

EU and TURKEY – S&T POLICIES PERSPECTIVE

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Pisa, 20 Nov 2007

1. Overview of S&T Policy of Turkey

- **The first attempts for policy formulations on science and technology have started in the first planned economic period (1963 - 1967)**
- ***The Scientific and Technical Research Council of Turkey (TÜBİTAK) - Established in 1963***

The basic policy in 1960's and 1970's:

***promotion of basic and applied
research in natural sciences***

In The Third Five Year Development Plan

(1973-1977), for the first time:

- the concept of “technology policy” has been mentioned**
- “integration of the technology policy with the industry, employment and investment policies and enhancing the technological abilities of certain industrial sectors” have been envisaged**

The first detailed S&T(Policy) document was prepared in 1983 with the contribution of over 300 experts and scientists, and this document;

- **explicitly recognized the role of technology for development**
- **suggested broadly defined priority areas of technology**
- **led to the establishment of a new institution:**

**SUPREME COUNCIL
FOR SCIENCE AND TECHNOLOGY (SCST)**

The Supreme Council for Science and Technology (SCST)

- Highest S&T policy making body
- Chaired by Prime Minister / Deputy Prime Minister
- Members:
 - Ministers (most closely concerned with S&T)
 - Undersecretaries (SPO, Treasury, Foreign Trade)
 - Presidents of Higher Education Council, Nuclear Energy Council, Union of Chambers of Commerce and Industry
 - President and Vice President of TÜBİTAK

TÜBİTAK functions as the general secretariat to the SCST and is responsible for

- **preparing the agenda of the Supreme Council**
- **carrying out the preparatory studies**
- **following up the implementations**
- **evaluating the impacts of implementations**

SCST in 1989-2002

- **1989**

Inaugural meeting

- **1993**

**Priority Areas of S&T / Industrial
R&D Support Program**

- **1997-2002**

**Significant developments / action
plans / implementations**

1993 Policy Approach

To acquire capabilities in science and technology,

- not only to achieve excellence in scientific and technological research,
- but also to turn scientific and technological findings into economical and/or social benefits.

Hence, the present S&T Policy of
Turkey is based on the
establishment of a
National Innovation System

Outcome in ten years

- Rank by the number of Journal Publications (SCI) **41(90): 1177** ↗ **25(00): 6074**
- R&D realised by business enterprise **20.4%(90)** ↗ **33.4% (00)**
- R&D financed by business enterprise **27.5%(90)** ↗ **42.9% (00)**
- GERD in % of GDP **0.32%(90)** ↗ **0.64% (00)**
- R&D personnel intensity per 10,000 labour force **7.5(90)** ↗ **13.1 (00)**

S&T System of Turkey

Institutional framework

SCST / TÜBİTAK (main actor)
State Planning Organisation
KOSGEB (SME Org.),
TTGV (Tech. Dev. Found.)
Universities / Public Research Institutes / Firms
Turkish Patent Institute (TRIPS)
National Metrology Institute (TÜBİTAK)
Accreditation Board
Technology Development Regions (Technoparks)

SCI Publications from Turkey

Yıl	Toplam Makale	Türkiye Makale	Sıralama	Oran (%)
2005	1308336	15666	19	1.20
2004	1191670	13700	20	1.15
2003	1176696	11672	21	0.99
2002	1149095	10056	22	0.88
2001	1090635	7578	25	0.69
2000	1084009	6224	25	0.57
1999	1054205	6045	25	0.57
1997	986400	4436	27	0.45
1995	902875	2992	34	0.33
1993	800843	1895	35	0.24
1991	724531	1336	38	0.18
1990	696383	1094	42	0.16
1980	536963	380	40	0.07
1975	402548	235	40	0.06
1973	369331	209	40	0.06

Long Term S&T Policy

(SCST Decision on 13 Dec. 2000)

**A new national S&T policy document for
the period 2003-2023 is to be
prepared to build a **welfare society** in
2023**

**(100'th Anniversary of the Foundation of the Turkish
Republic):**

***Vision 2023: Strategies for Science and
Technology***

2. Europe of Science

Science was invented some 2500 years ago. It is continuous across cultural boundaries. The Ionian science antiquity became the science of the muslims of yesterday and the science of the muslims became the science of Europe today, through generally continuous development and growth.

