

DFG

## Research and Innovation in Germany.... and the role of DFG within the system

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(German Research Foundation)



## Warning .....

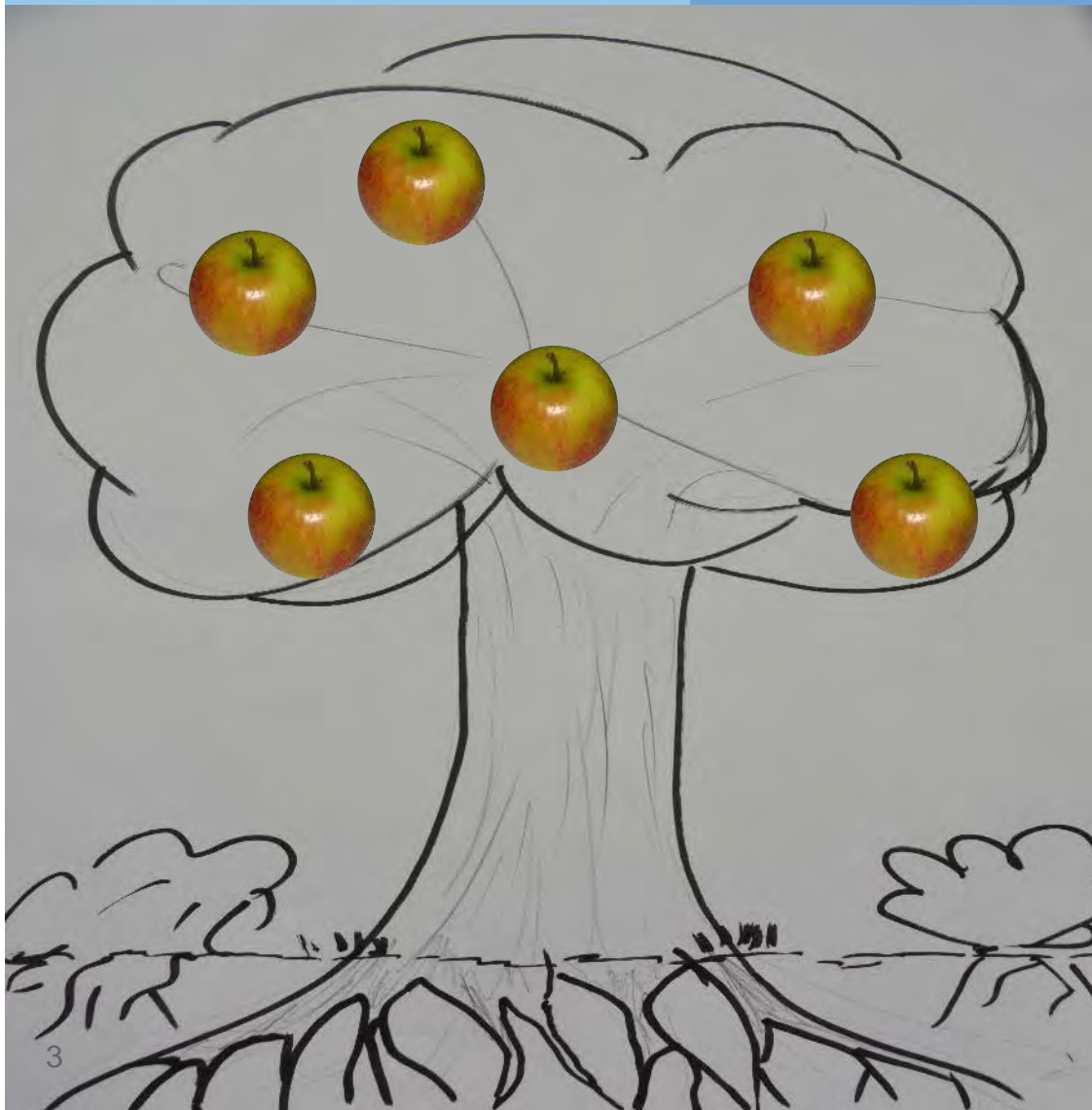
**Statistics – at least recent statistics – are difficult to obtain.**

**Therefore, some of the figures are rather „educated guesses“.**

**But always good enough to make the point I want to make.**



## The German Innovation System – a healthy tree ...



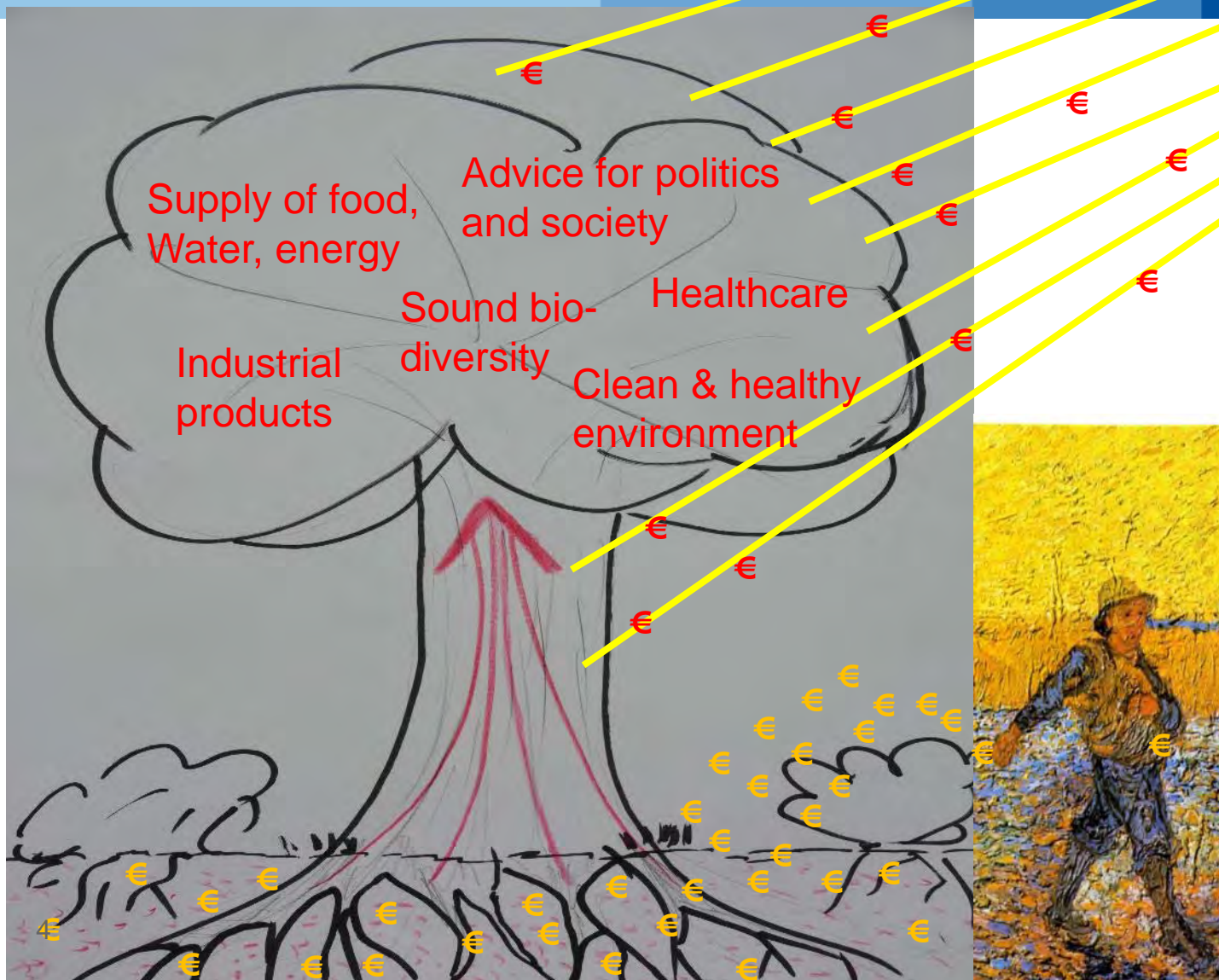
R&D products for  
Society, Economy,  
Health, Environment...

