TÜBİTAK

Workshop on «Assesing the Impacts of Public Research Systems»

Hande ALPASLAN
TÜBİTAK
Department of Science, Technology and Innovation Policy

03.05 2016, Paris

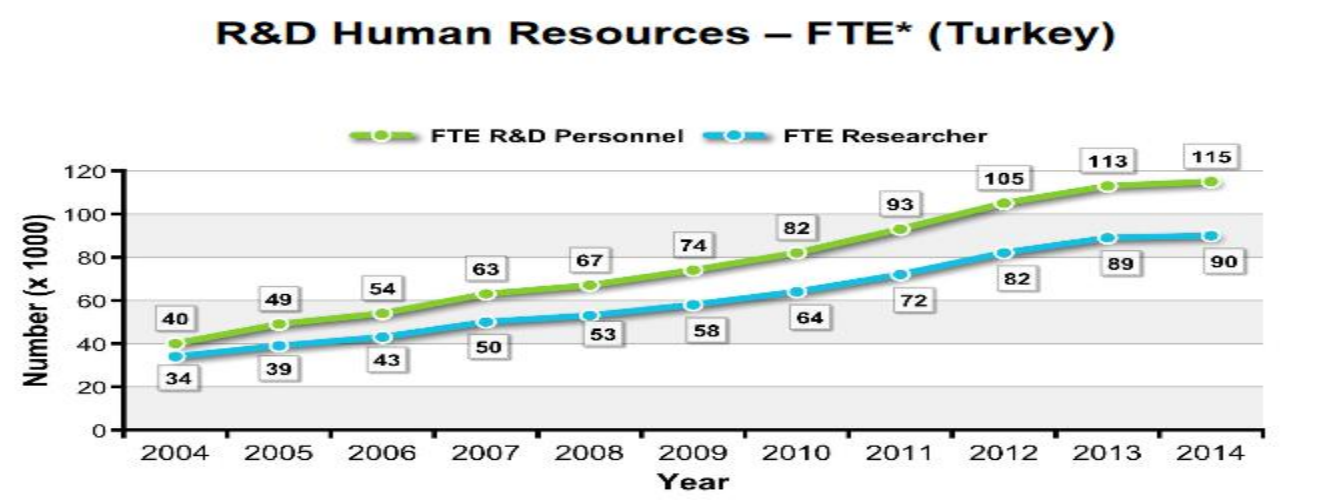
Outline

Some Figures in the Higher Education Sector in Turkey

Target Oriented National Innovation System

How research and higher education is funded

R&D Human Resources in Turkey and Related Figures for Universities



Universities in Turkey

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

Year	Number of Universities in Turkey	Number of Undegraduate Students	Number of Students per Faculty Member	The rate of Graduate Students in all Students	Number of Doctorate Students	Number of Faculty Members
2015	190	3628800	21.89	%11	78.223	165.774

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».

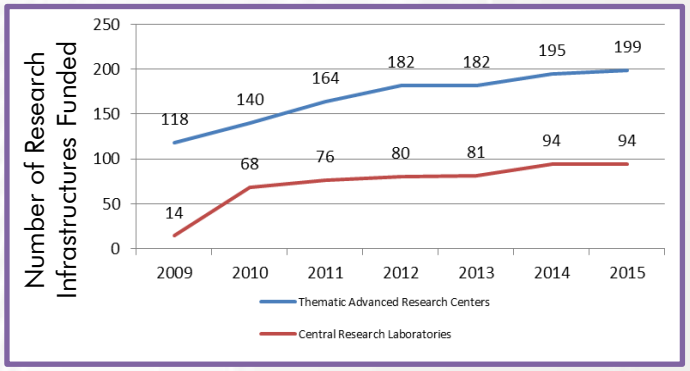
- 2003: 53 Milyon Current PPP$
- 2015: 444 Million Current PPP$

