



# Innovation Policy in Finland

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Ministry of Trade and Industry

6.5.2004

# THE FINNISH SYSTEM OF INNOVATION - LESSONS FOR SWITZERLAND?

**SATW**

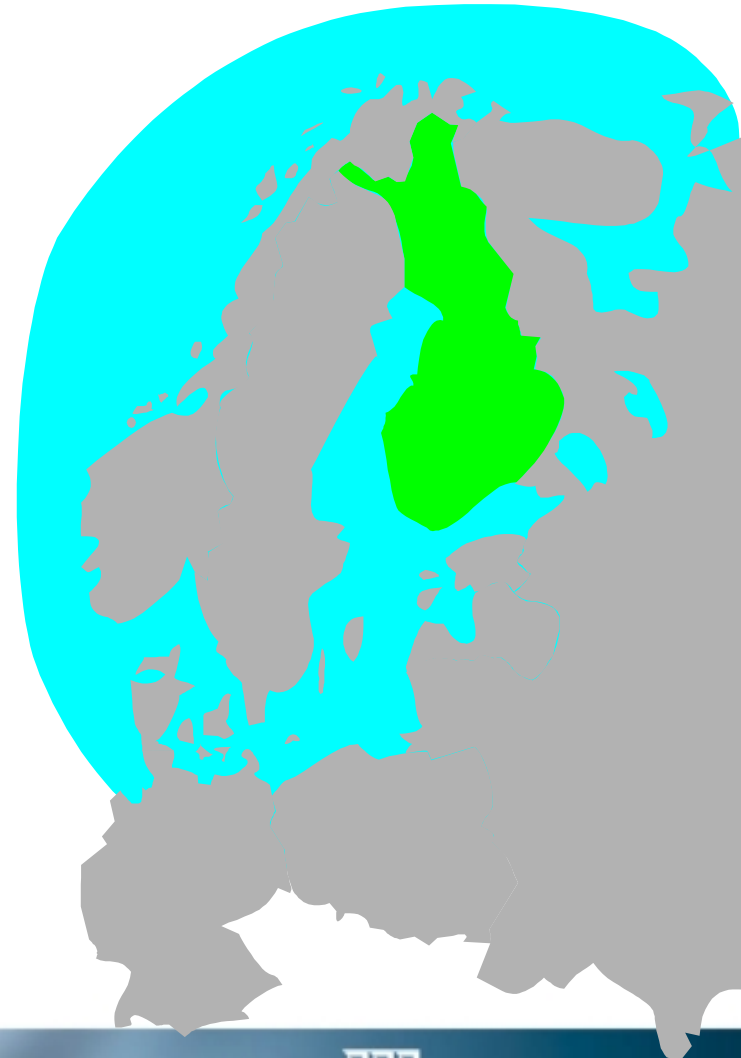
Schweizerische Akademie der Technischen Wissenschaften  
Académie suisse des sciences techniques  
Accademia Svizzera delle scienze tecniche  
Swiss Academy of Engineering Sciences



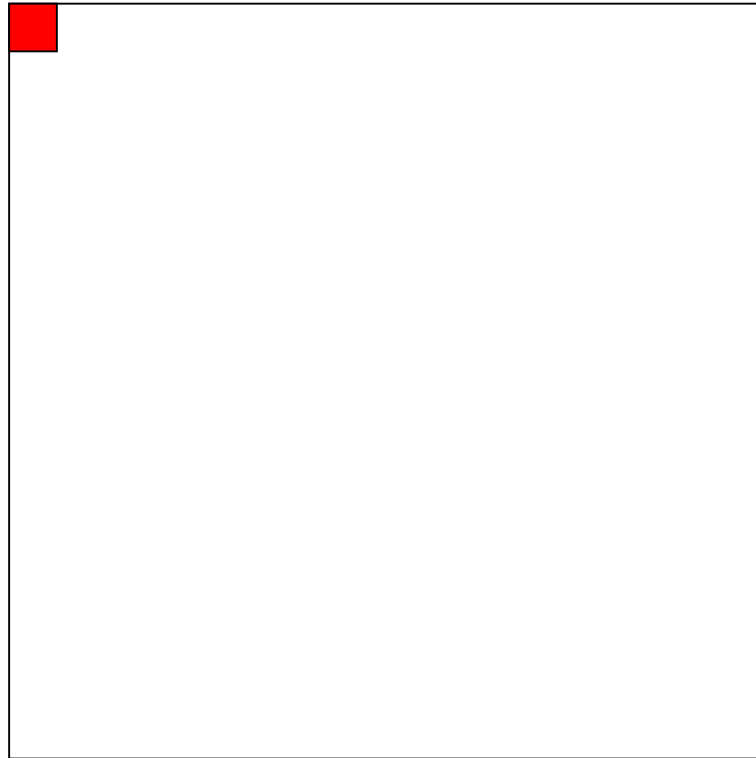
MINISTRY OF  
TRADE AND INDUSTRY

# 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	
<b>Finland</b>	<b>1</b>	<b>1</b>	The Growth Competitiveness Index (GCI)
<b>US</b>	<b>2</b>	<b>2</b>	
<b>Sweden</b>	<b>3</b>	<b>3</b>	
<b>Denmark</b>	<b>4</b>	<b>4</b>	
<b>Taiwan</b>	<b>5</b>	<b>16</b>	
<b>Singapore</b>	<b>6</b>	<b>8</b>	
<b>Switzerland</b>	<b>7</b>	<b>7</b>	
<b>Iceland</b>	<b>8</b>	<b>14</b>	
<b>Norway</b>	<b>9</b>	<b>22</b>	The Business Competitiveness Index (BCI)
<b>Australia</b>	<b>10</b>	<b>11</b>	
<b>Japan</b>	<b>11</b>	<b>13</b>	
<b>Netherlands</b>	<b>12</b>	<b>9</b>	
<b>Germany</b>	<b>13</b>	<b>5</b>	
<b>New Zealand</b>	<b>14</b>	<b>18</b>	
<b>UK</b>	<b>15</b>	<b>6</b>	
<b>Canada</b>	<b>16</b>	<b>12</b>	
<b>Austria</b>	<b>17</b>	<b>17</b>	
<b>Korea</b>	<b>18</b>	<b>23</b>	
<b>Malta</b>	<b>19</b>	<b>42</b>	
<b>Israel</b>	<b>20</b>	<b>20</b>	

Source; World Economic Forum, The Global Competitiveness Report 2003-2004

# The World Competitiveness Scoreboard

## Ranking as of April 2002

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

# 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)**

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



# 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

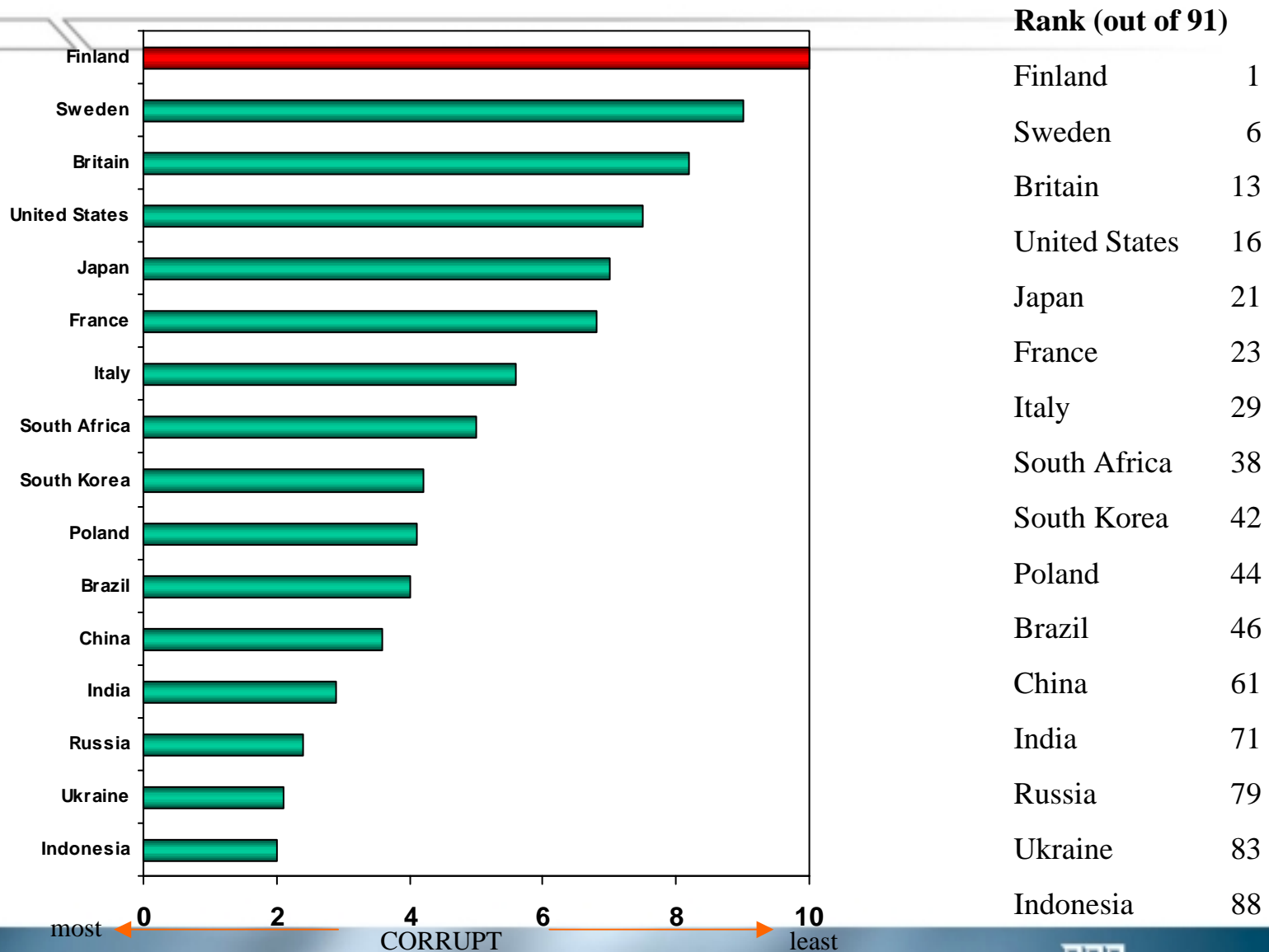
Finland	0,744
United States	0.733
Sweden	0,703
Japan	0,698
Korea, Rep. of	0,666
the Netherlands	0,630
United Kingdom	0,606
Canada	0,589
Australia	0,587
Singapore	0,585

