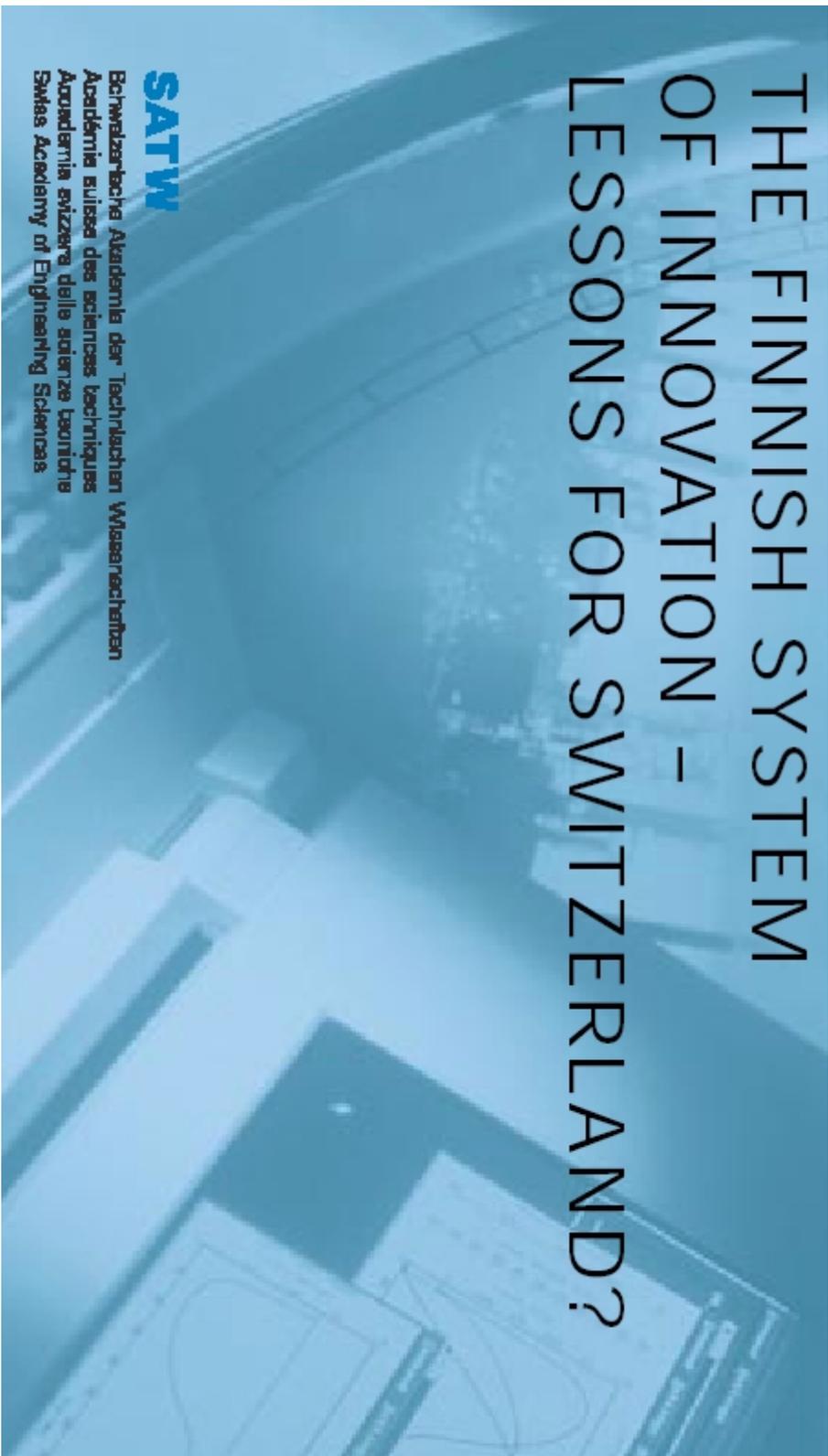

Innovation Policy in Finland

Antti Joensuu

Ministry of Trade and Industry

6.5.2004



THE FINNISH SYSTEM OF INNOVATION - LESSONS FOR SWITZERLAND?

SATW

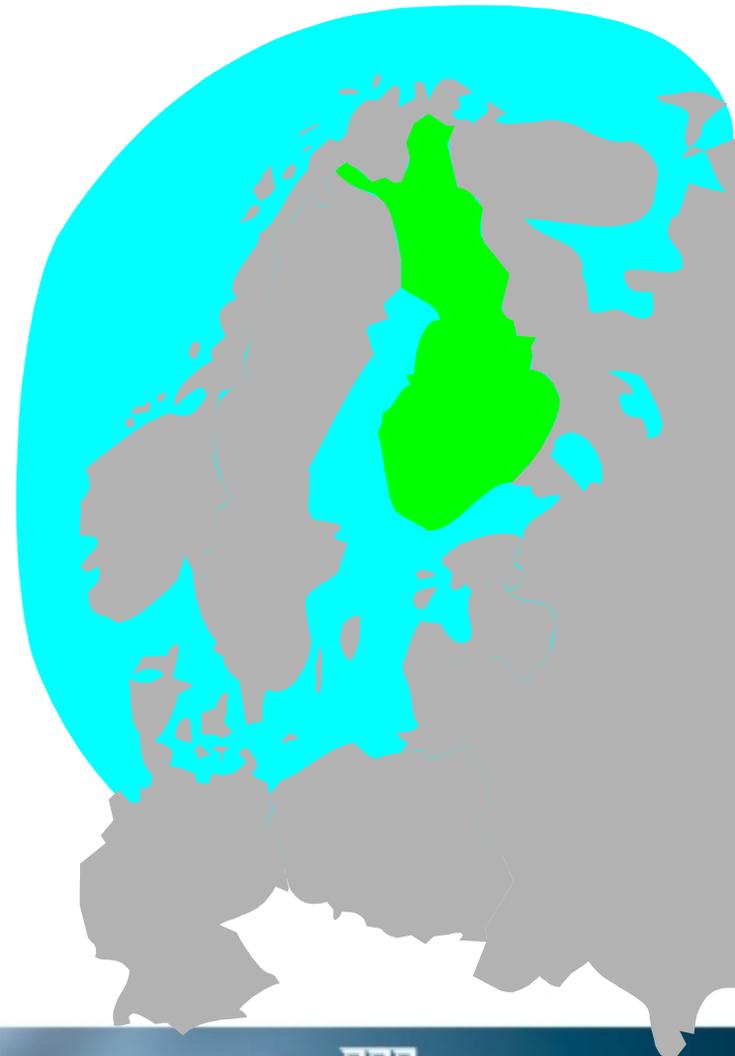
Bundesanstalt für Technologie und Innovationen
Accademia Svizzera delle Scienze Tecniche
Accademia Svizzera delle Scienze Tecniche
Swiss Academy of Engineering Sciences



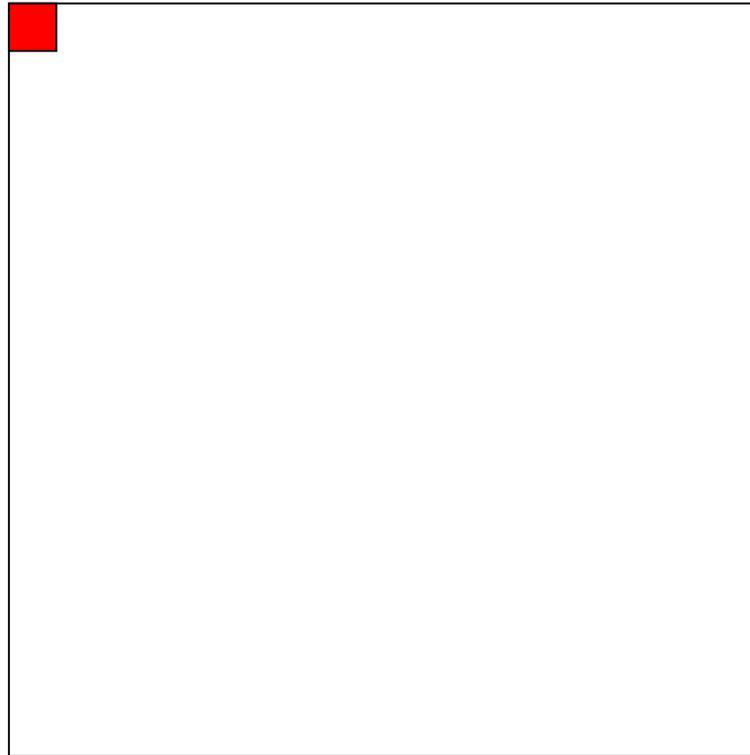
MINISTRY OF
TRADE AND INDUSTRY

Finland; the country

- **338,000 sq. km**
- **5,2 million people**
- **Capital Helsinki**
- **2 languages**
 - Finnish
 - Swedish
- **GDP per capita 2002***
€26,900, USD 25,090
- **a member of**
 - the European Union
 - UN, OECD, WTO



Finland in Global R&D



The Global Competitiveness rankings 2003

	GCI Ranking	BCI Ranking	
Finland	1	1	
US	2	2	
Sweden	3	3	
Denmark	4	4	
Taiwan	5	16	
Singapore	6	8	
Switzerland	7	7	
Iceland	8	14	
Norway	9	22	
Australia	10	11	
Japan	11	13	
Netherlands	12	9	
Germany	13	5	
New Zealand	14	18	
UK	15	6	
Canada	16	12	
Austria	17	17	
Korea	18	23	
Malta	19	42	
Israel	20	20	

The Growth
Competitiveness
Index (GCI)

The Business
Competitiveness
Index (BCI)

The World Competitiveness Scoreboard

Ranking as of April 2002

Country	2002	2001	2000	1999	1998	1997
USA	1	1	1	1	1	1
Finland	2	3	4	5	6	7
Luxembourg	3	4	6	3	3	8
Netherlands	4	5	3	4	4	4
Singapore	5	2	2	2	2	2
Denmark	6	15	13	9	10	13
Switzerland	7	10	7	7	9	12
Canada	8	9	8	10	8	6
Hong Kong	9	6	12	6	5	3
Ireland	10	7	5	8	7	10
Sweden	11	8	14	14	16	19
Iceland	12	13	9	13	18	21
Austria	13	14	15	18	24	20
Australia	14	11	10	11	12	15
Germany	15	12	11	12	15	16
U.K.	16	19	16	19	13	9
Belgium	18	17	19	21	23	23
Taiwan	24	18	20	15	14	18
Israel	25	16	21	22	25	25

National competitiveness balance sheet; Finland

NOTABLE COMPETITIVE ADVANTAGES

Growth Competitiveness Index

Technology

Technological sophistication	1
Firm-level technology absorption	1
University/industry research collaboration	1
Laws relating to ICT	1
Tertiary enrollment	1
Internet access in schools	1
Company spending on research and development	2
Government prioritization of ICT	3
Internet hosts, 2002	3
Government success in ICT promotion	5
Utility patents, 2002	7
Internet users, 2002	7
Cellular telephones, 2002	10

Source: World Economic Forum, Executive Opinion Survey (2003)

Mean Reading Literacy

Range of rank order positions for each country based on sample (with 95% confidence)

	Highest possible	Lowest possible
Finland	1	1
Canada	2	4
New Zealand	2	8
Australia	2	9
Ireland	3	9
Korea	4	9
UK	5	9
Japan	3	10
Sweden	9	11
Austria	11	16
Belgium	11	16
Iceland	11	15
Norway	11	16
France	11	16
United States	10	20
Denmark	16	19
Switzerland	16	21
Spain	17	21
Czech Rep.	17	21
Italy	19	24
Germany	21	25
Luxembourg	30	30

2002 Environmental Sustainability Index

	Rank	Index
Finland	1	73,9
Sweden	3	72,6
Canada	4	70,6
Austria	7	64,2
France	33	55,5
Spain	44	54,1
United States	45	53,2
Germany	50	52,5
Italy	84	47,2
United Kingdom	91	46,1

