



Federal Ministry  
of Education  
and Research



# Strategic Planning and Management of Research and Innovation in Germany

Expert Seminar, Prague, 30 May, 2011

## Part I: The National Perspective

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EU Research Policy; European Research Area (ERA)

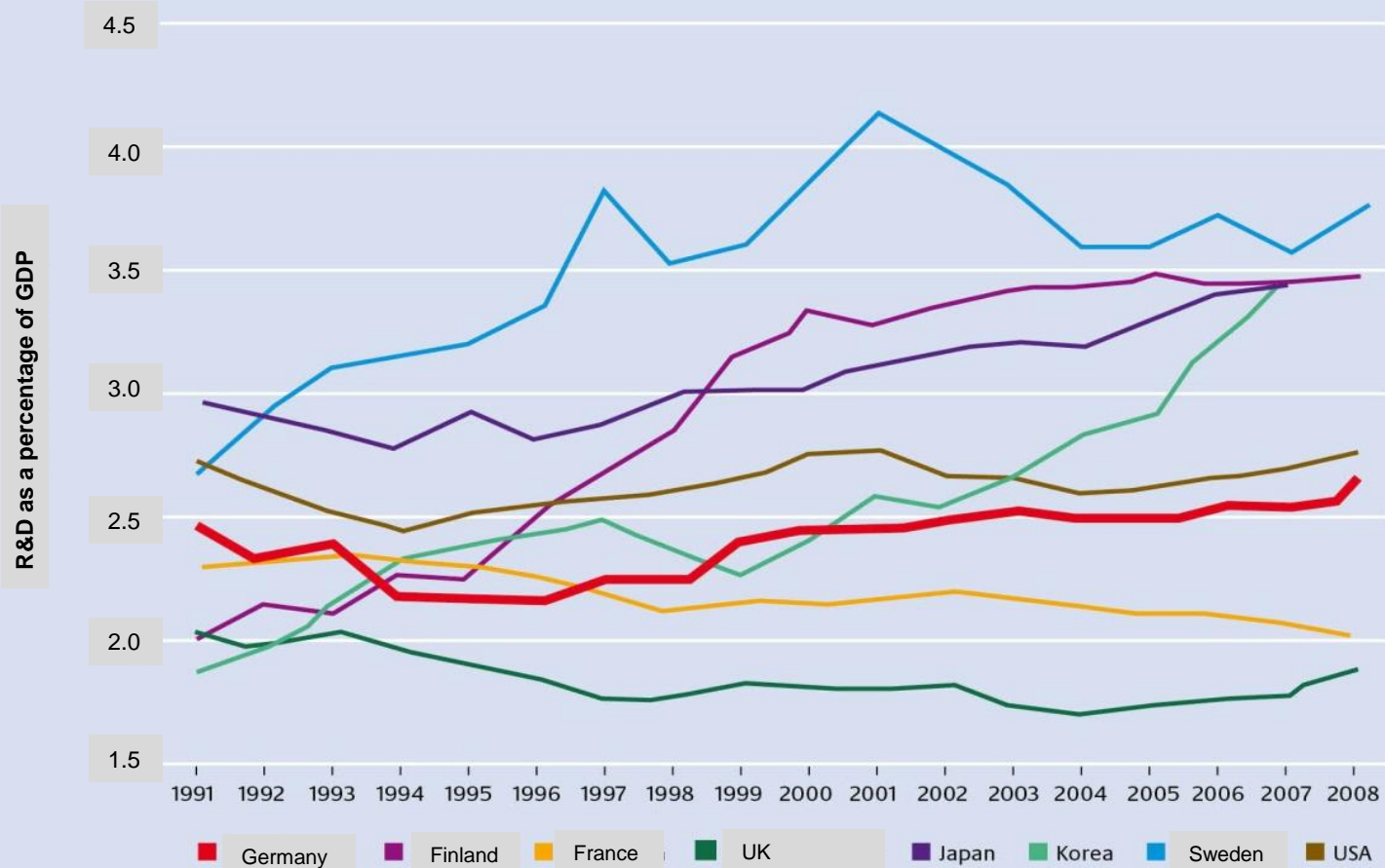


# NRP Germany:

target	EU 2020 target	national German target
<b>Research and Development</b>		
Percentage of GDP spent on R&D	3%	3% 2009 estimate: approx. 2.8%  Additionally: <b>10%</b> on education and research <b>by 2015</b>
<b>Education</b>		
Completed higher education (30- to 34-year-olds)	at least 40%	42% 2009: 40.7% (tertiary and equivalent qualification ISCED 4,5 A and B, 6)
Number of school drop-outs without an upper secondary qualification	under 10%	under 10%, 2009: 11.1%



## International comparison of R&D 1991 - 2008

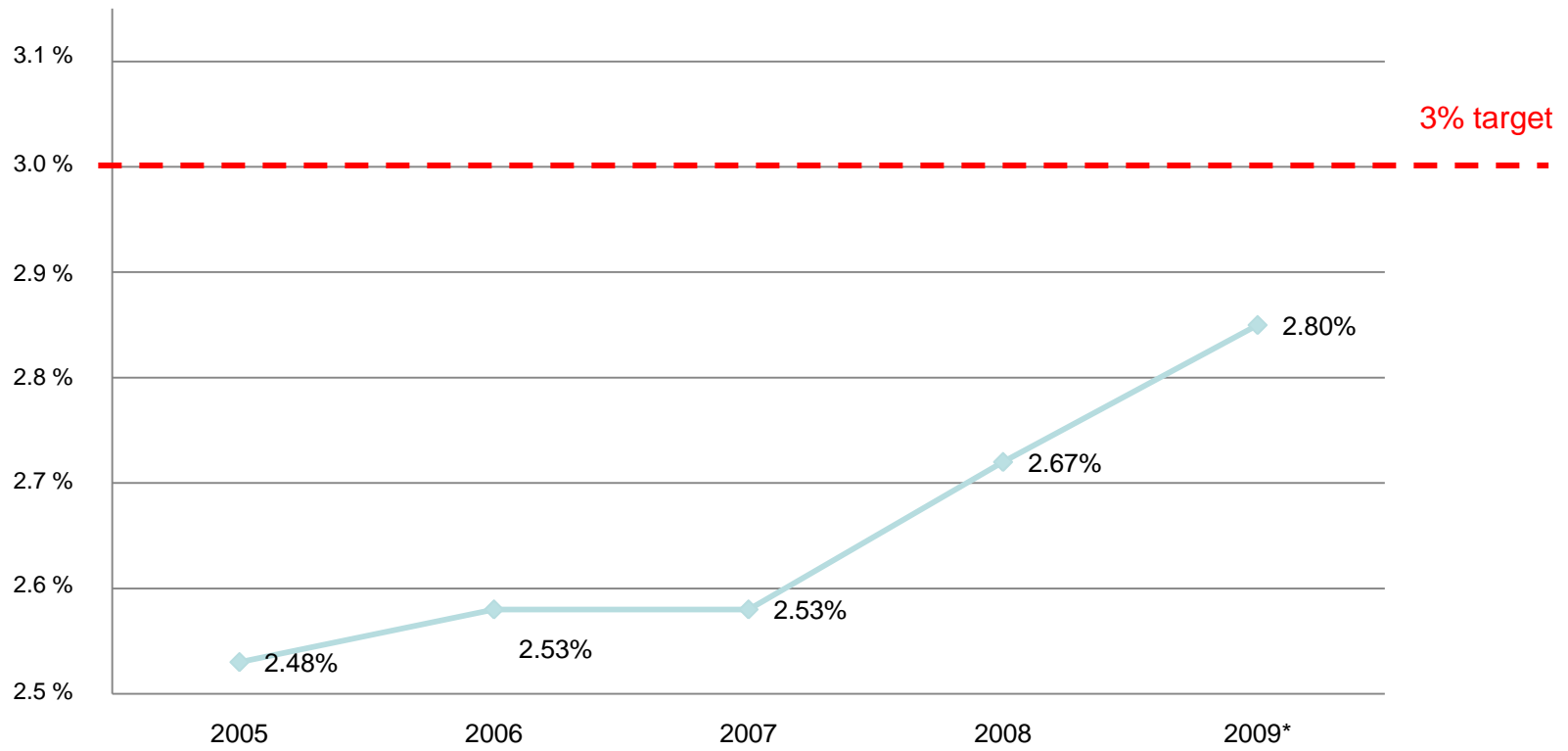


Datenbasis: OECD Main Science and Innovation Indicators 2009/2

Quelle: BMBF



## R&D as a percentage of GDP (2009 – *first forecast*)





## Programmes for education and R&D:

<b>Continuation of 3 Pacts:</b>	<b>Almost 18 billion euros in 2010 - 2019 (Federal Government and <i>Länder</i>)</b>
2 stimulus packages:	approx. 12 billion euros in 2009/10 (Federal Government and <i>Länder</i> )
Coalition agreement 2009:	additional 12 billion euros in 2010 – 2013 (Federal Government only)