# Corruption Perceptions Index, 2002

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

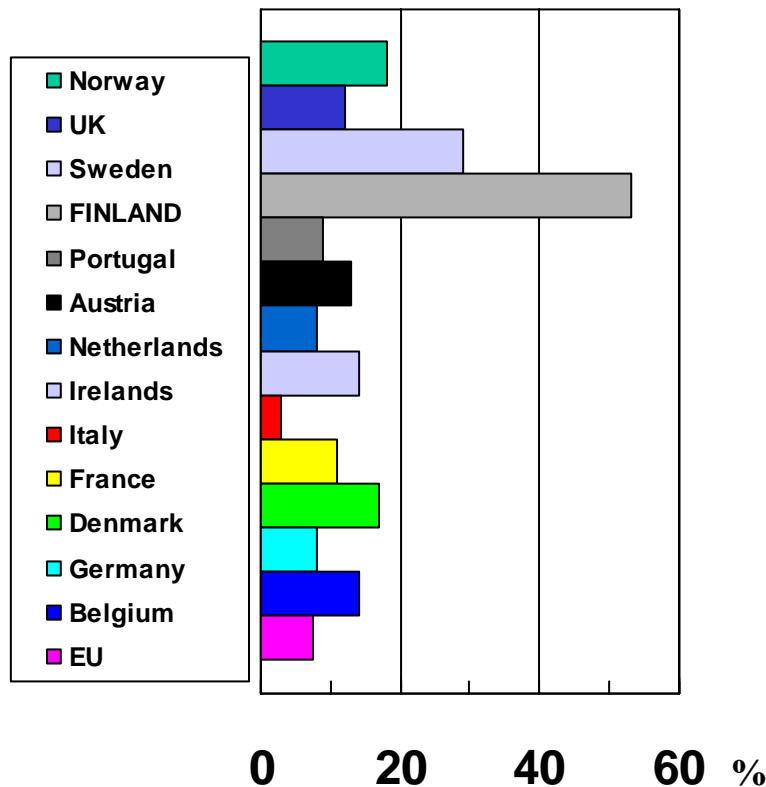
# Corruption Perceptions Index, 2001

10=least corrupt, 0=most Corrupt

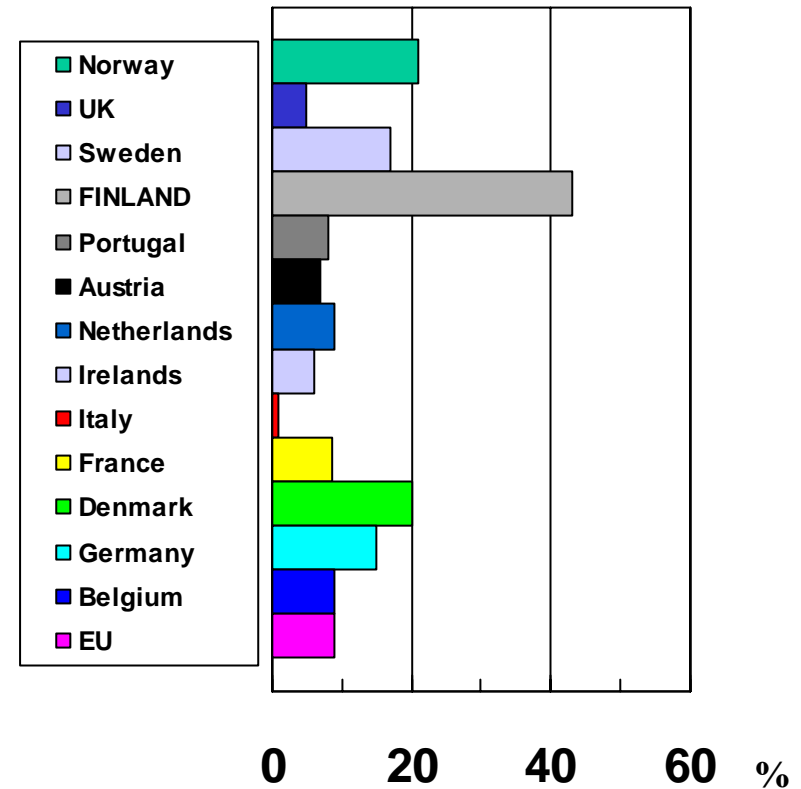


# Co-operation between companies and universities and research institutes

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

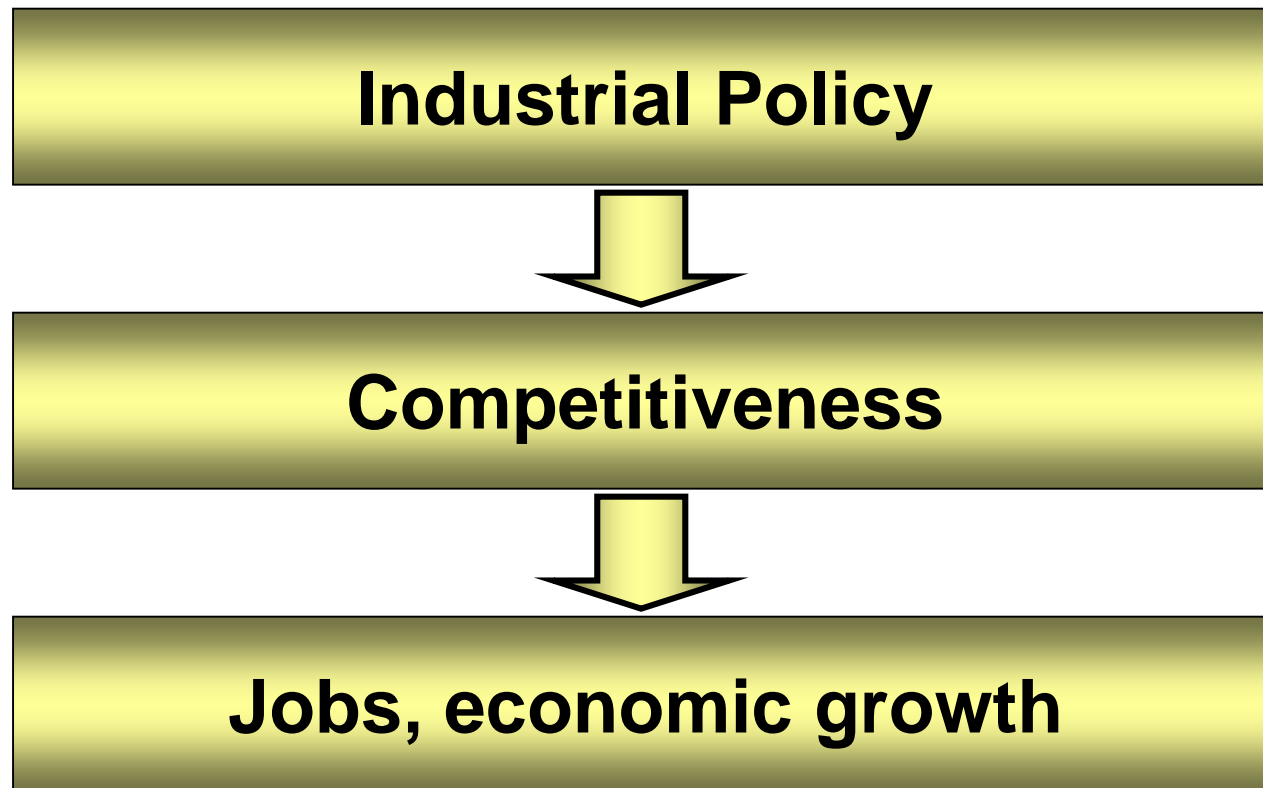
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As an expert in industrial and economic policy the Ministry of Trade and Industry plays a leading role in formulating economic policy decisions.

