

HIT, October 21, 2019, Berne

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# Science Politics in Switzerland and Beyond: Politics for Science – Science for Politics

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# Looking at science politics from two sides

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- **Politics for science**

- Why politics for science?
- Science politics in Switzerland
- Science politics beyond Switzerland: EU and globally



- **Science for politics**

- Why science for politics?
- Global challenges addressed by science
- Fostering evidence based politics

# My back ground in science politics

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- 1976: President of the student association VSETH
- 1979: Member of the Cantonal parliament in Zurich
- 1994: Chairing the Committee on science, education and culture of the National parliament
- 1995: Member of the Board of SNSF
- 1997: Member of the Board of the University of Zurich
- 2007: Member of the Board of the ETH-Domain
- 2007: Member of the EU strategic committee RISE
- 2015: Member of the Board of the TU Dresden
- 2017: Chairing the Strategic Board of the University of Geneva
- Since 1998: Running a private consultancy – consulting mainly public administrations as well as academic institutions.

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# Why politics for science?

# Science with a threefold mission

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- Science = Higher education, research and innovation
  - Science has a threefold mission!
    - To search for knowledge and to transmit knowledge – thus reflecting the intrinsic value of enlightenment.
    - To contribute to solving societal, economic and environmental challenges.
    - To reflect on societal challenges with a critical distance.
- It's by transcending the inherent conflicts of these three missions that science adds its particular value to society.

# Starting points for science politics

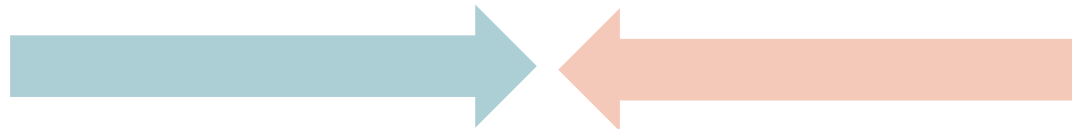
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- Science in Switzerland is financed to 83% by public funds. This offers a great stability to the science system.
- However, as a consequence of the threefold mission, science strategies are triggered by various interests.
  - Interests of the scientific community itself.
  - Interests of a regional, national or international economy.
  - Interests regarding societal, economic or environmental challenges.
  - Interests of politics with regards to a broader agenda of foreign policies.
- Various interests and different logics have to be balanced. That's what science politics is about!

# Different logics of science and politics

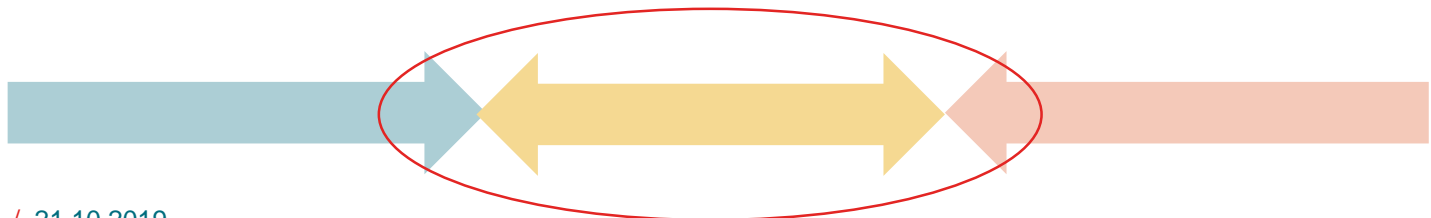
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	Science	Politics
Bodies	<ul style="list-style-type: none"> <li>– Scientific community</li> <li>– Individual scientists</li> </ul>	<ul style="list-style-type: none"> <li>– Government</li> <li>– Parliament</li> </ul>
Interests	<ul style="list-style-type: none"> <li>– Scientific progress</li> <li>– Scientific careers</li> <li>– Solving societal, economic or environmental challenges</li> <li>– Economic interests</li> </ul>	<ul style="list-style-type: none"> <li>– Scientific progress</li> <li>– Economic prosperity</li> <li>– Solving societal, economic or environmental challenges</li> <li>– Responsibility for public funds</li> <li>– Return on investment</li> <li>– Responsibility for the overall science landscape of a country</li> <li>– Electoral interests</li> </ul>



# Building bridges between the different logics

	Science	Strategy	Politics
Bodies	<ul style="list-style-type: none"> <li>– Scientific community</li> <li>– Individual scientists</li> </ul>	<ul style="list-style-type: none"> <li>– Strategic boards</li> <li>– Funding agencies</li> <li>– Administrations</li> </ul>	<ul style="list-style-type: none"> <li>– Government</li> <li>– Parliament</li> </ul>
Interests	<ul style="list-style-type: none"> <li>– Scientific progress</li> <li>– Scientific careers</li> <li>– Solving societal, economic or environmental challenges</li> <li>– Economic interests</li> </ul>	<ul style="list-style-type: none"> <li>– Scientific progress</li> <li>– Return on investment</li> <li>– Strategic guidance</li> <li>– Delegated responsibilities</li> <li>– Accountability with regards to politics</li> <li>– Advocacy for science</li> </ul>	<ul style="list-style-type: none"> <li>– Scientific progress</li> <li>– Economic prosperity</li> <li>– Solving societal, economic or environmental challenges</li> <li>– Responsibility for public funds</li> <li>– Return on investment</li> <li>– Responsibility for the overall science landscape of a country</li> <li>– Electoral interests</li> </ul>





# Lessons learnt I

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- Bridging the gap between a scientific logic and a political logic is essential!
  - Different systemic requirements and different expectations
  - Different kind of expertise: specialists <-> generalists
  - Different time lines: long term <-> short-term
- Bridging this gap is the main task of strategic bodies, funding agencies and the administration. Thereby, strong evidence is needed to support decisions.
  - Harmonized criteria regarding objectives and expectations
  - Accountability regarding the use of public funds
  - Independent evaluations

