığı ve YÖK'ün katılımıyla yürütülecektir.
- Ar-Ge yoğun başlangıç firmalarını destekleyen risk sermayesi fonlarının etkinleştirilmesi, bunlara kamunun ortak olabilmesi ve kamu Ar-Ge merkezlerinde yapılan araştırmaların sonuçlarının ticarileşmesi (spin-off, lisanslama vb.) süreçlerinin iyileştirilmesi için gerekli mevzuat çalışmalarını yapmak üzere TÜBİTAK'ın başkanlığında Hazine Müsteşarlığı, Bilim, Sanayi ve Teknoloji Bakanlığı, Maliye Bakanlığı, Kalkınma Bakanlığı, Ekonomi Bakanlığı ve Sermaye Piyasası Kurulu katılımıyla bir çalışma grubu oluşturulmasına ve gerekli düzenlemelerin yapılmasına karar verilmiştir.



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DEVELOPING POLICY TOOLS FOR FOSTERING INNOVATION AND ENTREPRENEURSHIP IN THE UNIVERSITIES [2011/104]

Establishment of Technology Transfer Offices –

- promoting University-Industry Collaboration,
- facilitating commercialisation,
- providing logistic support to academic research

Establishment of incubation centres –

- Supporting entrepreneurial researchers
- Providing consultancy for the development of business plans
- Facilitating start-ups

Designing an index for ranking of Universities based on their innovative and entrepreneurial efforts

- As a performance indicator
- To foster competition
- To encourage innovation and entrepreneurship

Amendment of Academic Promotion Criteria to foster Entrepreneurship and Innovativeness



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PROMOTION ENTREPRENEURSHIP CULTURE

[2011/105]

- Incorporating entrepreneurship courses into curricula at all levels (From primary school to doctorate)
- Organisation of competition for techno-entrepreneurship
- Developing certificate programmes for entrepreneurs

KARAR

- Toplumda girişimcilik kültürünün yaygınlaştırılması amacıyla gerekli politika araçlarının KOSGEB ve TÜBİTAK tarafından Milli Eğitim Bakanlığı, Bilim, Sanayi ve Teknoloji Bakanlığı, Ekonomi Bakanlığı ve YÖK'ün katkılarıyla geliştirilmesine ve uygulamaya alınmasına,
- Bu amaçla ilk aşamada,
 - İlköğretimden doktora derecesi düzeyine kadar girişimcilik ders içeriklerinin tasarlanması ve etkin bir şekilde uygulanmasına,
 - İleri teknoloji odaklı girişimcilik yarışmalarının düzenlenmesine,
 - Sertifikalı girişimcilik eğitimleri (Mini Girişimcilik MBA) programlarının düzenlenmesine

karar verilmiştir.



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DEVELOPING POLICY TOOLS TO STIMULATE DOMESTIC PATENT LICENSING [2011/108]

- Monitoring of licensing data by TPI
- Establishing coordinated measures for increasing licensing revenue

KARAR

Yerli patentlerin lisanslanmasına ilişkin verilerin Türk Patent Enstitüsü tarafından düzenli olarak izlenmesine ve lisans gelirlerinin artırılması için gerekli mekanizmaların kurumlar arası eşgüdüm içinde oluşturulmasına, bu konudaki gelişmelerin BTYK'ya raporlanmasına karar verilmiştir.



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“DISSEMINATING IP KNOWLEDGE IN UNIVERSITIES” Project – June 2011-2012

Turkish Patent Institute ve European Patent Office (EPO)

- **Increasing the knowledge and awareness level of IP at Turkish Universities,**
- **Integration of IPR trainings in different levels into university curriculums,**
- **Studies on establishment and improvement of IPR and Technology Transfer Offices within the universities**



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NATIONAL ROAD MAP

- M0: Steering/Road Map Management Committee**
- M1: Sharing of Best Practices, Coordination of Inter-University Communication for Building on Experiences and Supporting Excellence**
- M2: Establishment of IPR Policy and Increasing Awareness of IPR at Universities**
- M3: Establishment of Short Training Modules (Certificate Programmes)**
- M4: Establishment of Multidisciplinary Advanced Programmes Leading to IP Specialists**
- M5: Capacity Improvement of TT/IPR Offices and Infrastructure Building for New Ones**
- M6: Simplifying the Procedures for the Commercialization of Inventions Generated By Universities (Including the Establishment of Spin-Offs)**



DUE DILIGENCE SURVEY

“Due Diligence survey” was prepared and distributed to 171 universities.

2985 responses from Heads of Departments have been received

The results of the survey are interpreted based on information, opinions and comments of Heads of Departments.