# Investing in R&D and reaching the 3% target

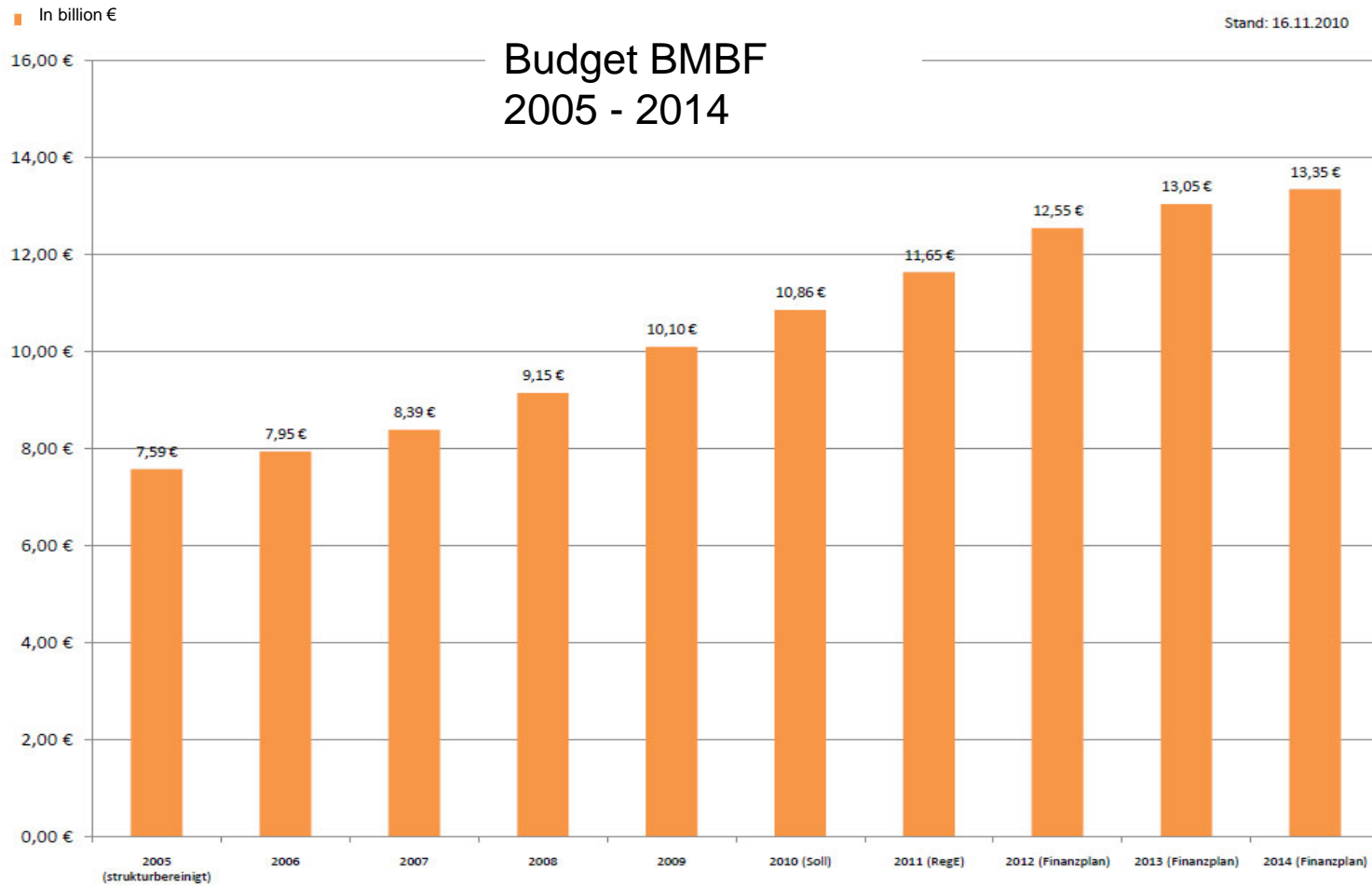


# Stimulus packages: approx. 12 billion euros

Package I 2009	Package II 2009/2010
0.274 billion euros	11.5 billion euros
for R&D and education	R&D:
	–E-mobility 0.5 –Infrastructure 0.5
	–Research SMEs 0.9
	Education:
	–Infrastructure 8.666 –Training jobless 1.0



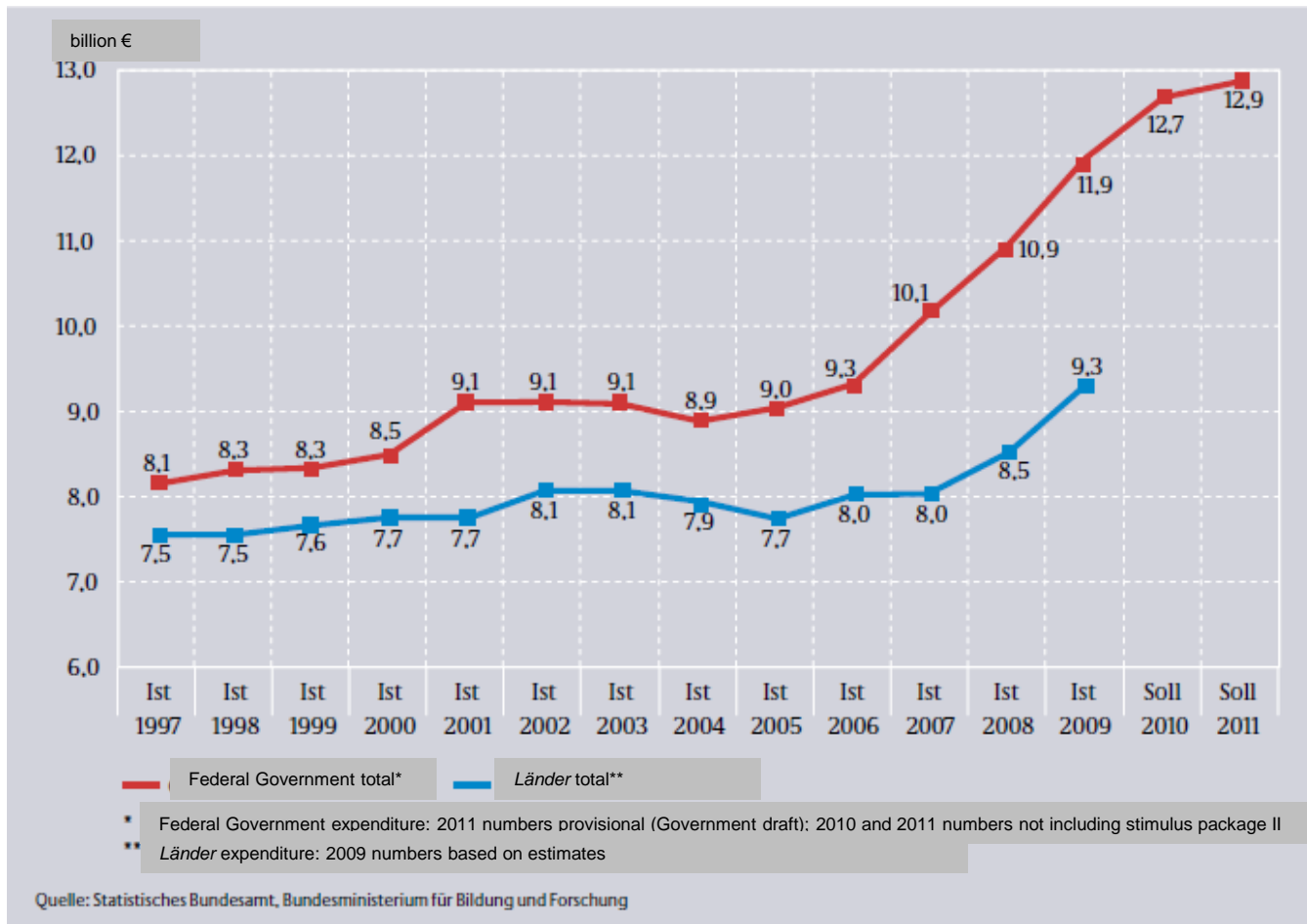
## Budget of the Federal Ministry of Education & Research 2005 - 2014