2001 Technology Achievement Index

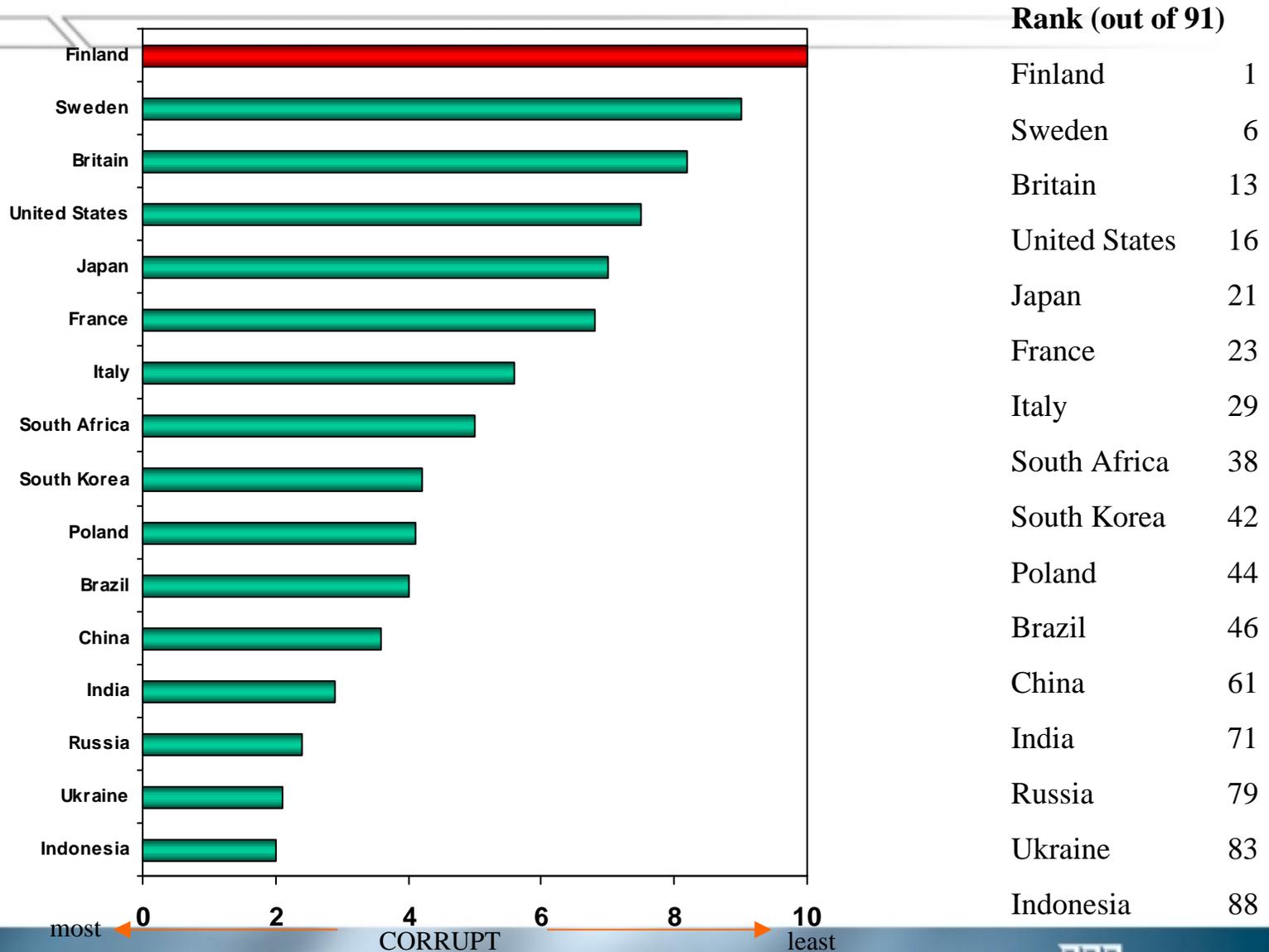
Finland	0,744
United States	0.733
Sweden	0,703
Japan	0,698
Korea, Rep. of	0,666
the Netherlands	0,630
United Kingdom	0,606
Canada	0,589
Australia	0,587
Singapore	0,585

Corruption Perceptions Index, 2002

Finland	1
Sweden	6
Britain	10
United States	16
Japan	21
France	25
Italy	31
South Africa	38
South Korea	43
Brazil	45
Poland	49
China	59
India	73
Russia	74
Ukraine	86
Indonesia	96

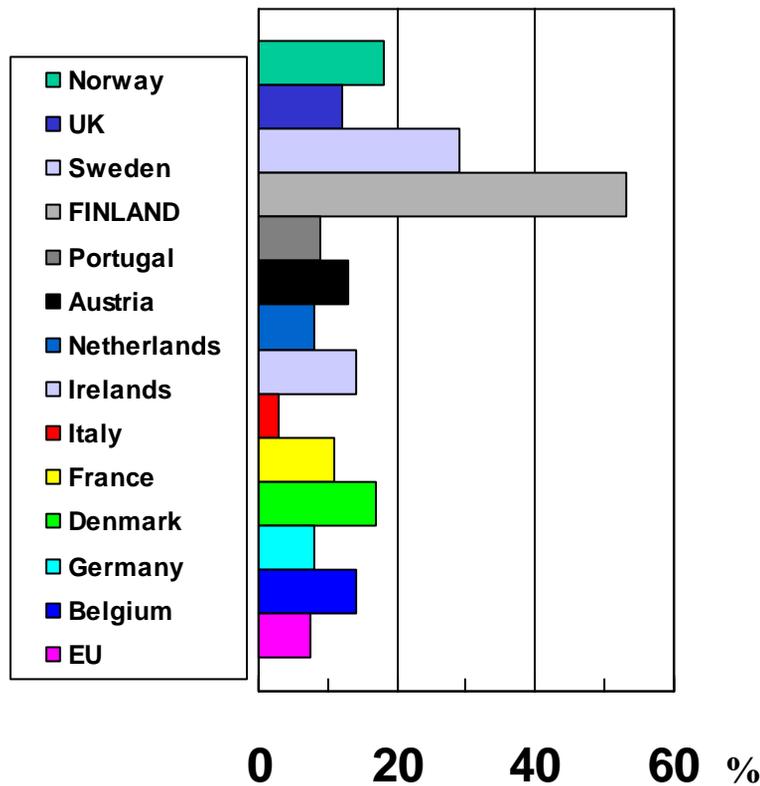
Corruption Perceptions Index, 2001

10=least corrupt, 0=most Corrupt

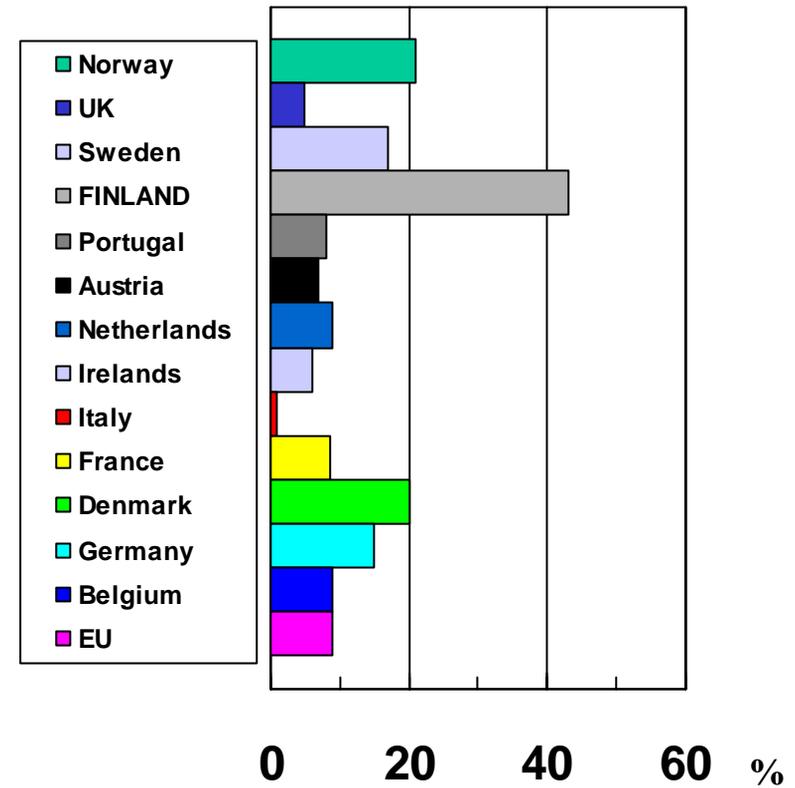


Co-operation between companies and universities and research institutes

Share of innovative companies having co-operation agreements with universities (1994-1996)



Share of innovative companies having co-operation agreements with public research institutes (1994-1996)



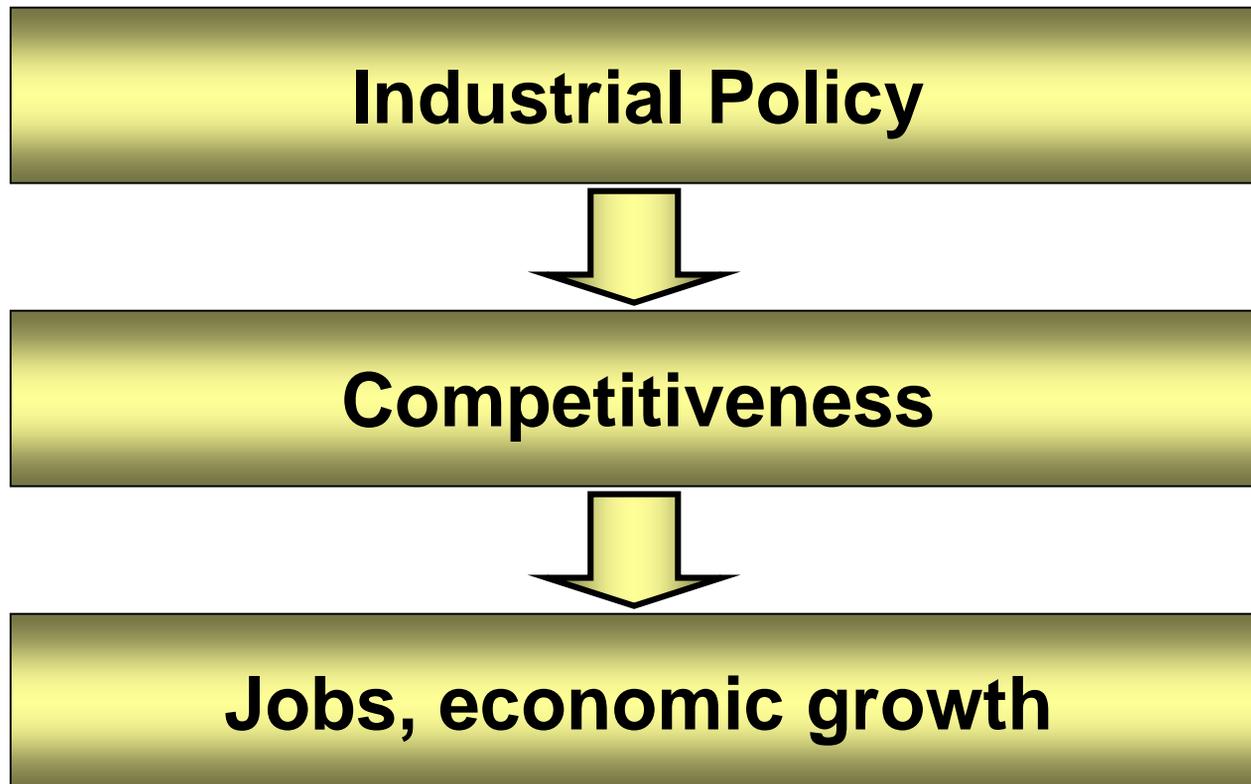
Source: Eurostat, Enterprise DG, 2nd Community Innovation Survey

Ministry of Trade and Industry

As an expert in industrial and economic policy the Ministry of Trade and Industry plays a leading role in formulating economic policy decisions.

Its principal function is to improve the competitiveness and operating conditions of enterprises and business life.