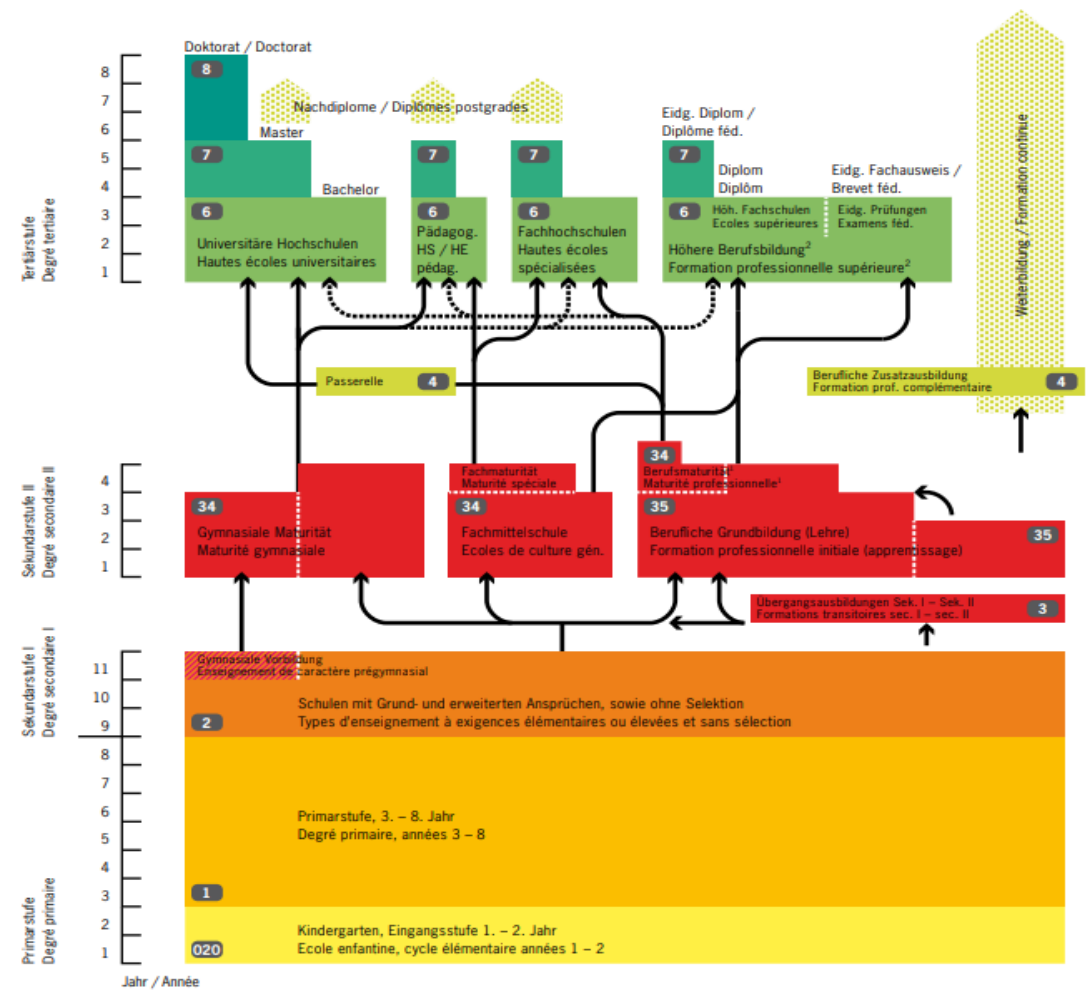


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# Science politics in Switzerland

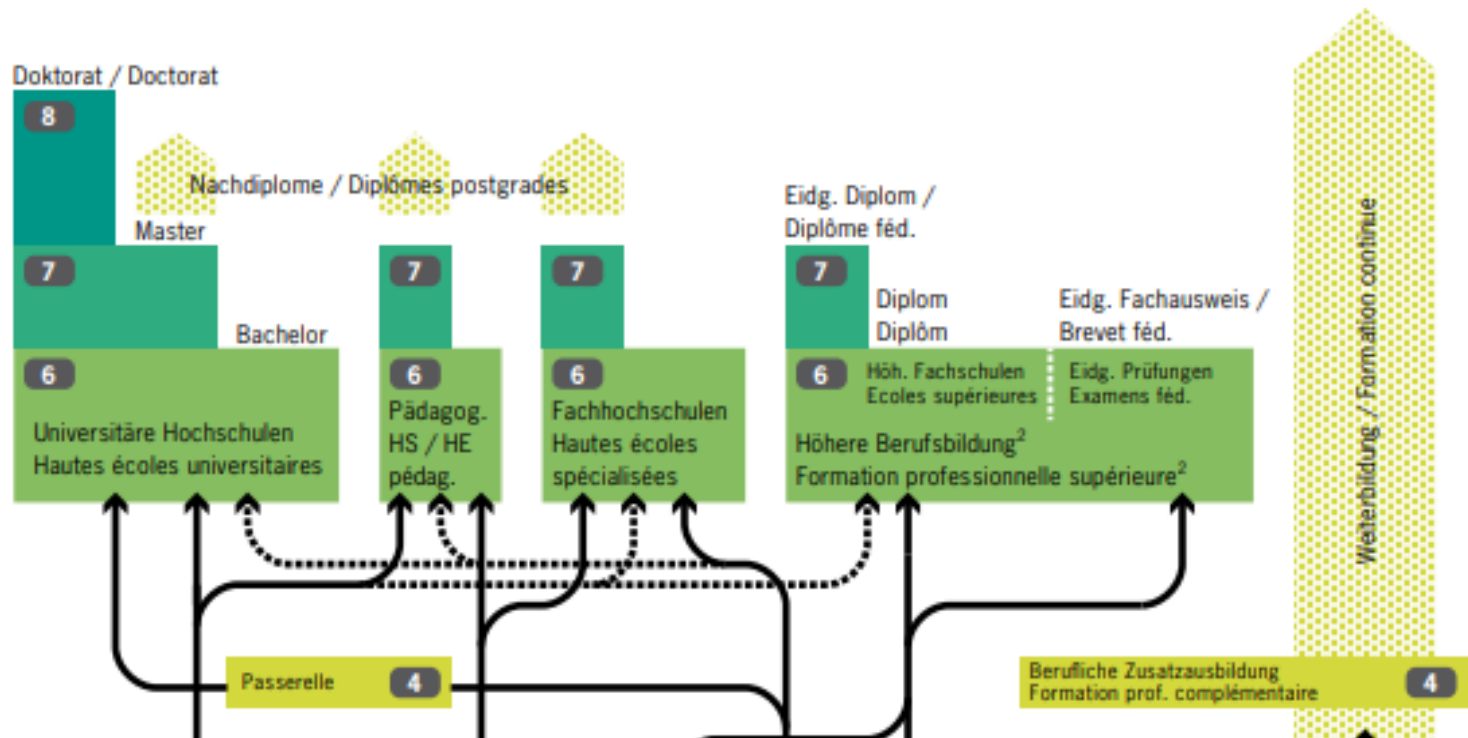
# Education in Switzerland: A federalist system