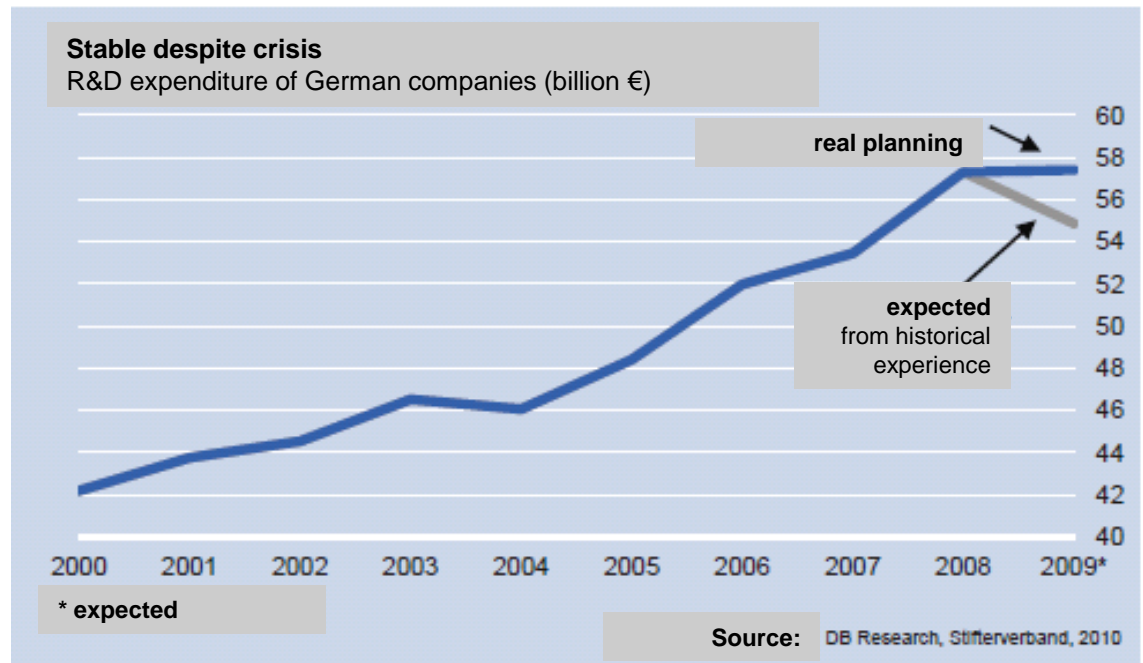
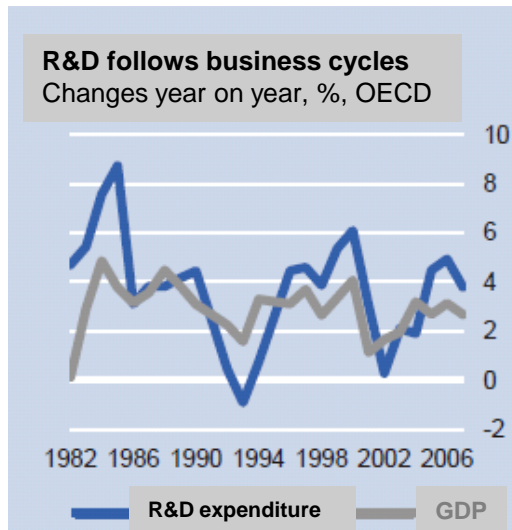
## Expenditure of the Federal Government and the *Länder* for Research and Development - timeline (financing)