...fed by  
pre-competitive  
applied research,  
problem-driven...

... and growing on  
basic research,  
science-driven

... if provided for adequately!

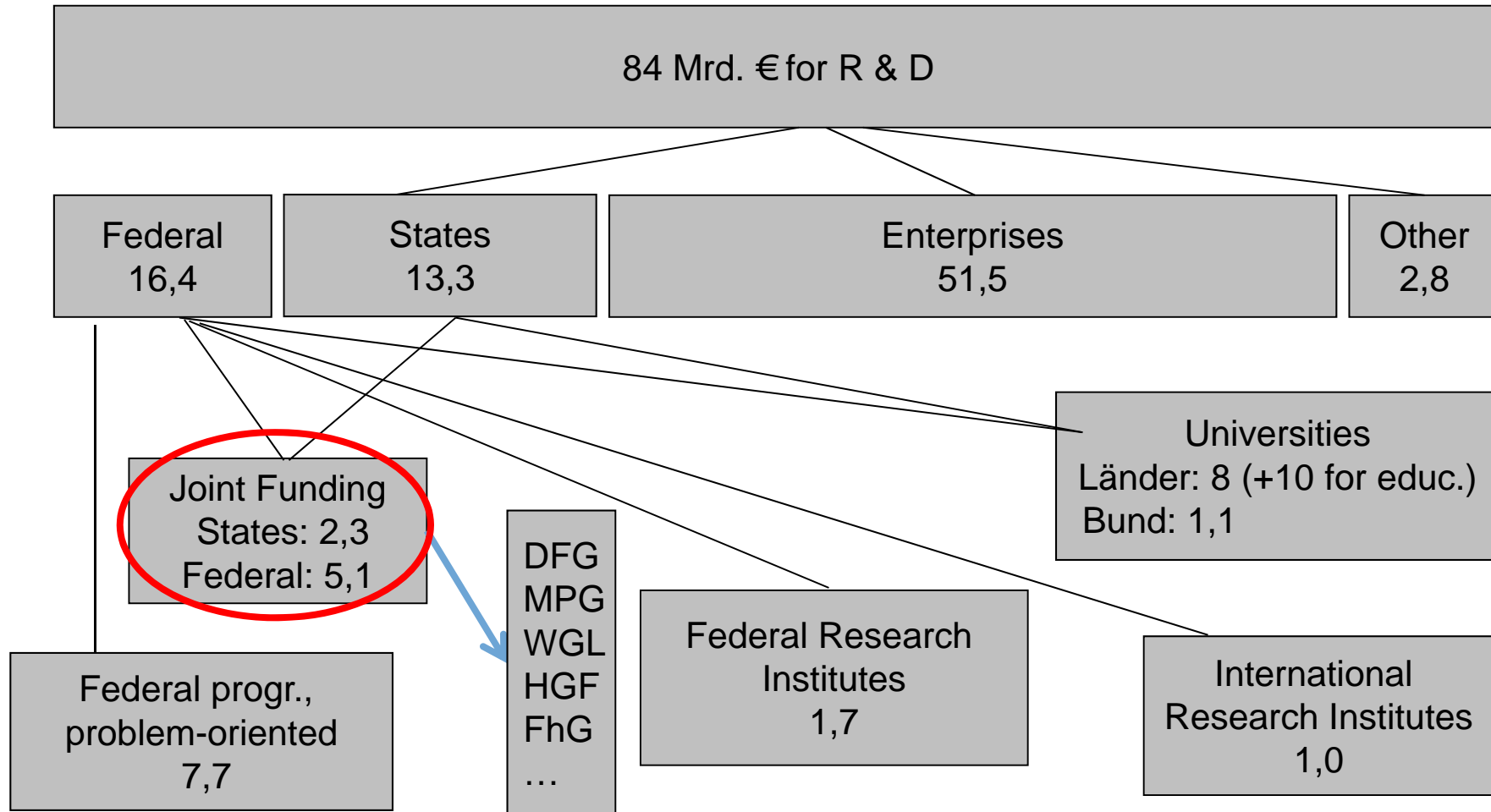
Top down  
funding,  
problem-  
oriented