- National and cantonal
- National, cantonal and private
- Cantonal



# Science in Switzerland: A complex system

- Science in Switzerland combines a federalist system (cantonal universities and universities of applied science) and a national system (ETH-Domain, SNSF, Innosuisse).



# Bringing interests together on the national level

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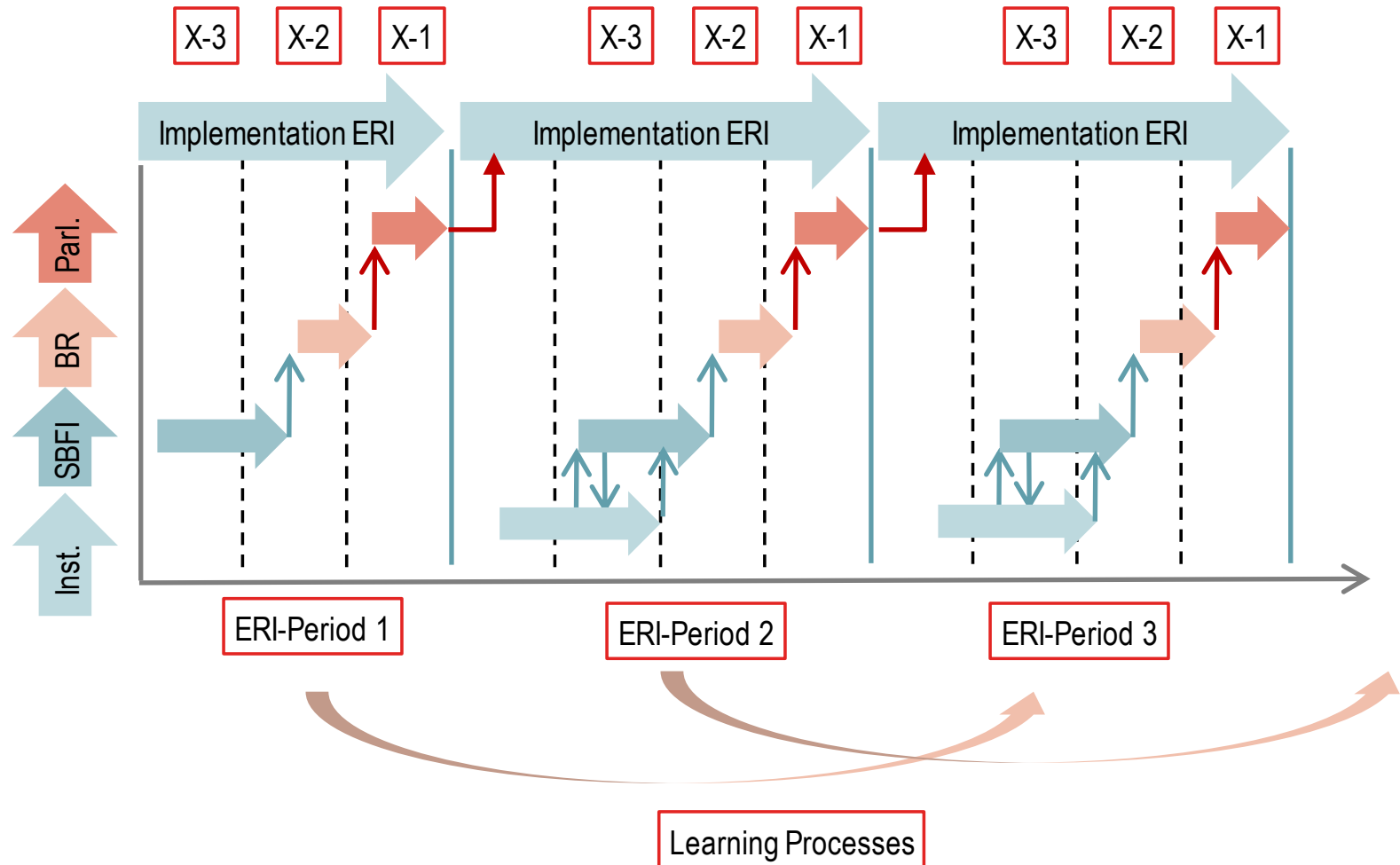
- **Strategy and funding:** Since 1991, the ERI-Dispatch presents every 4 years an overview of science in Switzerland and aligns federal contributions to institutional strategies, thus, combining bottom-up and top-down approaches.
- **Legal basis:** Since 2008 the Federal Act on Funding and Coordination (HFKG) unites all players of the federalist science system of Switzerland.
- **Organisation:** In 2012 the Federal Office for Professional Education and Technology and the State Secretariat for Education and Research were merged into today's State Secretariat for Education, Research and Innovation SBFI – finally in one single Department.