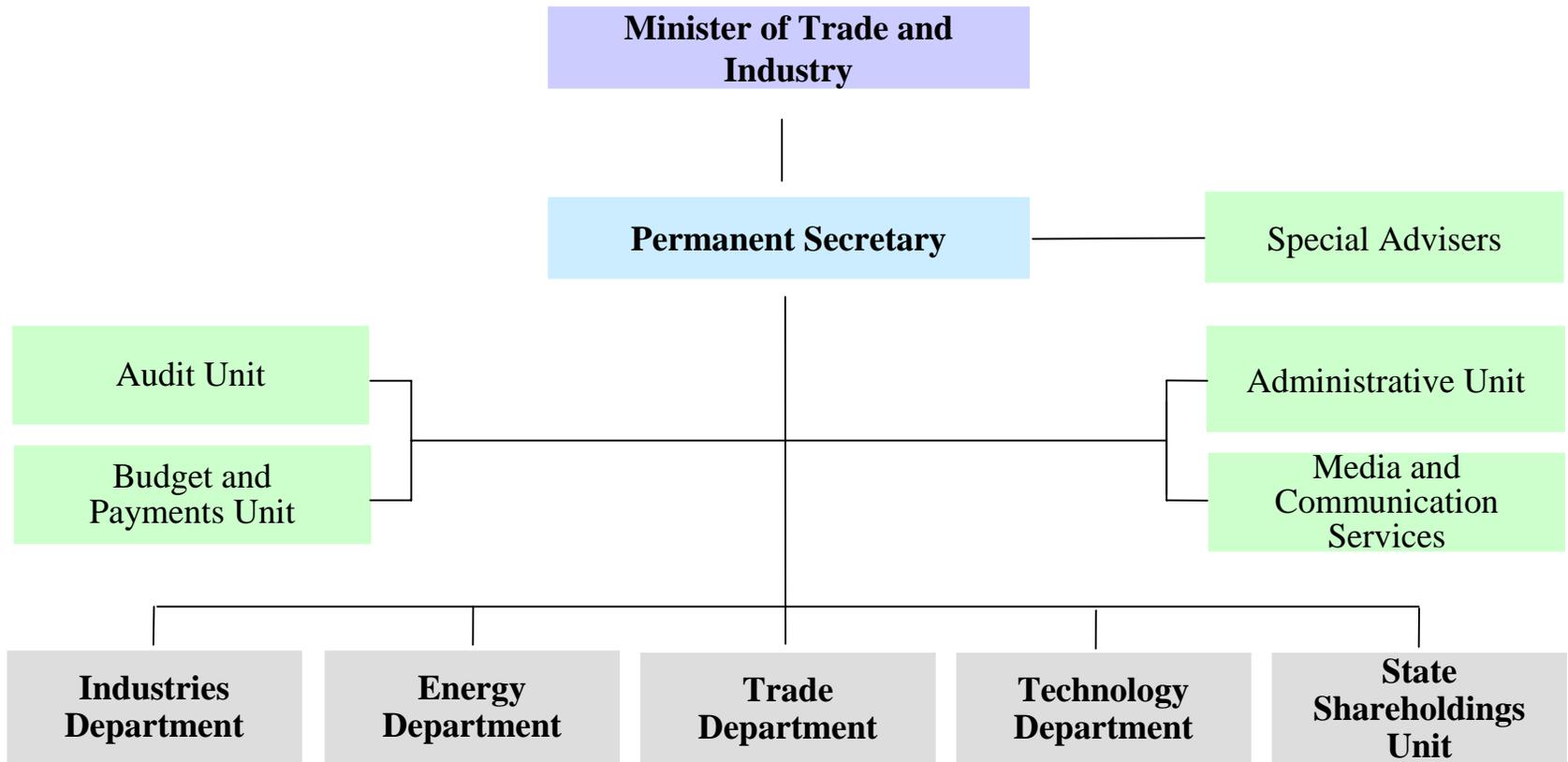
INDUSTRIAL POLICY

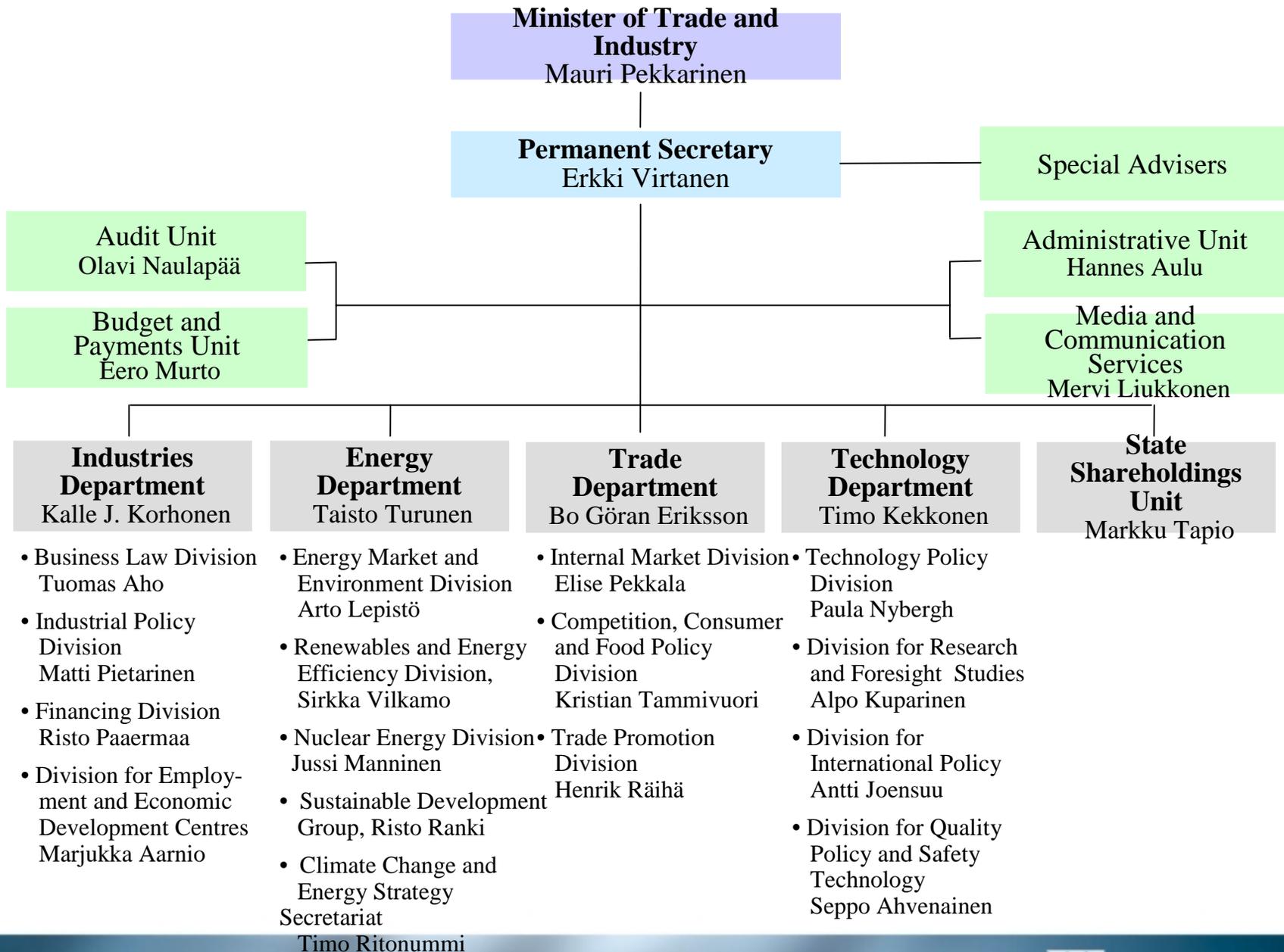


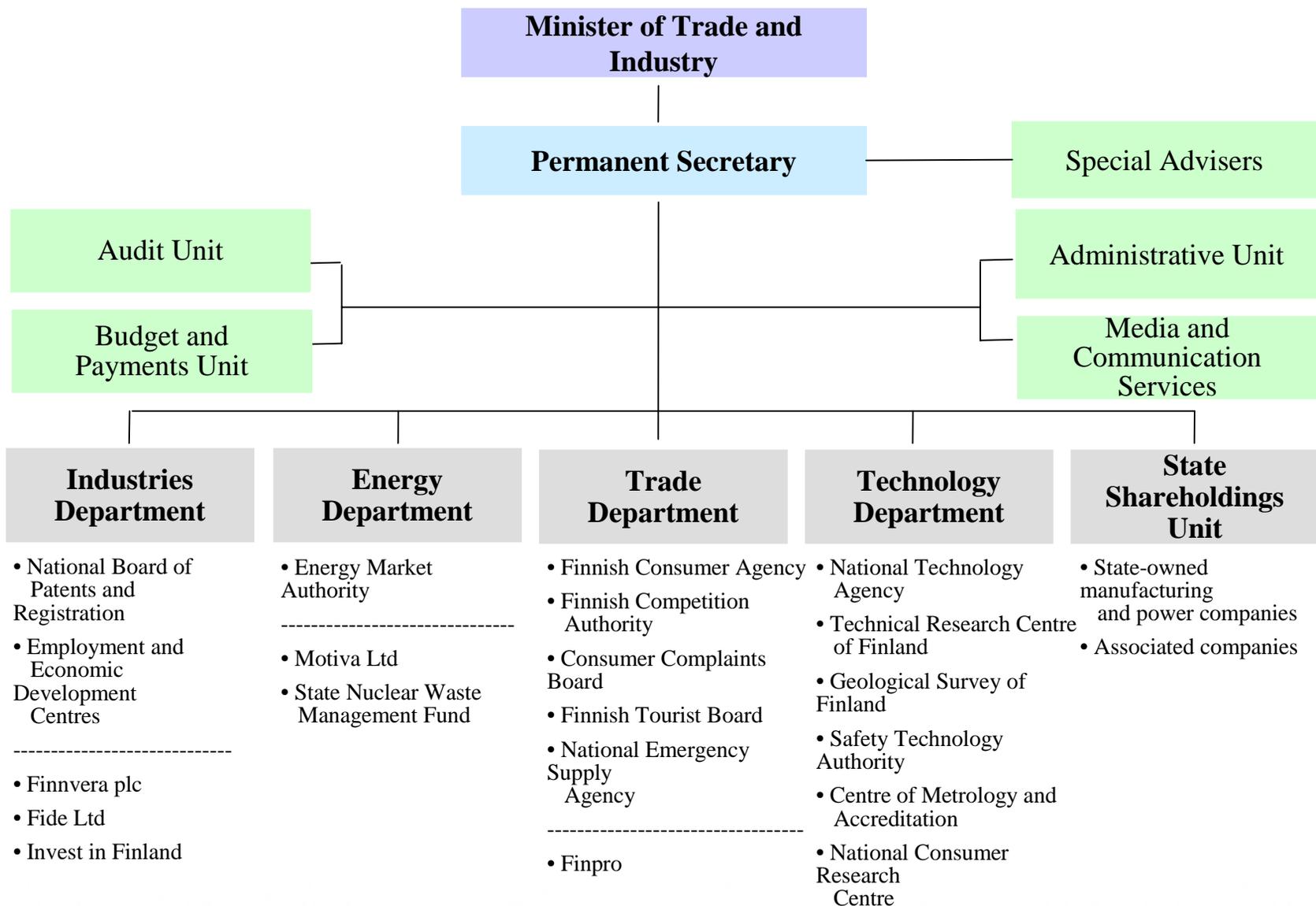
INSTRUMENTS OF INDUSTRIAL POLICY

- **Competition Policy**
- **Competition Rules**
- **Technology Policy**
- **Education**
- **Energy Policy**
- **Environmental Policy**
- **Financial Markets**
- **Tax Policy**









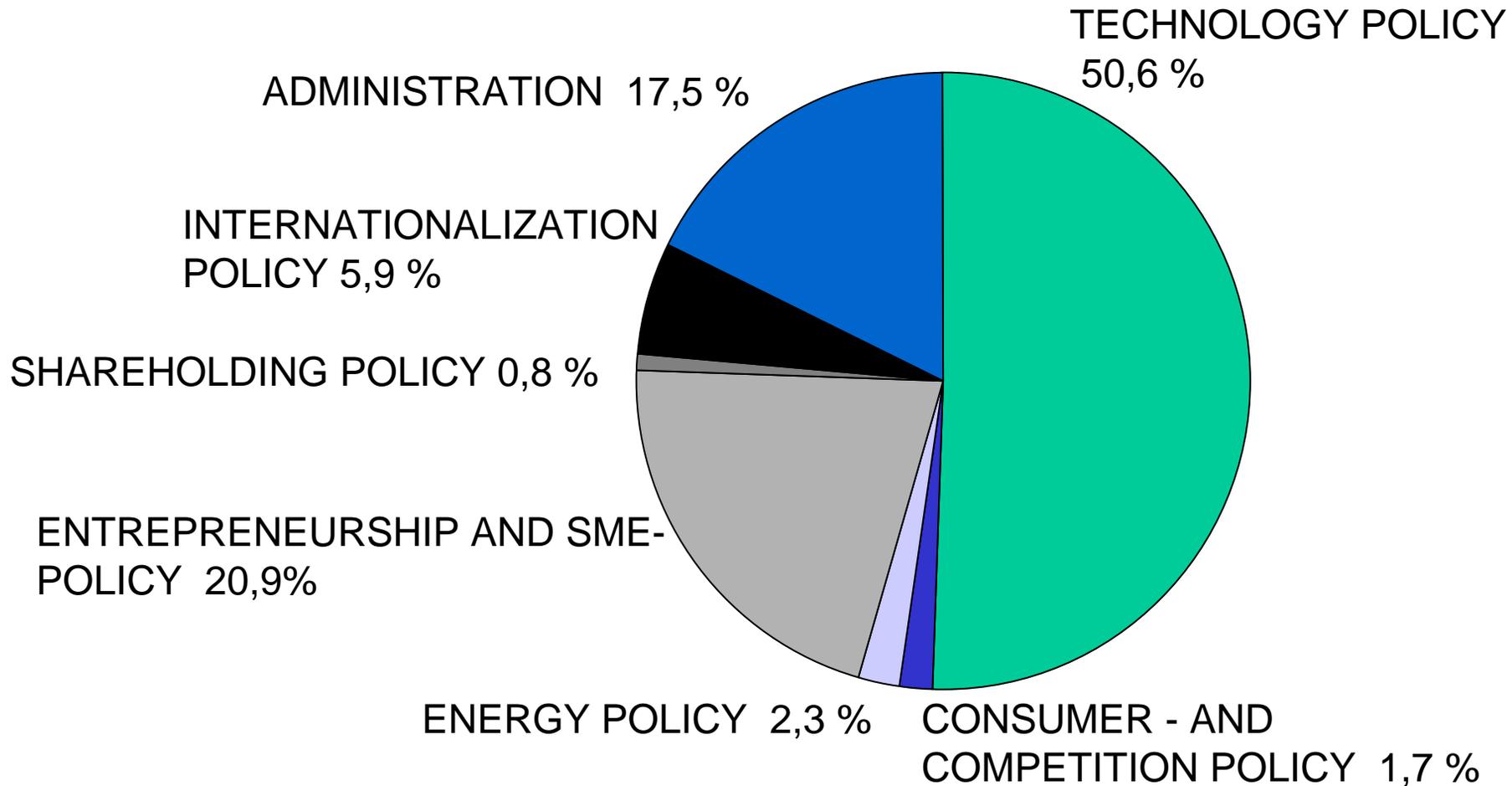
Technology Department

The Mission is:

To foresee the possibilities and effects of technology throughout the society and to develop together with other actors the operative framework that generates a competitive and evolutionary industry