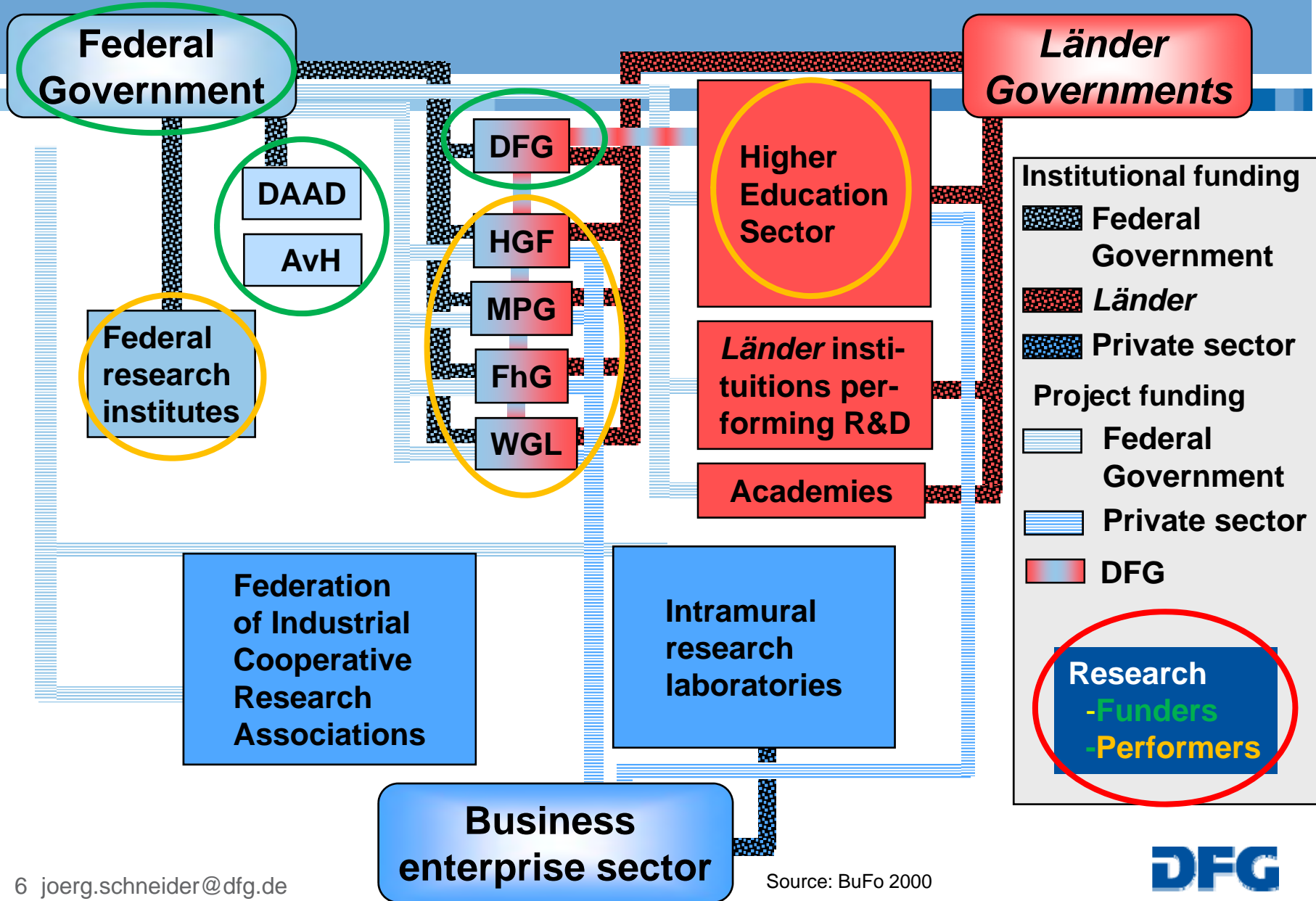
Bottom up funding,  
quality-oriented,  
but no thematic  
programmatics!

# R&D Expenditures in Germany 2011

(estimated according to Federal Report on Research and Innovation 2014)



# Major Players within German Research System (simplified!!!)



## Division of tasks within the public system

	<b>Problem-driven research „applied“</b>	<b>Science-driven research „basic“</b>
<b>Institutional funding</b>	<ul style="list-style-type: none"> <li>• <b>Leibniz Institutes</b></li> <li>• <b>Helmholtz Institutes</b></li> <li>• <b>Federal Research Inst</b></li> <li>• Joint Research C. EU</li> <li>• AiF Member Institutes</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Max-Planck Institutes</b></li> <li>• <b>Fraunhofer Institutes</b></li> <li>• CERN</li> <li>• EMBL</li> </ul>
<b>Project funding</b>	<ul style="list-style-type: none"> <li>• <b>Ministerial Funding Programs</b> (e.g. Water management, Biotech)</li> <li>• EU Funding Prg. (e.g. Car of the Future, Cardiovascular Diseases)</li> </ul>	<ul style="list-style-type: none"> <li>• <b>DFG</b></li> <li>• Fellowship programs (<b>DAAD, AvH, EU-Marie Curie</b>)</li> <li>• European Research Council (ERC)</li> </ul>

# German Research System – publically funded

- ▶ **Federal Government – top down thematic programs**
- ▶ Federal Government – DAAD and AvH
- ▶ Federal Government – federal research institutes
- ▶ Länder Governments – universities
- ▶ Länder Governments – states' research institutes
- ▶ Both together – Joint funding of
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  - various smaller institutions
- ▶ Further joint efforts to strengthen innovation system



# R&D Project Expenditure of BMBF

	2013	2014
AA Gesundheitsforschung und Gesundheitswirtschaft	355.636	317.366
B0 Bioökonomie	137.920	118.439
C0 Zivile Sicherheitsforschung	52.292	47.000
EA Rationelle Energieumwandlung	31.820	30.359
EB Erneuerbare Energien	7.385	12.340
EC Kerntechnische Sicherheit und Entsorgung	9.318	10.612
ED Beseitigung kerntechnischer Anlagen	201.542	239.415
EF Fusionsforschung	6.292	5.553
FA Klima, Klimaschutz; Globaler Wandel	112.443	95.257
FB Küsten-, Meeres- und Polarforschung, Geowissenschaften	112.167	98.258
FC Umwelt- und Nachhaltigkeitsforschung	87.282	77.435
FD Ökologie, Naturschutz, nachhaltige Nutzung	46.875	39.577
GA Softwaresysteme; Wissenstechnologien	108.368	104.605
GB Kommunikationstechnologien und -dienste	56.888	54.000
GC Elektronik und Elektroniksysteme	52.332	49.999
GD Mikrosystemtechnik	16.569	4.593
JA Forschung zur Verbesserung der Arbeitsbedingungen	15.689	22.020
JB Forschung im Dienstleistungssektor	12.439	9.394
KA Nanotechnologien	32.621	20.653
KB Werkstofftechnologien	38.583	43.347
LD Optische Technologien	107.000	81.200
MD Produktionstechnologien	45.418	49.587
NB Bauforschung		
OB Forschung in der Bildung	323.692	312.298
OC Neue Medien in der Bildung	13.330	10.602
PA Geisteswissenschaftliche Forschung	93.992	97.673
PB Sozialwissenschaftliche Forschung	5.261	4.554
RB Strukturelle Querschnittsaktivitäten	346.068	292.661
RC Demographischer Wandel	50.947	56.457
RE Sonstige innovationsrelevante Rahmenbedingungen und i	123.273	120.305
TB Sonstiges	2.740.582	2.783.994
UD Großgeräte der Grundlagenforschung	204.612	172.382
YB Nicht FuE-relevante Ausgaben der beruflichen Bildung - ke	162.973	159.239
YC Übrige, nicht FuE-relevante Bildungsausgaben - keine Wis	357.048	391.687
<b>Summe Insgesamt</b>	<b>6.068.635</b>	<b>5.932.860</b>