# Lessons learnt II

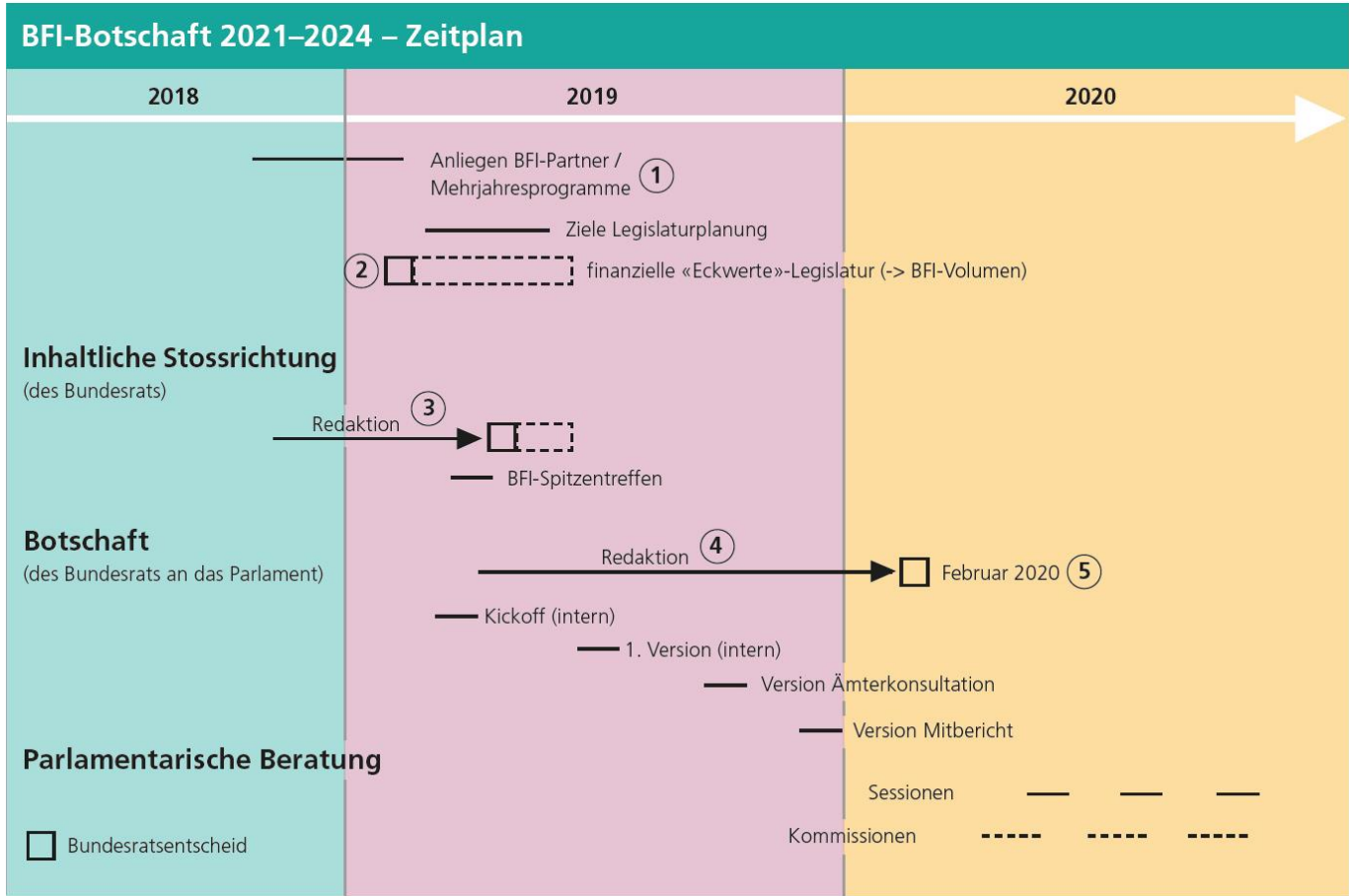
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- Science politics in Switzerland has to cope with a complex system and has to balance manifold interests:
  - a federalist system with cantonal responsibilities but strongly supported by national authorities
  - a national system financed solely by national authorities.
- As a consequence, science politics in Switzerland has to look for hybrid solutions, addressing needs and opportunities of both systems.
  - Strategies are proposed bottom up by the institutions.
  - Financial means are decided top down on the cantonal as well as on the national level.
- Processes are complex, they involve many stakeholders and they take long!

# ERI-Dispatch: Political processes take time!



# Preparing ERI-Dispatch 2021-2024



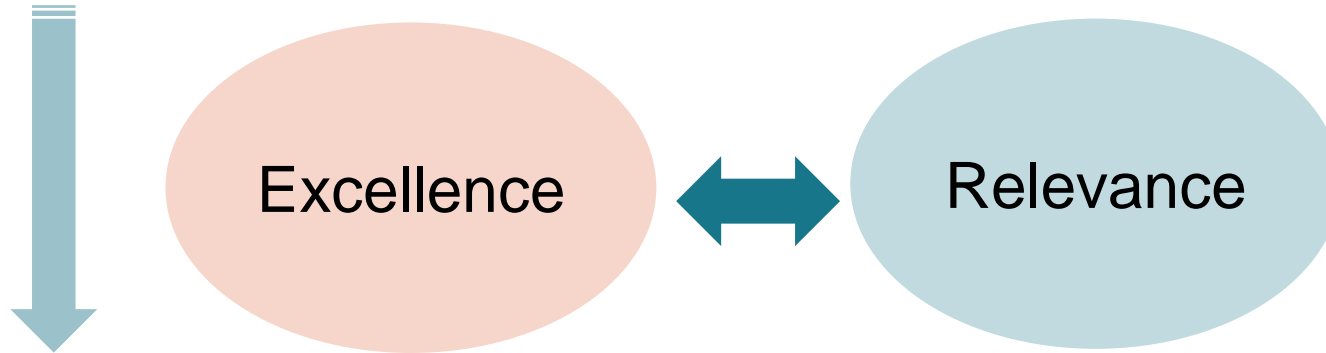


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# Trends in science politics in Switzerland and beyond

# Looking back: Science politics 1990-2000

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- Competition between different research strategies and funding priorities:
  - «Excellent» (fundamental) research
  - «Relevant» (applied) research
- Should Switzerland participate in EU research programs?
  - Nobel price winners of Switzerland were against.
  - The pharma-industry was against – the metal industry was in favor.