MTI Budget 2003

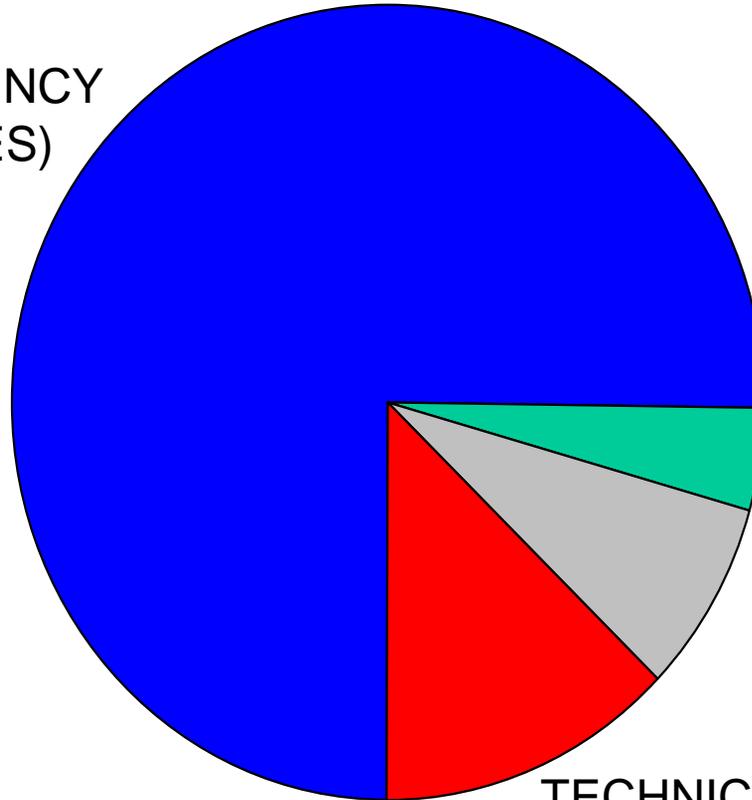
Total 975,9 milj. €



TECHNOLOGY POLICY BUDGET 2003

Total 494,1 milj. €

THE NATIONAL
TECHNOLOGY AGENCY
OF FINLAND (TEKES)
75,1 %

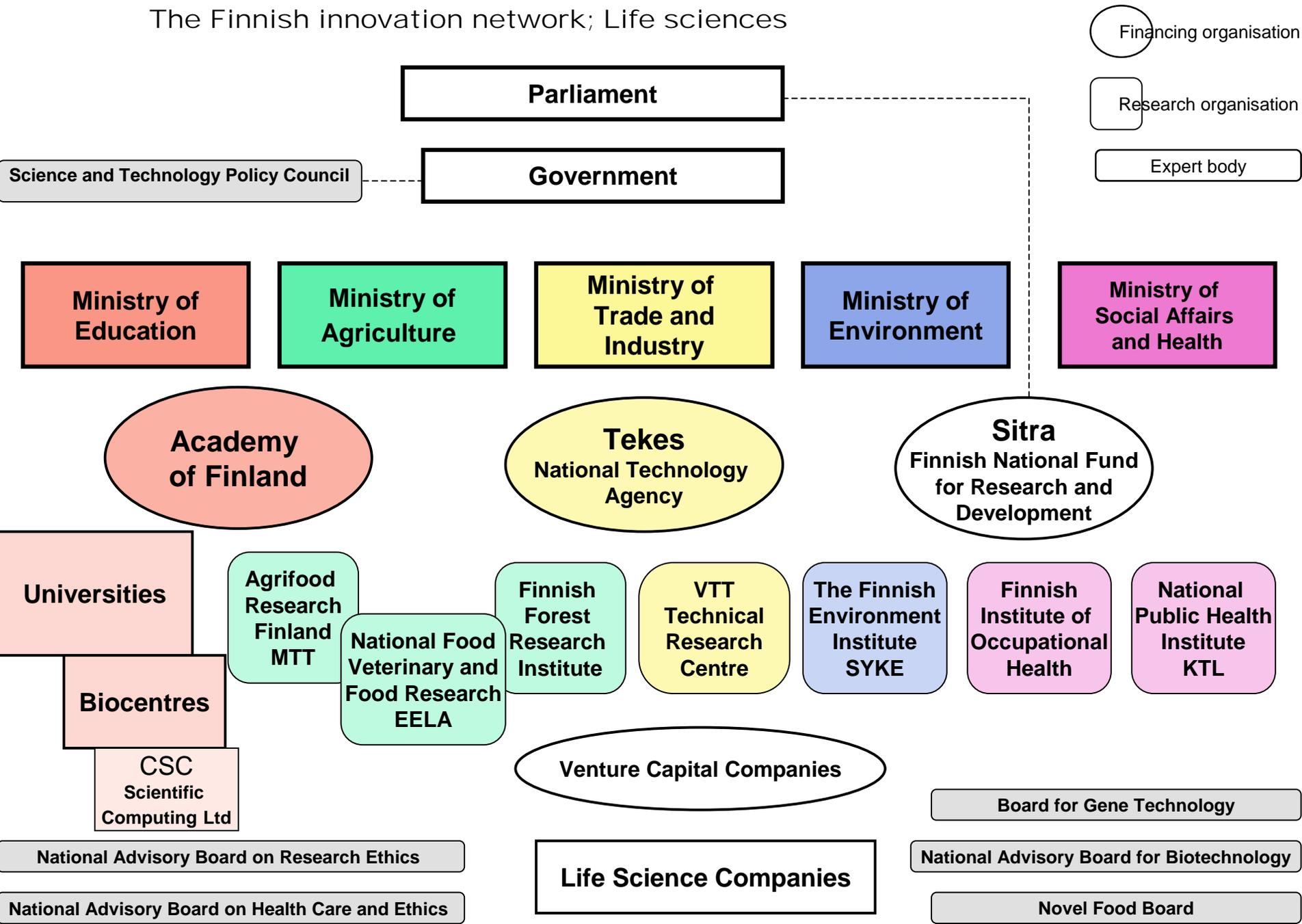


OTHERS 4,3 %

GEOLOGICAL SURVEY
OF FINLAND (GTK) 7,6 %

TECHNICAL RESEARCH
CENTRE
OF FINLAND (VTT) 12,8 %

The Finnish innovation network; Life sciences



Parliament

Council of State

**Ministry of
Education**

**Ministry of
Trade and Industry**

**Other
Ministries**

**Science and
Technology
Policy Council**

**Academy of
Finland**

**The National
Technology
Agency of
Finland**

SITRA Fund

Universities and government research institutes

**Enterprises, private research institutes,
funds and foundations, learned societies**

Science and Technology Policy Council of Finland

CHAIRMAN: PRIME MINISTER

DEPUTY CHAIRMEN:

MINISTER OF EDUCATION

MINISTER OF TRADE AND INDUSTRY

MINISTER OF FINANCE

+ 4 OTHER MINISTERS

10 OTHER MEMBERS

ACADEMY OF FINLAND

NATIONAL TECHNOLOGY AGENCY OF FINLAND

INDUSTRY

EMPLOYERS' ORGANISATIONS

EMPLOYEES' ORGANISATIONS

UNIVERSITIES

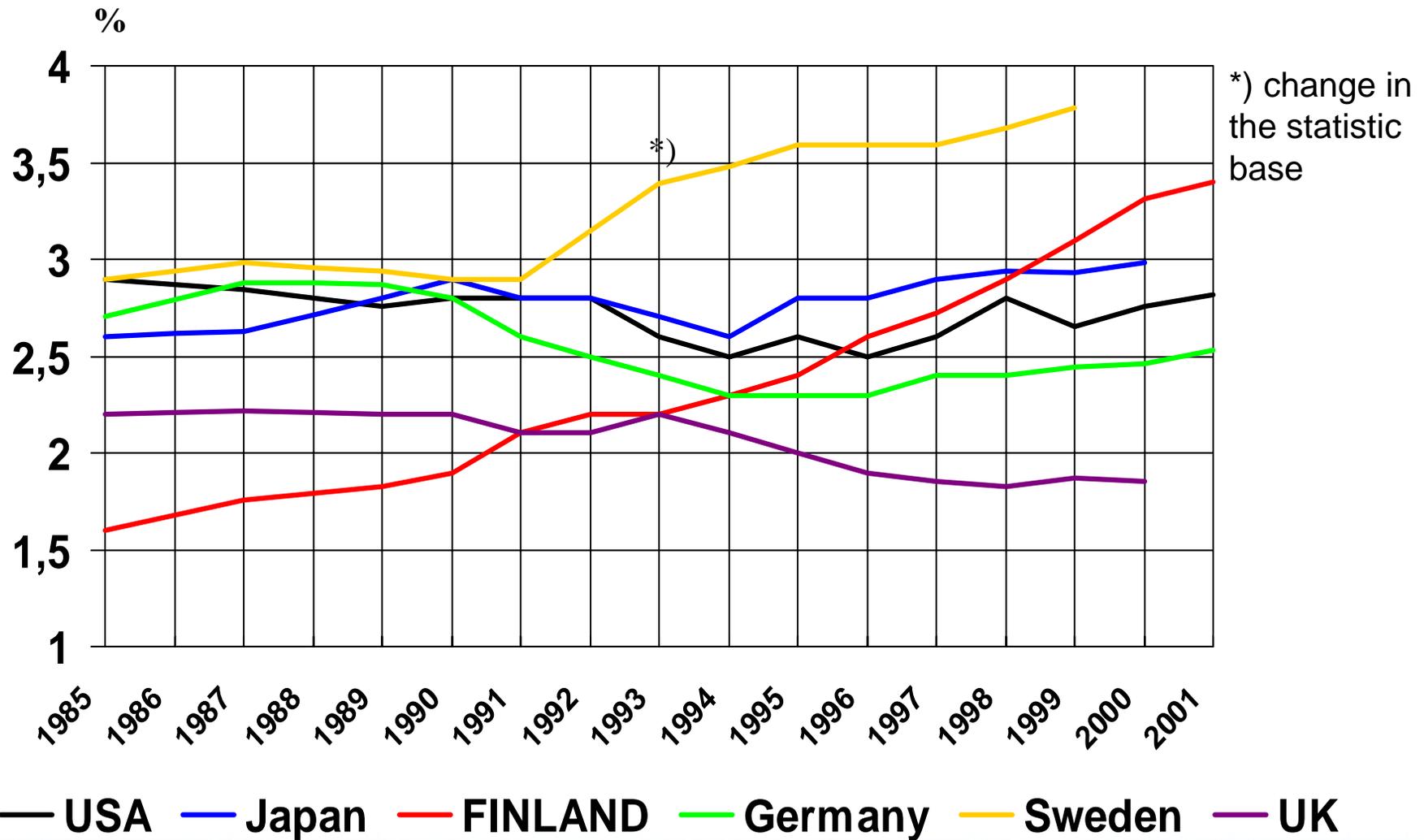
+ 4 OTHER MEMBERS

**SUBCOMMITTEES ON SCIENCE POLICY & TECHNOLOGY
POLICY**

SECRETARIAT

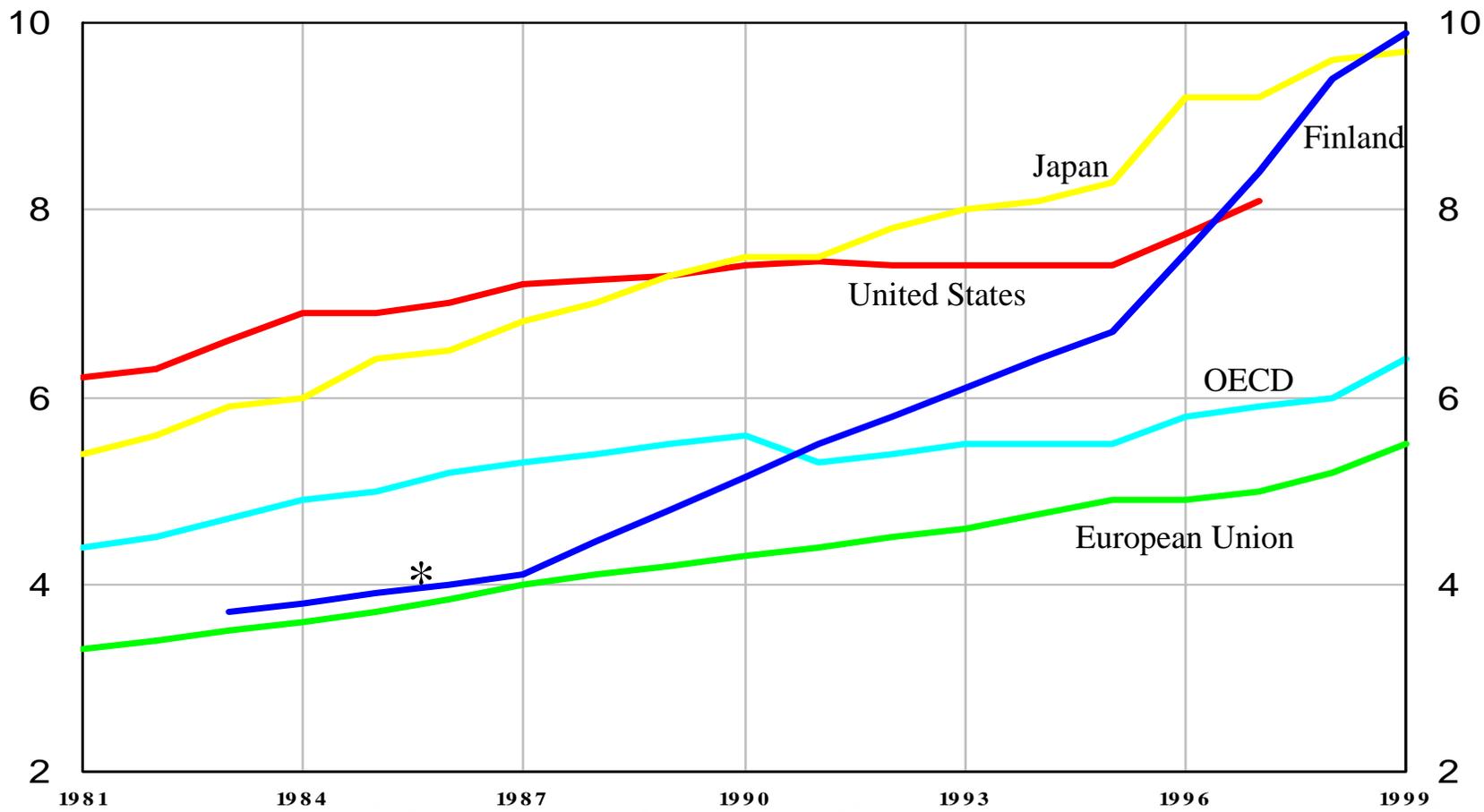


SHARE OF R&D IN GDP IN SOME OECD COUNTRIES



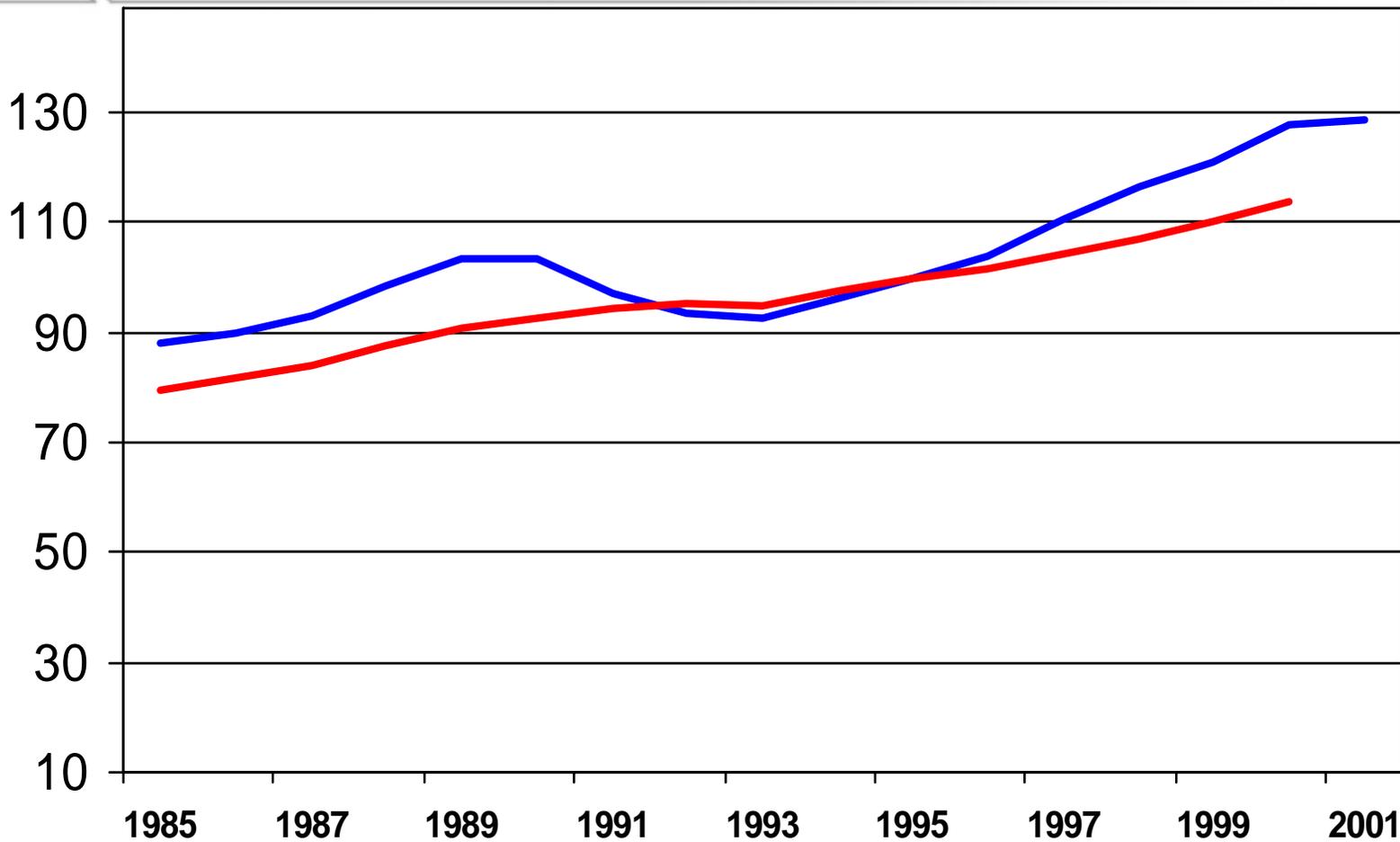
Source; Main Science and Tehnology Indicators, OECD 2002/2

Total researchers per thousand labour force



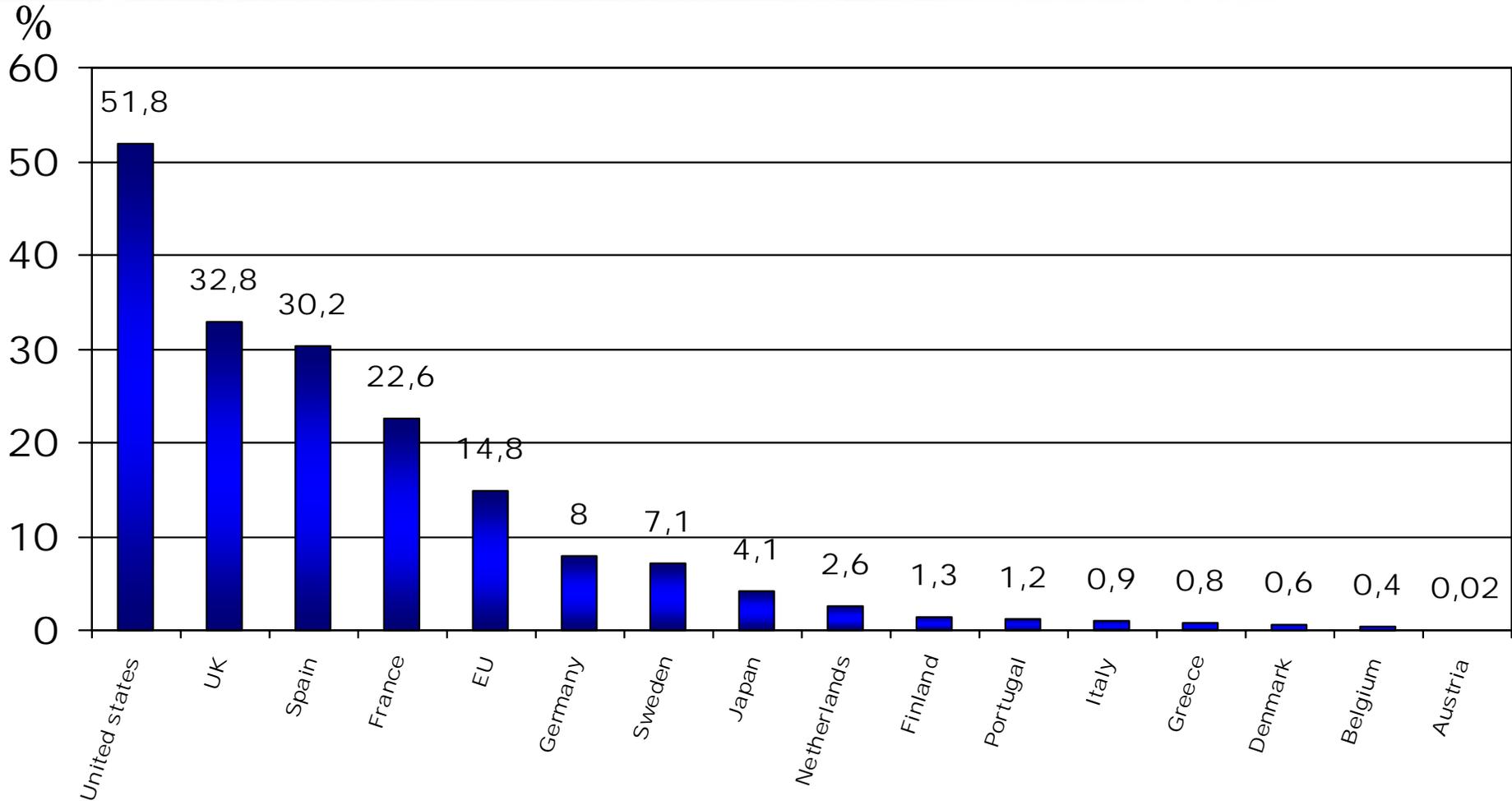
Source: OECD, Main Science and Technology Indicators, November 2001

GDP 1995=100 (at market prices per capita)

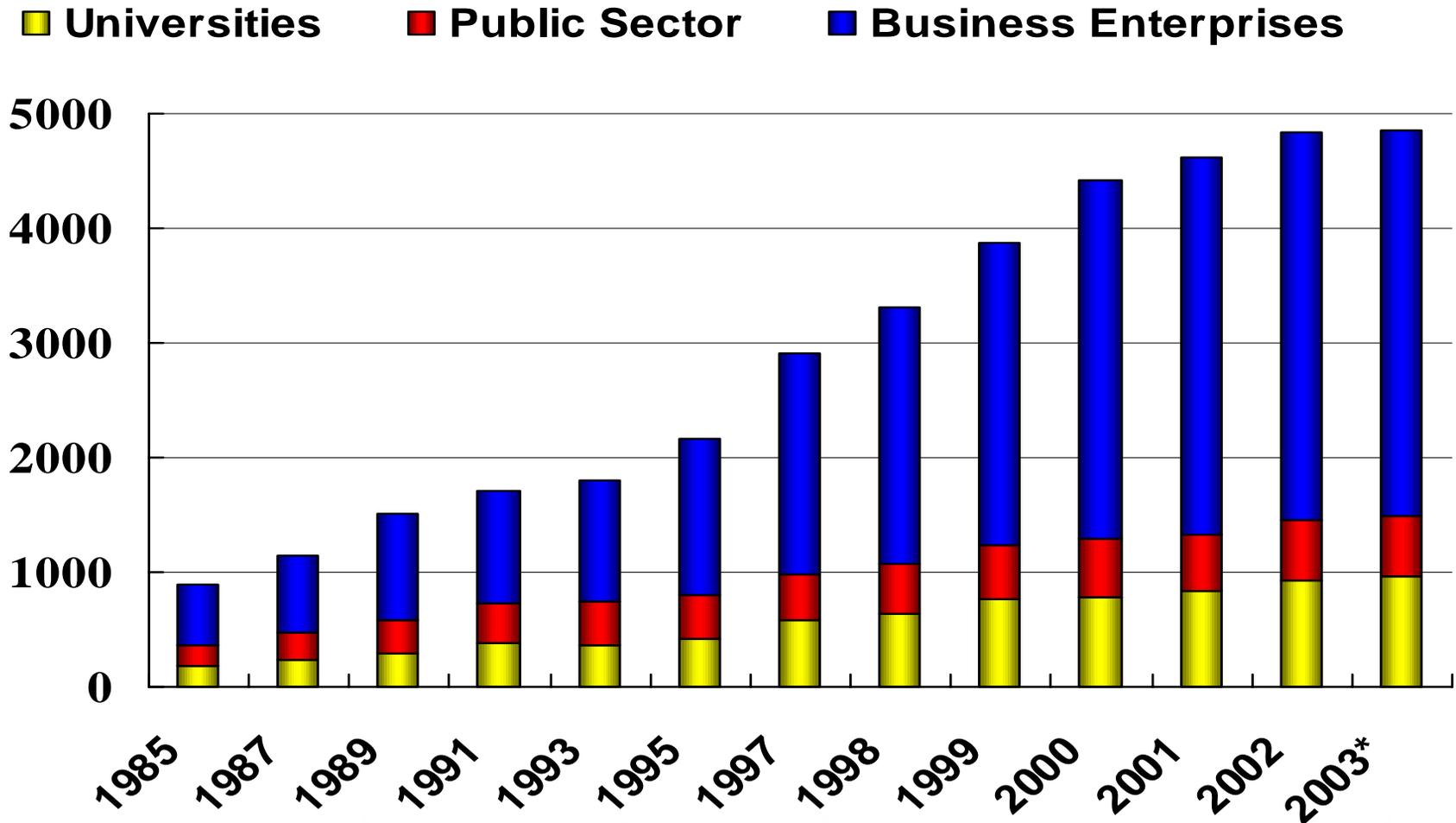


— Finland — EU countries

Share of defence R&D of total public R&D



R&D EXPENDITURES BY SECTOR 1985-2003 (million €)



Source; Statistics Finland

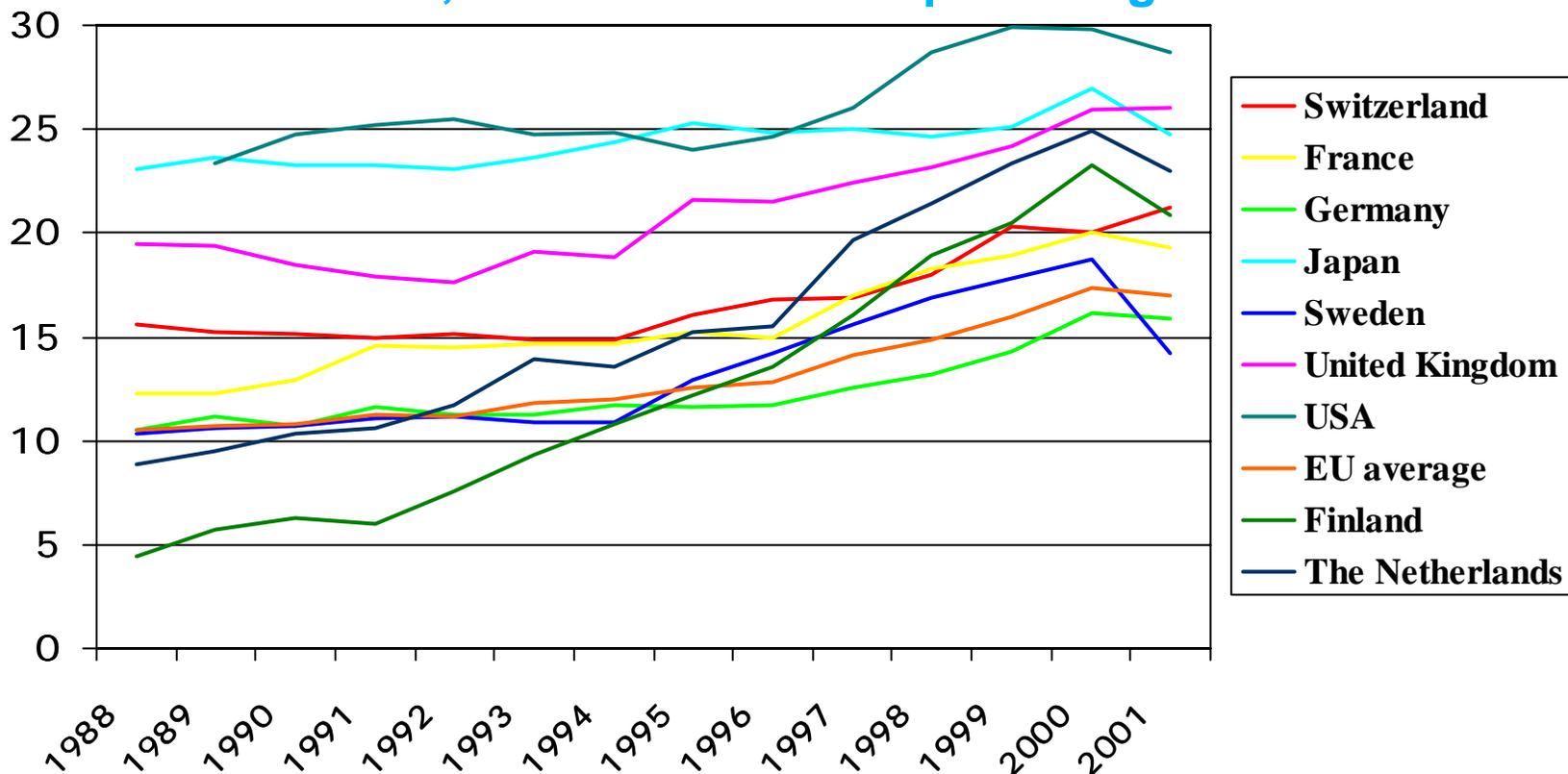
11/2003

The share of high tech exports in some OECD countries 1988 - 2001

Exports of Finnish high tech products totalled 10 billion € in 2001, i.e. 21 % of total exports of goods

