Workshop on «Assessing the Impacts of Public Research Systems»

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Outline

Some Figures in the Higher Education Sector in Turkey

Target Oriented National Innovation System

How research and higher education is funded
### Universities in Turkey

The number of FTE Researchers in Universities: 41269
The number of FTE Researchers in Government Research Institutes: 6541

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Universities in Turkey</th>
<th>Number of Undergraduates Students</th>
<th>Number of Students per Faculty Member</th>
<th>The rate of Graduate Students in all Students</th>
<th>Number of Doctorate Students</th>
<th>Number of Faculty Members</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>190</td>
<td>3628800</td>
<td>21.89</td>
<td>%11</td>
<td>78.223</td>
<td>165.774</td>
</tr>
</tbody>
</table>
Financial Resources for Universities

Block Funding for Research in Universities

- Ministry of Finance allocates institutional block funding for R&D activities of government universities under the name of «Scientific Research Projects Support».

- 2003: 53 Million Current PPP$
- 2015: 444 Million Current PPP$

8 fold increase since 2003

Competitive Funding for Research Infrastructures in Universities

<table>
<thead>
<tr>
<th>Year</th>
<th>Government Spending for Research Infrastructures in Universities (Current Milyon PPP$)</th>
<th>Government Spending for Research Infrastructures in Governmental Research Institutes (Current Milyon PPP$)</th>
<th>Total Government Spending for Research Infrastructures (Current Milyon PPP$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>425</td>
<td>168</td>
<td>593</td>
</tr>
</tbody>
</table>

*Ministry of Development

Competitive Funding for Research Projects in Universities

Total Academic R&D Funds of TÜBİTAK

TÜBİTAK 1003 Program

Budget per Project: 1,7 Million PPP $
The percentage of the collaborative R&D projects has doubled since 2009 in the government supported RDI projects.

**Outcomes:**
- Higher Education R&D Expenditure has increased more than 2.5 times.
- Level of funding from business sector is still low
2010-2015 => Number of documents
• 24% increase in the for Turkey, India and Brazil
• ~50 increase for Russia and China

% Among 10% Most Cited
• Average %30 increase for Turkey, Brazil and India
• %66 increase for Russia and %87 increase for China

Outline

- How research and higher education is funded
- Target Oriented National Innovation System
- Some Figures in the Higher Education Sector in Turkey
National Innovation System Targets For Economic Development and Wellbeing in 2023

- **GERD / GDP**: 3%
- **BERD / GDP**: 2%
- **Researchers (FTE)**: 300 K
- **Private Sector Researchers (FTE)**: 180 K

Supreme Council for Science and Technology (SCST)

Every six months R&D policy of Turkey is reviewed in Supreme Council for Science and Technology chaired by the Prime Minister himself.
Many of the decrees adopted in SCST meetings involve universities.

Examples: Resolutions of SCST Regarding the Ecosystem

- Fostering R&D Start-ups
- Enhancing TTOs
- Mini Entrepreneurship MBA Education
- University Entrepreneurship Index

- Open Video Courses For Higher Education
- Development of Centres of Excellence
- Improving Scholarships Supporting PhD Holders
- Development of University R&D Strategies
University R&D Capacity Building Program (1000)

- Call for development and implementation of university R&D Strategies
- Allow universities to focus on selected technologies based on their specific competency areas
- Funds to be allocated according to universities’ strategic research and development plans
Outline

Some Figures in the Higher Education Sector in Turkey

Target Oriented National Innovation System

How research and higher education is funded

1. Mission Oriented Approaches

2. Supporting Entrepreneurship and Technology Transfer

3. Performance Based Approaches

Business Plan

$\rightarrow$ Work $\rightarrow$ $\rightarrow$
Mission Oriented Approaches and Programs

Technology Road Maps: Support of large-scale projects for the development of national technology

4. Vaccines  6. Medical Diagnose Kits
5. Biomedical Equipment  7. Biomaterials
6. Advanced Display Technologies  8. MEMS/NEMS
11. Embedded Software in Automotive and Machinery Sectors  13. Pharmaceuticals
Supporting Entrepreneurship and Technology Transfer

Individual Entrepreneurs (1512)
BİGG.tubitak.gov.tr
Supporting entrepreneurship and creations of R&D based start-ups:

Technology Transfer Office Support Program (1513)
34 universities between 2013-2015
10 M TL for 10 years for each university

University Entrepreneurship Sertificate Program (1601)
Supporting the development of entrepreneurship and R&D culture at early stages

Venture Capital Support Program (1514)
R&D Start-Up Support
Supporting Industry Academia Interaction

Industrial R&D Projects Grant Program (1501)

Obligatory condition for university-industry cooperation for the industry projects with the budget over 1 million TL. Required percentage of cooperation increases while the budget increases.