There is neither a science of the West, nor an Islamic science. There is only one Science that wanders from cultur to cultur, and we are all heir to it, and are entitled to it. Science has been uniformly progressive and has found a home in any culture where people have been prepared to listen to each other with a view to learning something and to criticize each other, with a view to finding a better common vantage point.

Thus,

Science is the only truly uniting bond of all humans.

- What do we mean by the word Europe? The continent is named Europe some 2500 years ago. About the same time science is invented. The word Europe has been often used and misused, interpreted and misinterpreted. There have been many Europes:

- Europe of Greek Mythology,
- Europe of geographers,
- Europe of Roman Empire, Byzantine Empire,
- Carolingian and Papal Europe,
- Romantic and Gothic Europe,
- Europe of the Renaissance,

- Europe of Scientific Revolution; Europe of Industrial Revolution,
- Europe of French Revolution,
- Capitalist and Socialist Europe,
- Europe of Communism and Fascism; Europe of World Wars,
- Europe of US and Soviet hegemony,
- Europe of the Six, the Nine, the Ten, the Twelve, the Fifteen, the Twenty Five.

As old conceptions are fading away, Europe is moving(?) towards a new type of definition determined by not only geographical, religious and cultural considerations. Many (I, for one) believe that UNIVERSAL VALUES will hopefully prevail over narrow geographical, national, religious and cultural limitations, if Europe is to have a future.

3. Turkey's Integration With EU

Out of the past 2500 years much or all of the place nowadays called Turkey, has been politically, economically and culturally and extension of Europe for roughly two-thirds of the time. Recall that in its declining years The Ottoman Empire was called The Half Sick Man of Europe, but not of another geography.

Turkey has a good claim to be a part of the Europe of history, ideas and economy, if not the Europe of formal geography. The Country was put on its present path towards European integration in the 1950's, when She has joined the then OEEC, the NATO, and the Council of Europe. Turkey was among the first group of countries, in the post-WW2 period, joining all the movements of European integration.

In August 1959, only two years after the signing of the Treaty of Rome, She presented her request to the EEC for a special associate status with the eventual goal of full membership. The negotiations between TR and EC began on September 28, 1959, but took two years longer than the Greek negotiations, culminating in the Ankara Association Agreement on September 12, 1963 (something which is interestingly recommended to Turkey by G. d'Estaing in late 2002 on a par with Ukraine and Morocco).

Although Turkey has signed the association agreement with EU, while the Union was still composed of 6 countries (Germany, France, Italy, Belgium, Netherlands, and Luxemburg), only after her entry to the EU Customs Union in 1996 and formal acknowledgement of its candidate member status in Helsinki Summit in 1999, Turkey has entered on an (HOPEFULLY) irreversible course for integration with Europe.

To be frank, the real obstacle for membership to EU is **ECONOMICAL**. A very large part of the state budget is used up to pay the heavy debt off, and as a result little is left to stimulate production, as well as for education, health and infrastructure programs. It has been attracting very little private foreign investment (FDI) without which (and domestic saving accumulation) it would be difficult for Turkey to catch up with Europe.

Milestones of Turkey's Integration With Europe

Membership to the Council of Europe	1949
Membership to NATO	1952
Associated Membership to EEC (Ankara Agreement)	1963
Application for full membership to EC	1987
Customs Union with EU	1996
Candidacy to EU (Helsinki)	10 Dec 1999

Turkey's Membership in Principal International Organizations

	Date of establishment	Turkey's Entry
UN	1945	1945
Council of Europe	1949	1949
NATO	1949	1952
OECD	1960	1960

5. Turkey in EU RTD-FP

After a long and fluctuating relations, the historic step on our course to integration with Europe was to join the FP6 in 2002.

S&T Milestones in Turkish Integration to Europe

1954	CERN set up (TR joined in 1954 as an associate member)
1971	COST launched (TR joined in 1971 as a founding member)
1974	ESF established in Strasbourg (TR joined in 1977 via TUBITAK)
1975	ESA established in Paris (TR started negotiations in 2001 via TUBITAK)

S&T Integration (cont)

1975	International Energy Agency (IEA) Established in Paris (Turkey joined in 1975)
1978	EMBL inaugurated in Heidelberg (TR joins in 1993)
1984	FPRTD launched (TR joined in FP6)
1985	EUREKA launched (TR joined as a founding member)
1988	Academia Europea set up in London (3 TR scientists elected in '92-'93)

It is a fact that, although our GDP is quite sizable, especially as compared to NEW MEMBERS, our R&D indicators are relatively modest next to EU averages.