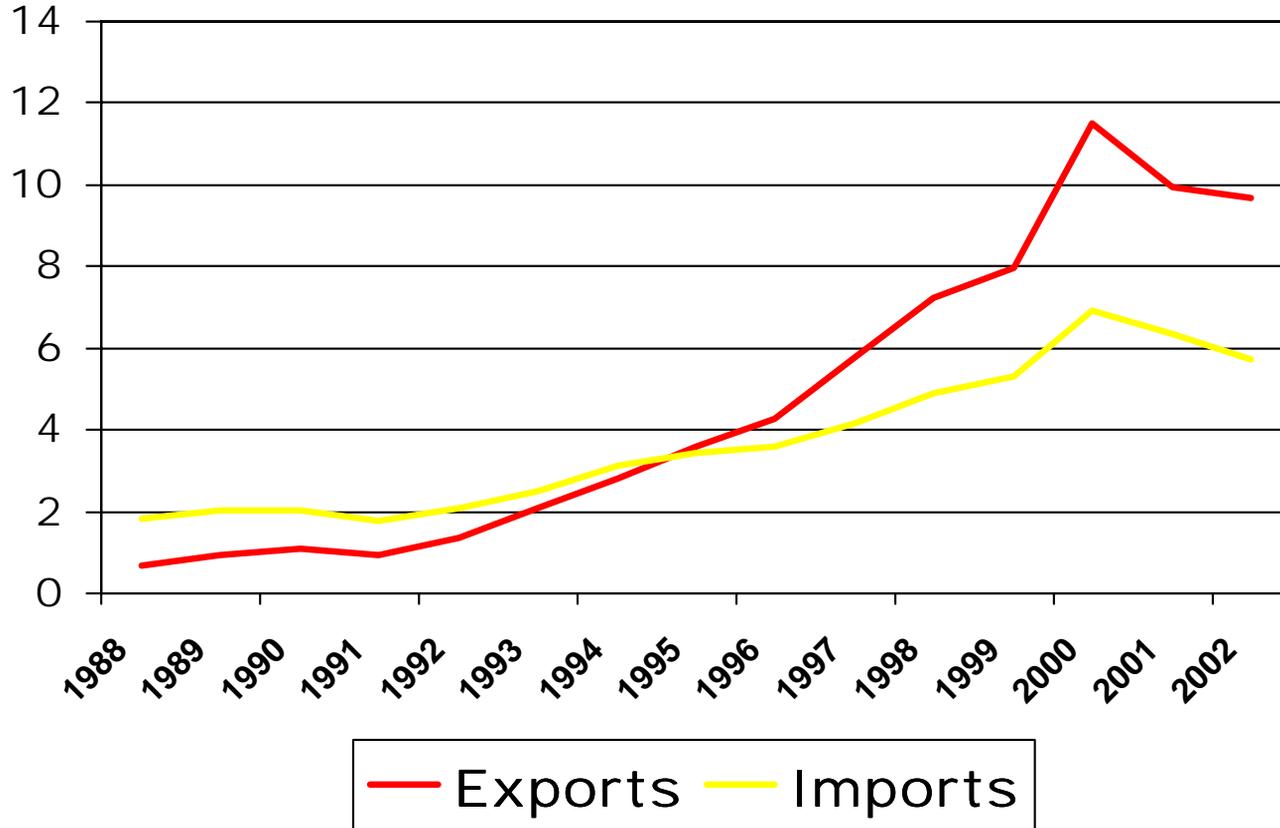
% of total exports of goods

EU average



Finland's foreign trade in high-tech products

billion €

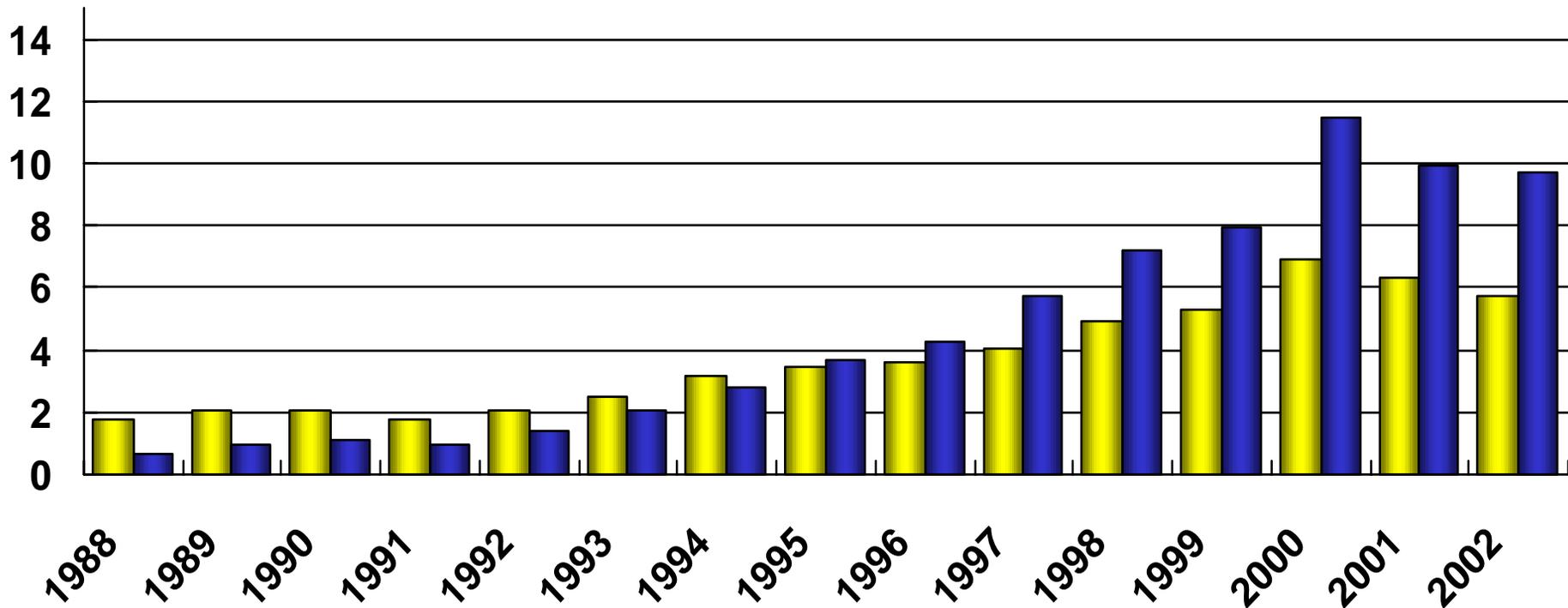


FINNISH TRADE ON HIGH TECH PRODUCTS

Finnish high technology exports totalled €9,7 billion and imports 5,7 billion in 2002