# Looking back: Science politics 2000

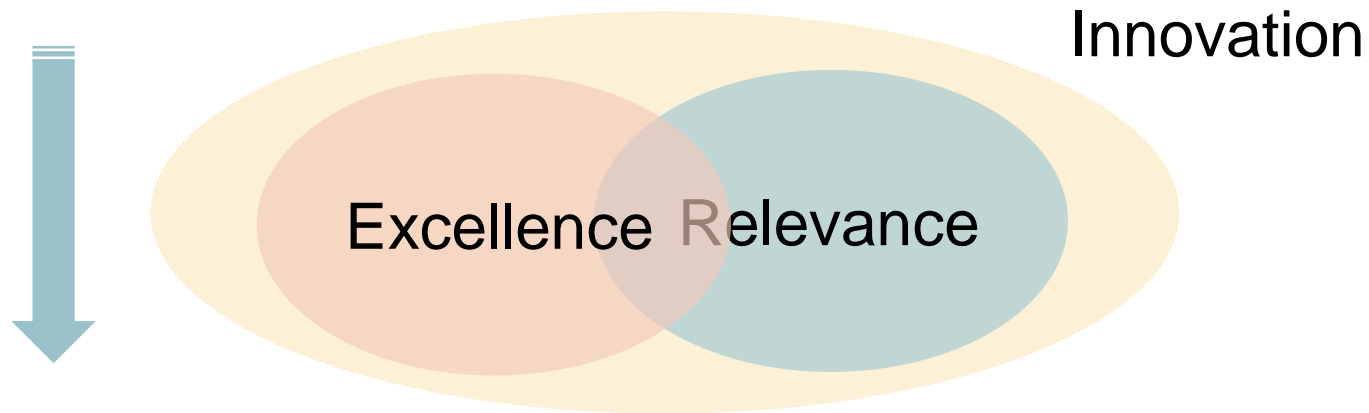
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- Ambitions regarding excellence and relevance merge:
  - A relevant part of fundamental research is geared towards grand challenges.
  - Also applied research has to meet criteria of excellence.
- Switzerland has become a very successful member of EU research programmes.

# Science politics since 2010

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- Comprehensive innovation strategies are developed in Switzerland and beyond.
  - Horizon 2020, the Innovation Union as well as Horizon Europe are geared towards grand challenges and SDGs.
  - Comprehensive energy research strategies in EU-MS and CH.
  - CH: BFI and BBT are merged.
  - EU: DG Research & DG Innovation are merged.

# Lessons learnt III

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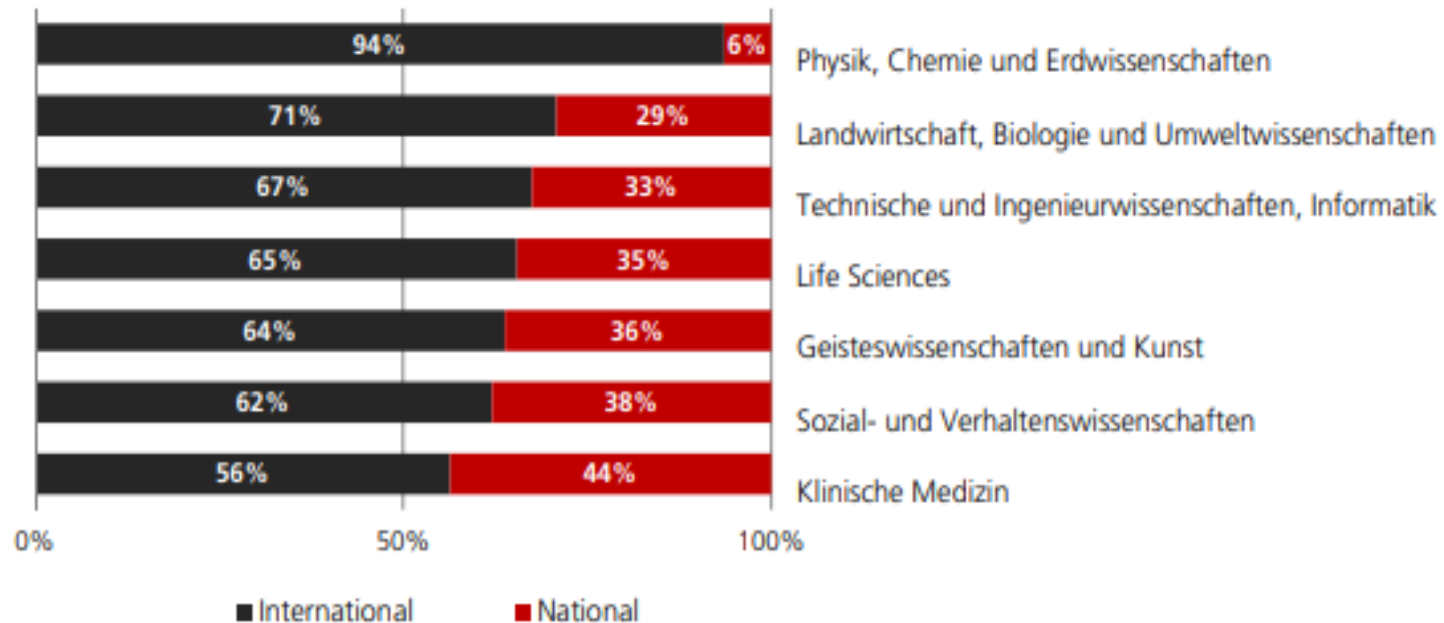
- Facing global challenges as well as international competition, science strategies and policies merge.
  - Blue-sky basic research, application-oriented research and development are perceived as equivalent elements of comprehensive innovation strategies.
- Science is increasingly promoted in a coordinated manner, often driven by political initiatives beyond science.
  - Science strategies are aligned with general political strategies (ERI-Dispatch and Legislaturplanung).
  - This is also reflected in comprehensive funding approaches and processes as well as in organisational set ups.
  - There is a trade off between stability of multiannual funding on the one hand and flexibility to react to new needs on the other.