8 fold increase since 2003

Competitive Funding for Research Infrastructures in Universities

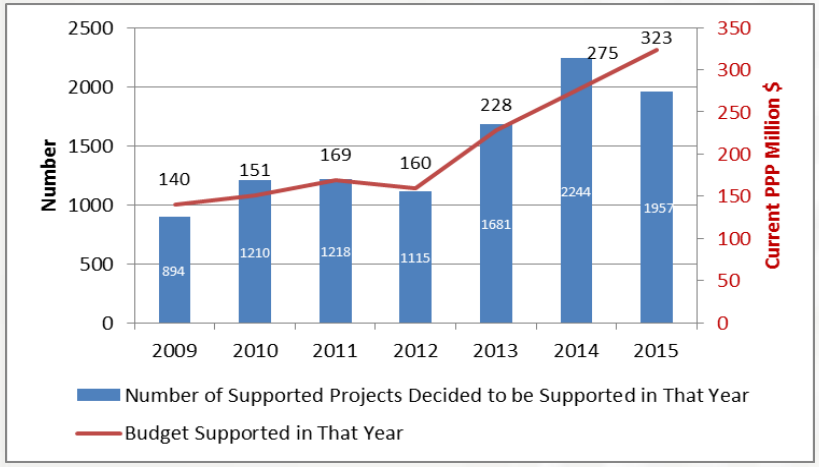
Year	Government Spending for Research Infrastructures in Universities (Current Milyon PPP$)	Government Spending for Research Infrastructures in Governmental Research Institutes (Current Milyon PPP$)	Total Government Spending for Research Infrastructures (Current Milyon PPP$)
2015	425	168	593