Quelle der Graphik: Jahreswirtschaftsbericht 2011

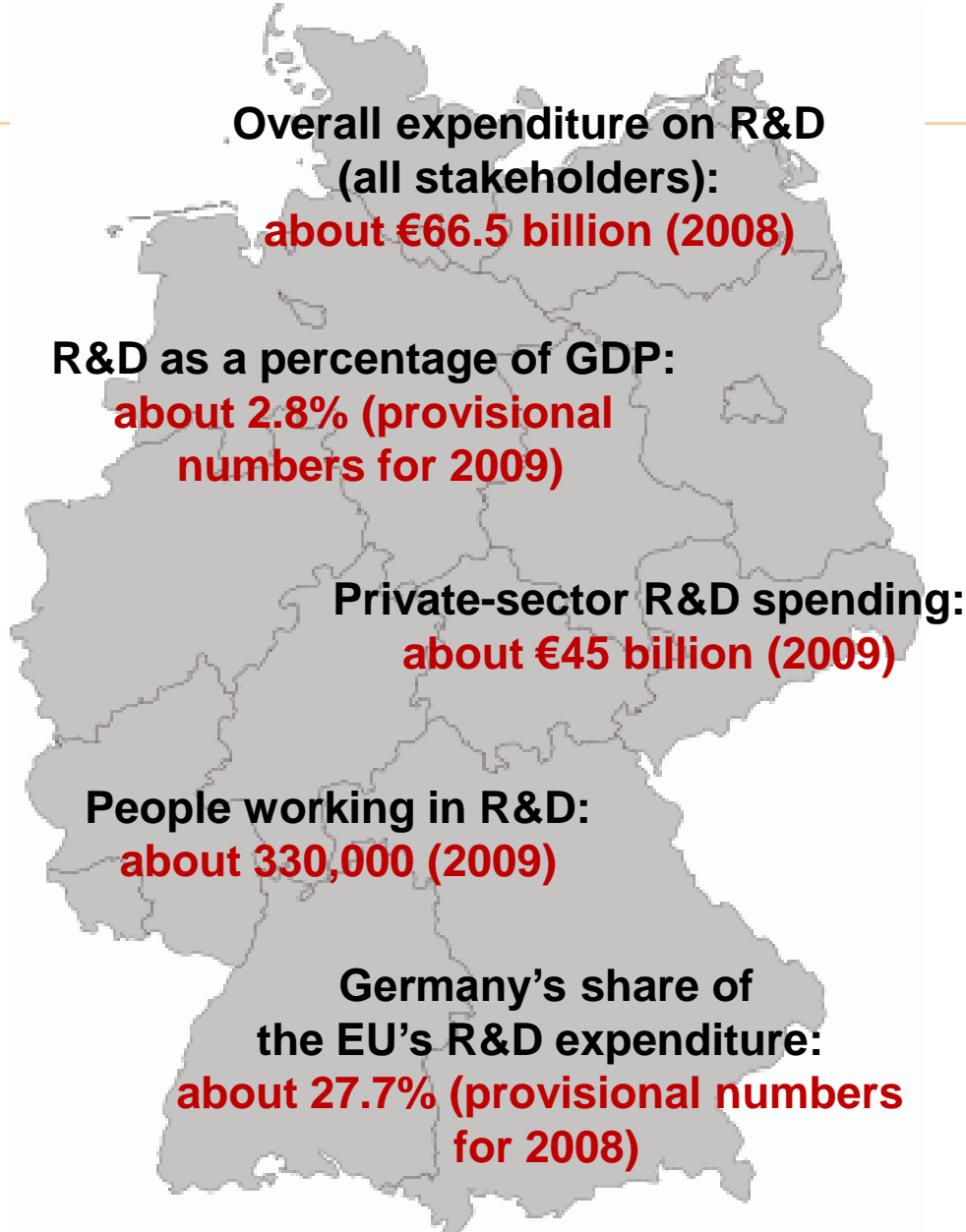


## R&D expenditure of German companies (billion €)



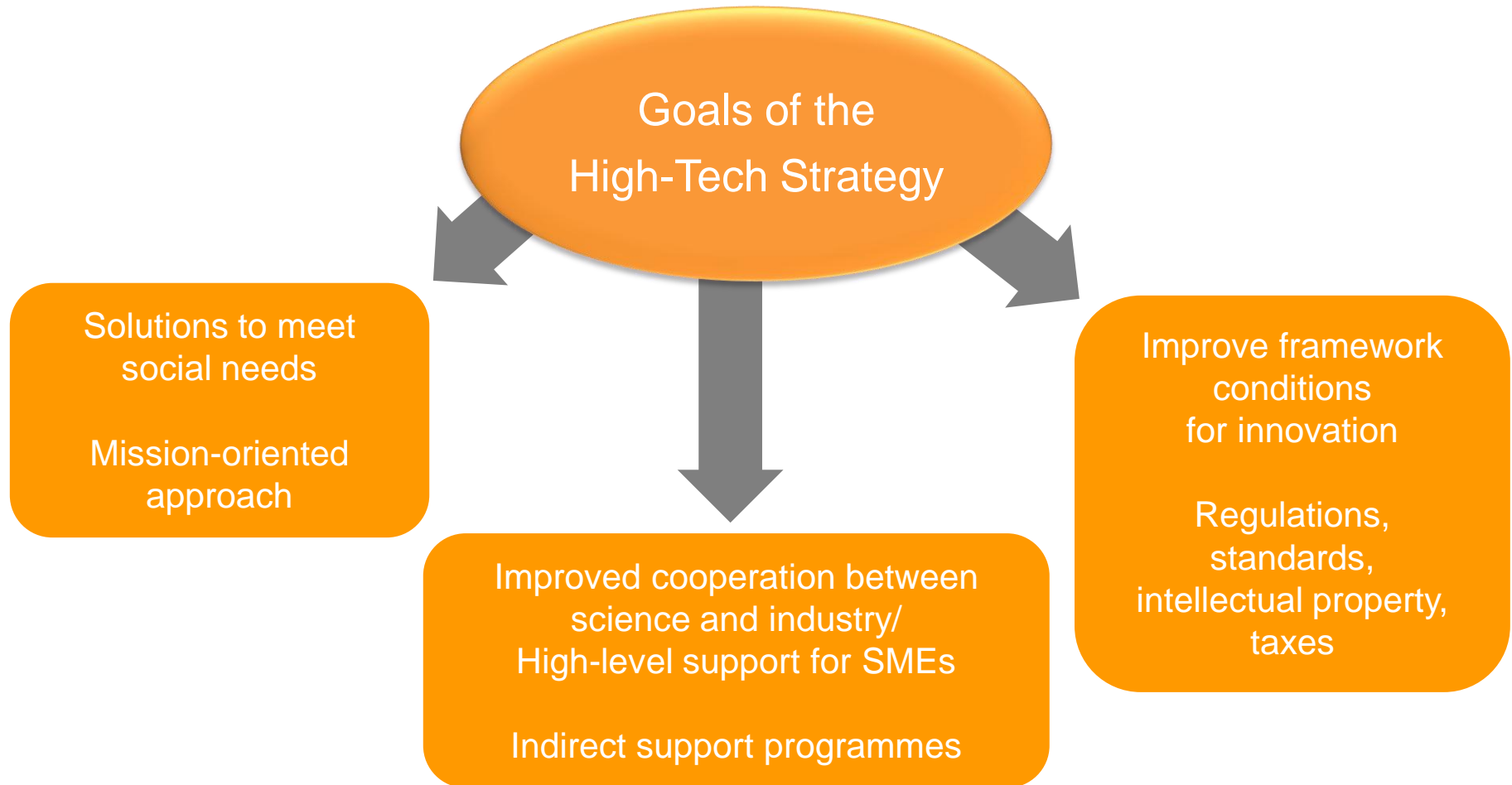


# Innovation indicators





# **The High-Tech Strategy 2020: A systemic approach to boost R&D and innovation in Germany**





## Fields of action

Global challenges → 5 fields of action

Climate  
Energy

Health  
Nutrition

Mobility

Security

Communi-  
cation

Key technologies

Interdisciplinary issues/framework conditions



## Forward-looking projects of the High-Tech Strategy

### For the fields of action ..... Forward-looking projects

- Climate/Energy
- Health/Nutrition
- Mobility
- Security
- Communication



are being developed by groups of promoters, roadmaps drawn up for their implementation,

- drivers of and obstacles to innovation identified,
- research tasks defined and
- the need for action formulated.

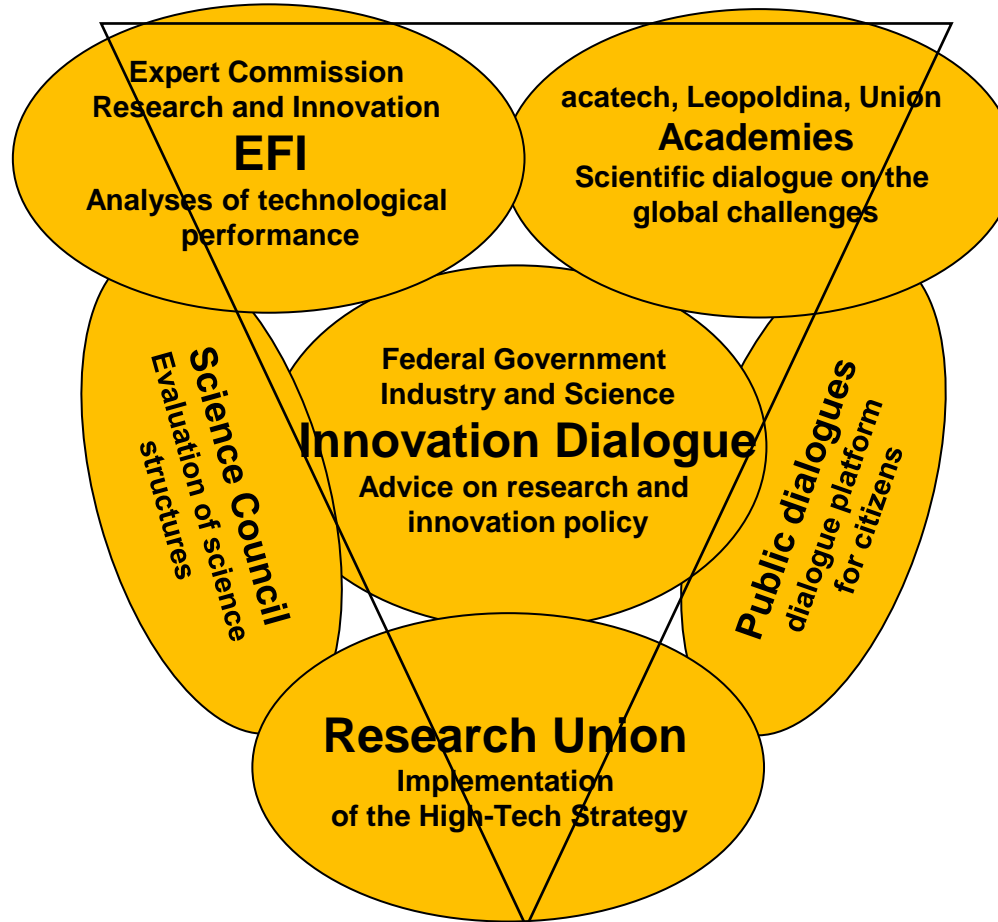




## Policy advice on science, research and innovation

Analysis

Dialogue



Implementation





## **Guiding principles of the German Federal Government's research and innovation policy (1)**

**We are investing more in education, training and lifelong learning, because**

- Germany has few natural resources
- we are facing a demographic change and a shortage of skilled personnel.