Health

Global Change

Knowledge technologies/software

Research on Education

Demographic change

in thousand €

**5.932.860 = 5.9 billion €**



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# Mobility Funding by Federal Government

**DAAD**

Deutscher Akademischer Austausch Dienst  
German Academic Exchange Service

mobility of students/education sector



mobility of researchers

Federal Foreign Office	177 Mio €	37 Mio €
Fed. Min. Education & Research	103 Mio €	64 Mio €
Fed. Min. Economic Coop. & Development	41 Mio €	5 Mio €
European Commission (Erasmus ....)	65 Mio €	1 Mio €
Other Sources	55 Mio €	4 Mio €
<b>Total budget</b>	<b><u>441 Mio € (2014)</u></b>	<b><u>111 Mio € (2014)</u></b>

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# Research Organizations: Federal Research Institutes

www | ressort  
forschung | de

**Total budget (2011): 1.746 Mio €  
incl. 869 Mio € for F&E**

**43 institutes, working for and  
reporting directly to one of 12  
(out of 14) federal ministries**

**Roughly 50% research, 50% ad-  
vice and support for federal  
ministries/government**



# Federal Research Institutes

## examples

### **Foreign Affairs (AA)**

- ▶ German Archaeological Institute (DAI)

### **Economy (BMW)**

- ▶ Federal Institute for Materials Research and Testing (BAM)
- ▶ National Institute for Metrology (PTB)

### **Health (BMG)**

- ▶ Paul-Ehrlich-Institut – Sera and Vaccines (PEI)

### **Traffic and Infrastructure (BMVI)**

- ▶ National Meteorological Service (DWD)

### **Environment (BMUB)**

- ▶ Federal Office for the Environment (UBA)

### **Defence (BMVg)**

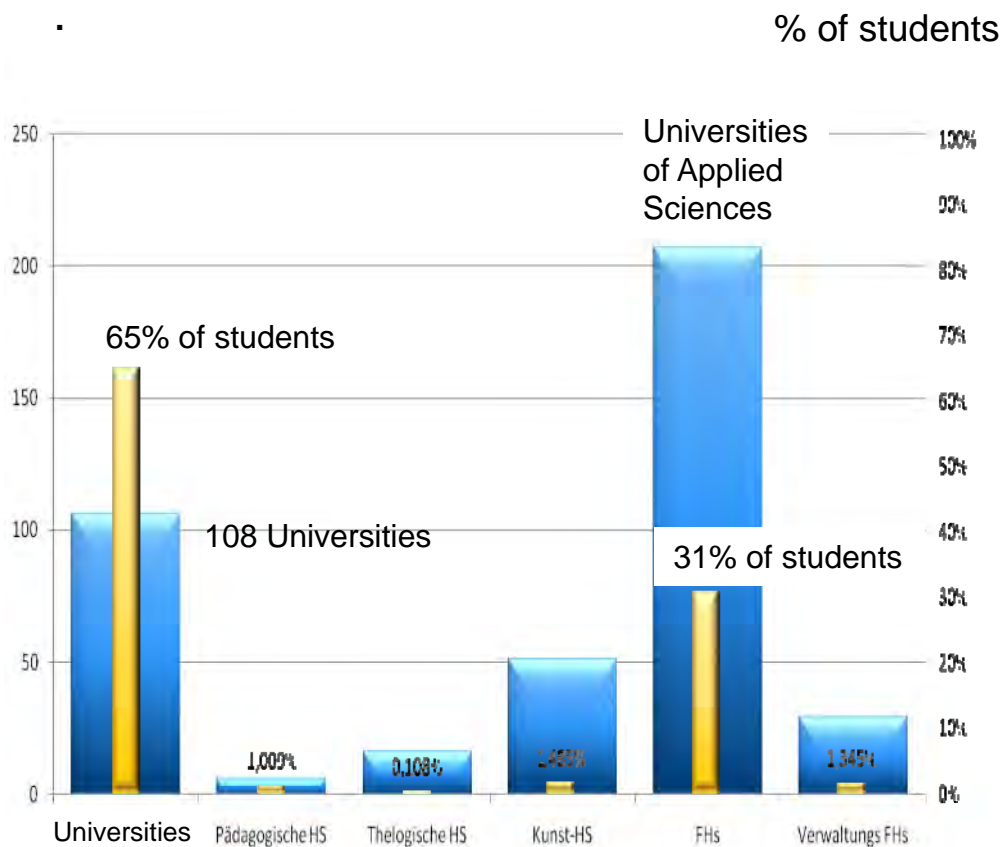
- ▶ Institute of Microbiology of the Federal Armed Forces (

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# Institutions of Higher Education IHE



In Germany (2012):  
 427 IHE with 2,5 Mio. students  
 26 % IHE are universities  
 (108) with 65% of all students  
 74% IHE are Universities of Applied Sciences –  
 Fachhochschulen and similar  
 46% pupils from one year go to IHE  
 → PhD can only be granted by Universities

Source: Federal Statistics Bureau



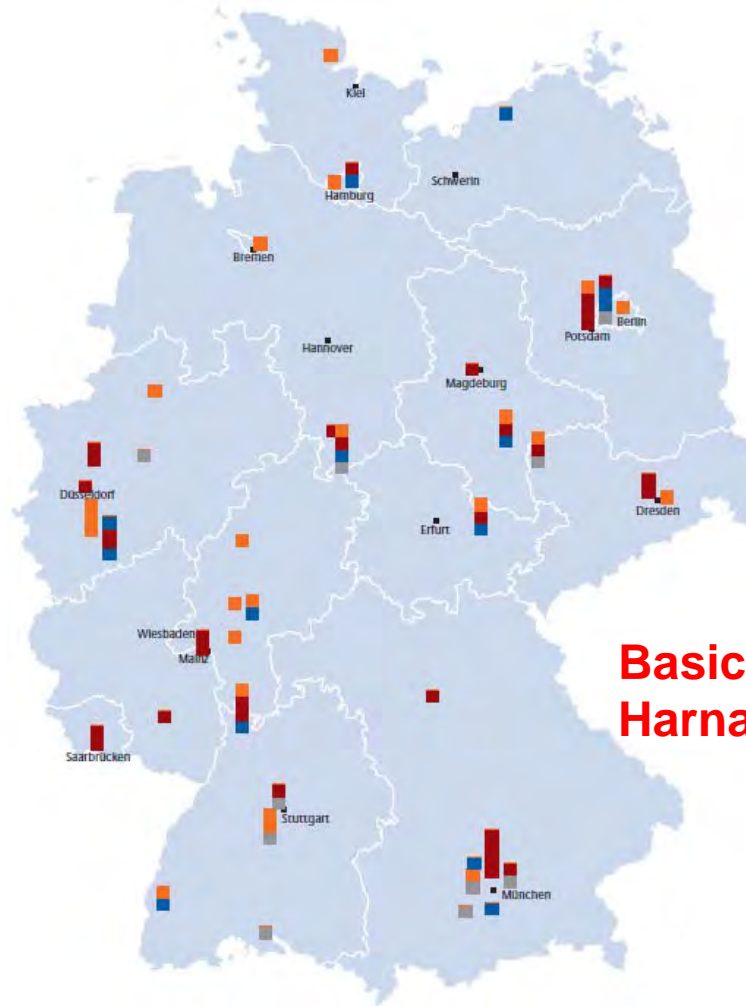
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# Research Organizations: Max-Planck Society