*Ministry of Development

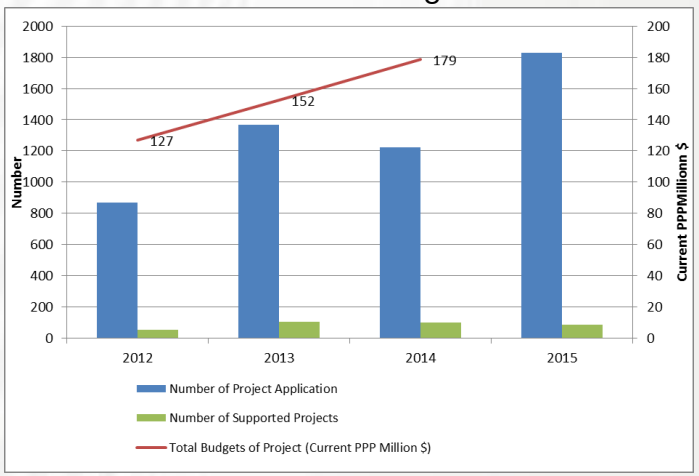


Competitive Funding for Research Projects in Universities

Total Academic R&D Funds of TÜBİTAK

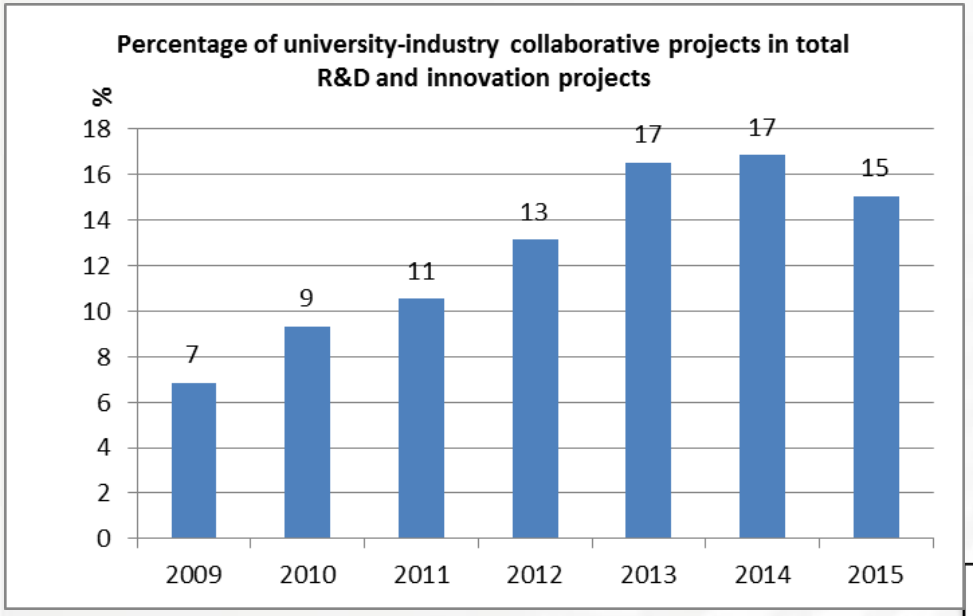


TÜBİTAK 1003 Program

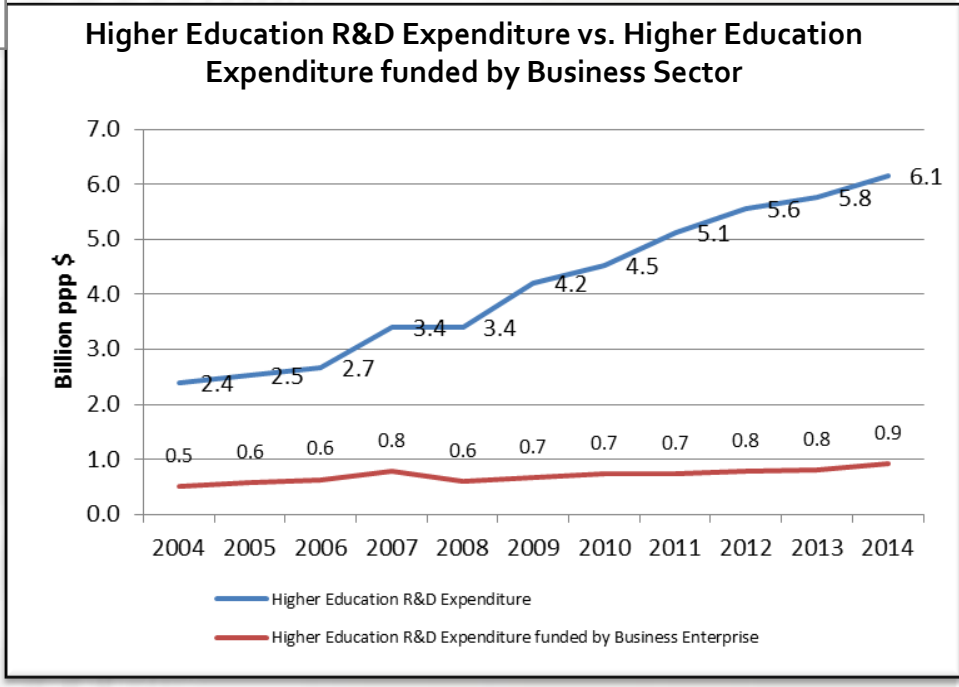


Budget per Project: 1,7 Million PPP $

University-Industry Interaction



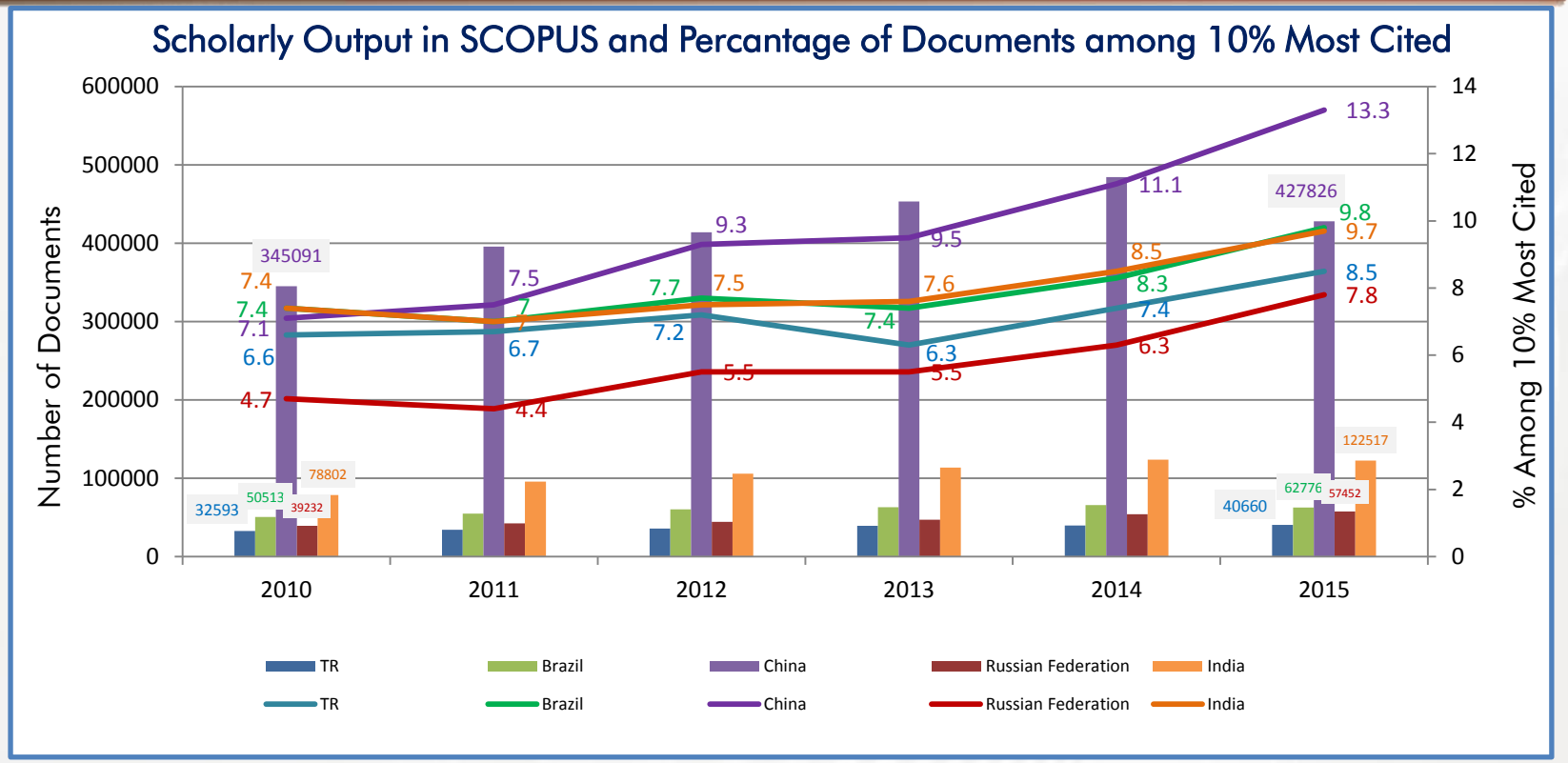
The percantage of the collaborative R&DI projects has doubled since 2009 in the government supported RDI projects.



Outcomes:

- Higher Education R&D Expenditure has increased more than 2.5 times.
- Level of funding from business sector is still low

Quantity and Quality of Scholarly Outputs



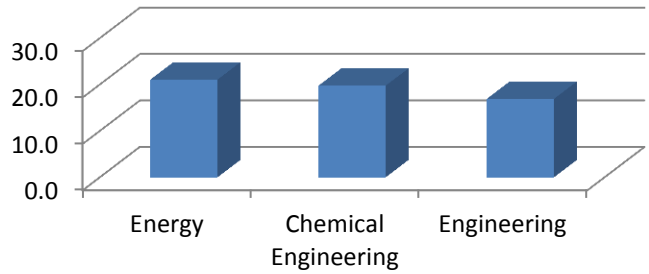
2010-2015=> Number of documents

- 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

Percentage of documents of Turkey among 10% most cited, by field
(2003-2012 Cumulative)



Source: SCOPUS, and SciVal; OECD and SCImago Research Group (CSIC) (2015), Compendium of Bibliometric Science Indicators 2014

Outline

Some Figures in the Higher Education Sector in Turkey

Target Oriented National Innovation System

How research and higher education is funded

National STI Targets for 2023

National Innovation System Targets For Economic Development and Wellbeing in 2023

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

References: The Economist (2012), TÜRKSTAT (2014), OECD (2014), UNESCO Education Expenditures (2014), World Bank (2014)

Supreme Council for Science and Technology (SCST)

TÜBİTAK

Every six months R&D policy of Turkey is reviewed in Supreme Council for Science and Technology chaired by the Prime Minister himself