**We need high-quality, modern qualifications, because**

- they will secure the economic upswing
- they are very important for an individual's future opportunities in life and employment and for his/her social integration in today's knowledge society.



## Guiding principles of the German Federal Government's research and innovation policy (2)

**We want to strengthen Germany as a research location, because**

- we are facing tremendous global challenges: climate change, demographic change, common diseases and many others. If we want to find solutions and strategies for sustainable growth, we need to know more about ourselves and the world in which we live.
- we want our products and services to continue to be bought here and across the world. Therefore we need to make sure that they remain innovative and competitive.

We have therefore concluded 3 Pacts between the Federal Government and the *Länder*.



## The 3 Pacts between the Federal Government and the *Länder*

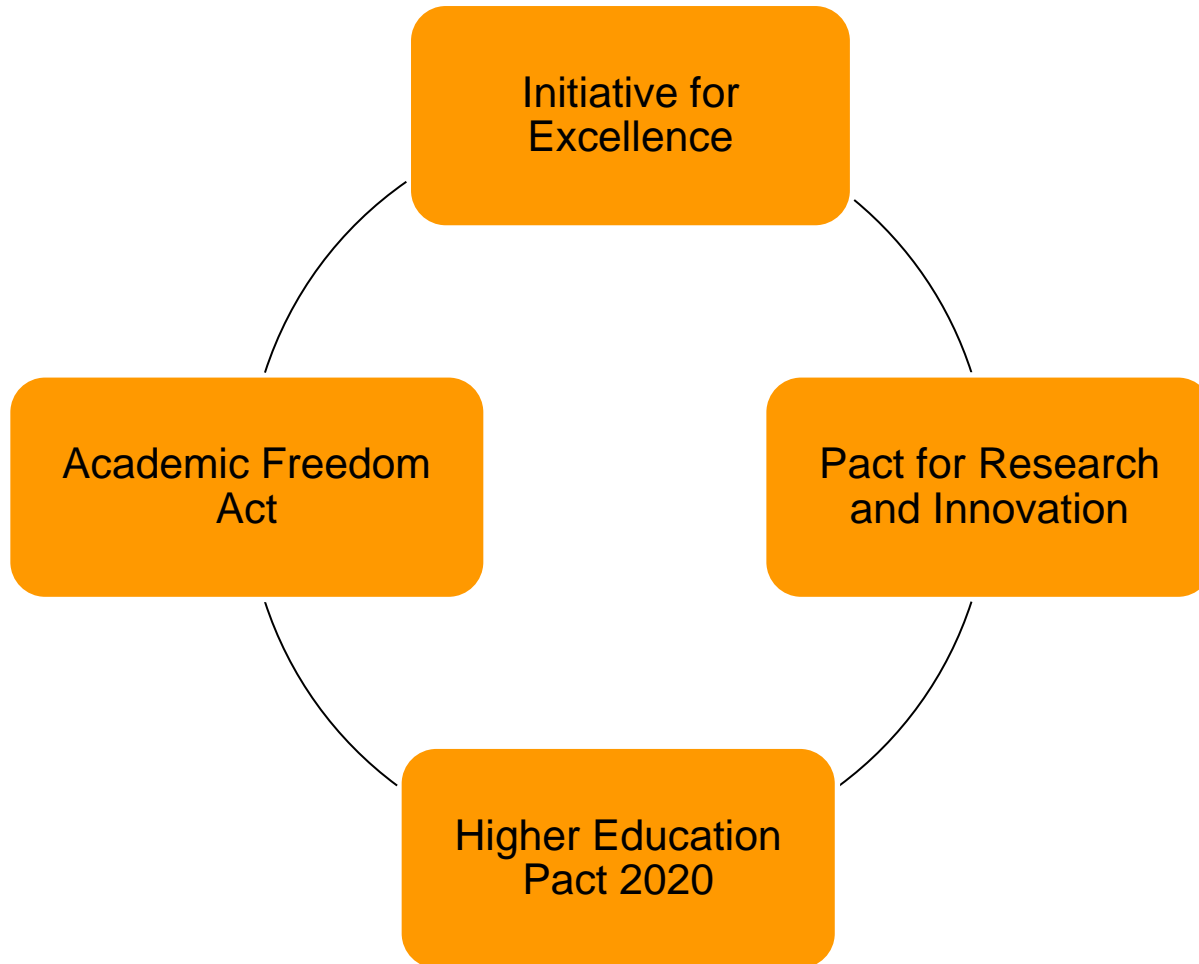
The Federal Government and Länder are investing approximately 18 billion euro until 2019

- in continuing the [Initiative for Excellence](#) to provide a secure perspective for cutting-edge research at institutions of higher education,
- in non-university research institutions to provide them with the necessary leeway to continue to develop dynamically in future ([Pact for Research and Innovation](#)) and
- in an additional 275,000 places at institutions of higher education ([Higher Education Pact](#)).

This continuation of the Higher Education Pact, the Initiative for Excellence and the Pact for Research and Innovation sends out a strong signal for future-oriented education and research in Germany.