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



# INDUSTRIAL POLICY



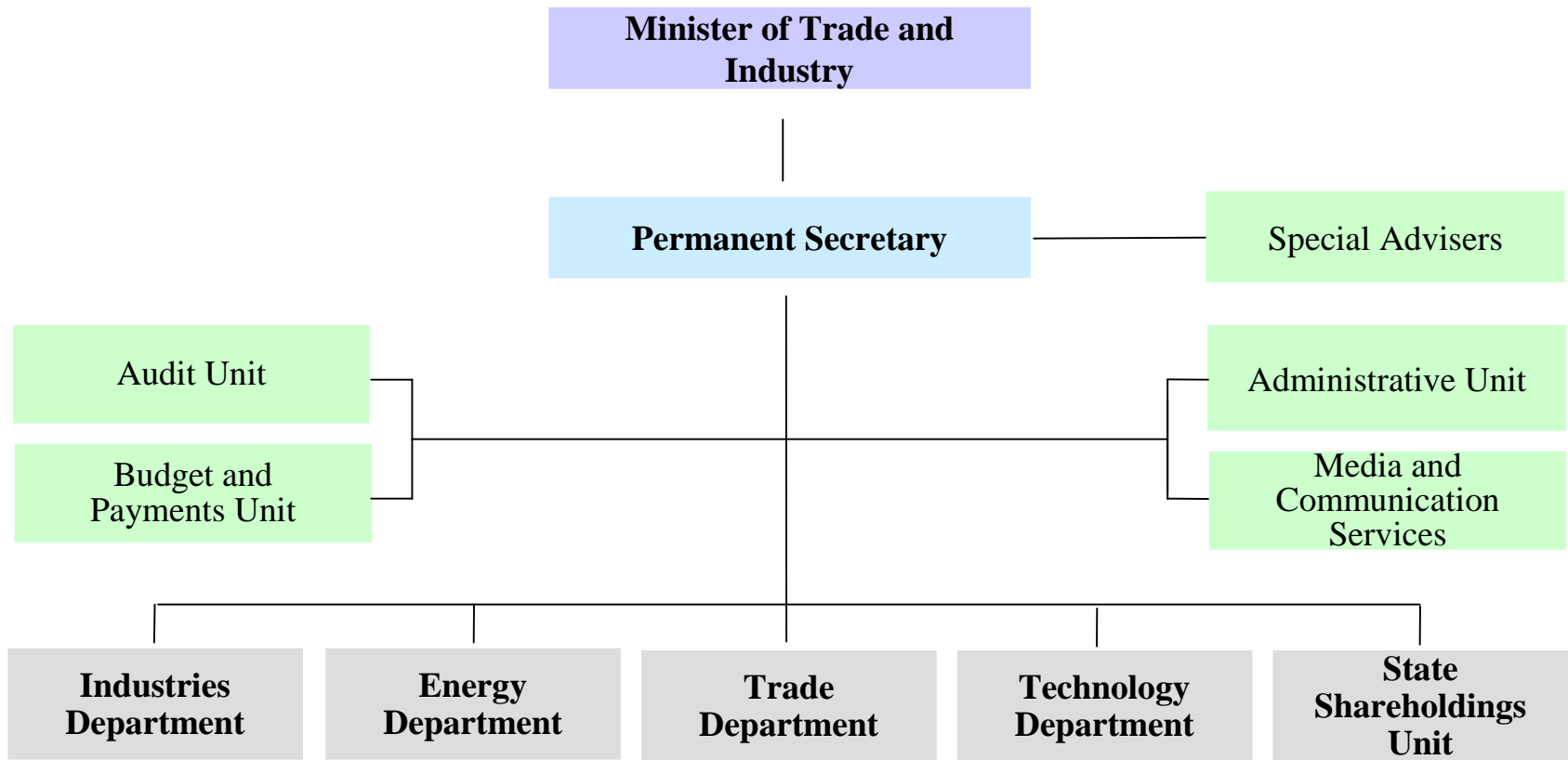
# **INSTRUMENTS OF INDUSTRIAL POLICY**

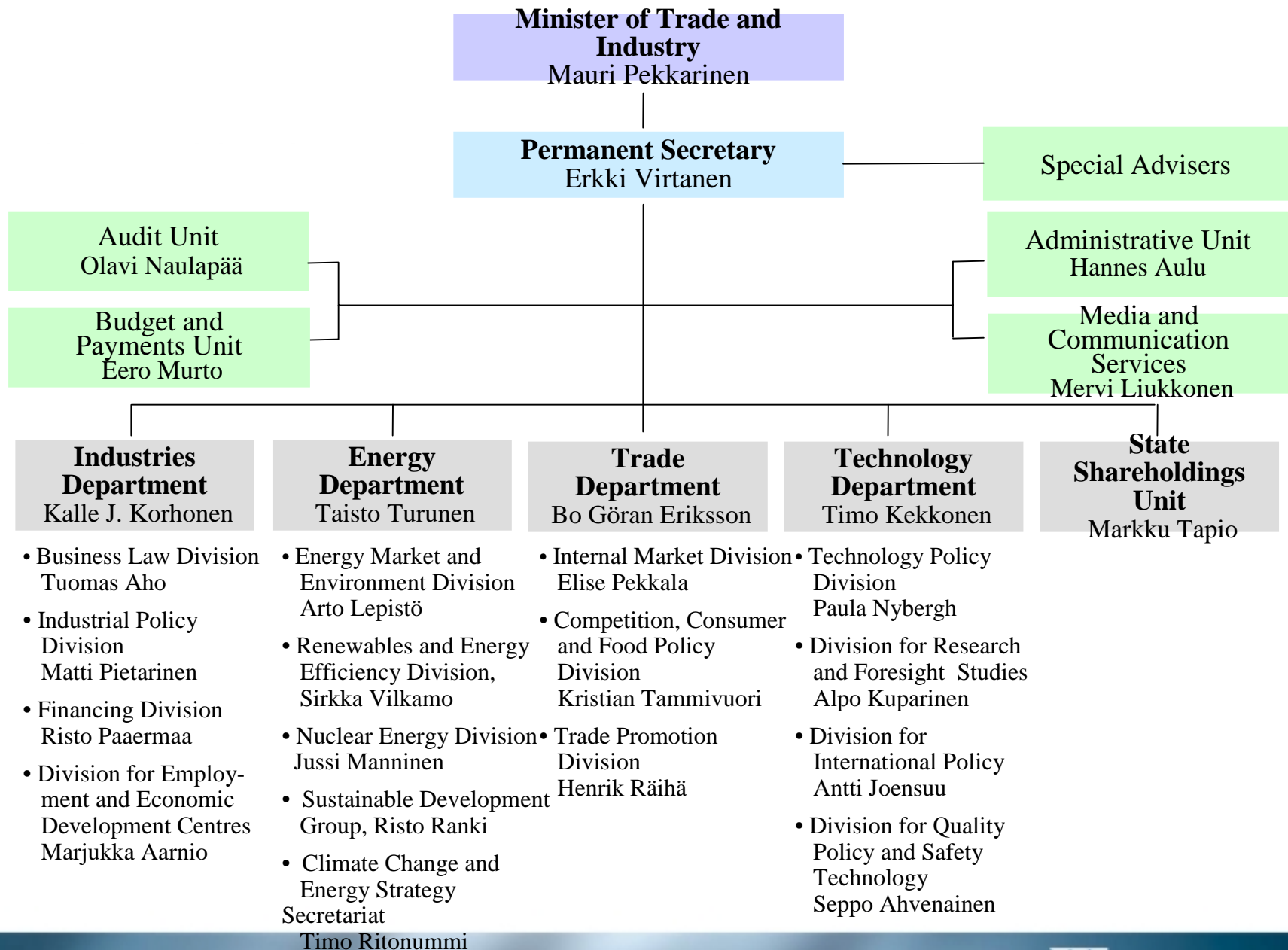
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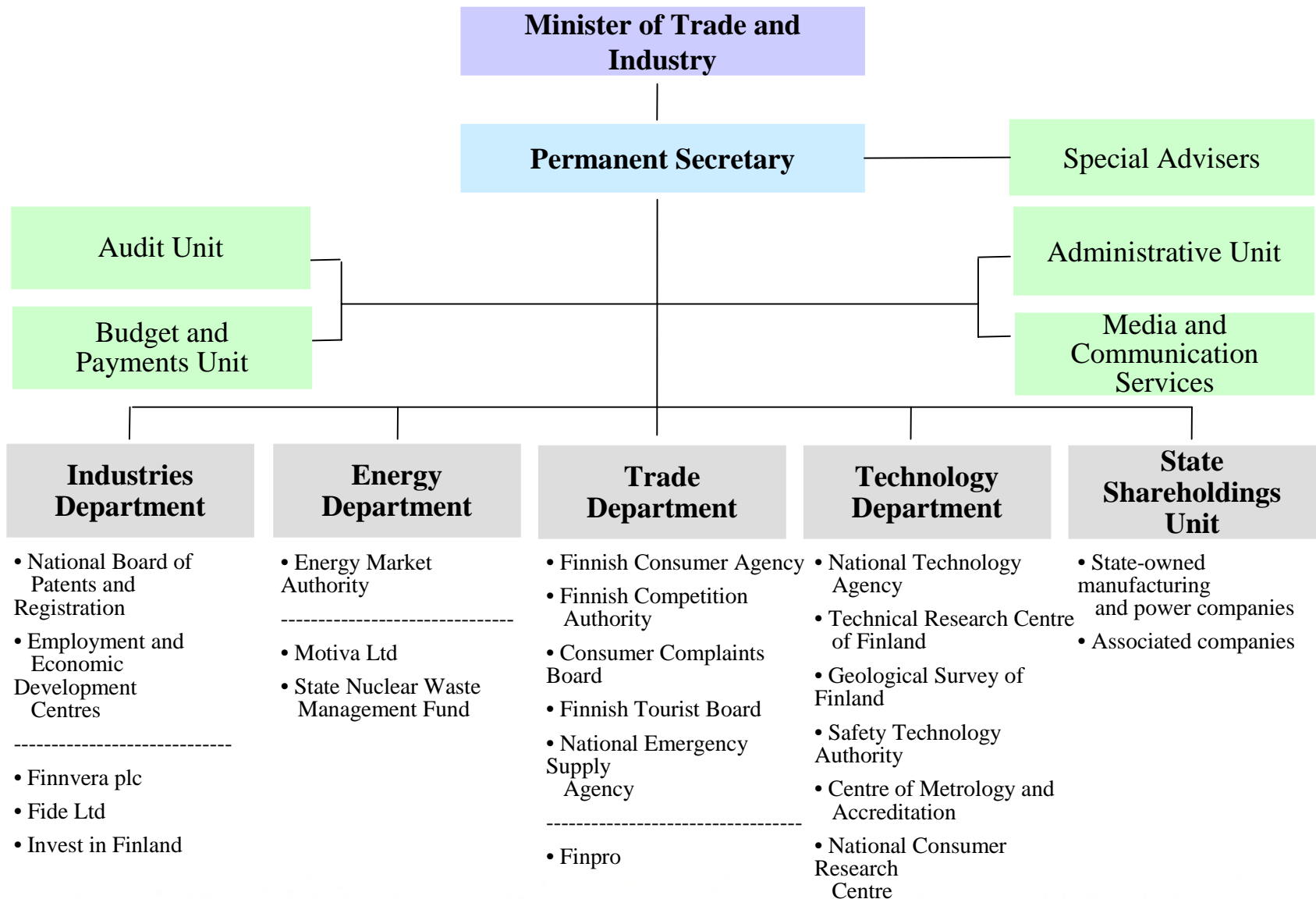
- **Competition Policy**
- **Competition Rules**
- **Technology Policy**
- **Education**
- **Energy Policy**
- **Environmental Policy**
- **Financial Markets**
- **Tax Policy**











# Technology Department

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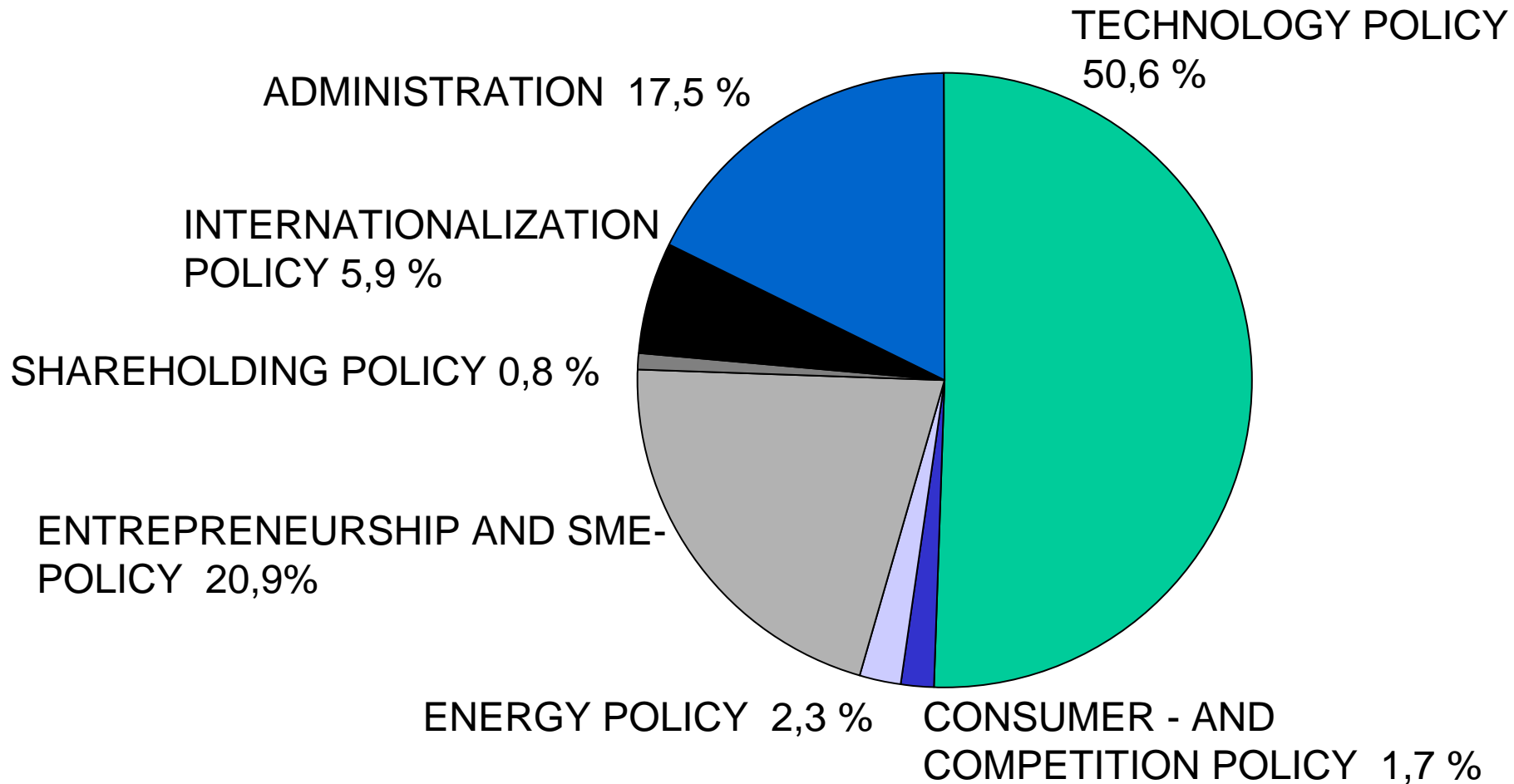
The Mission is:

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

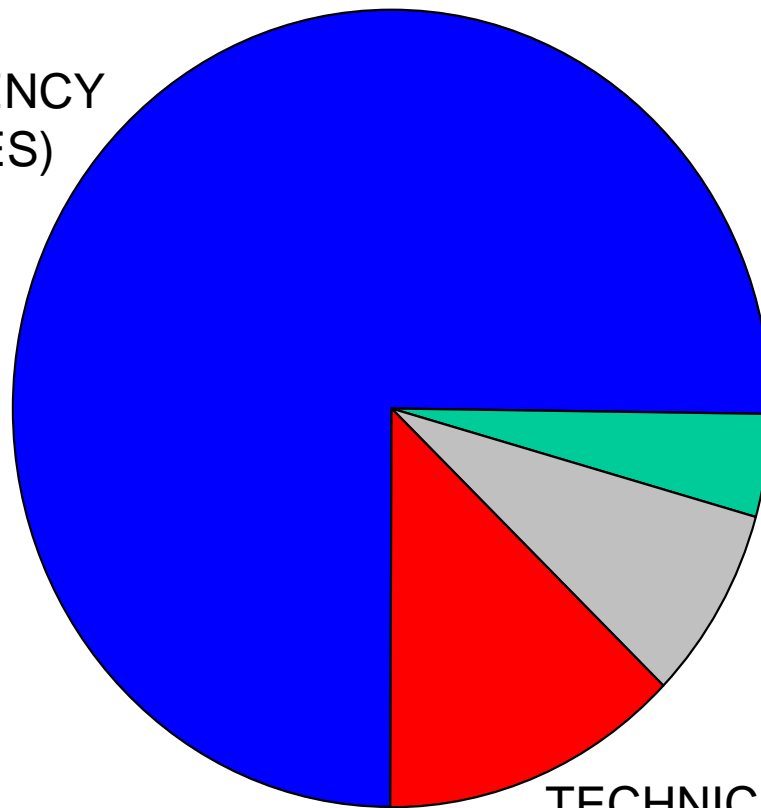
## Total 975,9 milj. €



# TECHNOLOGY POLICY BUDGET 2003

Total 494,1 milj. €

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

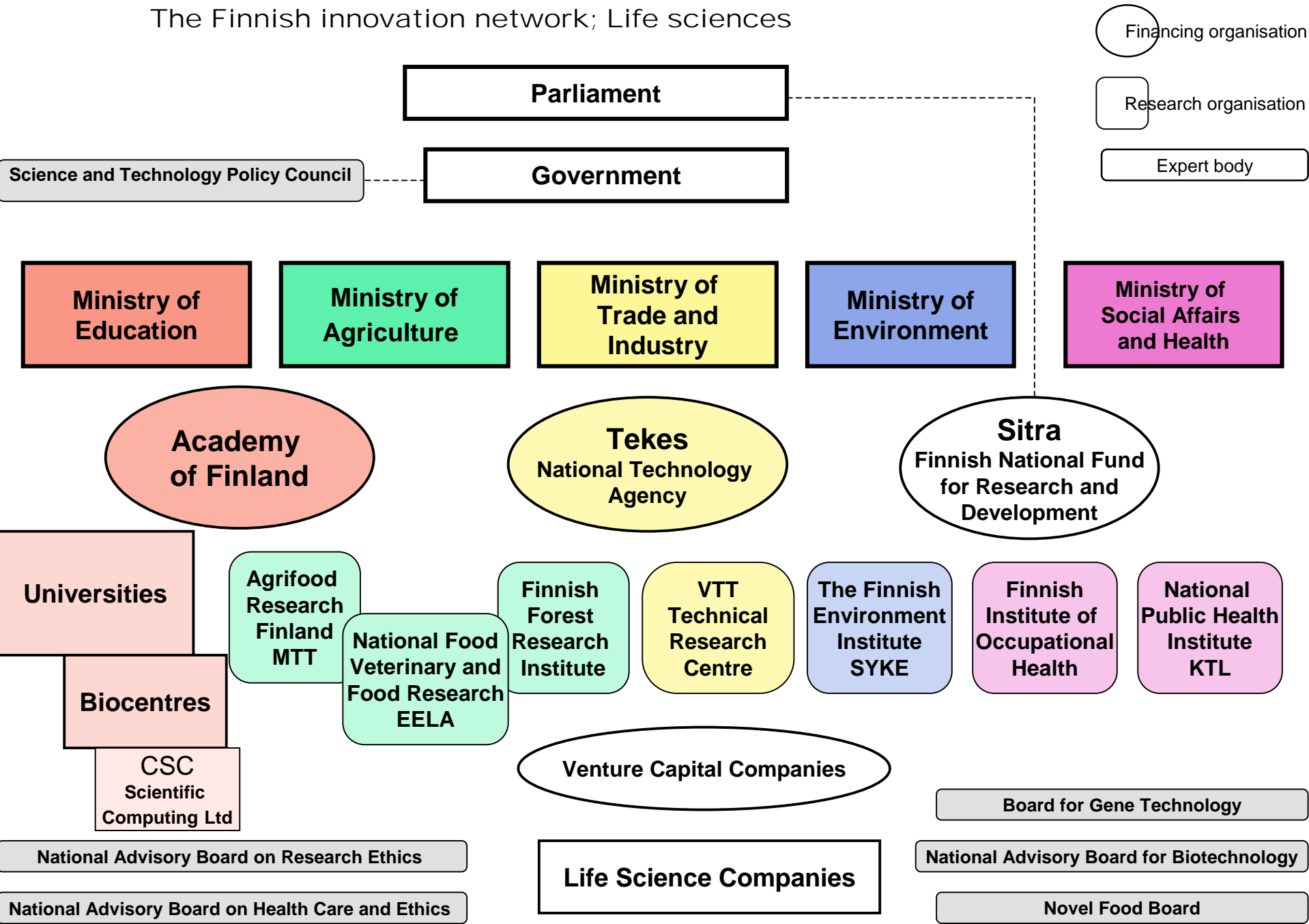


OTHERS 4,3 %

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

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**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**