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	

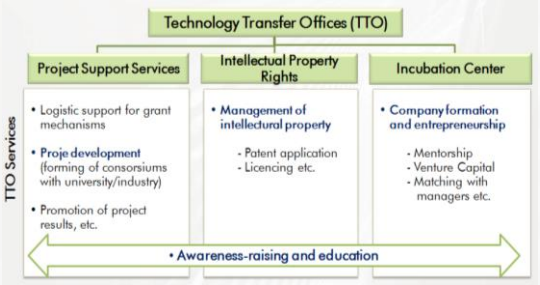
SCST

- Policy Making
- Setting Long Term Targets
- Appointment of Organizations and Establishment of Commitees
- Policy Implementation
- Monitoring

Examples: Resolutions of SCST Regarding the Ecosystem

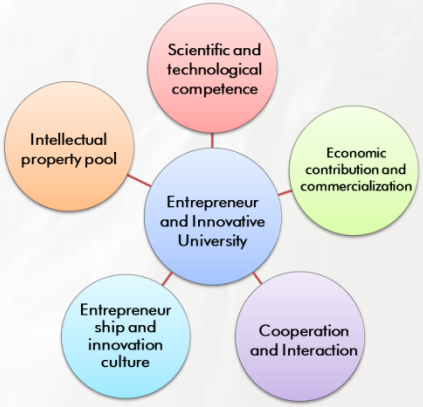
Many of the decrees adopted in SCST meetings involve universities

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

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

Mission Oriented Approaches and Programs

TÜBİTAK

SCST ⇒ National Science, Technology and Innovation Strategy (2011-2016) ⇒ Automotive | Machine Manf | ICT | Defence | Space | Health | Energy | Water | Food

Prioritization of Sub Technology Topics with Sector Representatives

Call Based System

- Private Sector (1511) — NEW
  - Embedded Systems
  - Biomaterials
- University (1003) — NEW
  - Hybrid and EV
  - Solar Energy
- Government (1007) — REVISION
  - Domestic Seed
  - Wind Energy

University-Industry Interaction

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

1. Energy Efficiency
2. Mobile Comm. Tech.
3. Pharmaceuticals
4. Vaccines
5. Biomedical Equipment
6. Medical Diagnose Kits
7. Biomaterials
8. MEMS/NEMS
9. Advanced Display Technologies
10. Machine Control and Factory Automation Systems
11. Embedded Software in Automotive and Machinery Sectors
12. Lightweight Materials Technology in Automotive
13. Social Sciences (Education, Economic Growth, Family, Urbanization, Culture, History)

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
- Fisiblity support up to 10k TL
- SME → 75 %, Big Scale firm → 60 %

Performance Based Approaches

Highest Quality Research

- Award According to Project Performance — NEW
- Incentives for Quality Oriented International Publications — NEW

Higher Education

- Project Overhead Increases According to the Performance — REVISION
- Entrepreneurial and Innovative University Index — NEW

Research Centers

- Centers of Excellence (1004) — NEW
- Assessment of Higher Education Research Labs — NEW

Award and Awards for Highest Quality Research

Project Performance Award

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

Support increases due to performance!

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%

- Project overhead will vary from university to university
- More performance more project overhead
- Calculations will be based on objective criteria

Supporting Centers of Excellence

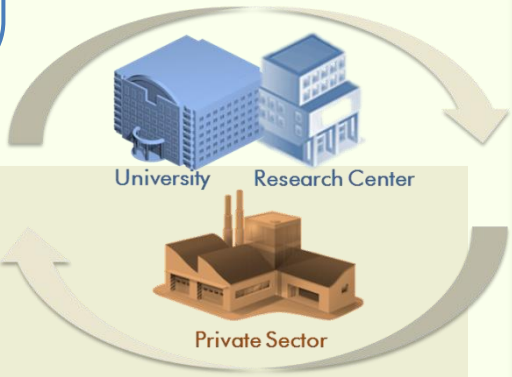
Support Program for Centers of Excellence (1004)