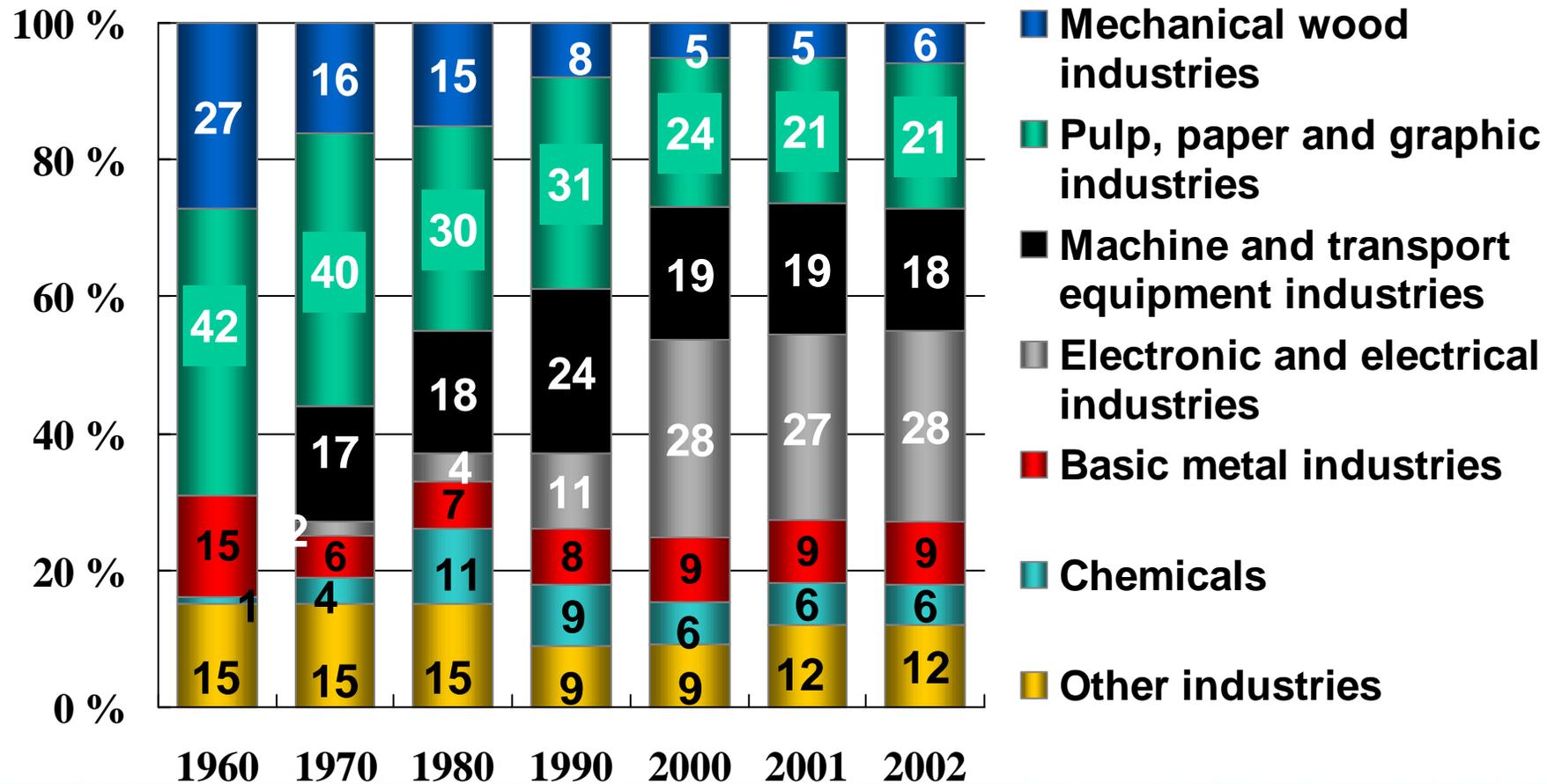
billion €

■ Imports ■ Exports

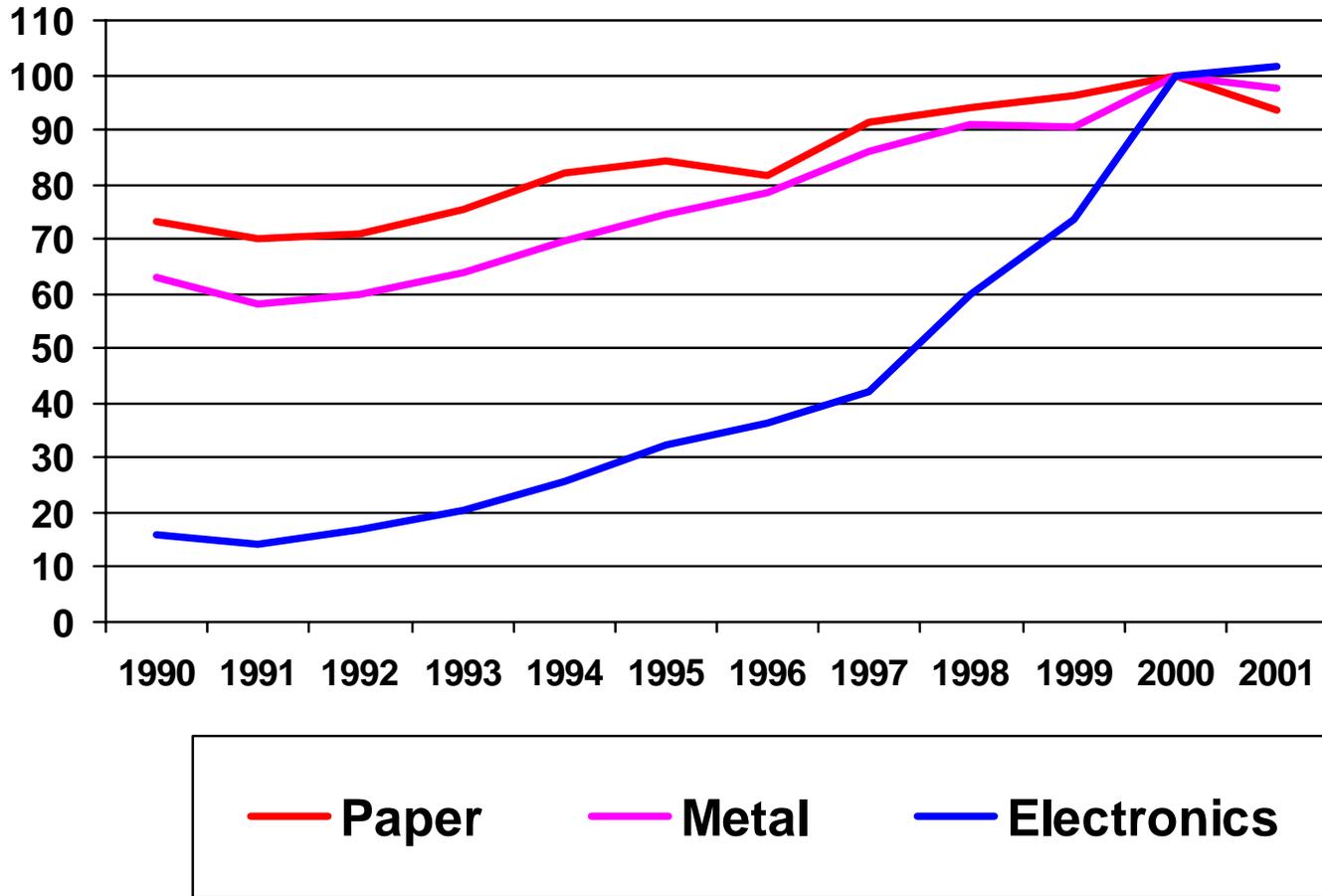


FINNISH EXPORTS BY INDUSTRIES 1960 - 2002

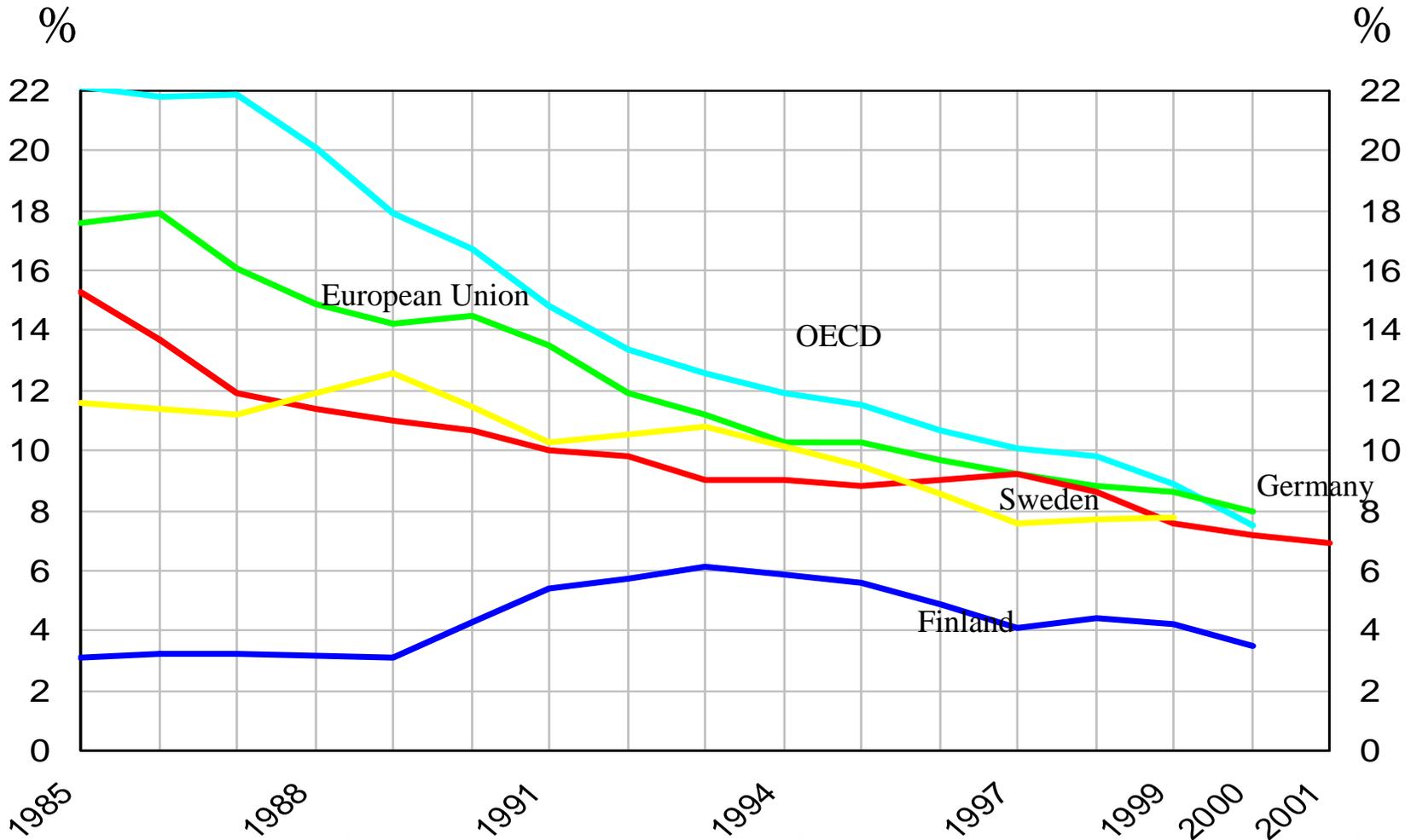
% of total exports



Industrial Output by Sector 2000=100



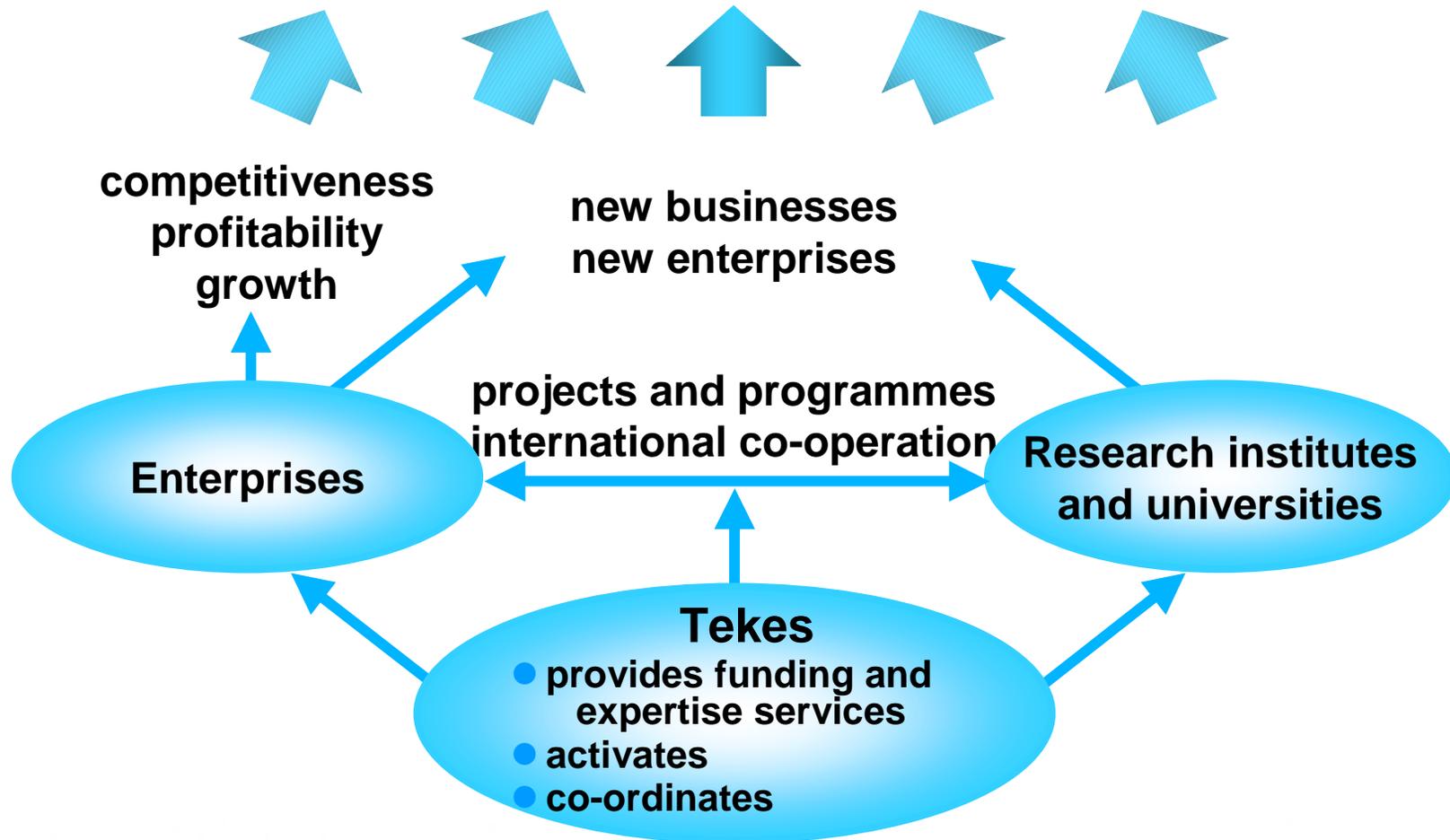
Percentage of BERD financed by Government



Source: OECD, Main Science and Technology Indicators 2002/2

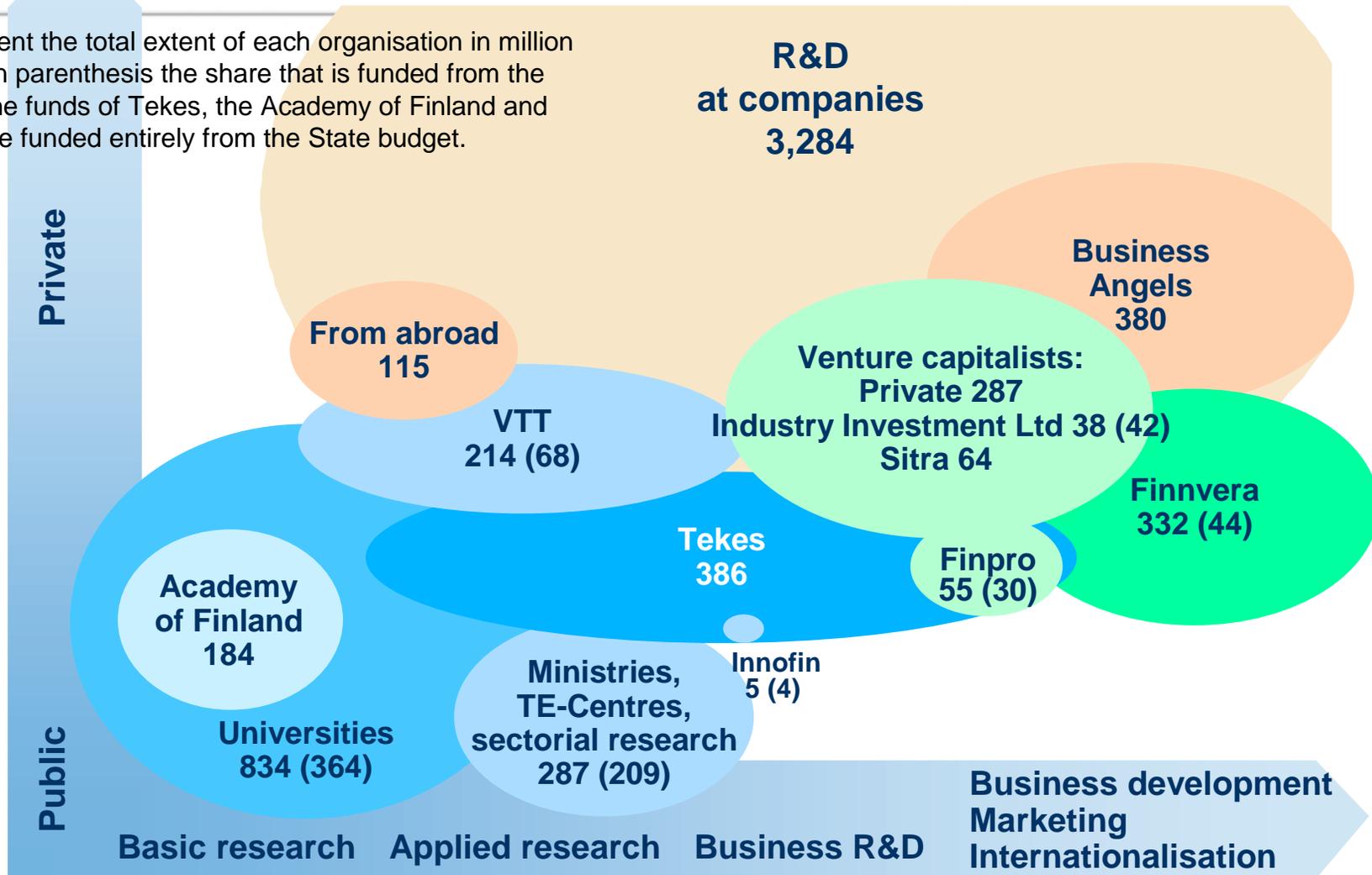
Impact of Tekes activities

To increase exports, broaden Finland's industrial base, generate new jobs, expand welfare.