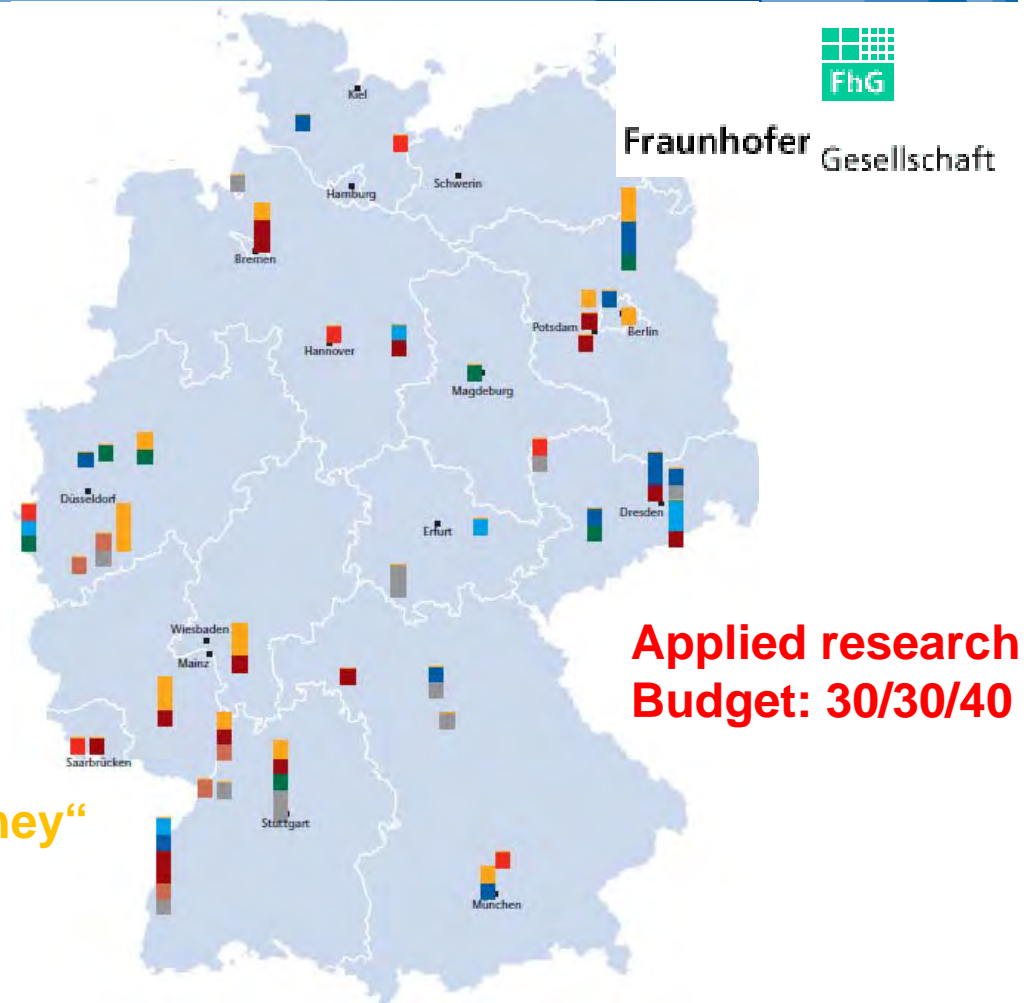
- ▶ 80 Institutes
- ▶ Budget: 1.8 B €
- ▶ 17,000 employees incl.  
5,200 scientists
- ▶ plus 13,400 „students“
- ▶ Central Administration with  
500 admin. staff
- ▶ **Mission: high quality basic  
research - „Nobel Awards“**



**Basic research  
Harnack principle**

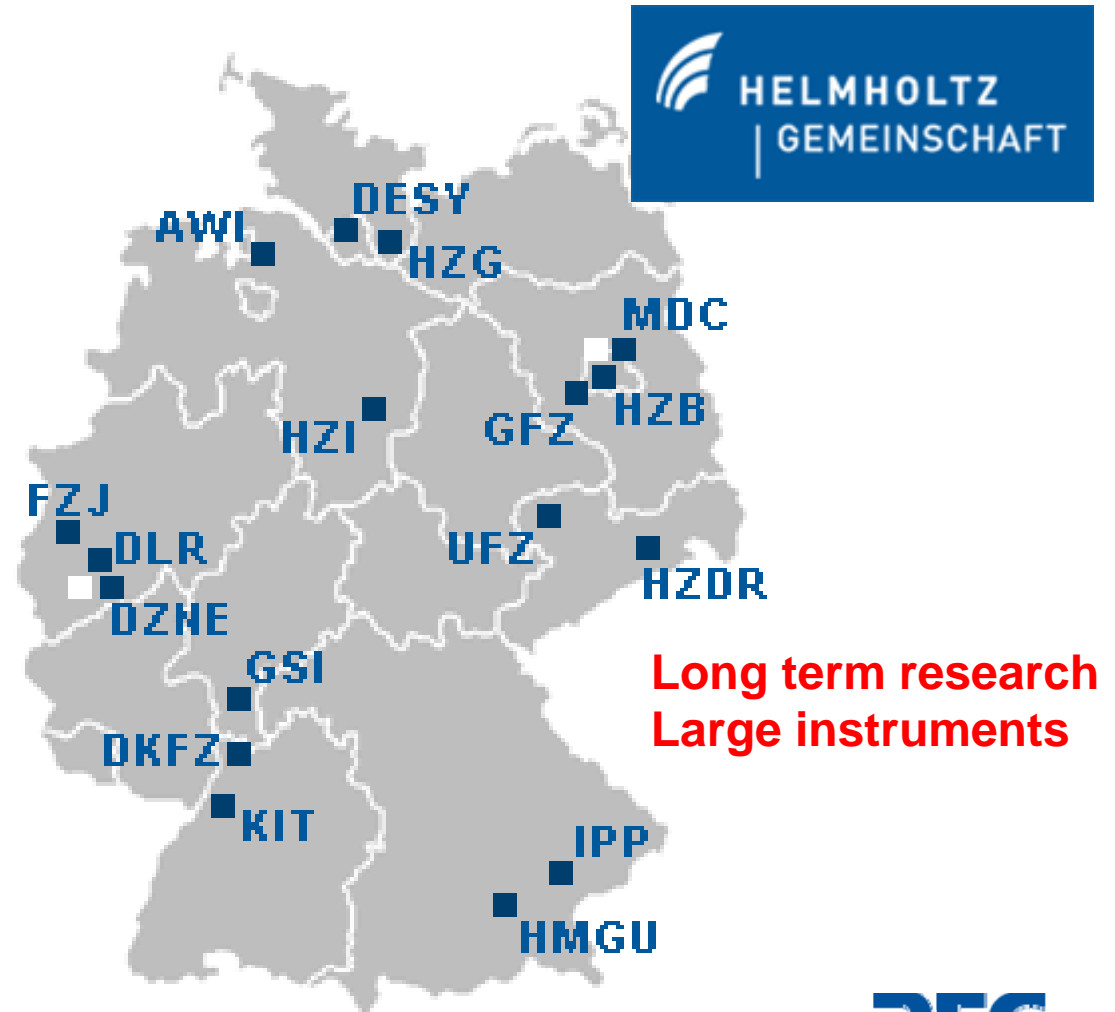
# Research Organizations: Fraunhofer Society