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

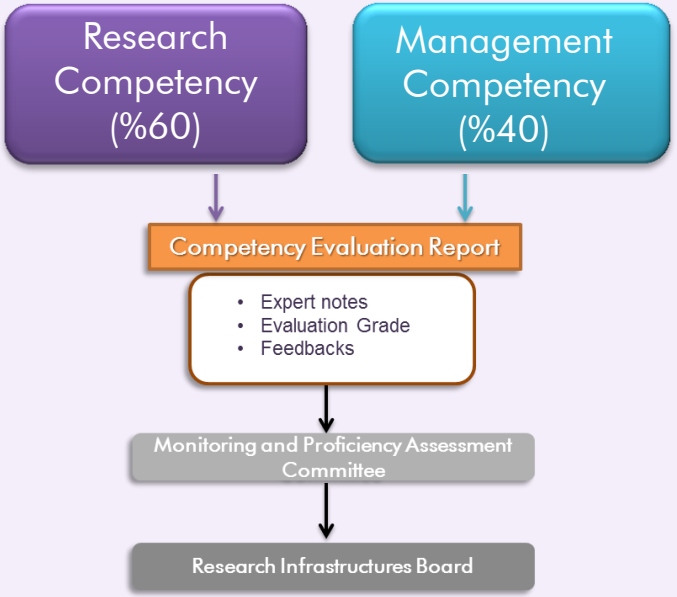


Qualified Thematic Research Centers

Consorsium:
- Center + Private Sector

Industry Stearing Board

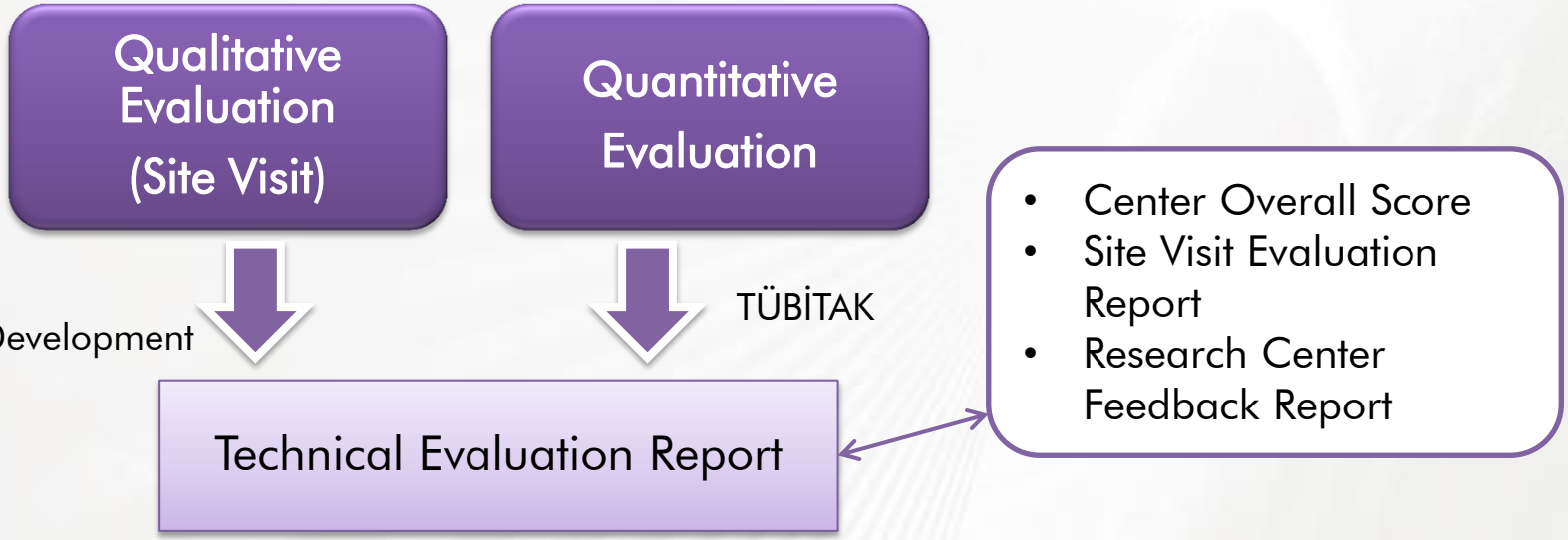
Assessment of Higher Education Research Labs



Research Competency Criterias
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 Criterias
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 Dimensions