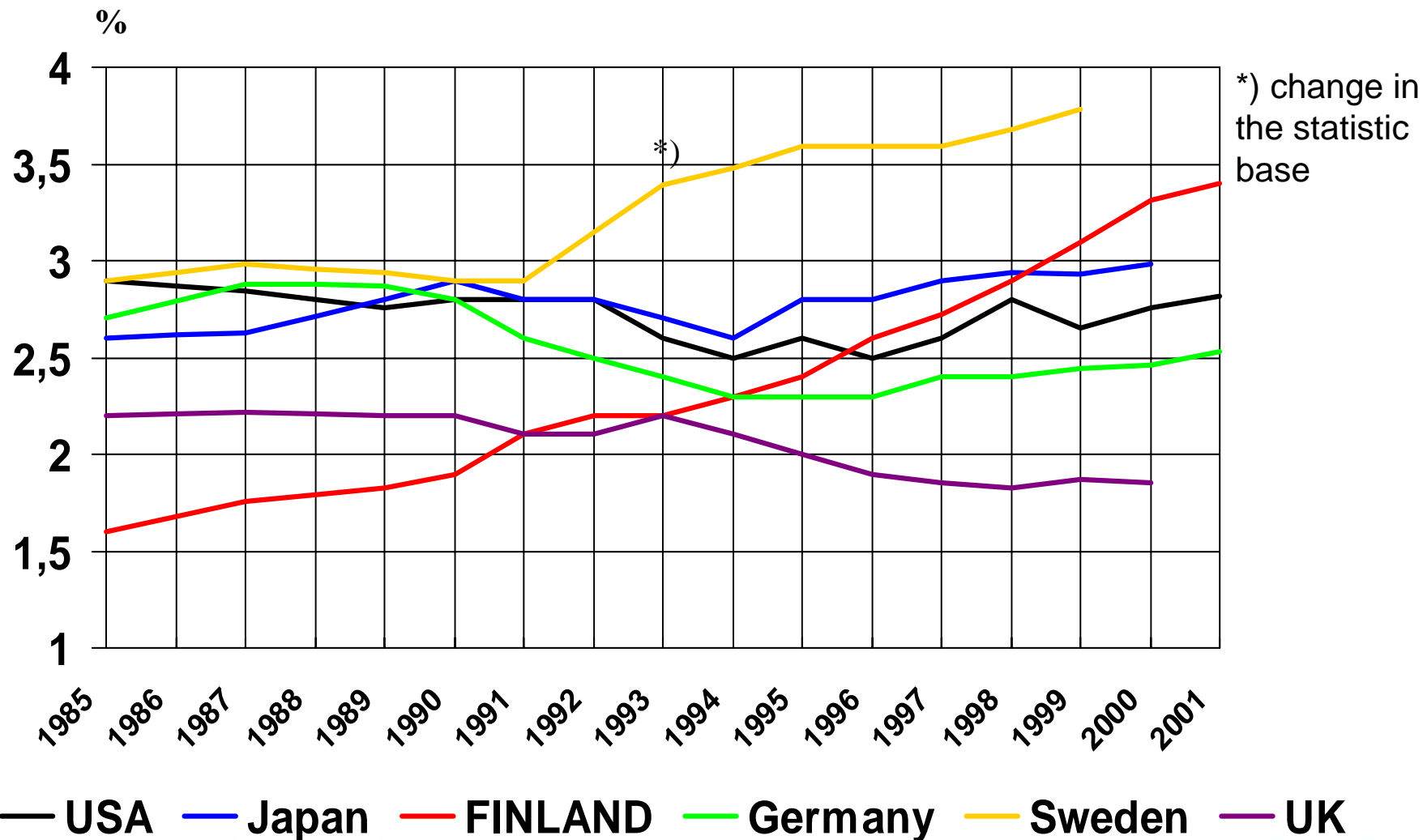
**SUBCOMMITTEES ON SCIENCE POLICY & TECHNOLOGY  
POLICY**

**SECRETARIAT**



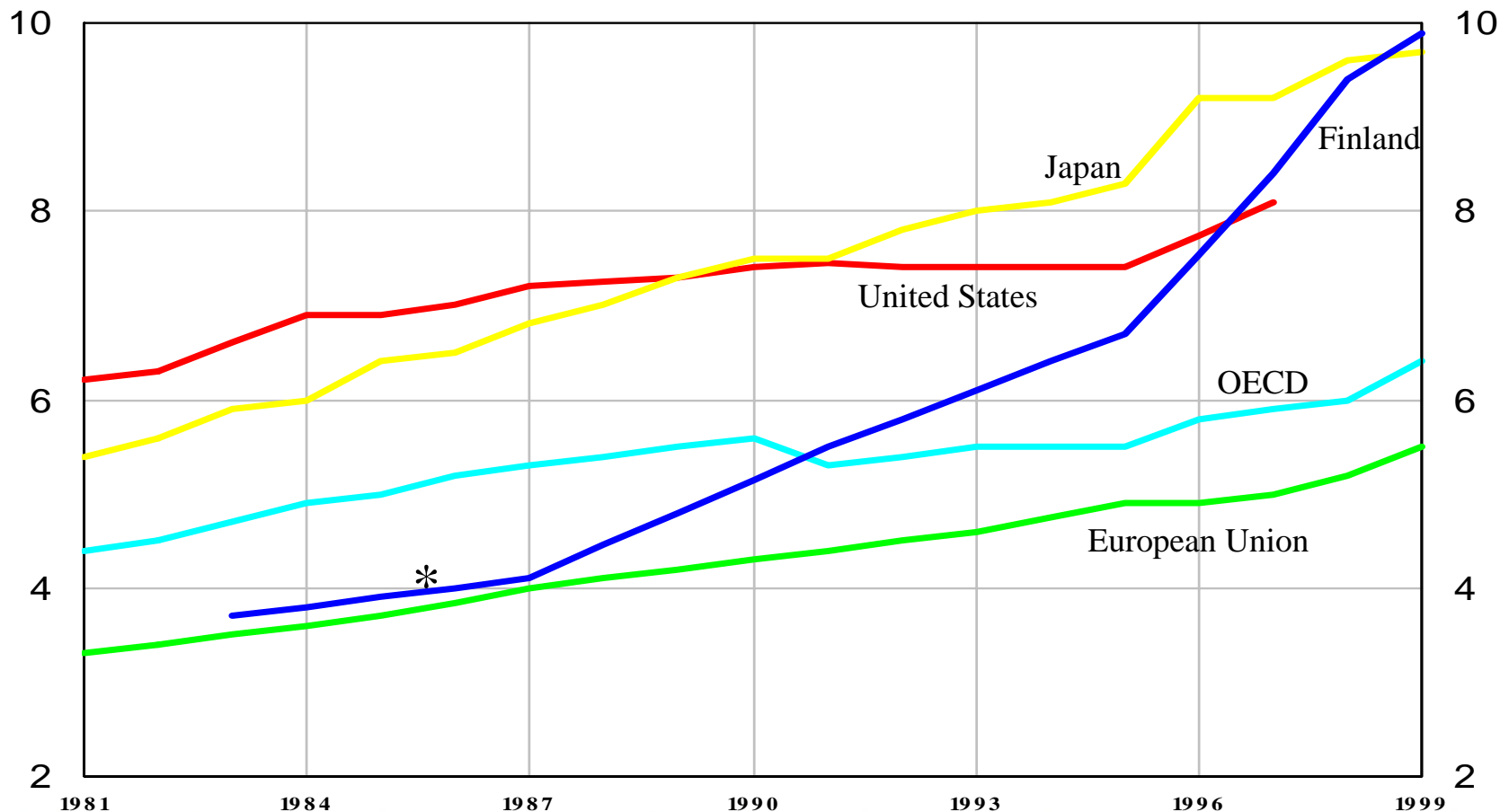
MINISTRY OF  
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# SHARE OF R&D IN GDP IN SOME OECD COUNTRIES



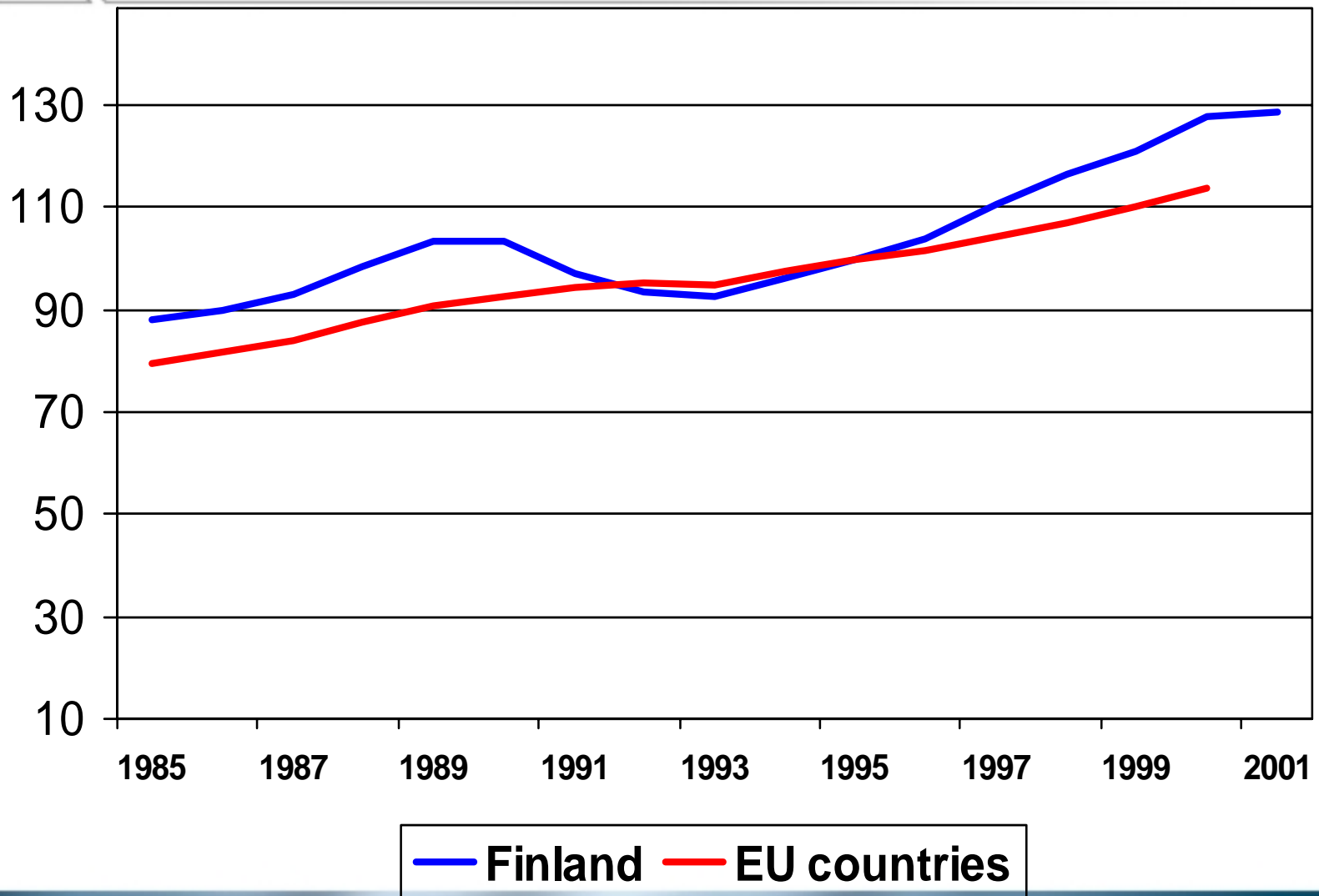
Source; Main Science and Tehnology Indicators, OECD 2002/2