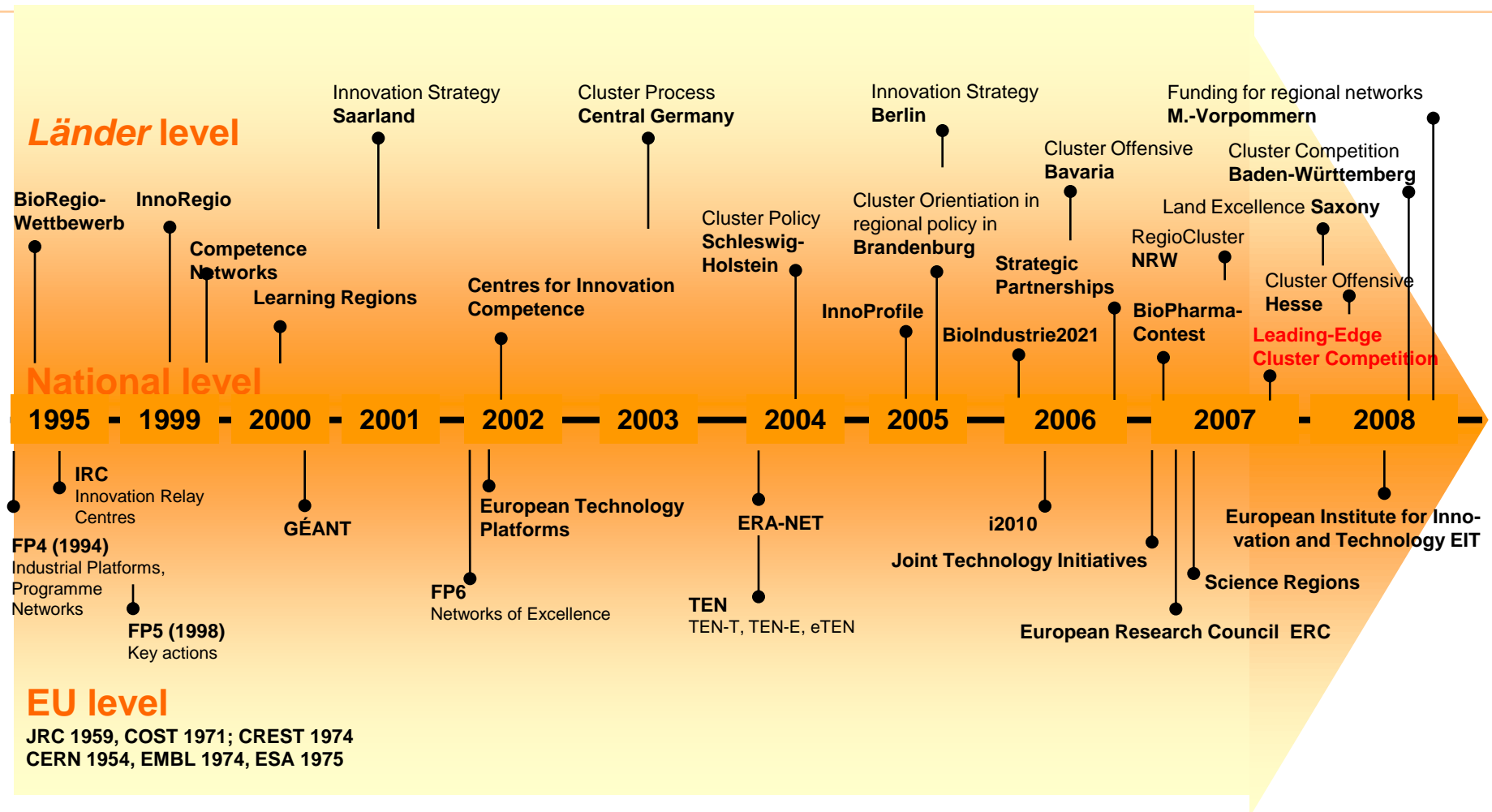


## To boost our science system





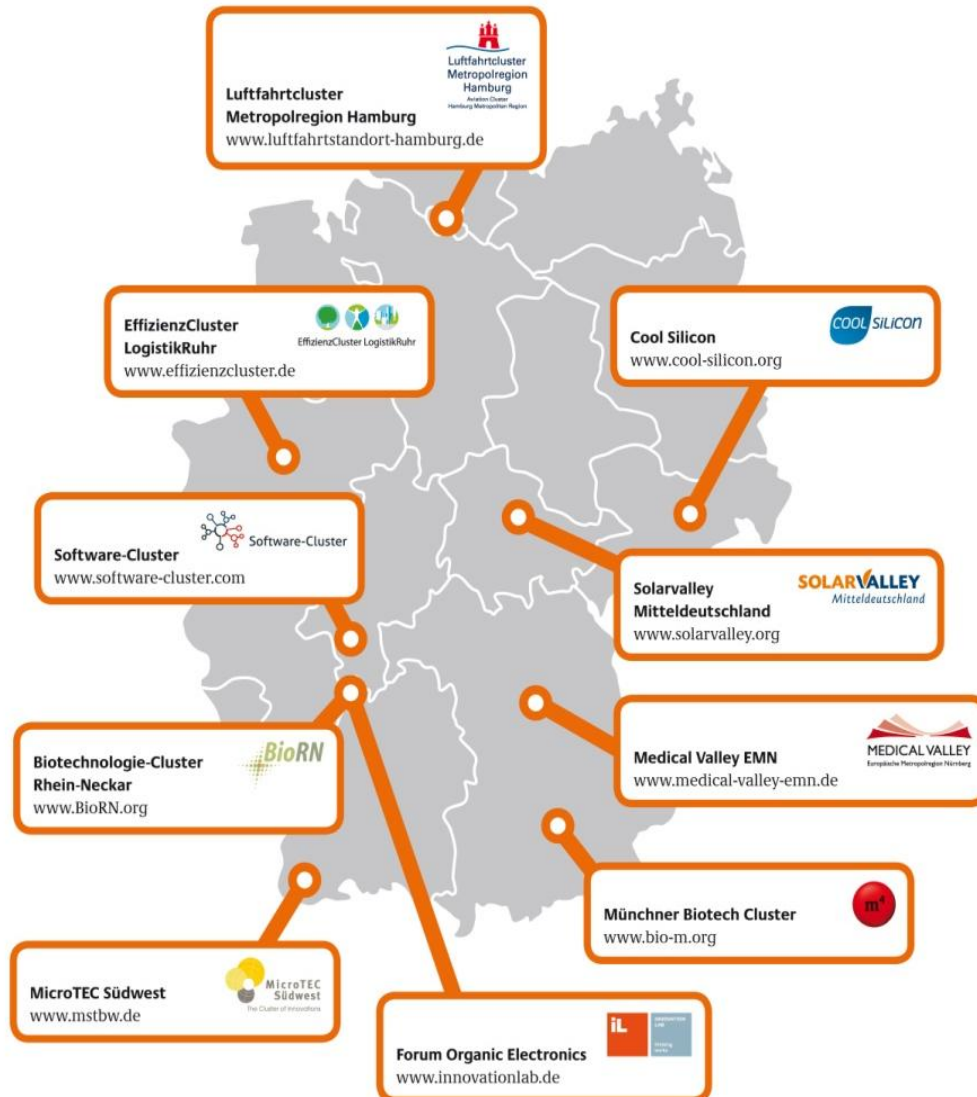
## Public measures to support clusters and networks (1995-2008)



Innovation policy increasingly refers to networks and clusters



## Leading Edge Cluster Competition in Germany



### Concept and selection criteria:

1. Strong scientific and economic starting position, high development potential
2. Strategy and management ensure sustainability of cluster
3. Significant financial support of 40 million euros over 5 years
4. Substantial contribution of industry (at least 50%)
5. Ambitious goals to establish the cluster in the international top league and to provide economic surplus
6. No pre-determination of topics, regional pooling along the value chain, high level, independent jury