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# Science politics > Switzerland

# Research cooperations are international

Abbildung 28: Anteil der nationalen und internationalen Partnerschaften der Schweiz nach Forschungsbereichen, 2009-2013

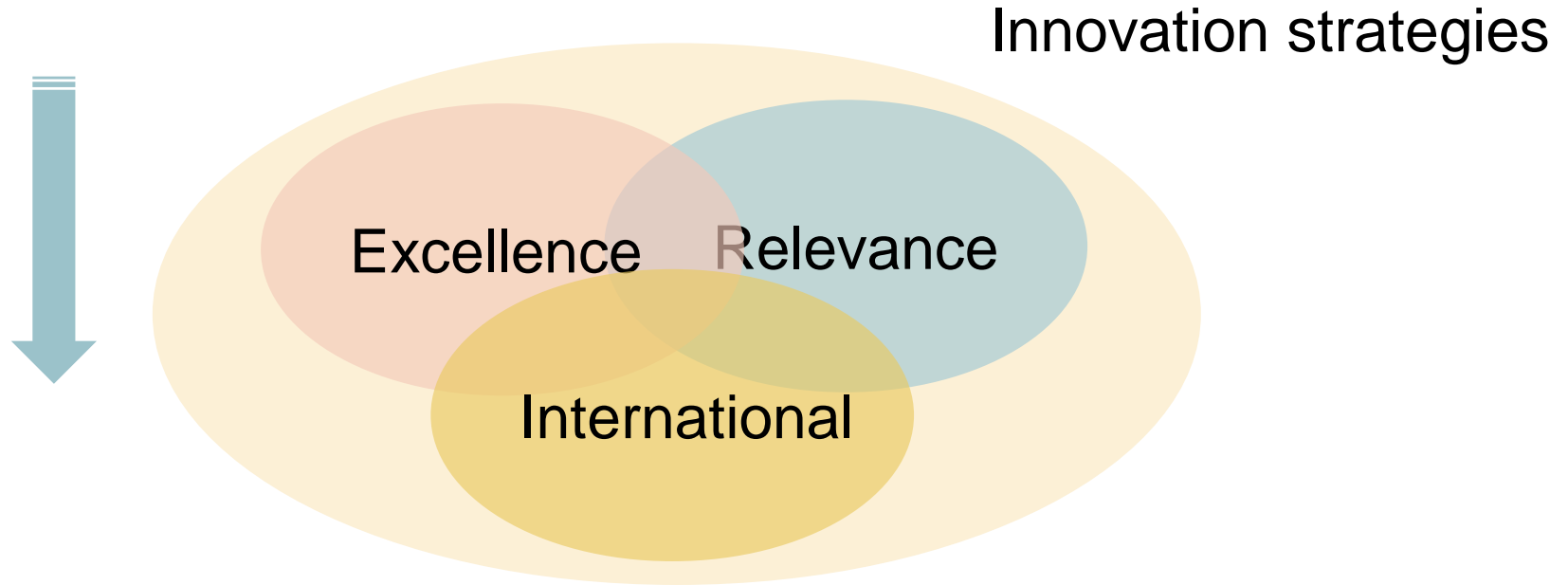


Quelle: Thomson Reuters (SCI/SSCI/A&HCI), Bearbeitung SBFI

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# Science politics today

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- Research and innovation strategies and policies have to look beyond Switzerland – and also beyond Europe!
- Excellence and innovation are global benchmarks!



# Switzerland's International Science Strategy 2018

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- Optimal framework conditions for Swiss science actors to freely engage in international activities.
  - Infrastructures, programmes and services abroad shall be open to Swiss actors.
  - Switzerland wants to make use of opportunities for the cross-border promotion of young professionals and scientists.
- Strengthening Switzerland's international attractiveness as a leading country in science.
  - Switzerland shall remain a high-quality focused, globally renowned and competitive place for science.
  - Switzerland shall globally be perceived as an attractive place for high-quality research institutions and innovation-based companies.

# Lessons learnt IV

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- Research becomes increasingly international and so do research politics – also in Switzerland.
  - **Europe:** Switzerland is member of Eureka and a full-fledged member of the EU RP and the COST-Programme since 1995.
  - **Bilateral science treaties** with additional countries (BRICS).
  - **Member** of CERN, CIESM, ESRF29, HFSP, XFEL etc.
  - Participation in scientific policy bodies of the Council of Europe, OECD, UNESCO, etc.
  - **Global representation of Swiss science:** Swissnex has five branches: Boston, San Francisco, Shanghai, Bangalore and Rio de Janeiro. Moreover, there are 28 Science and Technology Councilors, active in 20 countries worldwide.

# Next EU RP: «Horizon Europe»

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- The EC presented its proposal for FP 9 in June 2018; the EP and the EC reached an agreement on Horizon Europe in April 2019. However, the legal bases as well as EU's long-term budget (21/27) still have to be settled.
- Horizon Europe will run from 2021 to 2027: 100 billion € shall be invested research and innovation funding
  - to strengthen the EU's scientific and technological bases
  - to boost Europe's innovation capacity, competitiveness and jobs
  - to deliver on citizens' priorities and sustain our socio-economic model and values
- Additional 4.1 billion € shall be allocated in a separate European Defence Fund and used for defence research.