Innovation system Resources and funding in 2001

The figures represent the total extent of each organisation in million euros in 2001. In parenthesis the share that is funded from the State budget. The funds of Tekes, the Academy of Finland and Innofin are funded entirely from the State budget.



Universities in Finland

Helsinki

-Academy of Fine Arts, Helsinki School of Economics and Business Administration, Helsinki University of Technology, National Defense Academy, Sibelius Academy, Swedish School of Economics and Business Administration, Theatre Academy, University of Art and Design, University of Helsinki

Joensuu

- University of Joensuu

Jyväskylä

- University of Jyväskylä

Kuopio

- University of Kuopio

Lappeenranta

- Lappeenranta University of Technology

Oulu

- University of Oulu

Rovaniemi

- University of Lapland

Tampere

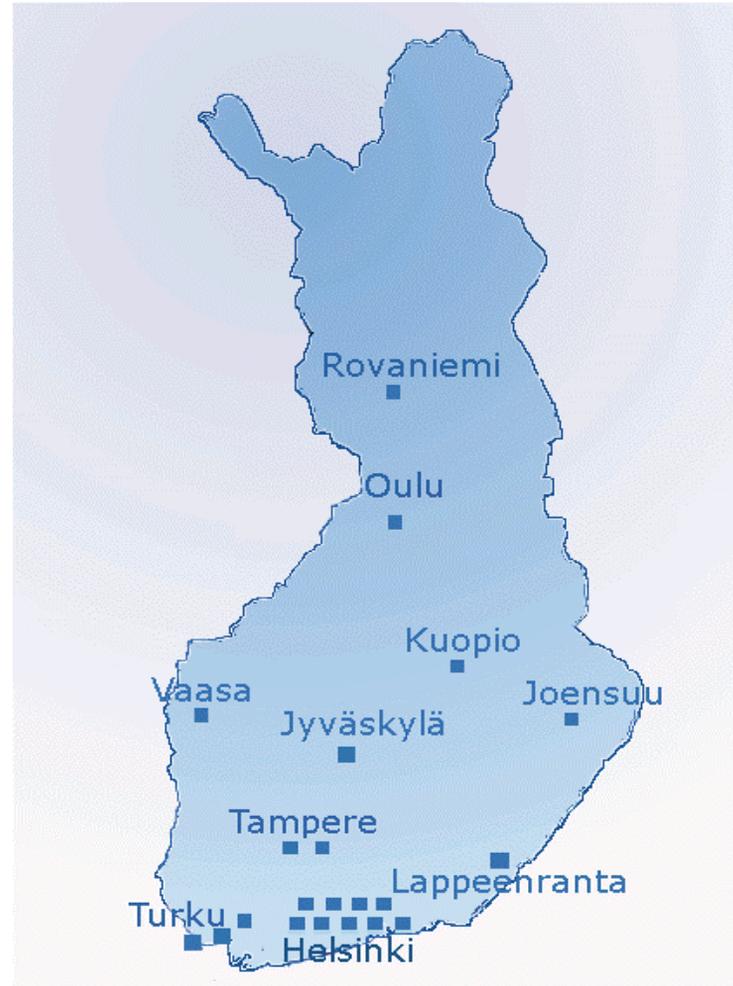
- Tampere University of Technology
- University of Tampere

Turku

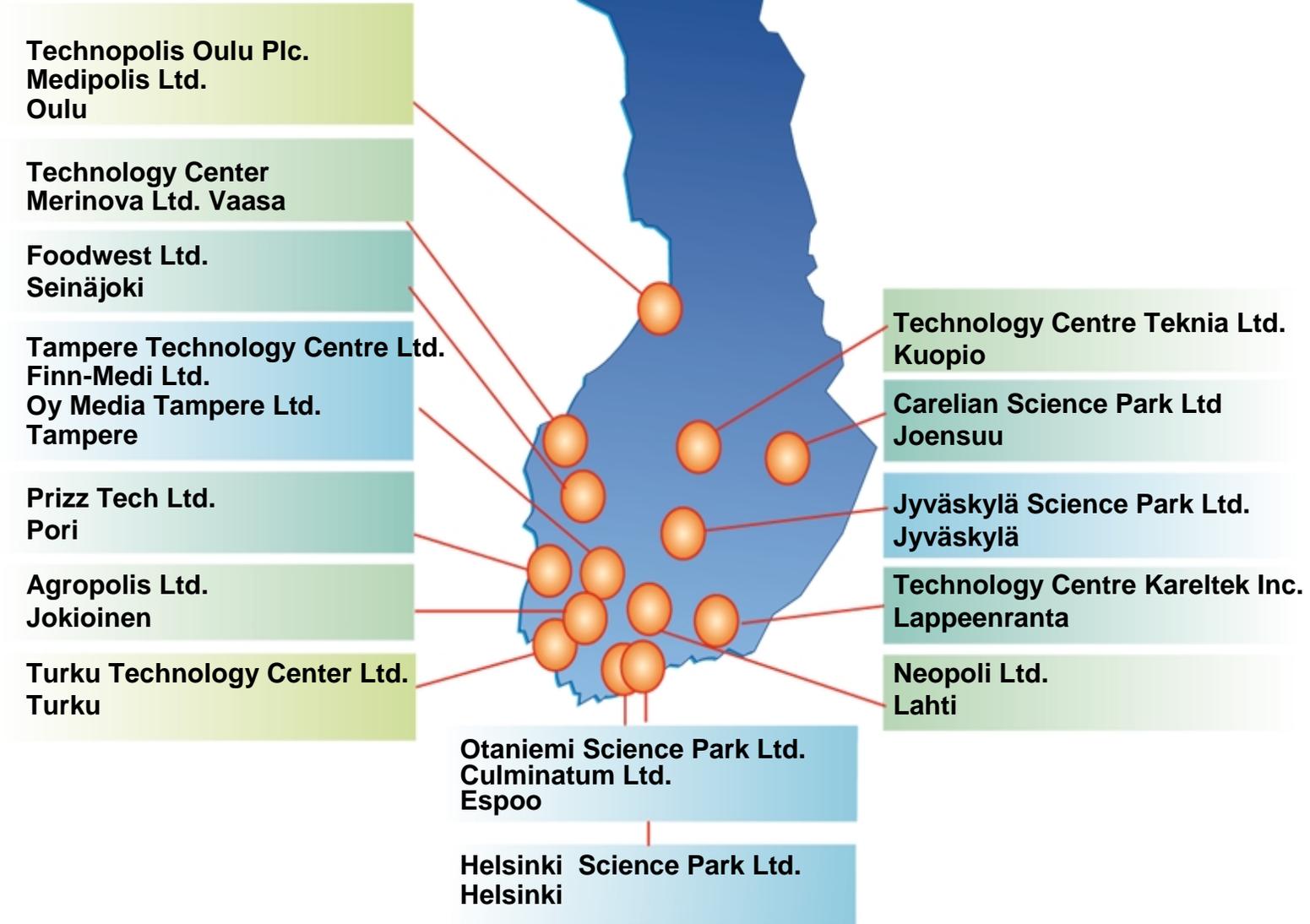
- Turku School of Economics and Business Administration,
University of Turku, Åbo Akademi University

Vaasa

- University of Vaasa



Finnish Science Parks





OPERATIVE COMPANIES

- 22 technology and science parks
- 550 employees
- 100 M€ turnover

SCIENCE PARKS

- 1 600 enterprises and other organizations
- 32 000 experts
- 1 000 000 m²



Joensuu



Tampere



TEKEL

ENVIRONMENT

Technology and science parks

Universities
Science
communities

Industry and
commerce

TEKEL

Ministries

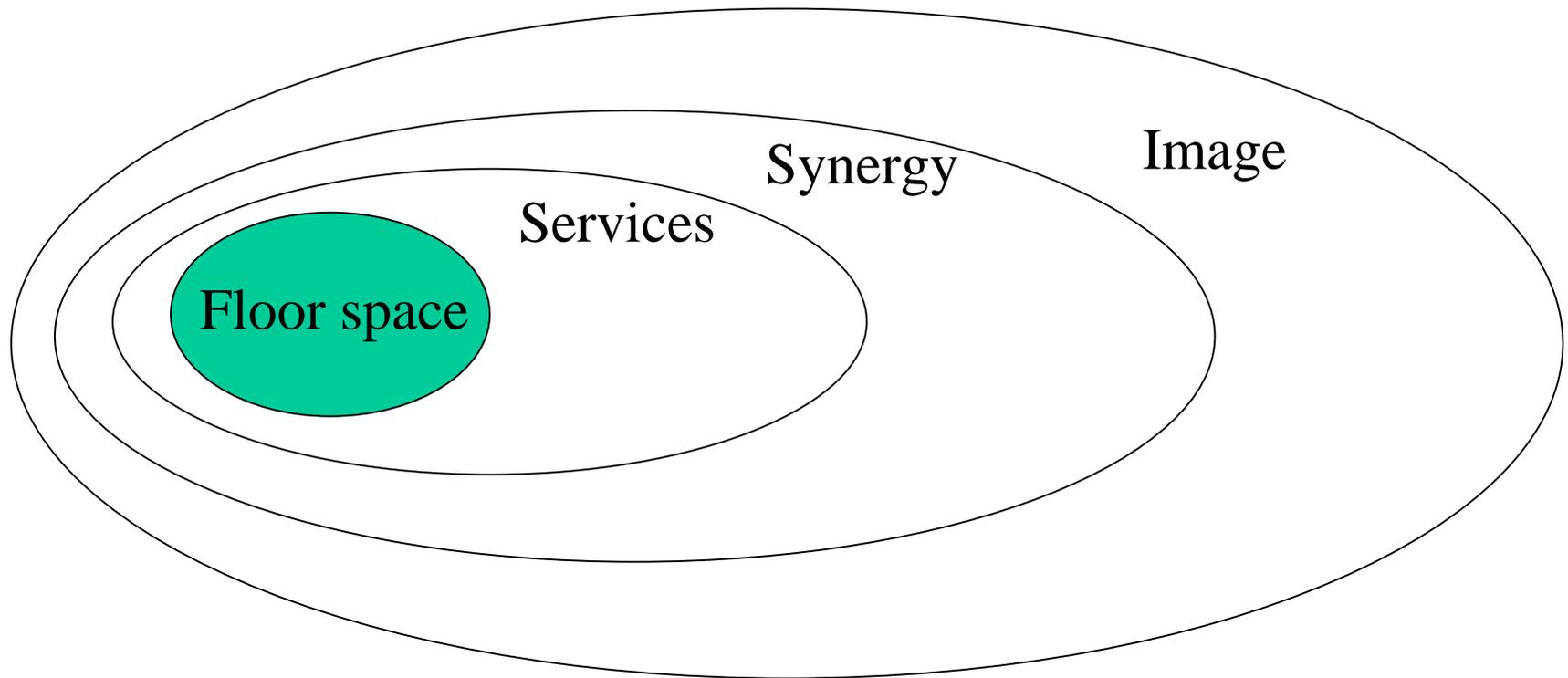
Venture capital
Financial institutions

Municipalities

Regional alliances

Organizations and associations

Hermia Concept



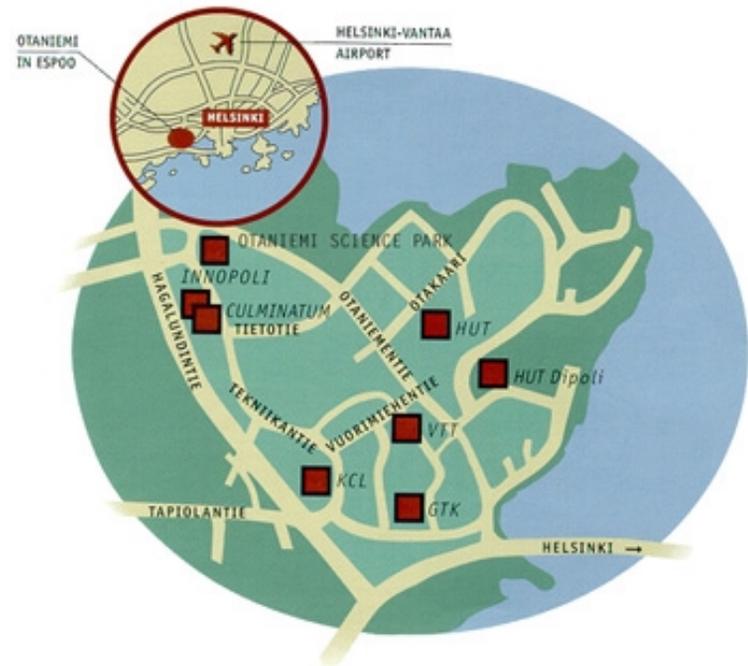
Otaniemi



- Helsinki University of Technology
- Otaniemi International Innovation Centre (OIIC)
- Technical Research Centre of Finland VTT
- Innopoli Group
- Culminatum Ltd.
- Spinno Business Development Centre
- Foundation for Finnish Inventions
- TULI-project
- others...

Otaniemi Cluster

- Research and education
 - 14000 students
 - 3000 researchers
- Start-up companies
 - Total over 300
 - 200 in high-tech
- Large companies
 - “High-Tech Mile” of global companies: Nokia, Compaq, Microsoft, Kone, TietoEnator etc.



Challenges in Innovation Support

- Fast product cycles
 - implications in growth, financing
- Information technology impacts
 - new methods, new activities
- Immediate internationalisation
- Seed capital market
- Less direct support
- Efficient and motivated intermediates

Keywords: Networking, Incentives

Utilisation of Research Results

Themes for improvement:

- Technology transfer
 - technology transfer know-how
- IPR in universities
 - IPR strategy, incentives, services
- Incubators
 - efficient and fast operation, incentives
- Networking of organisations
- Seed capital
 - market failure in the start-up phase

More Information

www.tekes.fi

www.tekel.fi

www.aka.fi

www.research.fi

www.sitra.fi

