

REPORT ON RESEARCH,
INNOVATION AND TECHNOLOGICAL
PERFORMANCE IN GERMANY

COMMISSION OF EXPERTS
FOR RESEARCH
AND INNOVATION

EFI

REPORT

2020 2021 2022

2023 2024 2025

2026 2027 2028

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The Commission of Experts wishes to emphasize that the positions expressed in the report do not necessarily represent the opinions of the aforementioned persons.

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Executive summary

A Current developments and challenges

A 1 Implementation of the High-Tech Strategy 2025

Germany's R&D intensity rose to 3.13 percent in 2018. This is an important step towards reaching the target of spending 3.5 percent of GDP on R&D by 2025.

The entry into force of the Law on Tax Incentives for R&D (Forschungszulagengesetz) means that the instrument of tax incentives for R&D activities is at last also available in Germany. The planned evaluation will have to show whether the design of the instrument can have the desired incentive effect.

The newly founded SprinD GmbH aims to promote radical innovations. The Commission of Experts strongly believes that management should be given the highest degree of independence from political control in this context.

The Commission of Experts calls on the Federal Government to back up the measures listed in the Blockchain Strategy with milestones and to document the achievement of the milestones transparently.

In the opinion of the Commission of Experts, the effects intended with the planned GAIA-X data infrastructure can only be achieved if GAIA-X is implemented quickly, has a critical minimum capacity and guarantees a high degree of user-friendliness.

A 2 Science policy

The fourth Pact for Research and Innovation (PFI IV) gives non-university science organizations a high level of planning security. The Commission of Experts supports the increased importance being assigned to the transfer of knowledge and technology in the PFI IV research-policy objectives.

The Commission welcomes the fact that the Federal Government is participating permanently in the financing of teaching under the "Contract for the Future Strengthening of Higher Education and Teaching". It also regards the introduction of a quality-oriented system for the allocation of funds as a positive development.

However, the Commission sees problems in the focus on expanding permanent employment relationships for staff involved in studying and teaching. It is concerned that this will result in a disproportionate increase in the number of permanent non-professorial academic staff.

A legally dependent organizational unit is being set up to implement the objectives set out in the administrative agreement on 'Innovation in Higher Education Teaching'. The Commission of Experts criticizes the fact that this new organizational unit was not initially set up for a limited period of time and that it is relatively open to influence from political representatives.

The Commission of Experts again calls for an increase in the DFG's programme allowance, since it will otherwise not fully cover overhead costs in most cases.

B Core topics 2020

B 1 East Germany as a location for innovation – 30 years after reunification

Even 30 years after reunification, there are still major structural differences between east and west Germany which impact inter alia on corporate innovation activities. A comparison of structurally similar companies shows that the level of innovation activity in east German companies has converged with that of west German companies in recent years. However, there is still a need for east German companies to catch up when it comes to launching innovation activities and introducing innovations to the market.

East German companies cooperate more on their innovation projects than west German companies, whereby their cooperation activities are more frequently regionally oriented.

- One important task of the Federal Government's R&I policy is to strengthen Germany's position in global competition. The Commission of Experts therefore believes that R&I policy should continue to focus on promoting excellent innovation projects, which exist in both east and west Germany.
- The Commission of Experts welcomes the fact that the Federal Government will refrain from providing special R&I support for east German companies after the expiry of Solidarity Pact II. In its view, it makes sense to support R&I in structurally weak regions chosen on the basis of regional characteristics and not according to the borders between Länder. Such funding, too, should target projects chosen according to excellence criteria.
- Furthermore, the Commission of Experts advocates an innovation-oriented structural policy. This promotes the potential of structurally weak regions, for example through infrastructure measures, and in this way aims to increase their overall willingness and ability to innovate.
- In order to motivate more companies in structurally weak regions to engage in innovation activities, companies without R&D should be integrated more closely into R&I funding. In other words, non-technical and social innovations should also be given more support.

- The Commission of Experts recommends that in future R&I policy should be more oriented towards giving companies in structurally weak regions support in launching new products and services onto the market, thus increasing the innovator rate.
- The Commission of Experts attaches importance to regional networking among innovation actors. However, it suggests placing greater emphasis on supra-regional and international forms of cooperation and networking in R&I funding.

B 2 Cybersecurity

Ongoing digitalization and digital networking make companies more vulnerable to cyberattacks. Many companies are therefore very aware of the need to protect their information technology. Existing cyber threats have a negative impact on corporate innovation activities – e. g. creating a disincentive to plan new innovation projects or launch planned projects.

Cybersecurity itself is also the subject of innovation activities. Measured in terms of cybersecurity patents, Germany is a long way behind the USA, China and Japan.

The Commission of Experts recommends that the Federal Government should take the following measures:

- Teaching cybersecurity skills in vocational education and training as well as in higher education should be further promoted to meet the growing demand for cybersecurity experts. Such moves should cover not only technical aspects, but also deal with legal and ethical issues.
- The approval of digital infrastructure components should be based on criteria that apply throughout the European single market. These criteria should take into account technical and non-technical aspects and apply equally to EU and non-EU suppliers. Corresponding initiatives by the European Commission, e. g. on the roll-out of 5G networks, should be supported.
- The Cyber Agency should begin operations quickly and practise demand-driven procurement to promote innovative projects that help protect Germany's technological sovereignty in cybersecurity. It is important here to constantly and openly follow new technological developments to be able to react flexibly to changing needs. An evaluation of the Cyber Agency should examine what stimuli it generates for R&I activities in cybersecurity.
- It is particularly important to provide easily accessible information and advisory services for SMEs. The effectiveness of existing programmes to promote cybersecurity in SMEs should be evaluated and adapted to the constantly changing threat situation.
- In order to improve the information available on the quality of cybersecurity products and services, initiatives should be supported which are aimed at developing minimum standards and certification systems, particularly at the European level.
- It needs to be established whether the existing reporting obligations need to be extended in order to improve the information available on cyber risks and to deal more effectively with cyber threats.

B 3 Exchange of knowledge and technology between Germany and China

There is concern in Germany that the exchange of knowledge and technology with China will lead to a one-sided outflow of know-how and weaken Germany's scientific and economic performance. The available empirical evidence does not support the hypothesis that Chinese direct investment in Germany has led to a weakening of the economic performance by the affected companies. Nonetheless, corporate investments and takeovers by Chinese investors in principle involve the risk of political and strategic influence being exerted.

- The Federal Government should push strongly for a level playing field in direct investment for German and Chinese companies.
- The Commission of Experts supports the BMWi's plans to examine corporate takeovers by foreign investors more thoroughly in the field of sensitive technologies. The areas of technology to be included should be announced first. In addition, clear and transparent auditing criteria need to be developed.
- In China, science is subject to direct government influence. In order to ensure that scientific cooperation with China benefits both sides, it is necessary to appropriately inform and sensitize the German actors involved.
- A central competence centre should be set up to advise German scientists and provide expertise on legal issues relevant to cooperation and research. The competence centre should furthermore systematically collect and evaluate information on experience and problems with German-Chinese cooperation and process it for research and administrative staff at research institutions.
- Research and teaching that contribute to the understanding of current political, societal and economic developments in China should be strengthened. In this context, attention should be paid on teaching good Chinese language skills.
- There should be an intensive and continuous exchange on the framework conditions and prospects of scientific cooperation between Germany and China, this should be coordinated with the European partners. The Commission of Experts recommends that suitable formats for further cooperation should be created soon following the expiry of the BMBF's China strategy and the termination of the Sino-German Innovation Platform.

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