The survey that contained 36 different questions in 7 different categories:

- **IPR Policy**
- **Education**
- **Specialization in IP**
- **University-Industry Collaboration Interfaces**
- **Research**
- **Commercialization**
- **Infrastructure of the Universities**



COUNCIL FOR THE IMPROVEMENT OF INVESTMENT ENVIRONMENT - *IPR and R&D TECHNICAL COMMITTEE ACTION PLAN*

- **Penal sanctions for violation of IPR**
- **Revision of the amendment of Turkish Patent Law**
- **Determining measures for the encouragement of the exploitation and commercialisation of IPR**



TURKISH PATENT INSTITUTE WORKING GROUP –

24 April 2012

- **Incentives and Support Programs for Technology Transfer**

Reduction / lifting of taxes on licensing and

Low cost or free of charge educational programmes for technology transfer professionals

- **Determining the current status of Technology Transfer Activities**

A data bank for technology transfer activities and existing licensable technologies

- **Establishment of a Technology Transfer Platform**

- **Establishment of a Technology Transfer Coordination Council**



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WHAT IS MISSING?



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LOOPS IN THE CHAIN

- Language – Definitions
- Funding – patent costs
- Legislation - Protection of IP
- Communication – authorities and key players, stakeholders, academia – industry,



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WHAT WE ARE HOPING FOR?



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A STRONG CHAIN....

An improvement in the innovation ecosystem

New horizons / vision for academia

**Increased opportunities for the commercialisation
of research results**

Increase in revenues created from licensing

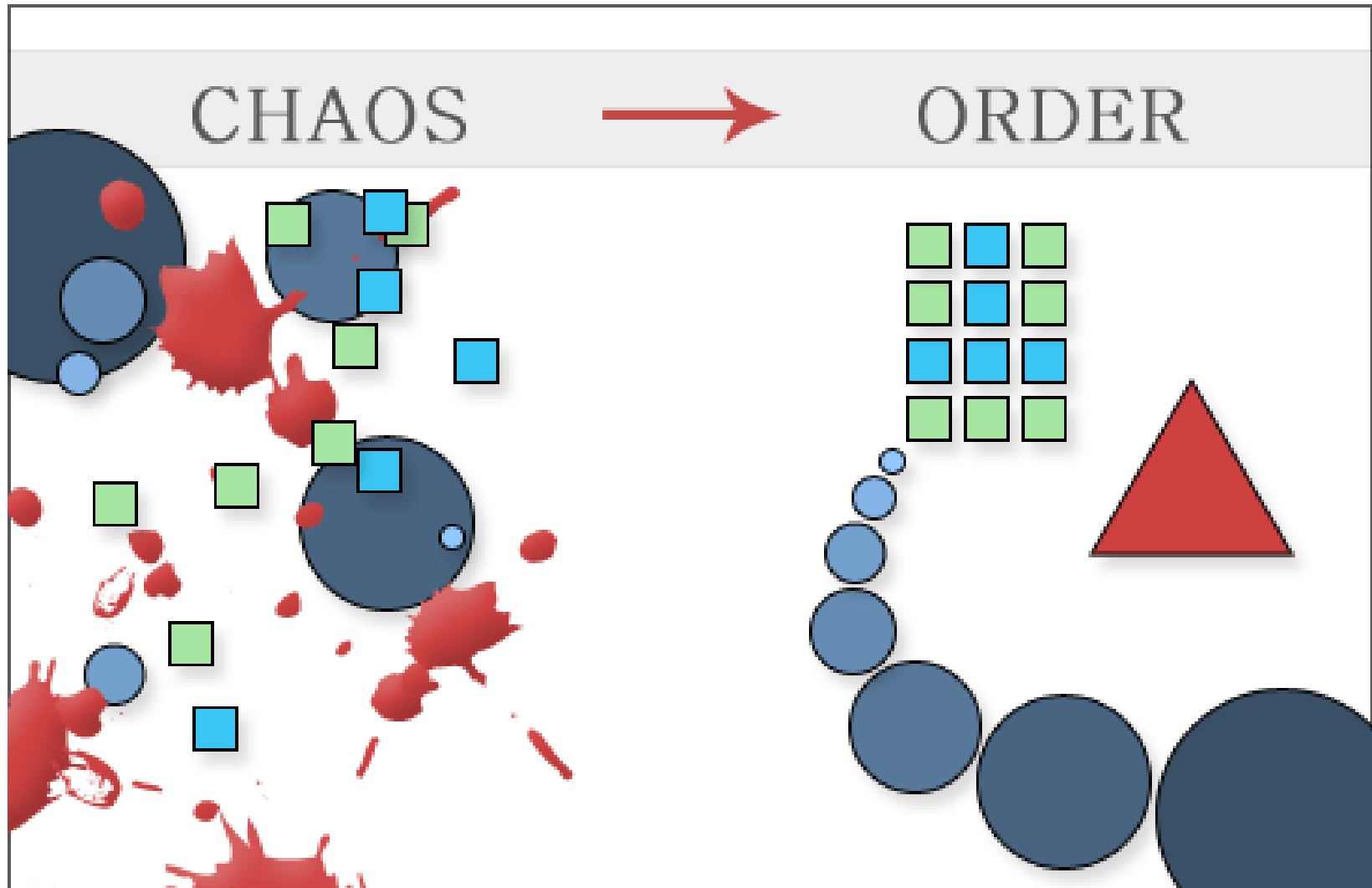
**Increased contribution of national R&D to the
competitiveness of national companies**

..... and More ??



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CREATING...



THANK YOU...

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