# Total researchers per thousand labour force

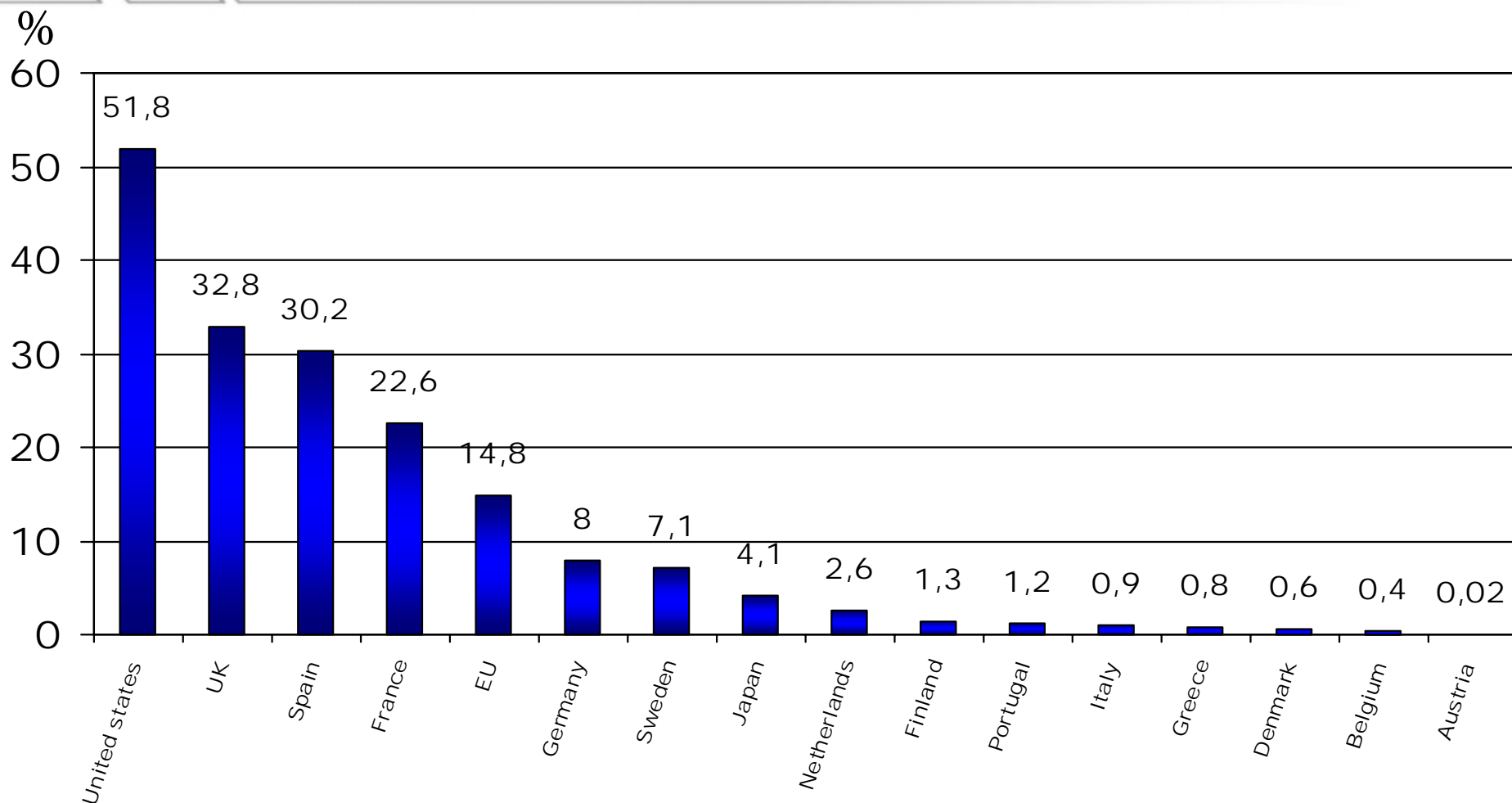


Source: OECD, Main Science and Technology Indicators, November 2001

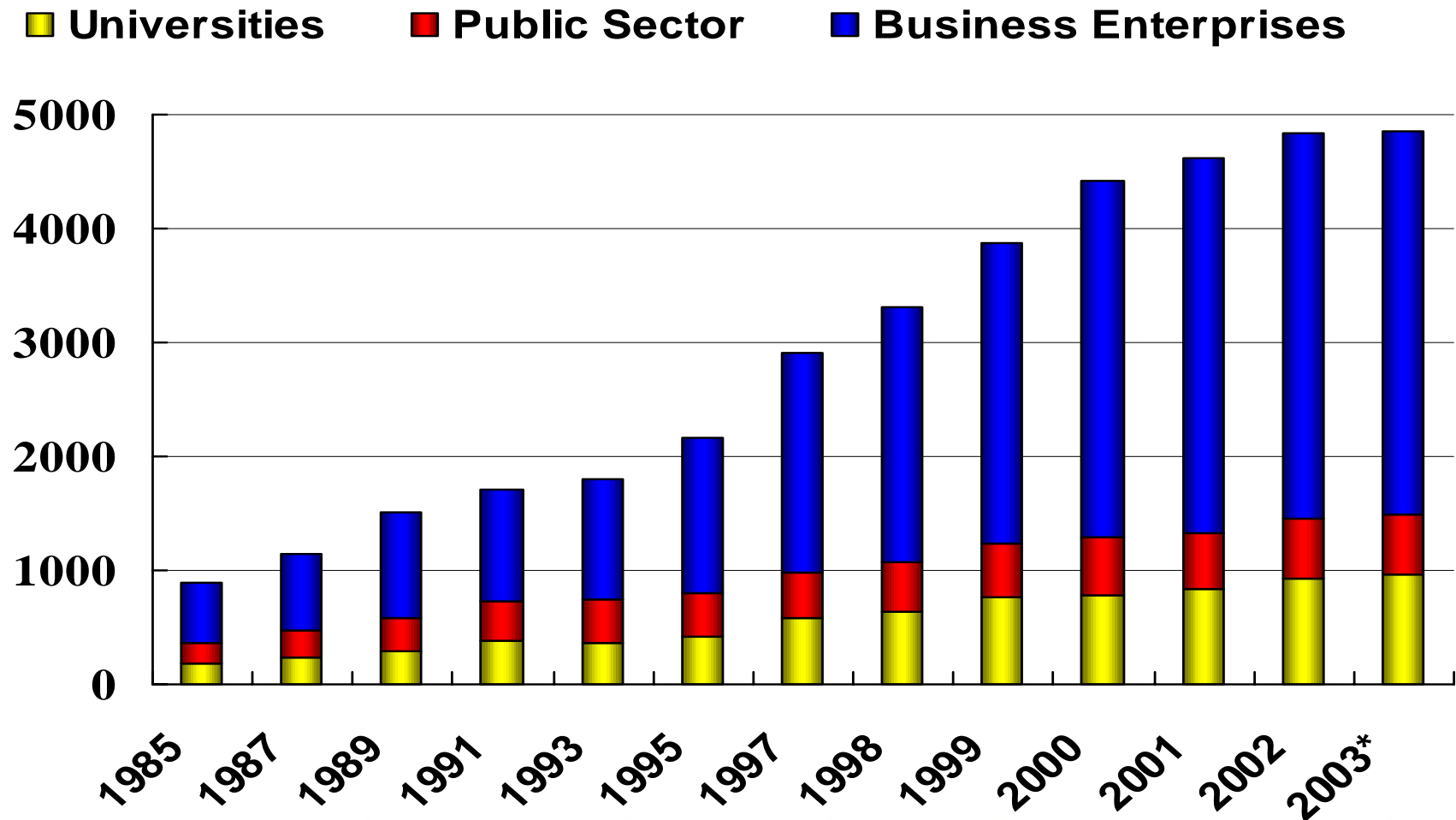
# GDP 1995=100 (at market prices per capita)