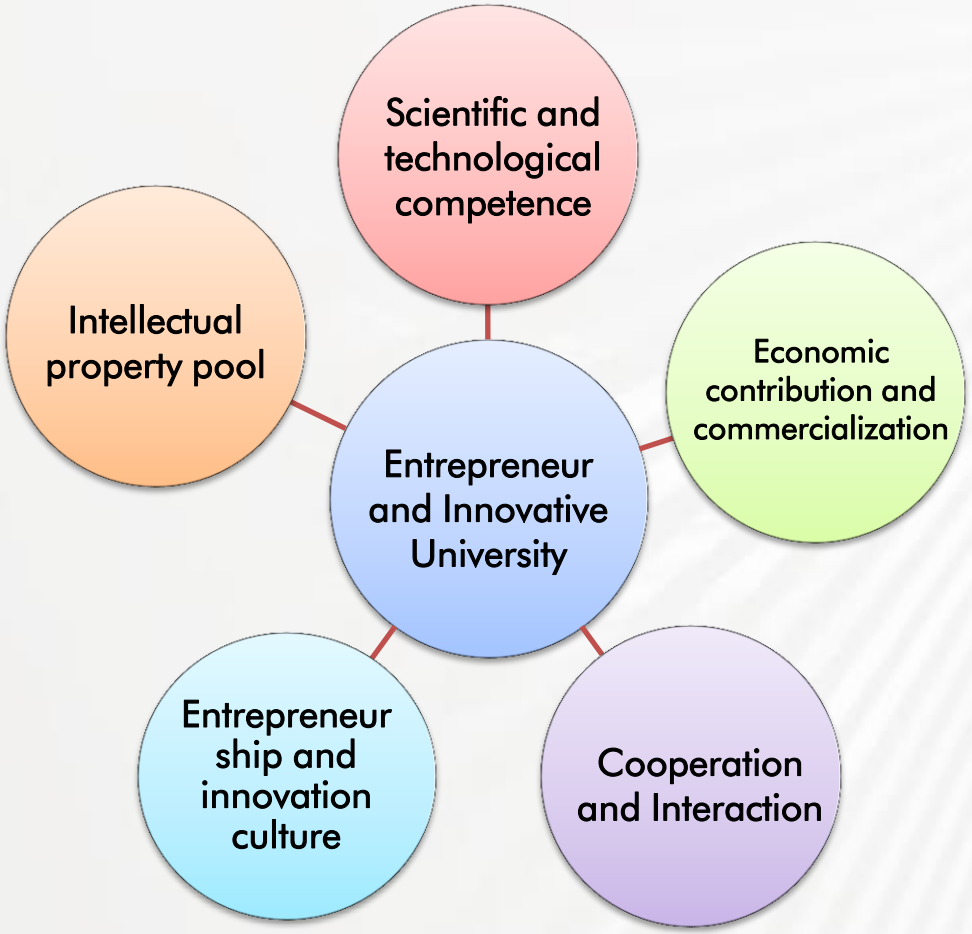
- Strategic Management
- Human Resources Management
- Collaboration Management
- Project Management
- Process and Quality Management
- Results Regarding Customers/Partners/Users

Quantitative Dimensions

- 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

Entrepreneurial and Innovative Universities

Entrepreneurial 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

Note: MoSIT, Ministry of Development, TurkStat, Ministry of Finance ,The Council of Higher Education, TUBA, KOSGEB,TUBITAK, Turkish Patent Institution, TTGV

Thank You

TÜBİTAK

Entrepreneurial and Innovative University Index

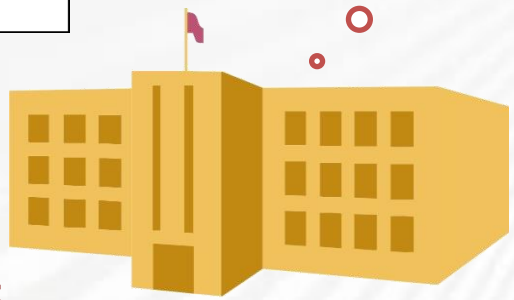
Steps for the index

This index is prepared for the **first time in Turkey**

Framework Definition

The Entrepreneurial and Innovative University

Scientific and technological competence



Collaboration

the spirit of entrepreneurship

Maturation and implementation of new business ideas

Commercial activities

Entrepreneurship and innovation culture

Economical contribution

Consultation

TÜBİTAK
Council of HE
TurkStat

High Level Group — 4 times

Technical Group — 3 times

- Indicators
- Data availability and accessibility
- Calculation method
- Weights

