

**Innovation for
Transformation**

Fostering innovation
to address
societal challenges



**An agenda for the future:
Innovation for transformation**

Bertelsmann Stiftung
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Innovation for Transformation –
Fostering innovation to address societal challenges

Results Paper 5

An agenda for the future: Innovation for transformation

Results Paper 1: Good practices in mission-oriented innovation strategies and their implementation

Results Paper 2: Networking and exchange in mission-oriented innovation processes

Results Paper 3: Addressing societal challenges through disruptive technologies

Results Paper 4: Fostering innovative startups in the pre-seed phase

Scientific analysis



Fostering innovation to address societal challenges

BACKGROUND

This “agenda for the future” presents a summary of findings from the “Fostering Innovation. Unlocking Potential.” research project carried out by the Bertelsmann Stiftung for the Reinhard Mohn Prize 2020. In the context of this project, the Bertelsmann Stiftung cast a wide research net on good practices around the world and, in cooperation with the Fraunhofer Institute for Systems and Innovation Research ISI, bundled the findings into four results papers. As model approaches, the examples featured in these papers offer valuable input for efforts in Germany and Europe to advance innovation policy. Each paper is available at www.bertelsmann-stiftung.de/innovation-for-transformation-en.

AN AGENDA FOR THE FUTURE: INNOVATION FOR TRANSFORMATION

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Retooling Germany's strategic, cultural and institutional framework for innovation policy

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The way forward: An agenda for reviving competition in generating innovative solutions to societal problems

- ▶ Align the country's development with appealing visions and formulate ambitious mission-oriented strategies
- ▶ Ensure the effective implementation of transformative goals and a more inclusive and participatory innovation policy
- ▶ Leverage current strengths to advance transformation, foster disruptive innovations and overcome path dependencies
- ▶ Overcome rigid thinking in innovation funding, strengthen entrepreneurship, and treat startups as trendsetters in transformation
- ▶ Expand the scope of collaboration, networking and dialogue as accelerators of societal change

1.

Retooling Germany's strategic, cultural and institutional framework for innovation policy

Research, technology and innovation (RTI) policy in Germany and the EU has never been so well-positioned to achieve so much. Yet at the same time, we've never faced a greater need for strategies to develop solutions that deliver both societal and economic benefits, and in equal measure. Given the grand challenges facing humanity, such as global warming, healthcare provision, demographic change and food security, there is a clear and evident need to direct research and innovation activities toward resolving societal problems. As advocated by the core thesis of our results papers, linking innovation and competitiveness-oriented measures with new approaches to addressing societal needs can help us leverage untapped opportunities to foster economic growth while tackling the grand challenges facing society. Innovation is therefore crucial to shaping a sustainable and future-oriented society and economy.

Politicians and policymakers are called upon to help cultivate a research and innovation environment that can effectively address the challenges we face. The goal here must be to foster the transformative processes required in key societal areas. This involves establishing a more inclusive consensus among political, business and civil society actors regarding the direction and design of desired solutions as well as a rapid translation of societal needs into actionable

plans. It also requires that the state, together with its diverse institutions, demonstrate a willingness and capacity to create opportunities for participation, moderate negotiation processes, orchestrate innovation activities, and set the normative boundaries in which action is taken. Market forces are to be harnessed and supported in developing the desired solutions. The coronavirus pandemic and the need to generate viable solutions within a short timeline have gravely amplified the need to orchestrate and mobilize market forces for specific purposes.

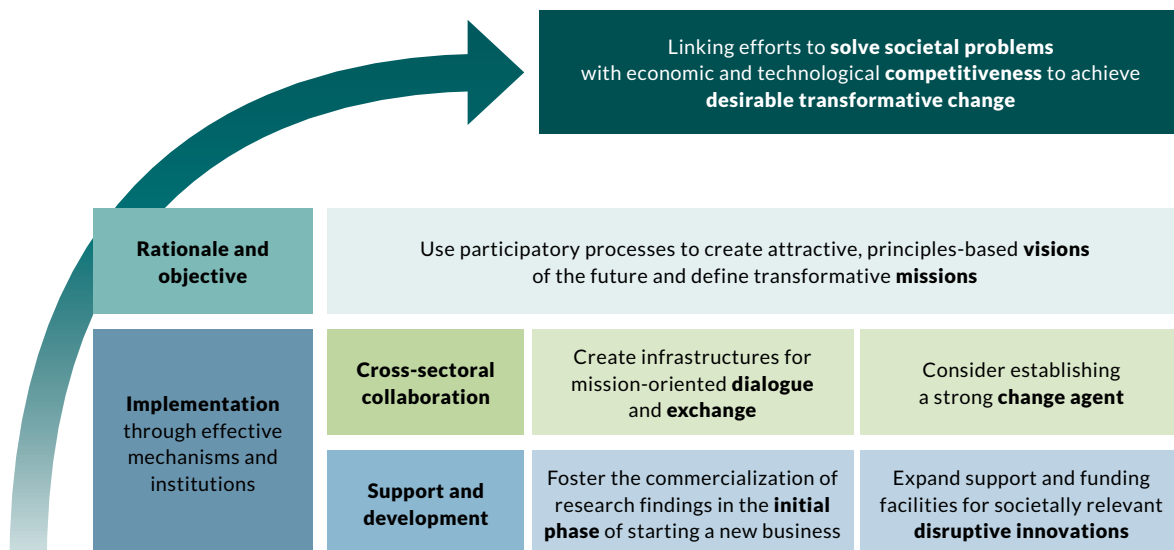
Strengthening innovative capacity is essential to enhancing our ability to solve problems. A modern innovation policy therefore entails emphasizing support for creativity, initiative and entrepreneurship that draws on market-oriented mechanisms in finding and rapidly applying innovative, high-quality solutions to societal problems. Redirecting innovation policy in this way is important if Germany and Europe are to strengthen their competitiveness vis-à-vis other economic powers such as China or the United States. But it is also essential to developing resilient and sustainable systems of production, transport, communication, energy and healthcare.