- ▶ 66 Institutes
- ▶ Budget: 1.9 B €
- ▶ 22,000 employees
- ▶ Incl. 6,403 „students“
- ▶ Central Administration with 300 admin. staff
- ▶ **Mission: high quality applied research - „earn money“**



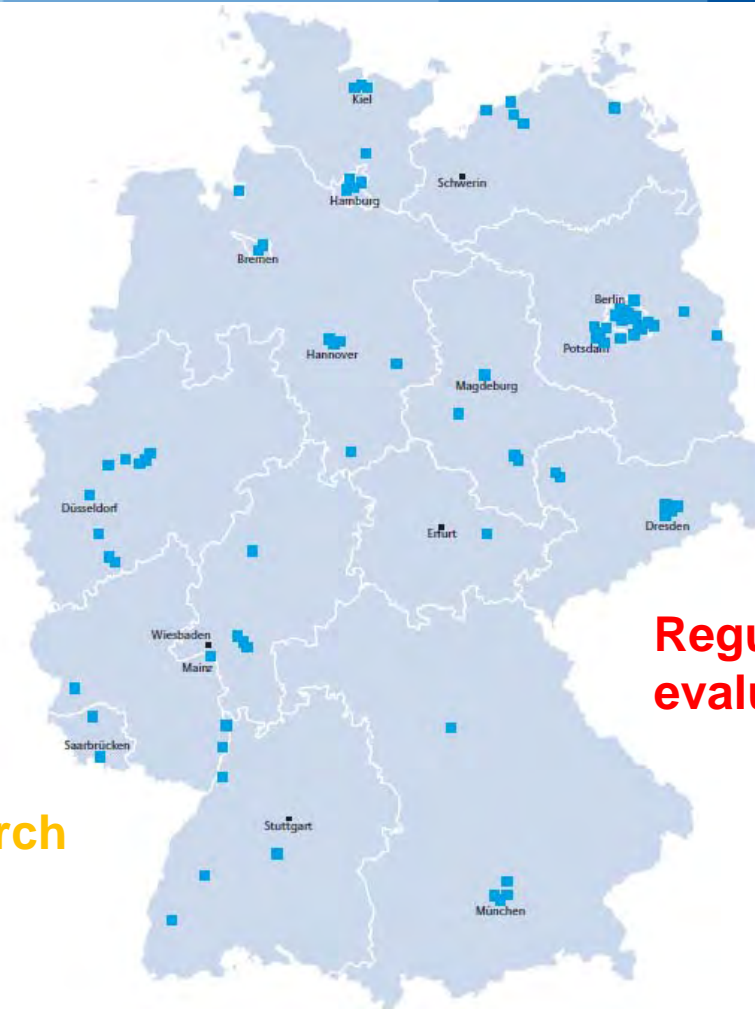
# Research Organizations: Helmholtz Association

- ▶ 18 Institutes
- ▶ Budget: 3.8 B €
- ▶ 33,000 employees
- ▶ Incl. 16,000 scientists
- ▶ Central Office with 70 admin. staff
- ▶ **Mission: high quality problem-oriented, long-term research**



# Research Organizations: Leibniz Association

- ▶ 86 Institutes
- ▶ Budget: 1.5 B €
- ▶ 17,000 employees
- ▶ Incl. 8,000 scientists
- ▶ Central Office with 60 admin. staff
- ▶ **Mission: high quality problem-oriented research**



**Regular independent evaluation**

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# Pact for Research and Innovation

## Pakt für Forschung und Innovation

The Pact for Research and Innovation is designed to give financial planning security to institutions that are jointly funded by the Federal Government and the Länder (states):

- ▶ Max Planck Society MPG
- ▶ Fraunhofer Society FhG
- ▶ Helmholtz Association HGF
- ▶ Leibniz Association WGL
- ▶ German Research Foundation DFG

2005 – 2010: Budget increase of 5% every year

2011 – 2015: Budget increase of 5% every year

2016 – 2020: Budget increase of 3% every year



## Excellence Initiative

Top-class research for even better competitiveness

2005 – 2011	1.9 billion €
2012 – 2017	2.7 billion €
2017 – ????	similar investments

75% Federal State

25 % host state of funded institution

2005 – 2017; currently funded:

- ▶ 45 Graduate Schools
- ▶ 43 Clusters of Excellence
- ▶ 11 Institutional Strategies



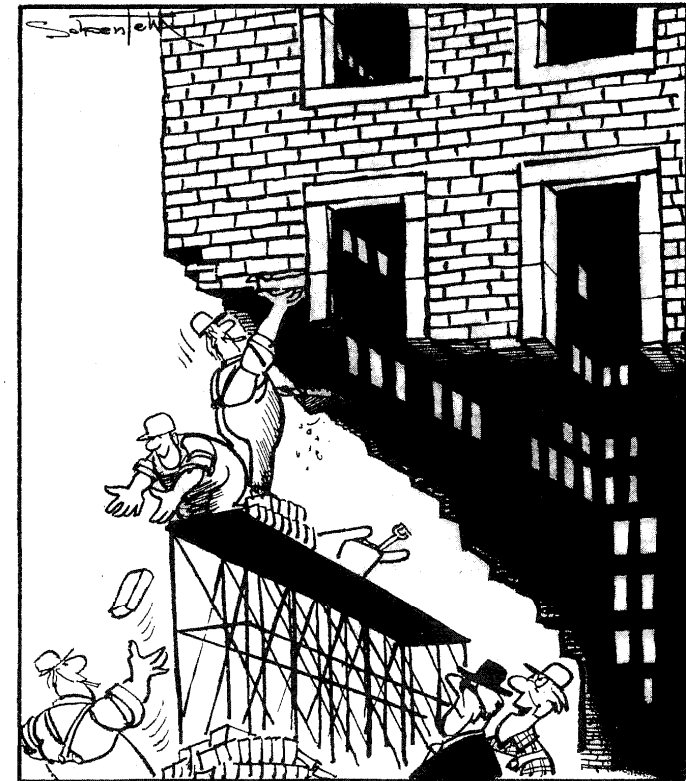
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## DFG is driven by scientific demand