The mismatch between our GDP and GERD is clearly a serious concern for us when we enter international consortia, since the algorithm used in the computation of participation fees is usually based on the GDP while the real absorption capacities (of project funding from FP resources, for instance) are proportional to GERD.

Surprisingly, however, the Science System performs better than it should. The contribution of the Turkish S&T system to the universal R&D production, for instance, has increased significantly over the past decade. More precisely, our place in the SCI total publication standings, 45th in eighties, advanced to 20th recently.

There is an increasing awareness about the importance of the private sector's role in the innovations. Although their share in the R&D activities is presently lower than the EU average, there is steady increase due to incentives introduced in early 90's.

**Namely, a special program
TUBITAK (and a parallel Soft
Loan Pr) initiated in 1995(1993)
to fund industrial R&D, was
instrumental in doubling the
share of the private sector in
R&D activities in about five
years, raising it to 35%.**

At this point, I would like to give a brief overall picture on, how prepared we are in the European Research Platform. As a first step let us compare the three bidders for world leadership, from demographic, economic, and S & T point of view, together with Turkey.

	GDP	S & T	Demography
USA	20 %	31.7 %	4.6 %
EU – 15	22 %	32.8 %	6.3 %
Japan	8 %	7.1 %	1.9 %
Total	50 %	71.6 %	12.8 %
Turkey	0.6 %	0.9%	1.1 %

**Let us asses Turkey's position
from S & T output point of view
with EU-15, and the old CC-13:**

- **Turkey has higher number of SCI publications than the 7 members (namely Austria, Finland, Denmark, Greece, Portugal, Ireland, and Luxemburg). Turkey has higher number of SCI publications than all the CC-13's, except Poland.**

- **Within the group of CC-13, the weights of Turkey are as follows:**

Demography : 37 %

GDP : 21 %

S&T publications : 21 %

- **Turkey however does not fare well in attracting FDI as much as the other CC's, although her standing is higher than all the CC's in microeconomic competitiveness ranking. This clearly calls for some urgent measures to be implemented at the national level.**

S&T Indicators

Country or Group	R&D Exp. % of GDP 2001	R&D Exp. in Bus. Sector % of Total 2001	R&D Performed by Bus. Sector of Total 2001	R&D Exp. in Gov. Sector % of Total 2001	R&D Performed by Uni. Sector of Total 2001	Sci. and Eng. in R&D per 1000 Empl. 2001	Trt. Stud. in Sci. Math. and Eng % of Total Tert. 2001	Number of Publications		
								1981	1995	2002
FINLAND	3.37	70.30	70.90	26.20	17.8	15.2	27.7	2615	5732	8004
USA	2.82	68.30	74.40	26.90	14.2	8.6	8.9	174123	249386	314109
KOREA	2.65	73.40	71.20	23.90	14.2	5.2	33.9	234	5393	18430
IRELAND	2.90	64.10	64.10	21.80	21.2	5.1	13.7	881	1891	3345
ISRAEL	2.54	59.30	70.90	29.90	18.4	4.8*	16.1	4934	8279	10431
SPAIN	0.97	49.70	54.30	38.60	29.4	4.9	17.6	3462	1536	26960
GREECE	0.67	24.20	28.50	48.70	49.5	3.8	ND	968	3158	6193
PORTUGAL	0.76	21.30	35.80	69.70	38.6	3.2	15.1	237	1580	4170
INDONESIA	0.37	44.70	ND	55.30	ND	0.9	ND	229	587	1001
MEXICO	0.43	29.60	25.50	61.30	26.3	0.6	15.5	907	2901	5756
THAILAND	0.20	9.40	ND	85.50	30.6*	1.0*	21.0*	373	649	1823
TURKEY	0.64	42.90	33.40	50.60	60.4	1.1	21.4	378	2471	9303
BRAZIL	0.91	40.10	45.50	57.20	43.50	1.7*	23*	1913	5440	14999
INDIA	0.74	27.90	ND	52.00	ND	1.5*	25.0*	13623	1488	20409
HIGH.INC. OECD AVG.	2.24	64.20	69.50	38.50	17.20	6.40			3	