# Cornerstones of «Horizon Europe»

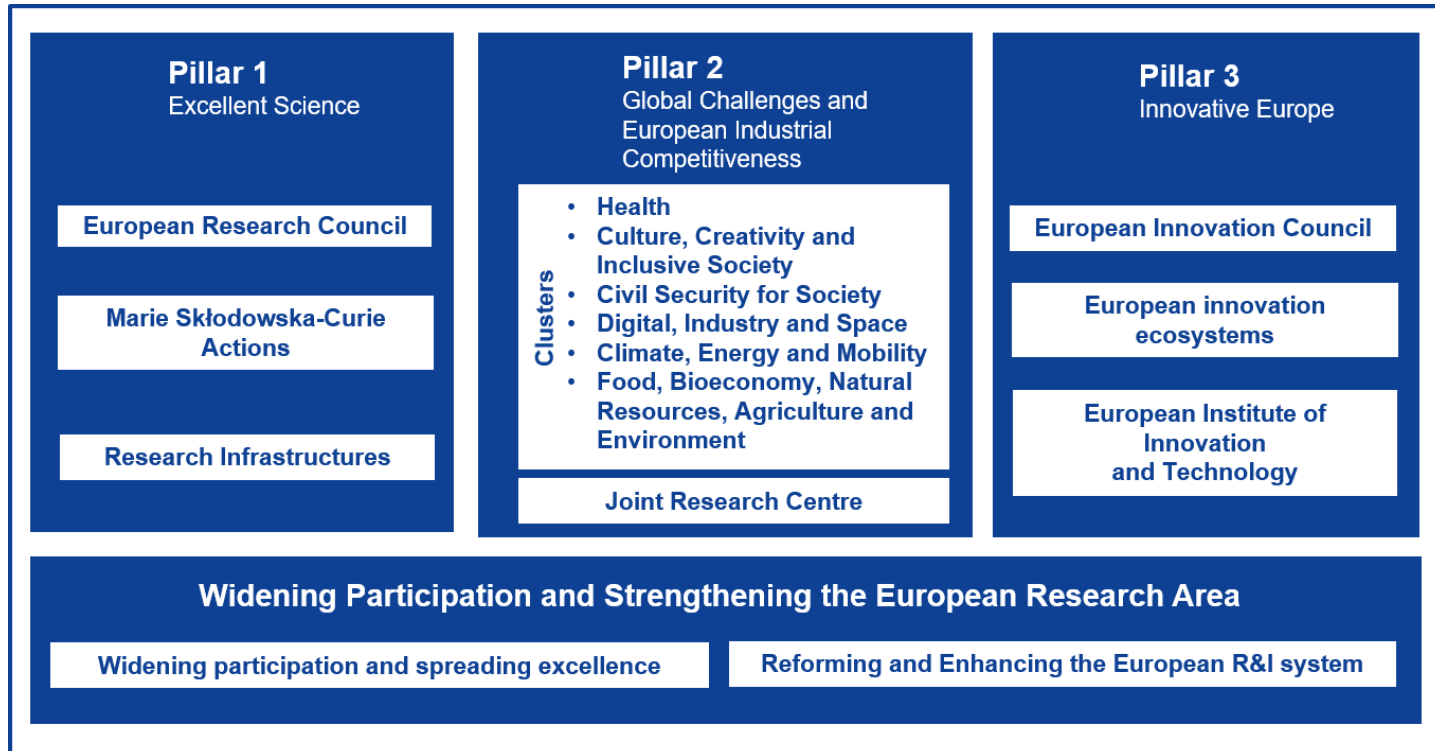
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- The political vision:
  - A Europe that protects.
  - A Europe that empowers.
  - A Europe that defends.
- Tackling climate change (35 % budgetary target)
- Helping to achieve the Sustainable Development Goals set by the UN
- Boosting the Union's competitiveness and growth



# Structure of «Horizon Europe»

- Horizon Europe incorporates research and innovation to increase the effectiveness of funding by pursuing clearly defined targets.



# Lessons learnt V

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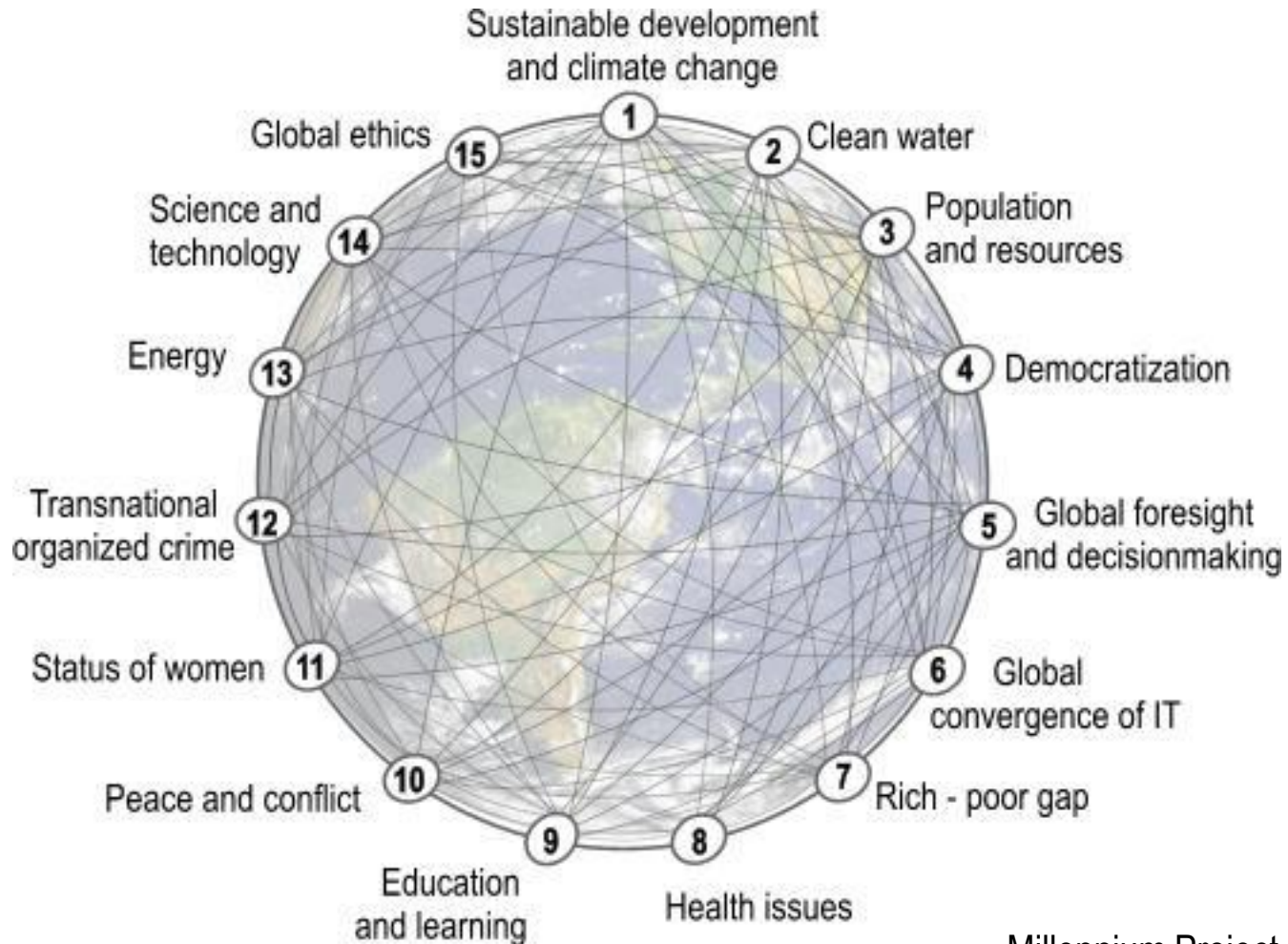
- To what extent Switzerland will be able to participate in Horizon Europe is not clear yet.
- Switzerland's participation in Horizon Europe will depend on the settlement of a general framework agreement between Switzerland and the European Union.
- International science politics has become part of foreign politics at large.
  - International science politics depends on general foreign policies of a country.
  - On the other hand science politics may be used as a tool for general foreign policy goals.