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



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



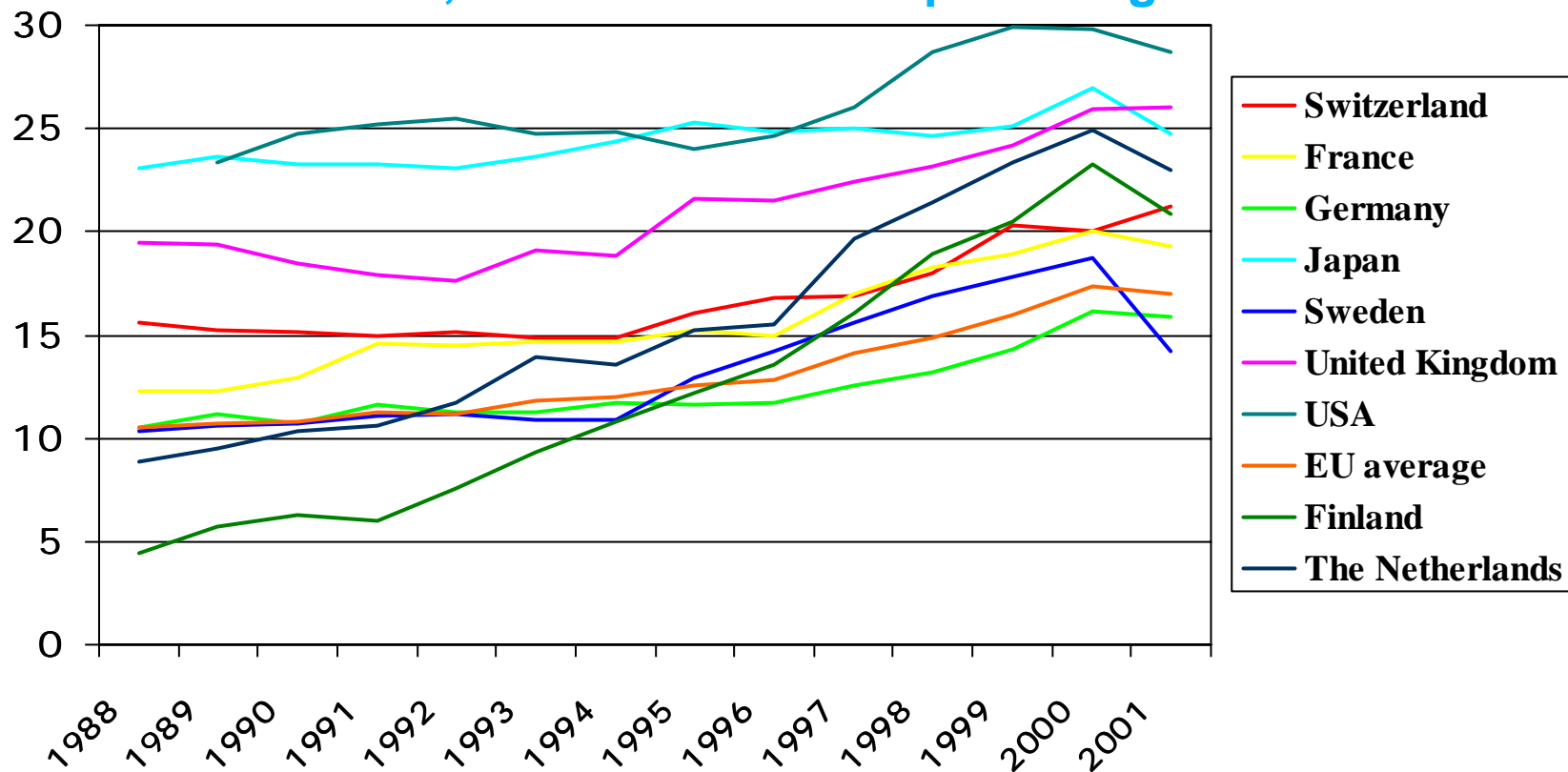
Source; Statistics Finland

11/2003

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

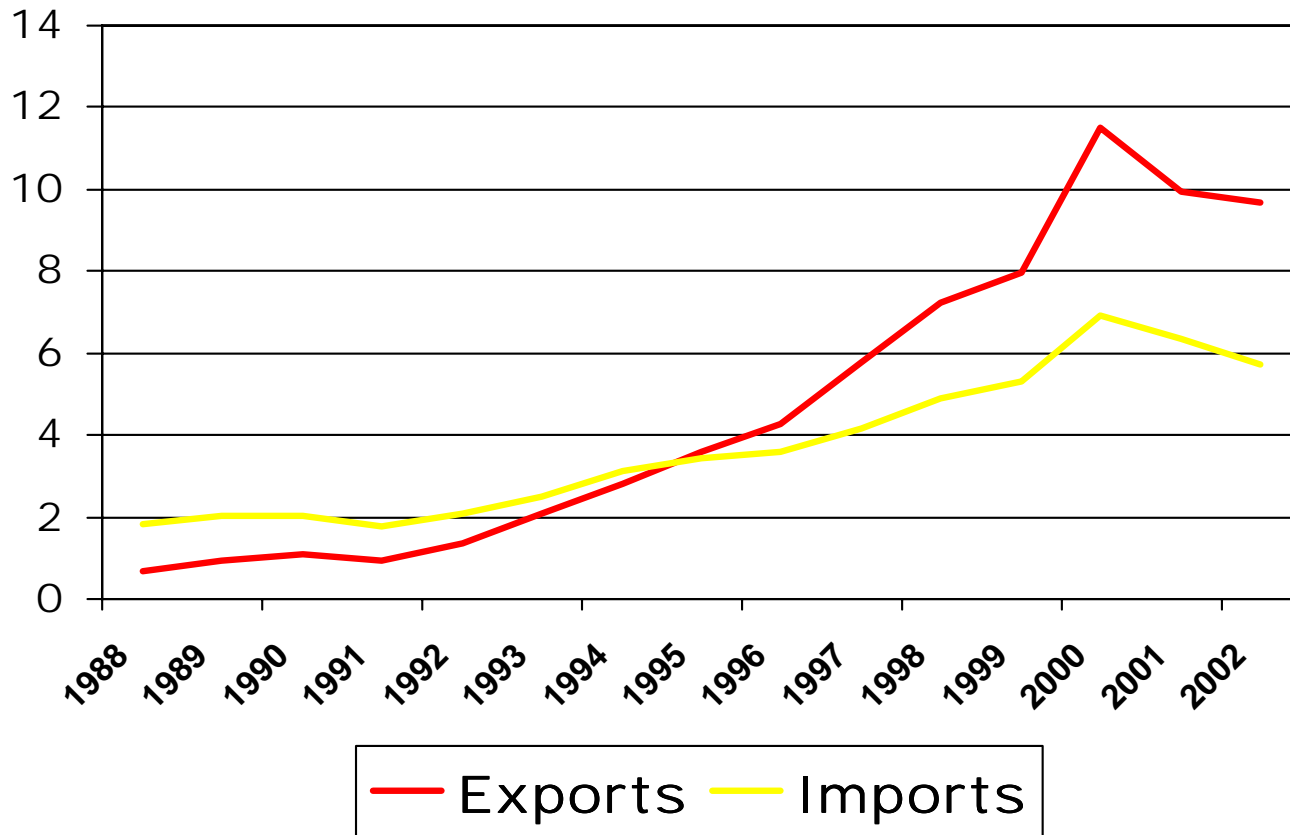
%  
of total  
exports  
of goods

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



# Finland's foreign trade in high-tech products

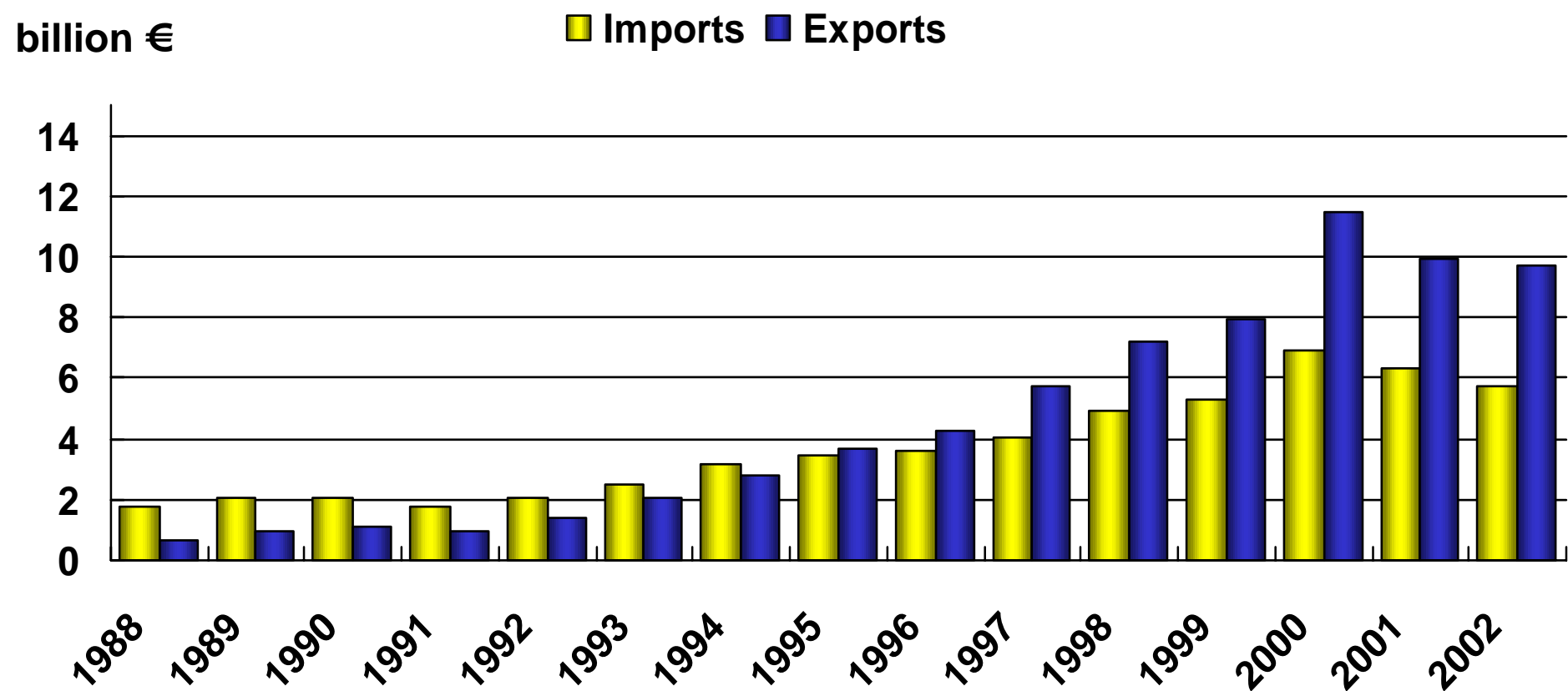
billion €





# FINNISH TRADE ON HIGH TECH PRODUCTS

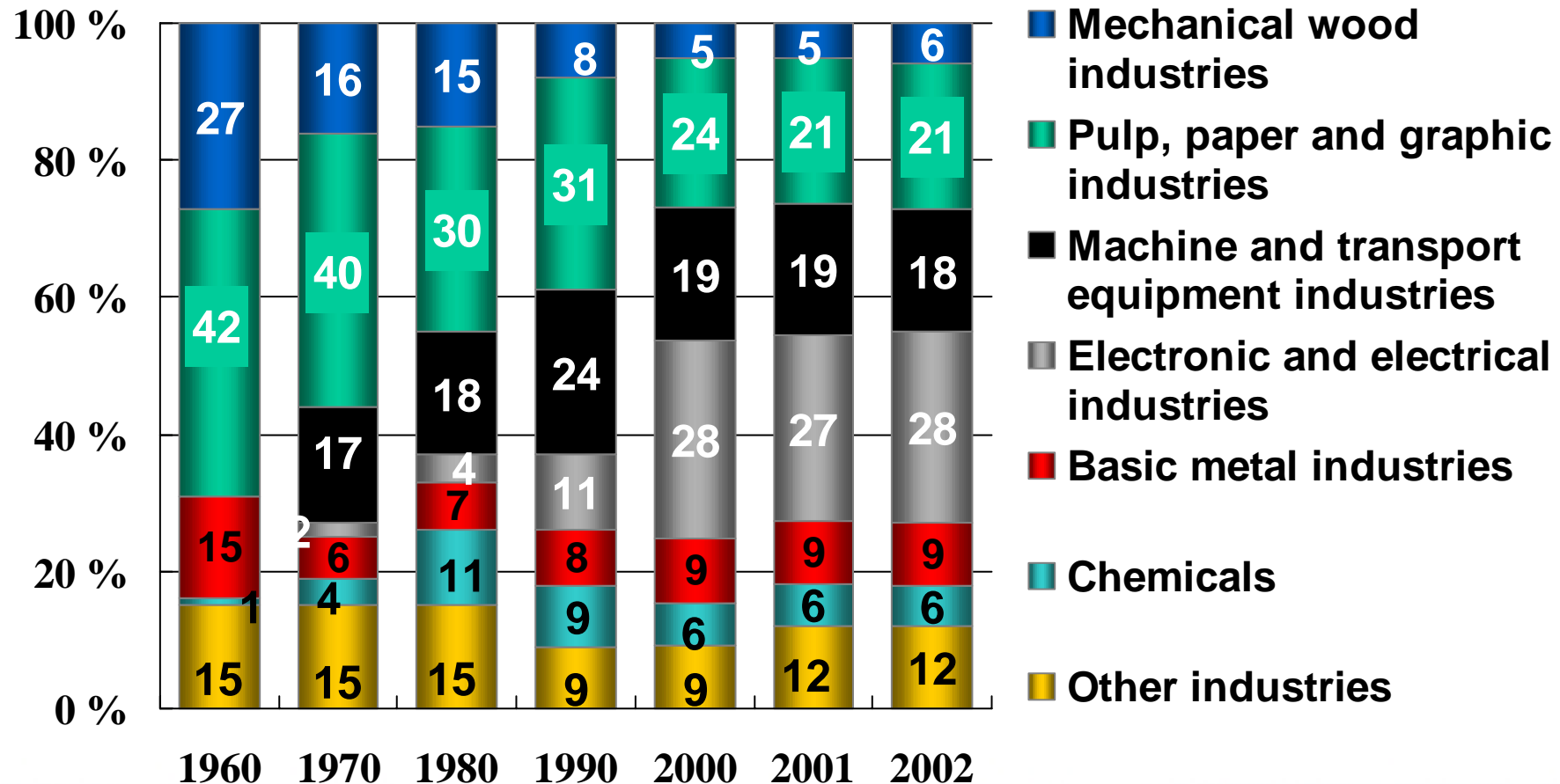
Finnish high technology exports totalled €9,7 billion  
and imports 5,7 billion in 2002