University-Industry Collaboration Grant Program (1505)

University-Public Knowledge Accumulation + SME-Big Scale Firm = Commercial Product/Process

• 1 million TL budget
• Feasibility support up to 10k TL
• SME → 75 %, Big Scale firm → 60 %
Performance Based Approaches

Highest Quality Research
- Award According to Project Performance
- Incentives for Quality Oriented International Publications

Higher Education
- Project Overhead Increases According to the Performance
- Entrepreneurial and Innovative University Index

Research Centers
- Centers of Excellence (1004)
- Assessment of Higher Education Research Labs
**Award and Awards for Highest Quality Research**

**Project Performance Award**

- Up to **200 K TL** award for successfully completed projects

**Incentive Program for International Scientific Publications (UBYT)**

- Up to **7.500 TL** article support for researchers

- Incentive increases by folds due to quality!
- Each journal is assessed by objective criteria
Performance Based Project Overhead

Project Overhead Increases According to the Performance

Project overhead increases from 10% to 50%

1. Project overhead will vary from university to university
2. More performance more project overhead
3. Calculations will be based on objective criteria
Supporting Centers of Excellence

Support Program for Centers of Excellence (1004)

A new insight into specialization of Research Infrastructures in Turkey towards becoming Centers of Excellence

Infrastructure
Ministry of Development

Large Scaled Project Support
TÜBİTAK

Center of Excellence
Specialization

Qualified Thematic Research Centers

Consorsium:
• Center + Private Sector

Industry Stearing Board

Assessment of Higher Education Research Labs

Research Competency (%60)
Management Competency (%40)

Competency Evaluation Report

Monitoring and Proficiency Assessment Committee

Research Infrastructures Board

Research Competency Criteria
Infrastructure Size and Human Resources
Scientific Production and Academic Appeal
Cooperation and Interaction
Technological Production and Economic Contribution
Education, External Use and Diffusion

Management Competency Criteria
Leadership and Strategic Management
Human Resources Management
Project Management
Process and Quality Management
Results Relating to Users
Assessment Model for Higher Education Research Labs

Qualitative Evaluation (Site Visit)

- Strategic Management
- Human Resources Management
- Collaboration Management
- Project Management
- Process and Quality Management
- Results Regarding Customers/Partners/Users

Quantitative Evaluation

- R&D Intensity
- Center Size and Human Resources
- Project Accumulation
- Domestic Collaborations
- National Collaborations
- International Collaborations
- Level of Scientific Activity
- Level of Technological Activity
- Accordance With National Policies

Site Visit Team:
- Evaluators
- Ministry of Development
- TÜBİTAK

Technical Evaluation Report

- Center Overall Score
- Site Visit Evaluation Report
- Research Center Feedback Report
Entrepreneur and Innovative Universities

Entrepreneur and Innovative University Index is developed in cooperation with 168 universities and 10 public institutions.

Sample Indicators

- Number of firms established by academicians
- Number of firms established by students/graduated students
- Employment in those firms
- Patents
- Licences
- R&D and innovation projects
- Entrepreneurship, innovation lessons/trainings

International Collaboration to Develop Such Indexes

Thank You
Entrepreneurial and Innovative University Index

Steps for the index

This index is prepared for the first time in Turkey
Framework Definition

The Entrepreneurial and Innovative University

Scientific and technological competence

the spirit of entrepreneurship

Maturation and implementation of new business ideas

Entrepreneurship and innovation culture

Collaboration

Commercial activities

Economical contribution
Consultation

Indicators
Data availability and accessibility
Calculation method
Weights

High Level Group
4 times

Technical Group
3 times

TÜBİTAK
Council of HE
TurkStat

Pilot Process

• 16 universities (old/new, private/government, faculty of medicine/engineering, region)

• Indicators
  • 87 breakdown, 6 science field
  • 12 Institutions/Units

• Feedback meeting
Pillars of the Index

5 pillars, 23 indicators overall

- Scientific and Technological Research Competence
- Intellectual Property Pool
- Economic Contribution and Commercialization
- Entrepreneurship and Innovation Culture
- Cooperation and Interaction

The Entrepreneurial and Innovative University Index
Examples for the Indicators

Cooperation with 168 universities and 10 public institutions

Some Indicators

- Number of firms established by academicians
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This index is prepared for the first time in Turkey and will be renewed and announced each year.
Thank You