* Latest available data for 1997

Technology Indicators

COUNTRY OR GROUP	TECHNOLOGY ACHIEVEMENT INDEX (TAI)	TECHNOLOGY CREATION		DIFFUSION OF RECENT INNOVATIONS		DIFFUSION OF OLD INNOVATIONS		HUMAN SKILLS		HDI	GDP PER CAPITA PPP US \$ 1999
		Pat. granted to residents, per million people 1998	Rec. of royalties and licence fees, US \$ per million people 1999	Internet hosts, per 1000 people 2000	High- and med.-tech. exports, % of total goods exp. 1999	Telephones, mainline and cell. per 1000 people 1999	Elect. consumption kw-hrs per capita 1999	Mean years of schooling (age 15 and above) 2000	Gross tert. science enroll. ratio, % 1995-1997		
FINLAND (1)*	0.744	187	125.6	200.2	59.9	1,203	14,129	10.0	27.4	0.934	23,096
USA (2)	0.733	289	130.0	179.1	66.2	993	11,832	12.0	13.9	0.925	31,872
KOREA (5)	0.666	779	9.8	4.8	66.7	938	4,497	10.8	23.2	0.875	15,712
IRELAND (13)	0.566	106	110.3	48.6	53.6	924	4,760	9.4	12.3	0.916	25,918
ISRAEL (18)	0.514	74	43.6	43.2	45.0	918	5,475	9.6	11.0	0.893	18,440
SPAIN (19)	0.481	42	8.6	21.0	53.4	730	4,195	7.3	15.6	0.908	18,079
GREECE (26)	0.437	-	0.0	16.4	17.9	839	3,739	8.7	17.2	0.881	15,414
PORTUGAL (27)	0.419	6	2.7	17.7	40.7	892	3,396	5.9	12.0	0.874	16,064
MALAYSIA (30)	0.396	-	0.0	2.4	67.4	340	2,554	6.8	3.3	0.774	8,209
MEXICO (32)	0.389	1	0.4	9.2	66.3	192	1,513	7.2	5.0	0.790	8,297
THAILAND (40)	0.337	1	0.3	1.6	48.9	124	1,345	6.5	4.6	0.757	6,132
TURKEY (41)	0.321	4	0.0	2.5	26.7	384	1,353	5.3	6.3	0.735	6,380
BRAZIL (43)	0.311	2	0.8	7.2	32.9	238	1,793	4.9	3.4	0.750	7,037
INDIA (63)	0.201	1	-	0.1	16.6	28	384	5.1	1.7	0.751	2,248
WORLD AVG.	-	-	-	15.1(00)	55	243(99)	2074	6.0(90)	-	0.928	6,980
HIGH-NC. OECD AVG	-	-	-	96.9(00)	58(99)	965(99)	6969	10.0(00)	-	0.716	26,050

Source: Reference (1)

* Rank according to TAI

Relationship between Affluence, Well-being, Technological Achievement and Global Competitiveness

COUNTRY OR GROUP	HUMAN DEVELOPMENT INDEX (HDI) 2000		GDP PER CAPITA 2000		GLOBAL COMPETITIVENESS RANKING 2001	TECHNOLOGY ACHIEVEMENT (TAI) 2001		High Tech. Exports, 1999 (% of Manufac. Exports)	Manufactured Exports, 1999 (% of tot. Merchandise Exports)
	Index	Ranking	PPP-USD	Ranking		Index	Ranking		
FINLAND	0.930	10	24.996	16	3	0.744	1	31	85
USA	0.939	6	34.142	2	1	0.733	2	36	83
KOREA	0.882	27	17.380	28	28	0.666	5	36	91
IRELAND	0.925	18	29.866	4	7	0.566	13	49	85
ISRAEL	0.896	22	20.131	23	16	0.514	18	31	93
SPAIN	0.913	25	19.472	21	23	0.481	19	13	78
GREECE	0.885	24	16.501	34	30	0.437	26	10	50
PORTUGAL	0.880	28	17.920	30	34	0.419	27	8	87
MALAYSIA	0.782	59	9.068	52	29	0.396	30	64	80
MEXICO	0.796	54	9.023	55	36	0.389	32	32	85
THAILAND	0.762	70	6.402	70	38	0.337	40	40	74
TURKEY	0.742	85	6.974	67	44	0.321	41	9	78
BRAZIL	0.750	73	7.625	60	31	0.311	43	16	54
INDIA	0.577	124	2.358	123	41	0.201	63	7 (98)	76 (98)
WORLD AVG.	0.722	-	7.446	-	-	-	-	-	-
HIGH-NC. OECD AVG	0.932	-	27.848	-	-	-	-	-	-