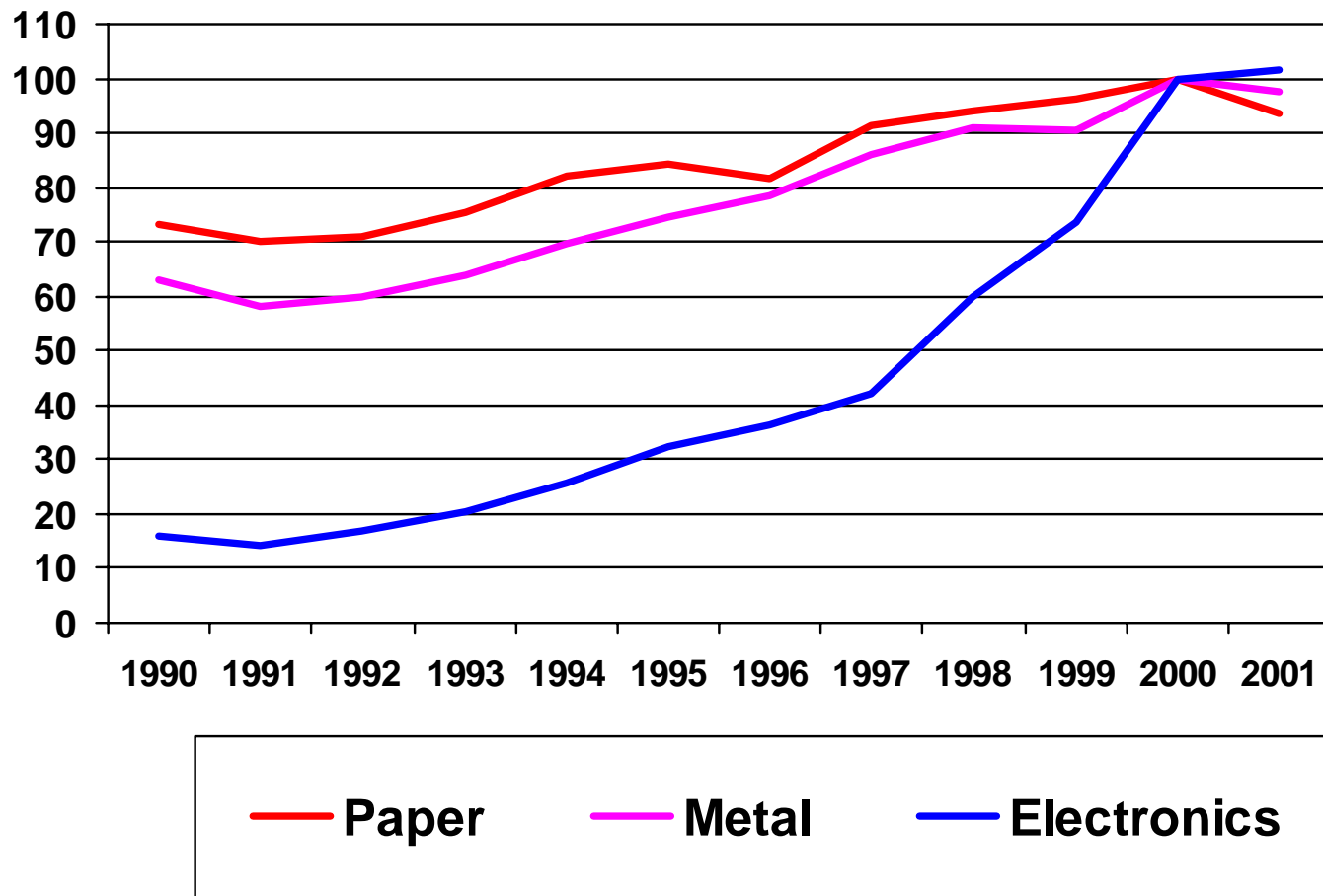
# FINNISH EXPORTS BY INDUSTRIES

## 1960 - 2002

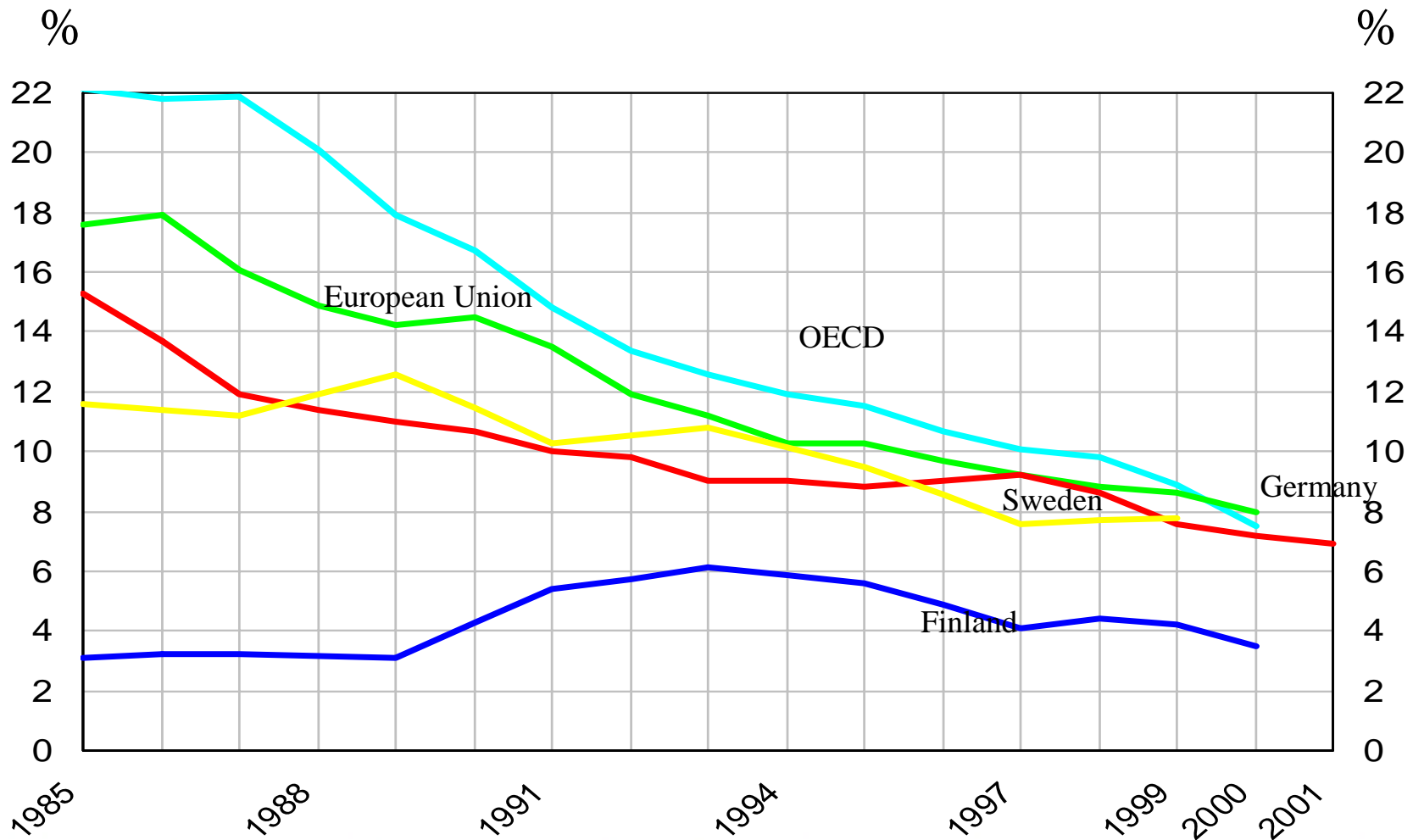
% of total exports



# Industrial Output by Sector 2000=100



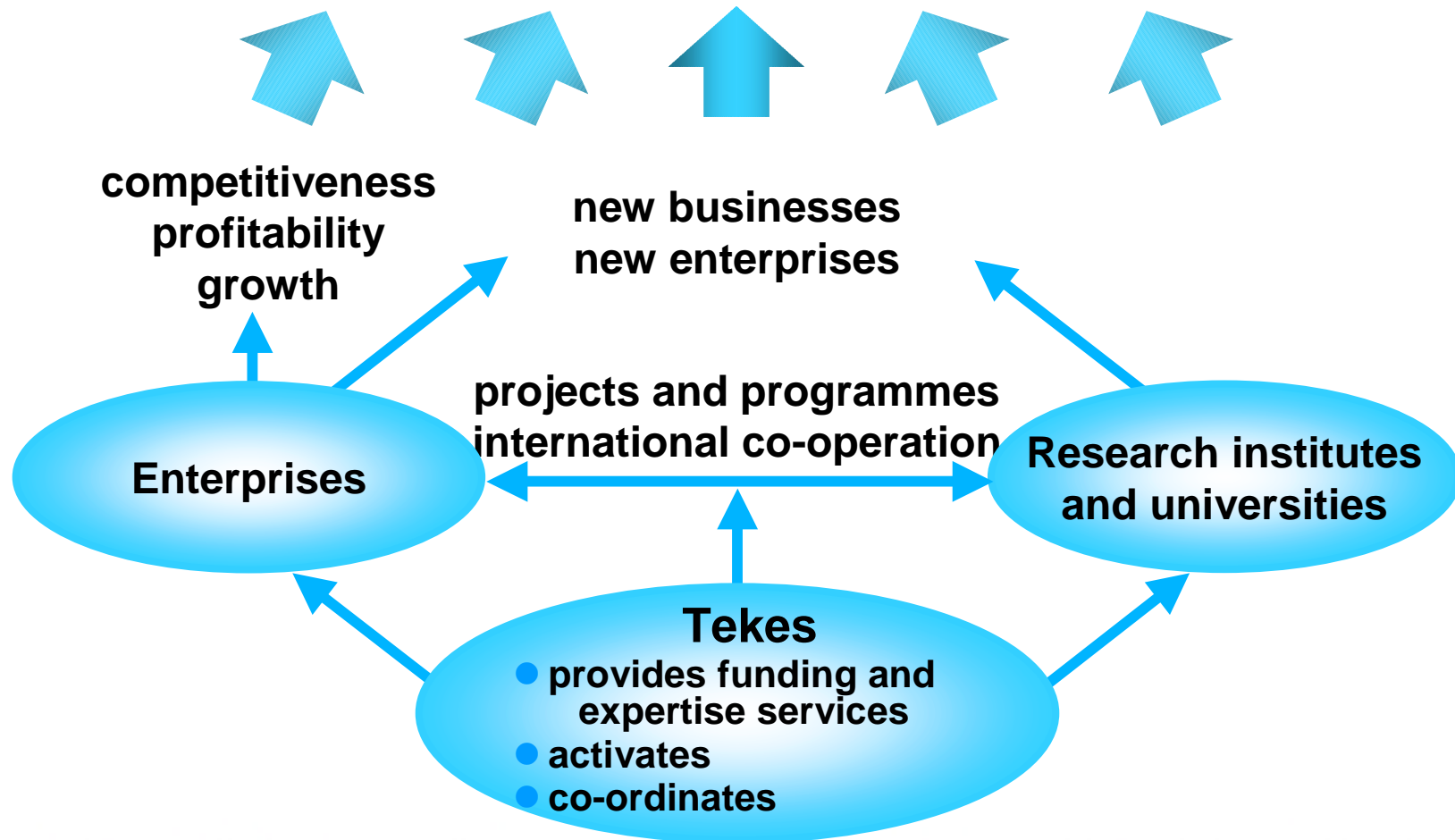
# Percentage of BERD financed by Government



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

# Impact of Tekes activities

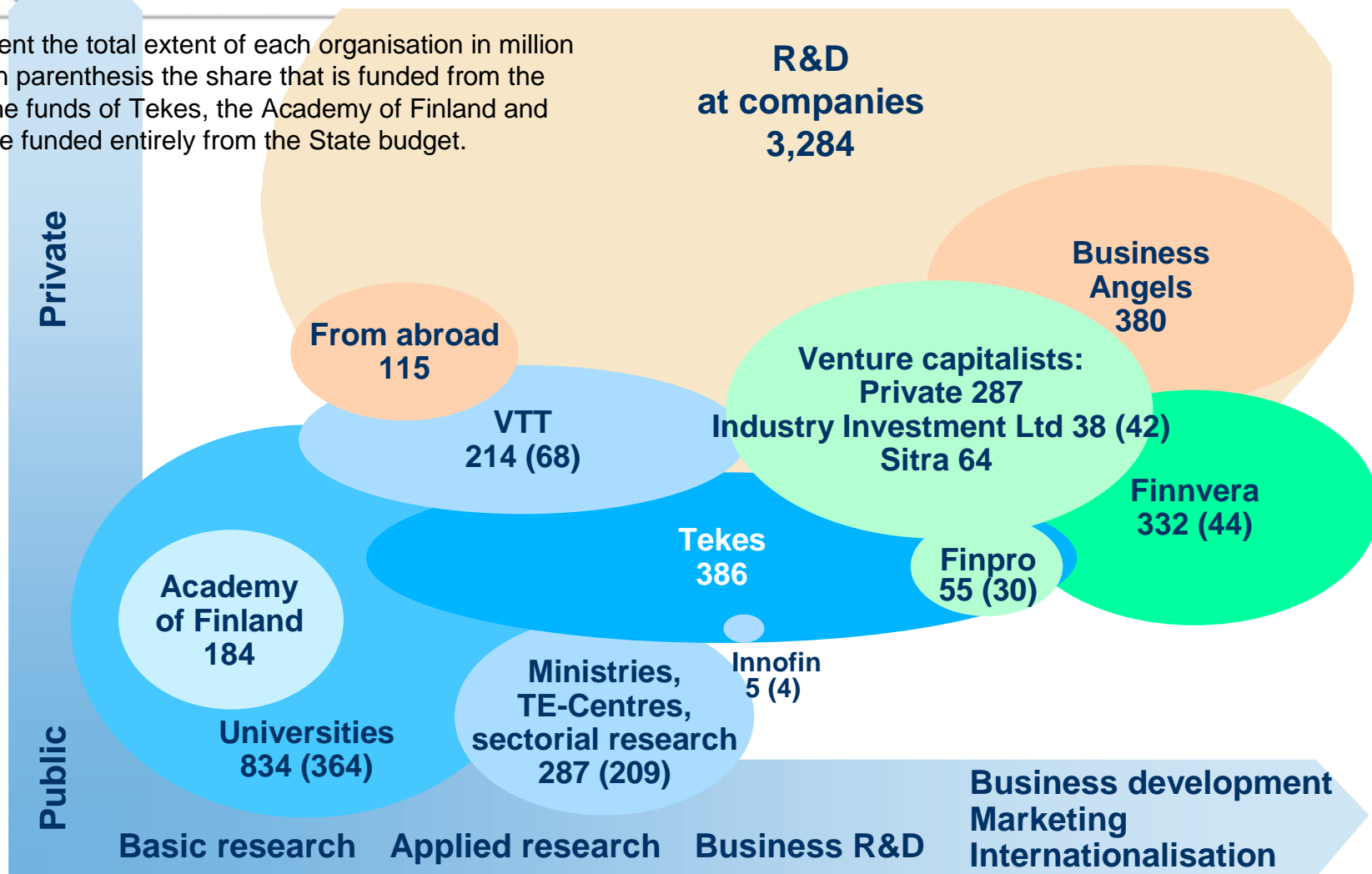
**To increase exports, broaden Finland's industrial base,  
generate new jobs, expand welfare.**