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# Why science for politics?

# Global challenges are interlinked

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Millennium Project, Washington



# Global trends, impacts and challenges 2019

	Impacts	Political Challenges
<b>Planetary Boundaries</b>		
<ul style="list-style-type: none"> <li>– Limited global resources</li> <li>– Climate change / global warming</li> </ul>	<ul style="list-style-type: none"> <li>– Increase of natural hazards</li> <li>– Conflicts regarding resources</li> <li>– Migration</li> </ul>	<ul style="list-style-type: none"> <li>– Decarbonising the economy</li> <li>– Circular economy</li> <li>– Food for growing populations</li> <li>– Environmental security</li> </ul>
<b>Digitalisation</b>		
<ul style="list-style-type: none"> <li>– Science, industry and society 4.0</li> <li>– AI</li> </ul>	<ul style="list-style-type: none"> <li>– Loss/gain of jobs</li> <li>– Structural unemployment</li> <li>– Gap between «fits and haves» and «less fits and have nots»</li> </ul>	<ul style="list-style-type: none"> <li>– Digitalisation / participation/ data protection</li> <li>– Life Long Learning</li> <li>– Valuing societal contributions</li> </ul>
<b>Globalisation</b>		
<ul style="list-style-type: none"> <li>– Globalisation beyond mobility</li> <li>– Atomisation of structures and values</li> </ul>	<ul style="list-style-type: none"> <li>– Vanishing borders and structures</li> <li>– Global dependencies and at the same time more protection</li> </ul>	<ul style="list-style-type: none"> <li>– New concepts for jobs</li> <li>– Transaction based taxation</li> <li>– Societal cohesion</li> </ul>
<b>Urbanisation</b>		
<ul style="list-style-type: none"> <li>– Mega cities</li> <li>– Need for infrastructures</li> <li>– Concentration of innovation</li> </ul>	<ul style="list-style-type: none"> <li>– «Innovation Hubs» and cities as living labs</li> <li>– Demand for resources</li> </ul>	<ul style="list-style-type: none"> <li>– Retrofitting cities, increasing resilience</li> <li>– Alternative rural developments</li> </ul>
<b>Demography</b>		
<ul style="list-style-type: none"> <li>– Aging societies</li> <li>– Growing populations in regions stressed by climate change</li> </ul>	<ul style="list-style-type: none"> <li>– Immigration in the north/west</li> <li>– Societal and cultural instability</li> </ul>	<ul style="list-style-type: none"> <li>– Investments in Africa/SE-Asia</li> <li>– Management of migration und integration</li> </ul>
<b>New actors</b>		
<ul style="list-style-type: none"> <li>– Private Actors</li> <li>– «Public-Private Partnerships»</li> </ul>	<ul style="list-style-type: none"> <li>– New interfaces of public and private</li> </ul>	<ul style="list-style-type: none"> <li>– New governance systems</li> </ul>

# Orienting science on grand challenges

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- There is a close link between science strategies and the question whether we will succeed in addressing global challenges successfully on the other.
  - Politics needs scientific evidence and advice to address grand challenges and to develop sustainable policies.
  - Orienting science towards grand challenges leads to comprehensive science strategies, integrating basic and applied research, pilot projects and innovation on the market and in society.
- Such comprehensive political and science strategies will have to include more public and private actors in a process of innovation that will have to be more open, more participative and more flexible than formerly.

# Key factors for successful science politics

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- Science politics are successful in supporting a competitive and sustainable R&I landscape if they manage to cope with the following challenges.
  - **Science:** Manage to balance the three missions of science as well as the various interests attached to them.
  - **Logic:** Manage to bridge the gap between the logic of science, strategies and politics and look at science politics from both sides – politics for science as well as science for politics.
  - **Processes:** Use transparent processes, to enable stakeholders to participate at the right moment.
- Science politics shall address a broad notion of science – reflecting Europe's successful tradition of enlightenment.