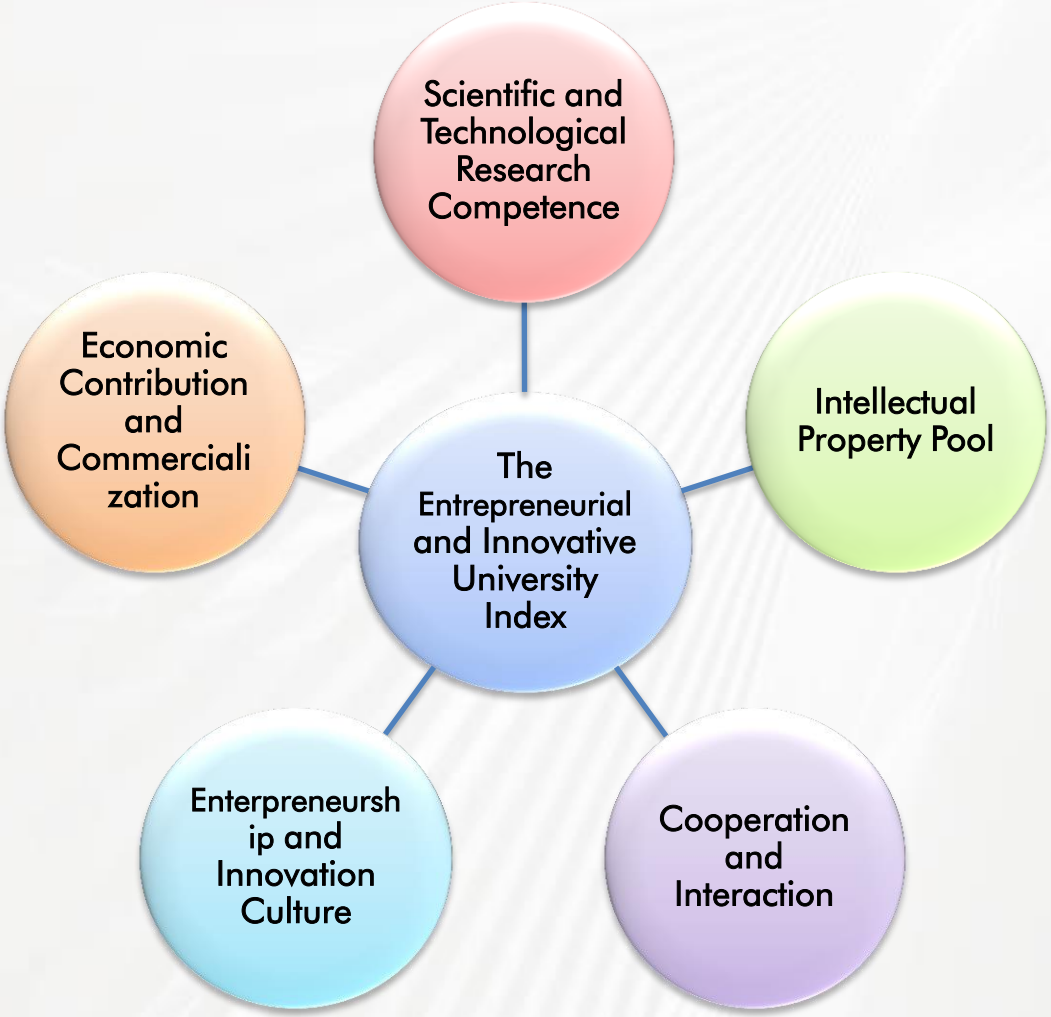
TÜBİTAK, MoSIT, Ministry of Development, TurkStat, Ministry of Finance ,The Council of Higher Education, TUBA, KOSGEB, Turkish Patent Institution, TTGV

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



Examples for the Indicators

Cooperation with 168 universities and 10 public institutions

Some 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

Note: MoSIT, Ministry of Development, TurkStat, Ministry of Finance ,The Council of Higher Education, TUBA, KOSGEB,TUBITAK, Turkish Patent Institution, TTGV

This index is prepared for the **first time in Turkey** and will be renewed and **announced each year**

Thank You