# 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**

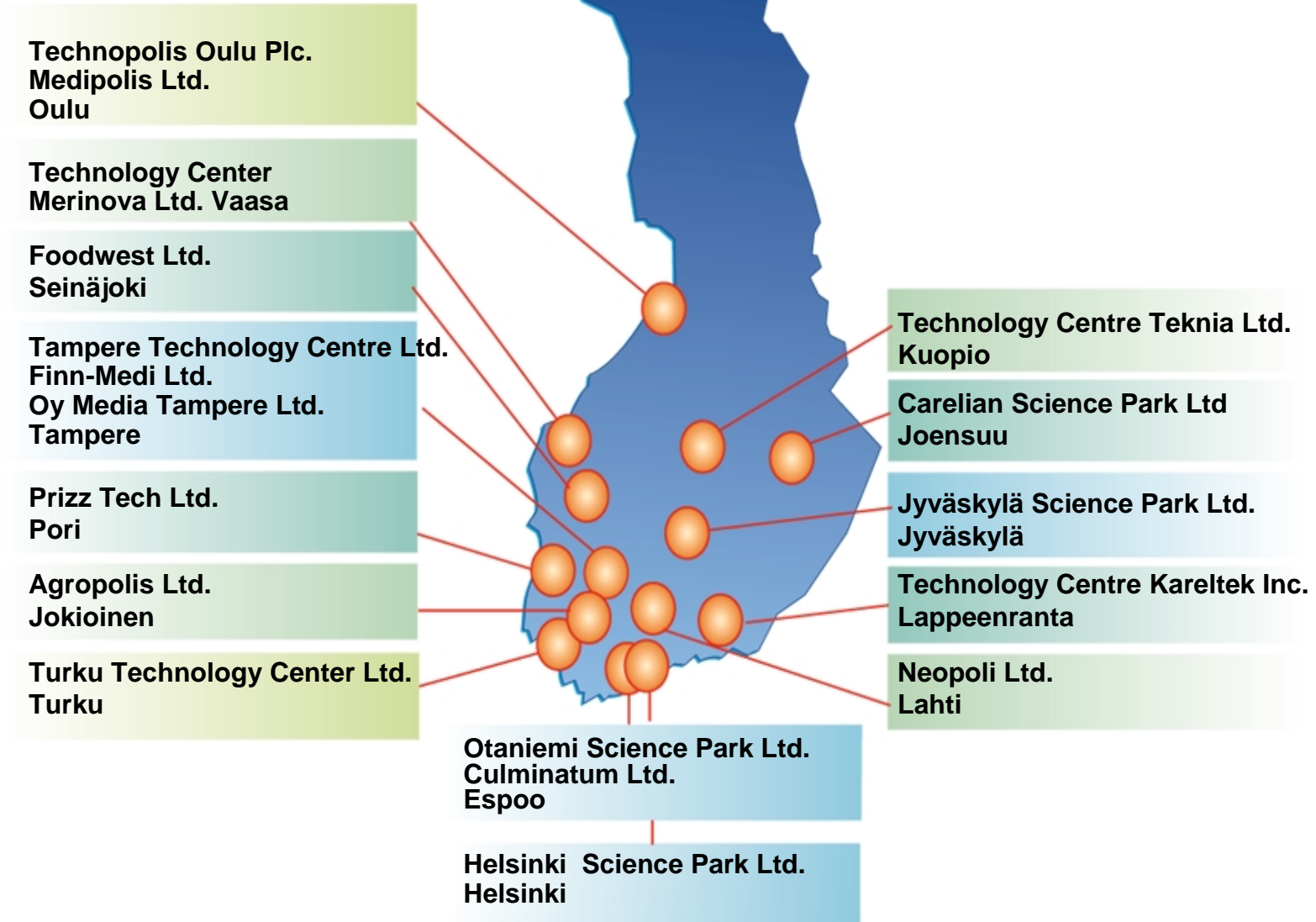
- Turku School of Economics and Business Administration, University of Turku, Åbo Akademi University

## **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 m<sup>2</sup>



# ENVIRONMENT

Technology and science parks

Universities  
Science  
communities

Industry and  
commerce

TEKEL

Venture capital

Ministries

Financial institutions

Municipalities

Regional alliances

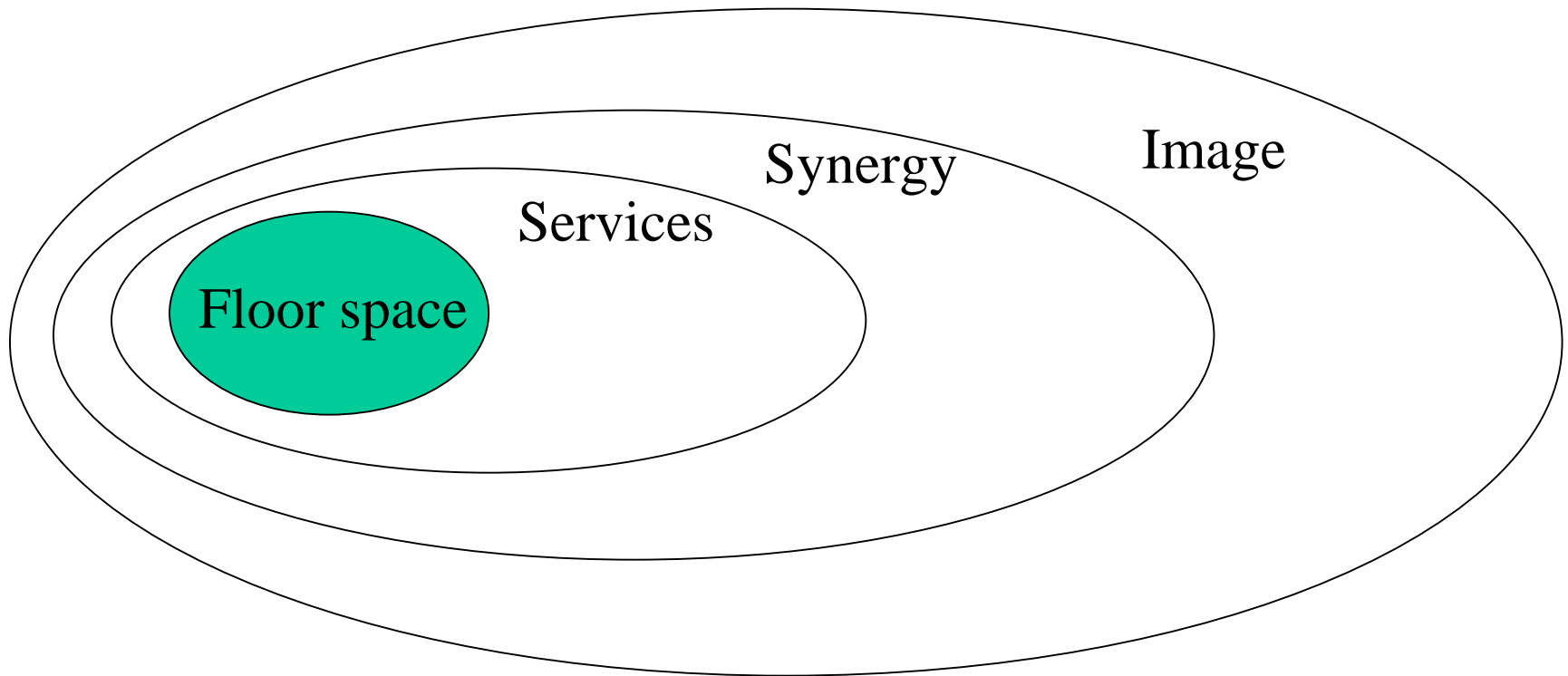
Organizations and associations



MINISTRY OF  
TRADE AND INDUSTRY

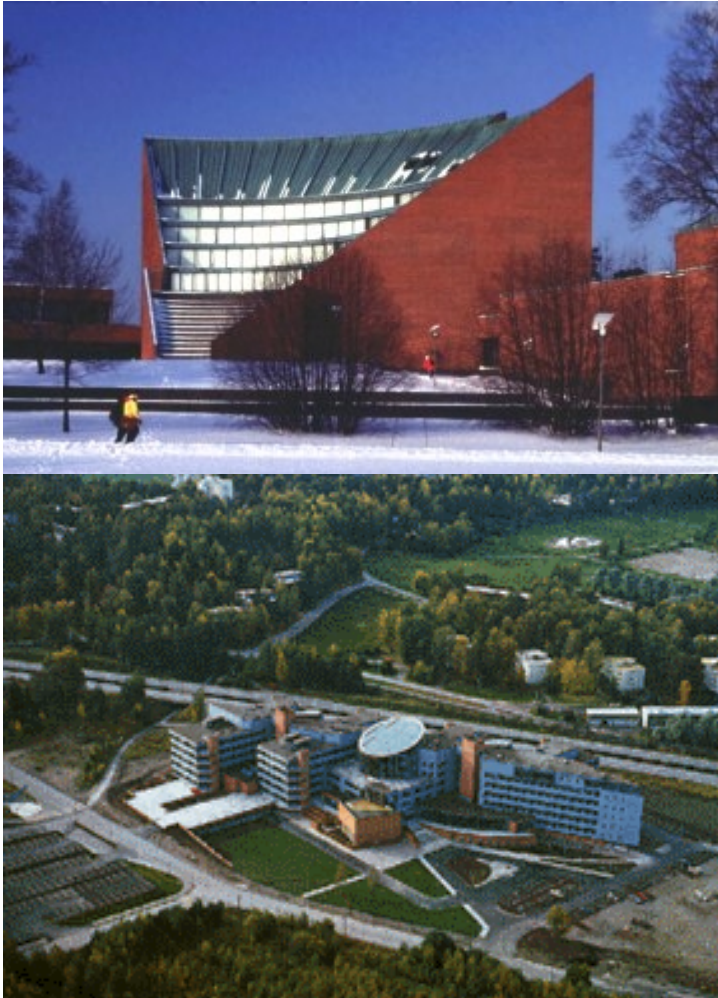
TEKEL 19.1.2004

# Hermia Concept





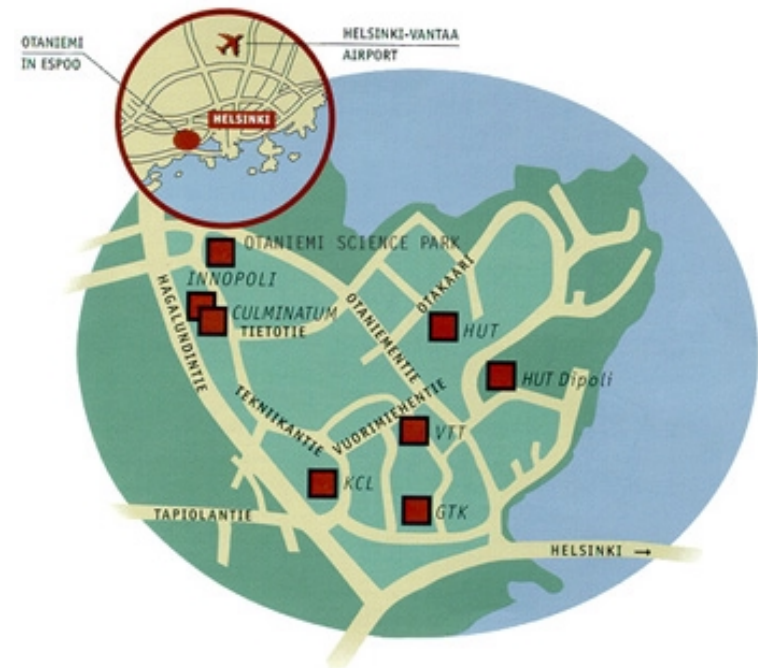
# Otaniemi



- 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

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- 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:

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- 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

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**[www.tekes.fi](http://www.tekes.fi)**

**[www.tekel.fi](http://www.tekel.fi)**

**[www.aka.fi](http://www.aka.fi)**

**[www.research.fi](http://www.research.fi)**

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