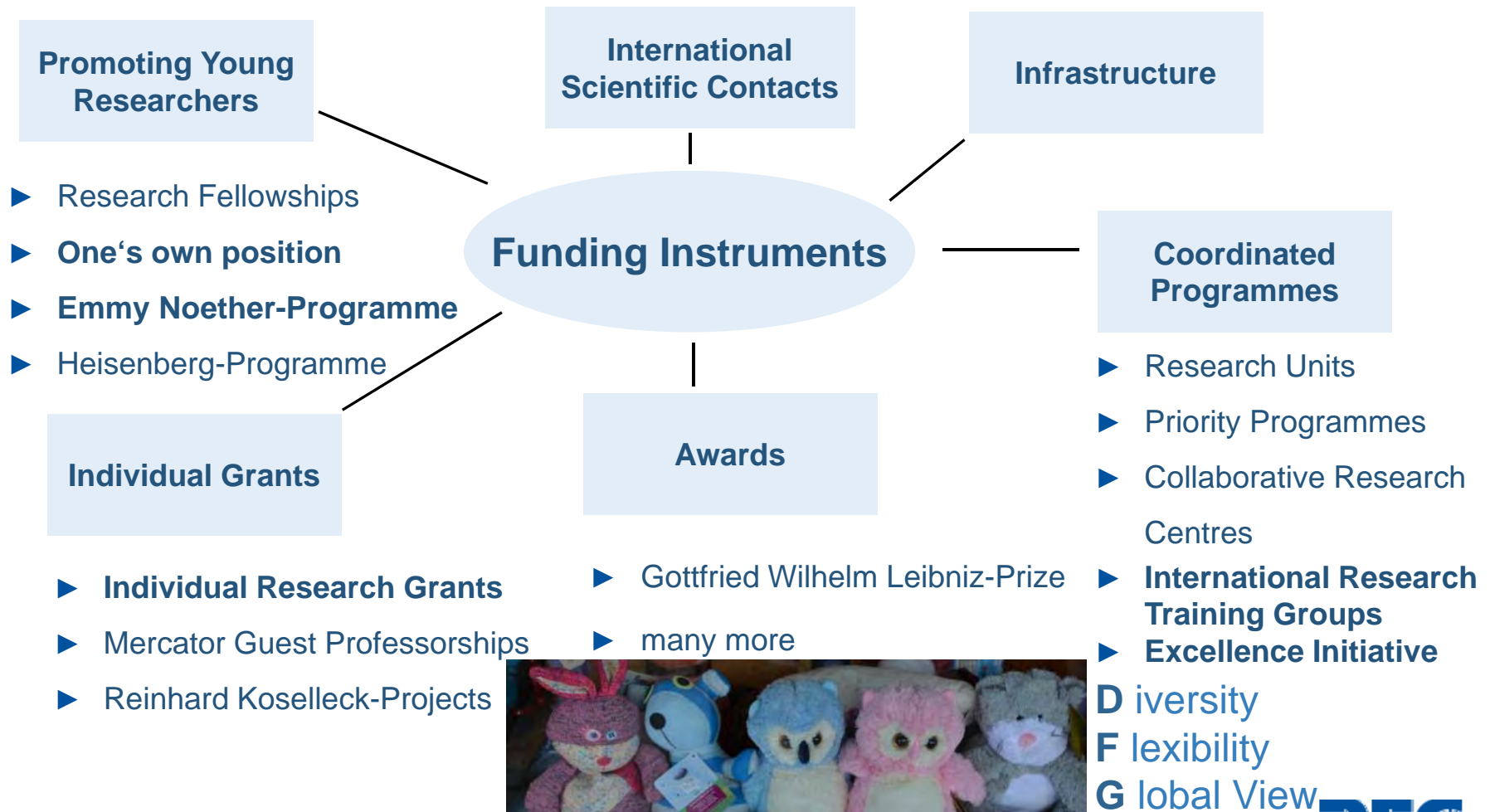
- ▶ DFG acts and funds **bottom up**
- ▶ **no thematic priorities (rare exceptions)**
- ▶ **No calls, no deadlines (rare exceptions)**
- ▶ no regional priorities
- ▶ **no political priorities**
- ▶ no political influence
- ▶ everything decided by scientists
- ▶ everything in competition
- ▶ everything in peer review
- ▶ Funding only if institution agrees  
on ethical standards