The results papers presented here therefore call for a reorientation of German innovation policy and its

institutions that is aimed specifically at the grand challenges we face. This reorientation should focus on linking up the otherwise siloed innovation policy priorities of strengthening competitiveness and innovative capacity on the one hand and our capacity to deliver solutions to societal problems on the other. Aligning these priorities will, in turn, promote the transformative change we need. The following recommendations call for a profound shift in our cultural and institutional thinking that would cultivate negotiation processes across society, unleash creativity and entrepreneurship, and mobilize compe-

titive forces. A paradigm shift of this magnitude is what we need to generate the best solutions to our most pressing problems. We need to partially restructure research, technology and innovation policy, and to reconfigure several established paths and institutions involved with research and innovation support. Doing so includes creating entirely new linkages across strategies, instruments and organizations (see figure below). Pursuing horizontal integration across policy sectors is also important here and involves ensuring that RTI policy is anchored in several ministries at once.

INNOVATION FOR TRANSFORMATION



2.

The way forward: An agenda for reviving competition in generating innovative solutions to societal problems

Align the country's development with appealing visions and formulate ambitious mission-oriented strategies

- Strategically align the German government's RTI policy with ambitious, potentially transformative and principles-based visions, emphasize innovation as a driver of both societal problem-solving and economic performance, and embed these visions in the institutions of national innovation policy.
- Ensure that these visions prove appealing to society as a whole and declare them binding for all ministries by, for example, stipulating them as such in a coalition agreement (with reference to the law if needed to ensure compliance that extends beyond legislative periods).
- Draw on this to formulate specific political missions and subsidiary goals to be pursued by the federal government that are anchored in ethical principles and the values promoted by democratic states.
- Integrate and coordinate RTI policy with those policy fields and sectors to undergo transformative change and thereby facilitate the demand- and solution-driven orientation of research and innovation.
- Recognize Germany as part of a European innovation ecosystem and position it as a global forerunner in areas such as sustainable innovation, "green" growth, and the principles-based development of digital technologies.

SELECTED GOOD PRACTICES

- ▶ The ambitious innovation and/or AI strategies pursued in Canada, Japan, the Netherlands, Sweden and the UK (> *Results Paper 1*)
- ▶ The Montreal Declaration as an example of how to develop principles-based artificial intelligence (> *Results Paper 1*)

Ensure the effective implementation of transformative goals and a more inclusive and participatory innovation policy

- Reorganize aspects of government activity in order to create new opportunities for consensus-driven negotiation across ministries while fostering a sense of ownership with regard to agenda items such as determining appropriate transformation paths, desirable research and funding outcomes, and the appropriation of funds for these purposes.
- Germany's chancellor should be an engaged advocate of transformative societal change. A dedicated unit within the Federal Chancellery should be established and tasked with bringing together, several times a year, representatives from the policymaking, business, civil society, research, and educational communities for consultation. Under the leadership of the chancellor, these summits should be designed to set priorities for a national innovation policy and to reach consensus on specific measures.
- Consider establishing a cross-sector change agent with considerable autonomy in promoting a mission-oriented policy (see "Good practices" below). This body would be tasked with identifying actionable areas, creating opportunities for participation, coordinating efforts horizontally (across sectors) and vertically (linking administrative hierarchies), and orchestrating innovation processes.
- Emphasize consensual integrity in defining and determining the path forward by ensuring early-on stakeholder engagement and by incorporating the concerns of those affected by transformative change. This kind of participatory process will improve the integration of public needs and social norms into policymaking which, in turn, will build public acceptance of government policies.