Source : Ref. 3

RELATIONSHIP BETWEEN TECHNOLOGICAL ACHIEVEMENT AND GLOBAL COMPETITIVENESS

COUNTRY	TAI 2001 RANK	COMPETITIVENESS RANK				
		2001	2000	1999	1998	1997
FINLAND	1	3	4	5	6	7
UNITED STATES	2	1	1	1	1	1
SWEDEN	3	8	14	14	16	19
KOREA	5	28	28	41	36	30
SINGAPORE	10	2	2	2	2	2
IRELAND	13	7	5	8	7	10
ISRAEL	18	16	21	22	25	25
SPAIN	19	23	23	20	26	26
GREECE	26	30	34	32	33	36
PORTUGAL	27	34	29	27	29	32
MALAYSIA	30	29	27	28	19	14
MEXICO	32	36	33	35	34	40
THAILAND	40	38	35	36	41	31
TURKEY	41 *	44	42	38	39	35
BRAZIL	43	31	31	34	35	34
INDIA	63	41	39	42	38	41

Based on calculation reported in this paper
Source : Reference (13)

Key Indicators and Rankings of Candidate Countries

	Pop. (2001) Million	Gross National Income (GNI) (2001)			Hum. Dev. Index (HDI) (2000)		Global Competitiveness (2001) Rank	SCI Publications (2001) Rank
		BUS D	BUSD(PPP)	Per Capita	Ra nk	Index		
				Rank				
Estonia	1,4	5,2	14	48	42	0,826	22	60
Lithuania	3,5	114	27	65	49	0,808		62
Latvia	2,3	7,6	18	66	53	0,803		72
Slovenia	2,0	19,4	36	29	29	0,879	39	44
Slovakia	5,4	20,0	63	46	36	0,835	37	41
Czech Rep.	10,3	54,1	149	39	33	0,849	35	31
Hungary	10,2	48,9	128	43	35	0,835	27	32
Poland	38,7	163,9	359	53	37	0,833	47	20
Romania	22,4	38,4	156	69	63	0,775		42
Bulgaria	8,1	12,6	48	80	62	0,779		47
Turkey	66,2	168,3	440	103	85	0,742	44	25
Greece	10,6	124,6	189	14	24	0,885	30	27
Portugal	10,2	109,2	177	26	28	0,880	34	37

Some Indicators of Development

	Expendit. in Education (1)	Expendit. in IT (2)	High Tech. Exports (3)	FDI Stock (4)		Ext. Debt Stock (4)
				(MUSD)	(%)	
Estonia	6,8	-	30	387	48	66
Lithuania	5,8	-	4	379	19	43
Latvia	6,0	-	4	607	27	46
Slovenia	5,2	2,1	5	176	13	-
Slovakia	4,7	2,9	4	2.052	15	48
Czech Rep.	4,3	3,9	8	4.583	32	43
Hungary	4,5	3,3	26	1.692	40	63
Poland	5,2	2,2	3	9.342	17	37
Romania	3,1	1,0	6	1.025	15	27
Bulgaria	3,7	1,7	4	1.002	17	82
Turkey	3,5	1,7	5	982	4	57

*(1) Public Expenditure on Education as % of GDP (2001)
(2000)*

(2) IT expenditures as % of GDP

(3) High tech exports as % of manufactured exports

(4) FDI Stock as % of GDP (2000)

(5) External depth stock as % of GDP (2000)

6. Conclusions

We have recently witnessed a very important transformation in our part of the globe, one that has changed the world from a bi-polar to mono-polar structure. This divide of ideologies is over for more than a decade. This had enormous consequences for the central Eastern European countries.

They benefited from an immediate flow of aid and schemes of cooperation coming from the developed world with EU playing a central role. The welcome arrival of these countries to the fold of democracies, however, should not adversely affect other parts of the world, least of all the Mediterranean area which has no less strategic importance for Western Europe.

However the frightening (albeit artificial) substitute of a divide, once looked to have receded, seems to have gained momentum after the dreadful incidents of September 11. I am talking about Huntington's thesis on the so-called "clash of civilisations". We all inherit a common culture and civilization forged by our forefathers over millenia in such centers as Ephesus, Athens, Rome, Istanbul and others.

We may differ in some attributes of culture, for instance, in our religion. But at the level of sophistication we have today we should not allow such differences to re-polarise the world and divide us again into hostile new camps, despite all the zeal of the proponents of a multipolar world-order from both sides.