<http://www.hightech-strategie.de/en/468.php>



# Initiative for Excellence in Higher Education in Germany – Results of the 1st Phase

## Förderentscheidungen in der Exzellenzinitiative

### Bewilligungen nach Förderlinien

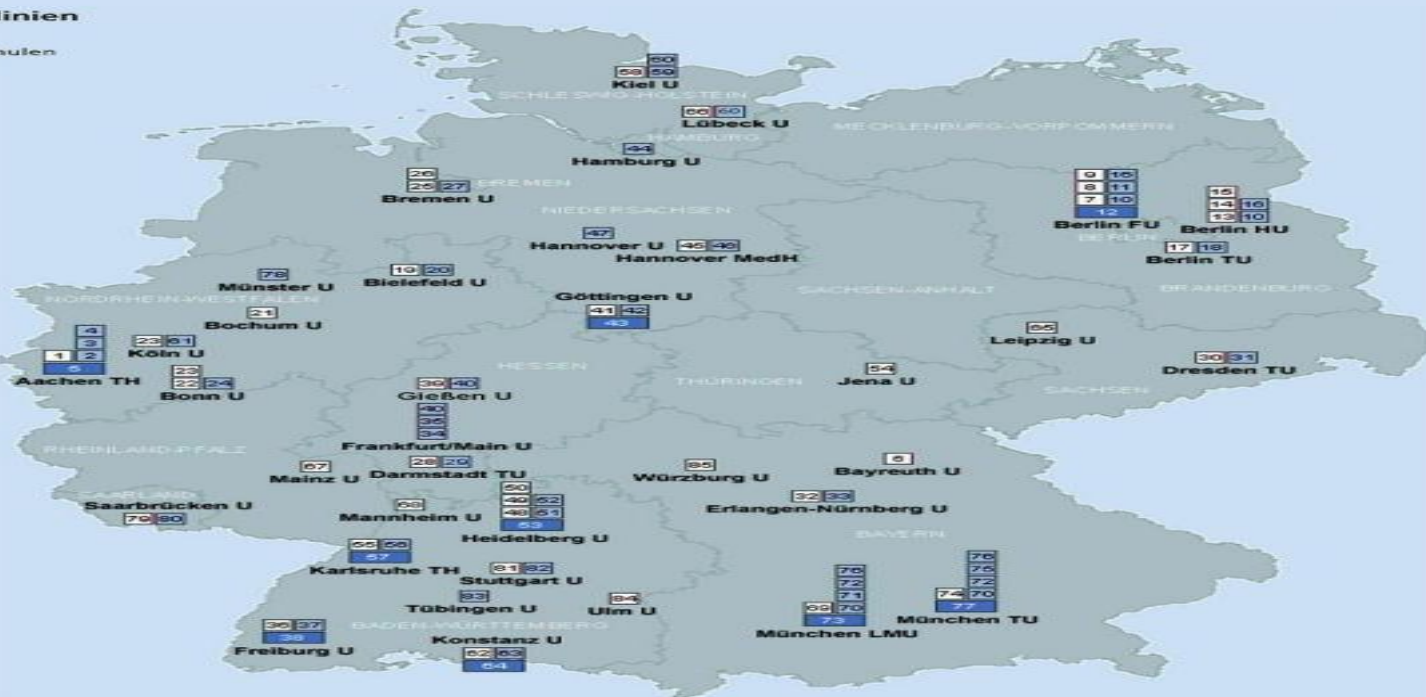


Basis: 1.181,5 Mio. €  
für drei Jahre

I. Förderlinie:  
Graduiertenschulen (GSC)  
zur Förderung des  
wissenschaftlichen  
Nachwuchses

II. Förderlinie:  
Exzellenzcluster (EXC)  
zur Förderung der  
Spitzenforschung

III. Förderlinie:  
Zukunftskonzepte (ZUK)  
zum projektbezogenen  
Ausbau der universitären  
Spitzenforschung



### Bewilligungen nach Wissenschaftsbereichen je Förderlinie

Graduiertenschulen  
Basis: 134,2 Mio. €  
für insg. 39 GSC

Exzellenzcluster  
Basis: 707,9 Mio. €  
für insg. 37 EXC

Zukunftskonzepte  
Basis: 339,4 Mio. €  
für insg. 9 ZUK



Geistes- und Sozialwissenschaften  
(11 GSC und 6 EXC)

Lebenswissenschaften  
(12 GSC und 12 EXC)

Naturwissenschaften  
(8 GSC und 10 EXC)

Ingenieurwissenschaften  
(6 GSC und 9 EXC)

Hochschulweit  
(9 ZUK, 2 GSC, keine EXC)

**Leserhinweise:**  
Die fachliche Zuordnung der Programme erfolgt hier  
über den primär zugeordneten Wissenschaftsbereich.  
Dabei ist zu beachten, dass alle ZUK und 2 GSC hoch-  
schulweit ausgerichtet sind. Die Bewilligungssummen  
bei GSC und EXC werden dagegen vollständig fachlich  
differenziert betrachtet.



## Initiative for Excellence in Higher Education in Germany

Background: Germany's universities and research institutions are excellent in many fields, but none of them has an outstanding reputation in a wide range of research fields like e.g. Harvard, Yale or Oxford.

Objectives: Supporting universities which

- a) have already reached a high level of excellence
- b) have developed an outstanding concept for future development

Scheme:

- € 4.6 billion in 2005 until 2017  
(75% Federal Government, 25% *Länder*)
- competitive award based on international peer review

Schedule:

- Second phase started in 2010, final funding decisions: summer 2012





# Pact for Research and Innovation

Goal: Increase international competitiveness of research, invest in promising fields, enhance the quality of research.

Objectives: Exploit new strategic research areas, further develop research collaborations with industry, enhance structured programmes for doctoral students and young researchers etc.

Scheme: The Federal Government and the *Länder* are increasing their institutional funding for the major research organizations (MPG, HGF, FhG, DFG) by 5% annually. Total costs: **€4.9 billion** (2011-2015).

Schedule: Between 2011 and 2015.



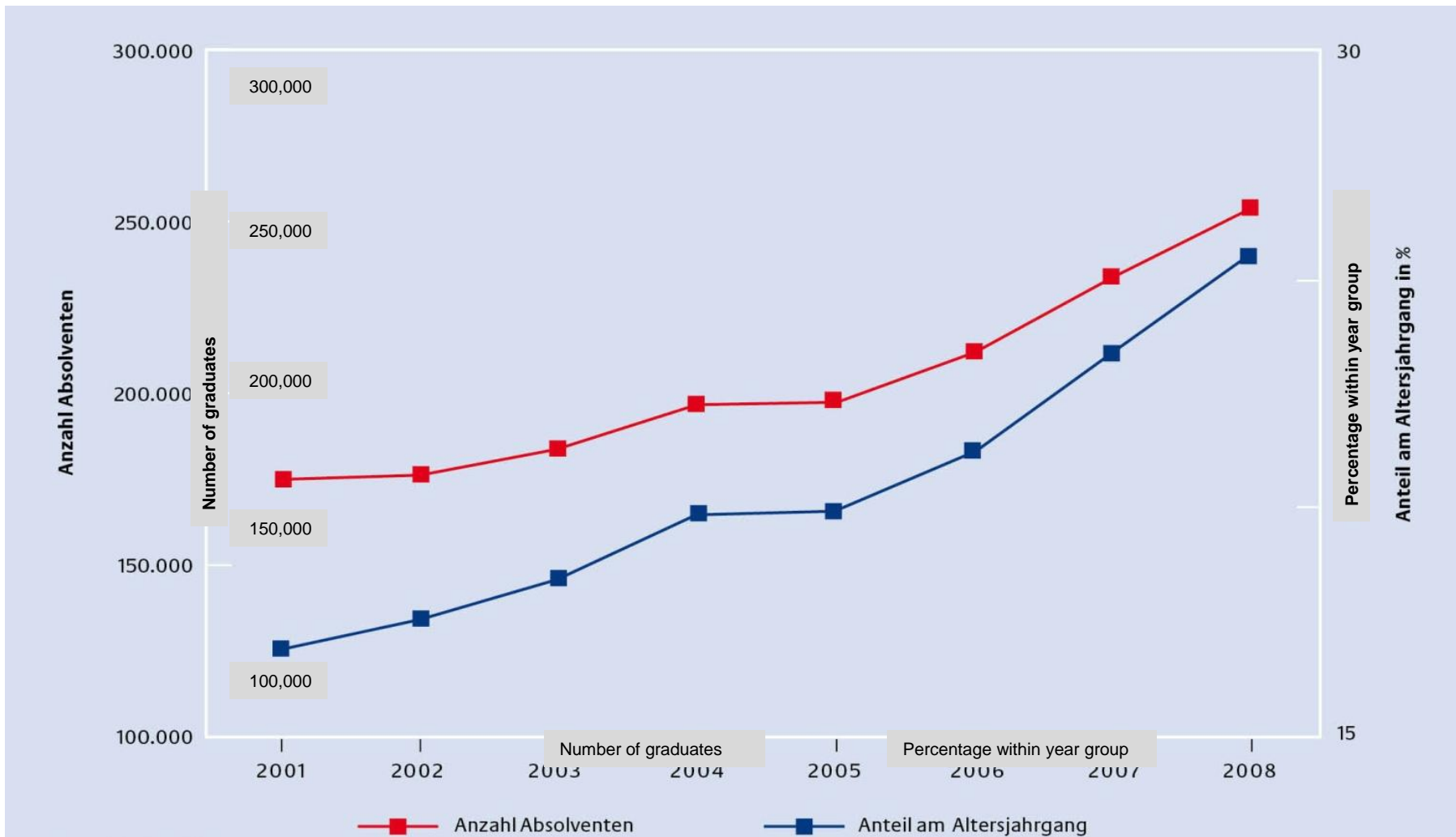
## Pact for Higher Education

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- Background: Modernizing higher education in Bologna Reform, rising number of students entering universities (boom !)
- Objectives: Ensuring that the supply of university places is in keeping with demand, increasing the quality of teaching and research at universities.
- Scheme: €4.7 to 4.8 billion for university places (2011-2015), €1.9 billion for improving the quality of teaching (2011-2020) and €1.7 billion for financing overhead costs for research projects (2011-2015).
- Schedule: Starting 2011.