„Die Regierungen meinen, daß Europa nur von oben  
aus gebaut werden kann.“

Zeichnung: Karl-Heinz Schoenfeld  
1996

# DFG's Funding Instruments – all open to international co-operation and to foreign researchers working in Germany

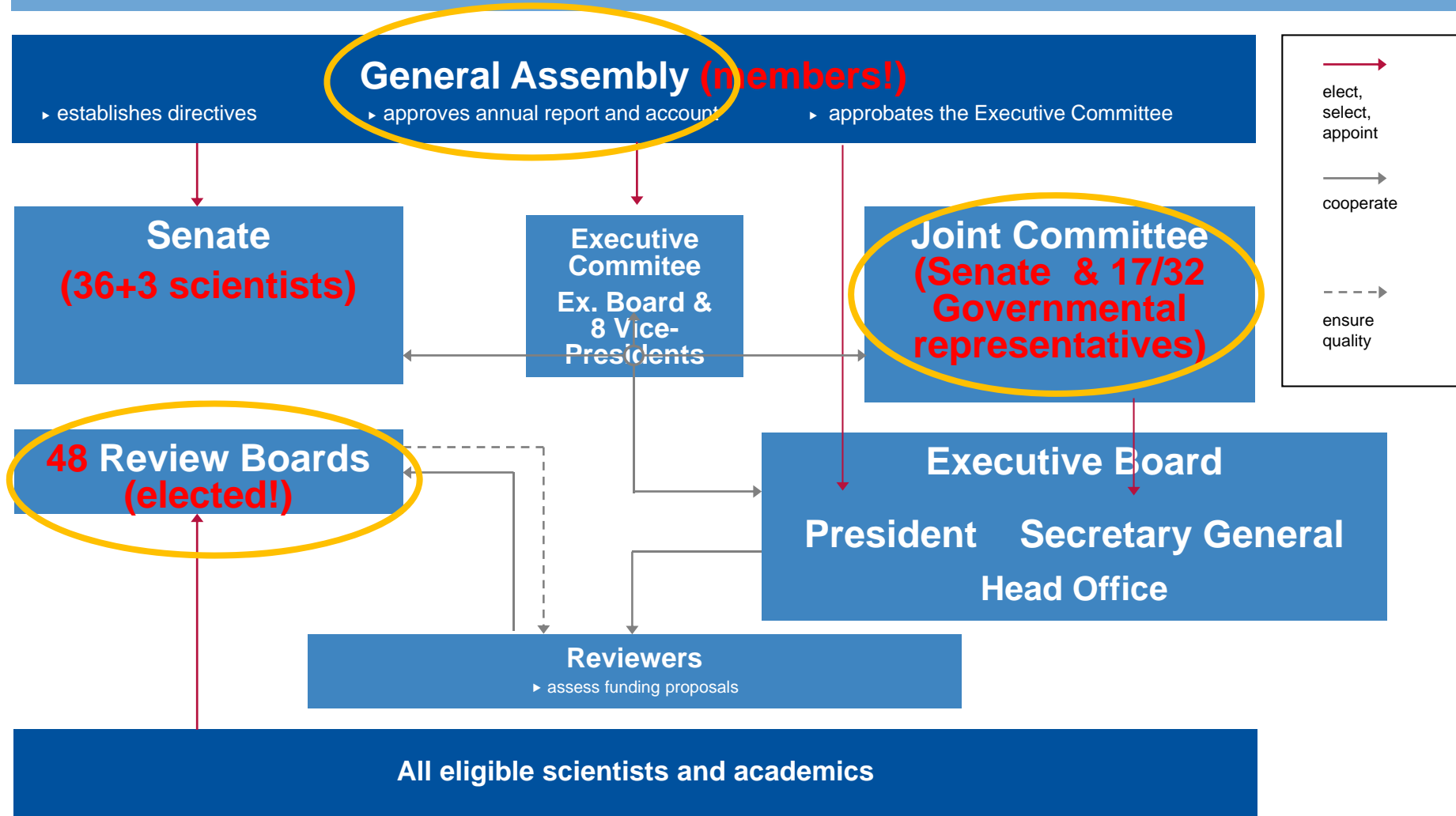


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# How is the DFG structured?

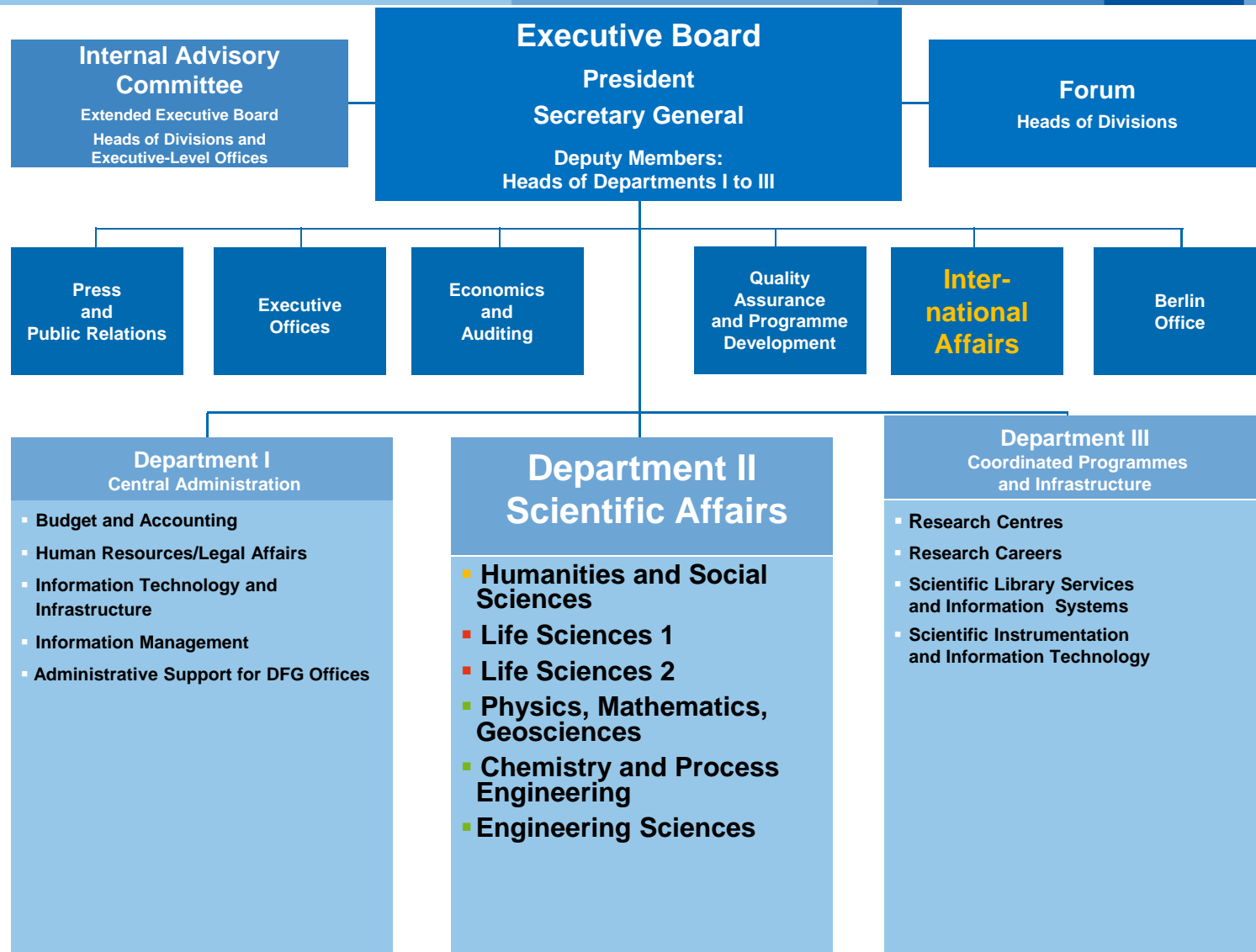


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# The DFG's Head Office



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For gathering and distributing information!

- Sino-Germ. Centre
- Individual Scientists
- DFG Office
- IZ Branch Office
- German Liaison Office



**Most important message**  
**„to take home“ today:**

DFG

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Tel.: +49 228 885 2346



### Further information

- ▶ On DFG
- ▶ On German research institutions
- ▶ On projects funded by DFG
- ▶ On German research landscape

[www.dfg.de](http://www.dfg.de)

[www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas)

[www.dfg.de/gepris](http://www.dfg.de/gepris)

<http://research-explorer.de>

**DFG**