SELECTED GOOD PRACTICES

- ▶ The participatory, dialogue-driven practices of the Swedish Innovation Council and the Netherlands' polder process (> *Results Paper 1*)
- ▶ Change agents which play a key role in the innovation systems of Sweden (Vinnova) and the UK (Nesta, UKRI) (> *Results Paper 1*)

Leverage current strengths to advance transformation, foster disruptive innovations and overcome path dependencies

- Strengthen Germany's incumbent industries such as mechanical and automotive engineering, chemical engineering, medical technology and electrical engineering by accessing new export markets for sustainable technologies and green growth while creating at home the skilled workforce needed to realize these goals.
- Involve industries in the implementation of cross-sectoral government visions and missions targeting challenges such as climate change, a mobility of the future, sustainable development, the smart economy and the future world of work. By generating ownership and commitment among stakeholders in this way, policymakers can ensure greater impact.
- Restructure the institutional frameworks aimed at fostering disruptive technologies and innovations so that they are better geared to address societal challenges and able to facilitate trans-European cooperation in such processes (e.g., the French-German JEDI initiative).
- Introduce new funding and tender guidelines that include solutions and technologies for societal impact and allow for long-term, ambitious research proposals (three years or longer) that are transdisciplinary in nature. These guidelines should explicitly encourage applications from high-risk projects with transformative potential that seek to deliver solutions to societal challenges, even at the risk of failure. Creativity and the willingness to take risks should not be penalized by too-narrow guidelines that are anchored in siloed thinking.
- Leverage public demand in stimulating efforts to develop innovative solutions to societal challenges and thereby facilitate the diffusion and visibility of such innovations.

SELECTED GOOD PRACTICES

- ▶ Institutions tasked with promoting disruptive innovation that are willing to take risks, such as DARPA (United States), the Israel Innovation Authority and the Japanese ImPACT program (> *Results Paper 3*)
- ▶ Sweden's National Agency for Public Procurement (Upphandlingsmyndigheten) as a buyer of societally relevant innovations (> *Results Paper 1*)

Overcome rigid thinking in innovation funding, strengthen entrepreneurship, and treat startups as trendsetters in transformation

- Introduce more flexible forms of knowledge commercialization and establish new channels for the transfer of promising but not yet market-ready research findings (e.g., commercializing knowledge through impact-oriented startups with origins in research institutes). Support in particular innovative or risk-oriented new businesses with initially difficult to predict return-on-investment yields and thereby reward a willingness to take risks and pursue bold ideas.
- Increase support for innovative startups with potentially transformative business ideas. Focus in particular on removing individual and systemic barriers to accessing this support during the initial phase of starting a business and simplify access to risk capital.
- Tap and leverage more purposefully the potential in Germany's research sector for developing solutions to societal challenges. This can include fostering research-based startups or providing researchers with support in terms of training, coaching, mentoring, advising, networking, or in-kind benefits so that they themselves can commercialize their research outcomes as entrepreneurs or by founding a business without a founder.
- Develop further Germany's startup ecosystems such as those found in Berlin, Munich, Hamburg and Leipzig and strengthen their capacity to inspire even more potentially transformative solutions through their creative, highly competitive environments. This can involve establishing lines of funding specifically for researchers and providing them opportunities to present their ideas to the broader public.
- Pay tribute to and place greater and more frequent emphasis on individual visionaries such as citizens demonstrating a strong societal commitment, as well as entrepreneurs, researchers and artists.

SELECTED GOOD PRACTICES

- see > *Results Paper 4* for a variety of ways to improve the commercialization of research findings, introduce a more flexible approach to promoting new-business projects in university contexts, and provide more purposeful support to aspiring entrepreneurs working in research or established companies

Expand the scope of collaboration, networking and dialogue as accelerators of societal change

- Networking infrastructures such as “clusters” or science parks, which are usually supported by the public sector (i.e., municipalities, districts, the federal states), should be geared more effectively to tackling specific regional challenges. In doing so, they should foster solution-driven dialogue in an open innovation process involving the business, research, policymaking and civil society communities.
- Expand the scope of existing networking infrastructures that are associated with industry-on-campus models, real-life laboratories and co-creation projects to serve as a platform for creatives, activists, entrepreneurs and startups. At the same

time, direct these infrastructures’ attention toward relevant societal impact issues so that they can test and implement new ideas and innovative business models for sustainable production, consumption, mobility, healthcare and energy supplies in urban and rural areas.

- Build national and international platforms and matching instruments that facilitate cross-sectoral networking among actors involved in innovation processes. These instruments will also allow suppliers and consumers of innovative products to interact online, thereby facilitating opportunities to develop, for example, high-tech solutions to specific societal issues.
- As institutionally anchored, professional networking infrastructures, these platforms underscore diversity, an openness to international dialogue and the persistent ability to overcome barriers as European cultural assets. They thus offer young people of all backgrounds relevant and inclusive career opportunities in Germany and Europe.

SELECTED GOOD PRACTICES

- ▶ Sweden’s science parks are an example of a mission-oriented regional cluster solution (> *Results Paper 2*)
- ▶ Matching solutions, such as Israel’s Start-Up Nation Central or Canada’s Mitacs, link suppliers with consumers of innovations (> *Results Paper 2*)
- ▶ Cooperative infrastructures as a platform for collaboration between the research community and the private sector, such as Australia’s Cooperative Research Centres Program and Canada’s Mila (> *Results Paper 2*)

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OUR RESULTS PAPERS

- #1: Good practices in mission-oriented innovation strategies and their implementation
- #2: Networking and exchange in mission-oriented innovation processes
- #3: Addressing societal challenges through disruptive technologies
- #4: Fostering innovative startups in the pre-seed phase
- #5: An agenda for the future: Innovation for transformation

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