## Number of university graduates and their percentage in the year group 2001-2008

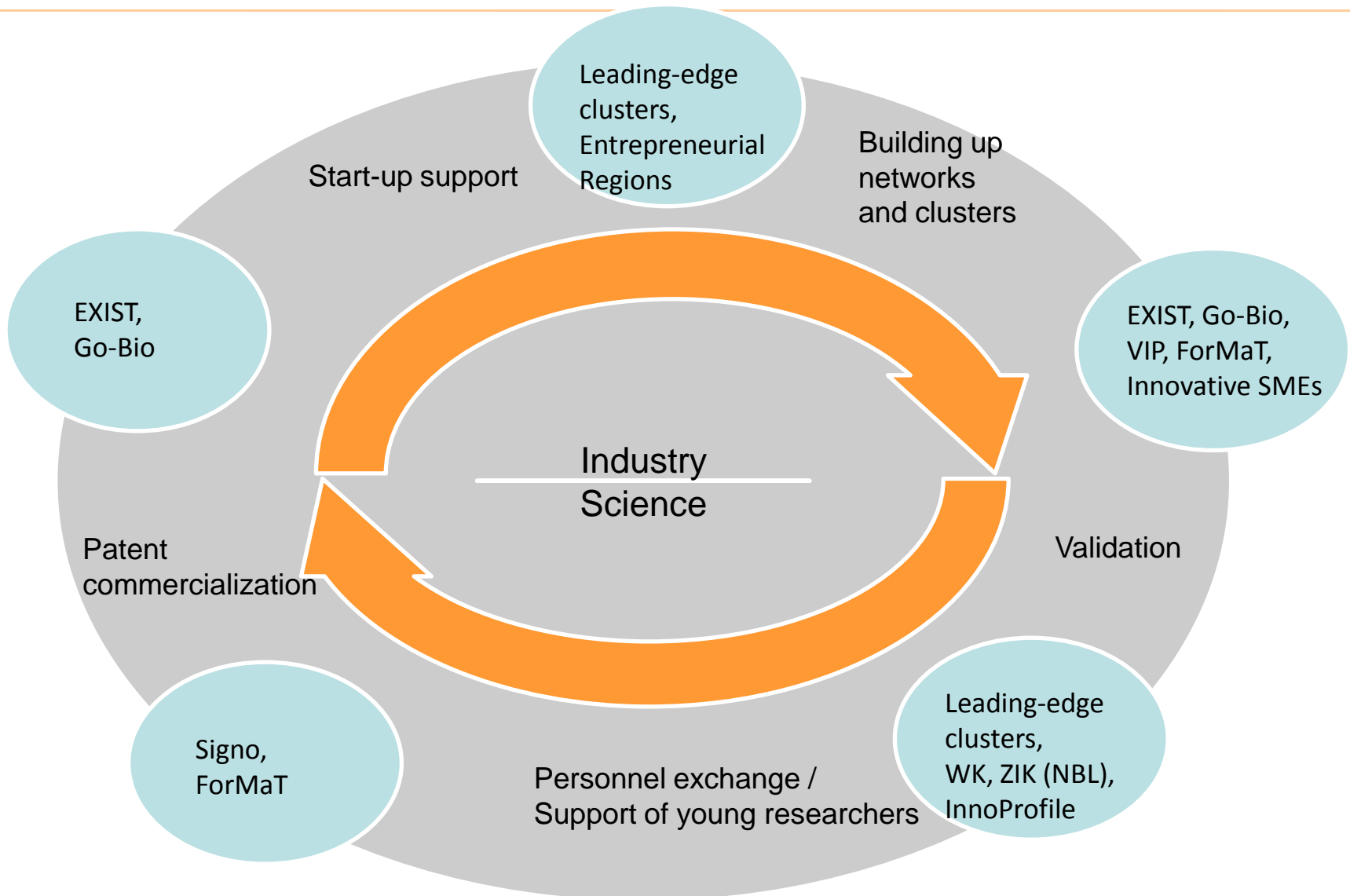




# **Specific horizontal measures to improve framework conditions for innovation**

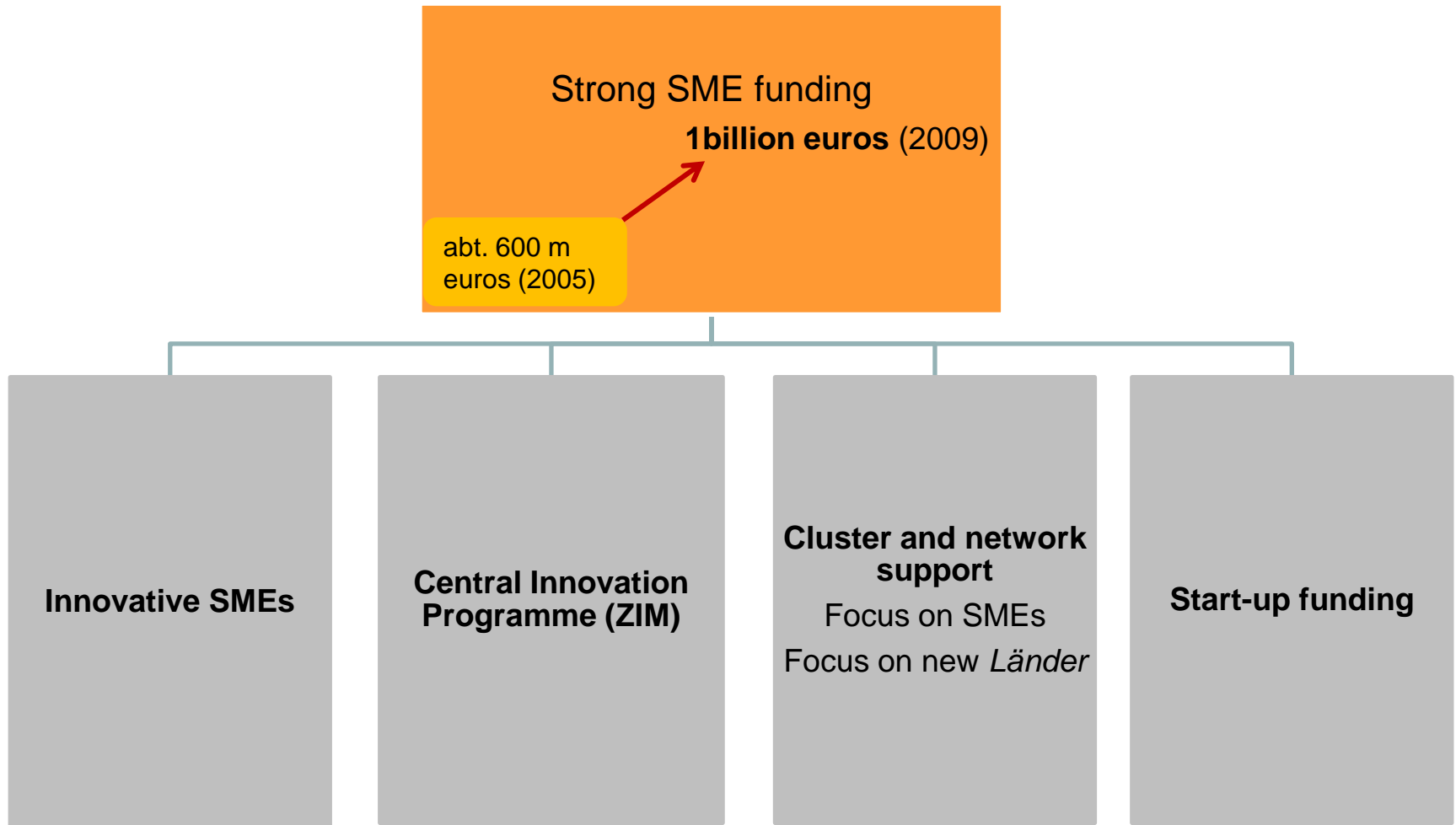


## Knowledge and technology transfer





## SMEs at the centre of innovation policy





## The BMBF funding initiative „Innovative SMEs“ strengthens innovative businesses

- “Innovative SMEs” is **open to all topics** within the technological field in question
- It facilitates **access to technology-specific funding**, which is particularly **attractive for small and young companies**
- Short **processing times**
- **Continuous submission of outlines**, cutoff dates for evaluation:  
15 April and 15 October every year
- **Structured and transparent procedure**



## The BMBF funding initiative „Innovative SMEs“ strengthens innovative businesses

### Results of the interim evaluation (May 2010):

- Innovative SMEs has been able to **mobilize** a significant proportion of the **target group** of research-oriented SMEs
- 34% of those who have submitted outlines are **first-time funding recipient**
- Particularly high number of **young, dynamic companies** with a strong orientation towards **international marketss**