Position paper

Driving the sustainable bioeconomy now!

Key messages

- Increase competitiveness and resilience through the bioeconomy
- Improving the conditions for bioeconomic innovation
- Creating a level playing field in the market
- Contributing to global food security through the bioeconomy
- Harnessing nature-inspired solutions
- Implementing a circular economy
- Supporting local and regional bioeconomy initiatives and international cooperation
- Preparing to shape a sustainable future for future generations

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This paper bundles the demands of a broad group of experts committed to a sustainable bioeconomy.
The spokespersons of the initiative are:

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Position paper

The bioeconomy is an indispensable part of a future-oriented economic system. It provides healthy food, renewable raw materials for various industries such as chemicals, packaging, products made from biological materials, pharmaceuticals and medical products. The transformation of these industries towards a circular bioeconomy promotes raw material independence, technological leadership and thus the resilience of our economy. The bioeconomy harnesses the high innovation potential of the life sciences, realises nature-based solutions and thereby promotes both compliance with international climate protection targets as well as social and economic progress. The bioeconomy opens up new development opportunities in various sectors of the economy, including agriculture, the chemical industry, construction, energy, environmental technology and health. Due to its strong potential for innovation, the bioeconomy creates new future-oriented jobs, which are urgently needed in the transition to a sustainable economic system and to enable 'green growth'. The bioeconomy is essential for the successful implementation of an economically and environmentally viable circular economy.

Germany has long played a leading role in the development of the bioeconomy both in Europe and globally. The great potential of the bioeconomy, with its important contribution to addressing global challenges such as food security, in the area of health care and also in the context of 'planetary health', is now being increasingly recognised worldwide. As a result, many countries are promoting the development of the bioeconomy through policy strategies and related implementation approaches. The bioeconomy strategies published by the US and China in 2022 focus on the potential of biotechnology and its importance for the economic development of these countries. In order to increase German and also European competitiveness, it is therefore essential to further develop the bioeconomy and anchor it in a long-term economic strategy with clearly formulated and stable framework conditions.
To effectively harness this potential for sustainable economic growth, competitiveness and climate protection, we make eight recommendations for the further development of a future-oriented bioeconomy:

1. Increase competitiveness and resilience through the bioeconomy

Bioeconomy solutions are an important lever in many sectors to achieve climate and resource protection, increase the resilience of supply chains, reduce dependence on foreign production sources and thus increase competitiveness. Agriculture and forestry, construction, chemical production, food, health and environmental protection all benefit from holistic implementation. Embedding the bioeconomy in sectoral and cross-sectoral scientific, economic and transfer strategies, as well as broad political support for the bioeconomy, are therefore crucial to realising its potential.

2. Improving the conditions for bioeconomic innovation

The use of biotechnological processes in all sectors, the application of biobased and bio-inspired solutions, and the closing of material cycles offer great potential for the bioeconomy. A large number of start-ups have been established in recent years and have developed ready-to-deploy solutions to the many current challenges.

Bringing these and other innovations under development to the implementation stage, and thus to the market, requires continued support for research and innovation, tools for validating bioeconomic business potential, operation of pilot plants in a protected environment, promotion of scale-up activities, improved access to finance for start-ups and a regulatory framework open to innovation. Only decisive and comprehensive action in a coordinated triad between politics, industry and science can prevent Germany from being left behind in the globally growing bioeconomic markets.

3. Creating a level playing field in the market

Innovative bioeconomy solutions have often been at a disadvantage in the market, in particular due to inappropriate product standards, e.g., in the construction and food sectors, unfavourable market conditions or restrictions through complex regulatory procedures, e.g. in the use and recycling of waste. In addition, conventional industries often have better structures for financing new investments. These disadvantages need to be addressed quickly and comprehensively if the market potential of the bioeconomy is to be realised.

4. Contributing to global food security through the bioeconomy

The bioeconomy offers new opportunities to achieve global food security in a sustainable way. It enables farmers worldwide to secure their incomes and food supplies, for example through improved access to high-yielding, climate-resilient and stress-tolerant crop varieties. In the countries of the Global South, new solutions for sustainable agriculture adapted to local conditions should be developed and implemented in partnership with farmers and other stakeholders.

5. Harnessing nature-inspired solutions

Bioeconomy solutions are inspired by natural processes and often provide cost-effective, ecologically beneficial, socially desirable and effective ways to improve the resilience of cities, landscapes and agricultural systems. Examples include improving the urban climate through green oases, flood protection and the regeneration of agricultural soils through the use of perennial plant systems or biological pest control in agriculture. These solutions can also be used to increase biodiversity and regenerate natural resources. Research into further nature-based solutions and their implementation needs to be intensified.

6. Implementing a circular economy

Bioeconomy solutions promote a circular economy by converting waste and residues into high-value materials, energy and storable carbon products, through the use of biotechnological processes for up-cycling, and by supporting carbon storage in natural systems. In addition, biotechnological processes enable the recovery of plant nutrients such as nitrogen and phosphorus, the use of CO_2 from various sources and the avoidance of greenhouse gas emissions in various sectors of the economy, which can make a significant contribution to the reduction of climate-damaging substances in the context of a bioeconomy. To enable these contributions to climate protection and sustainable economic growth, current regulatory barriers (e.g. in waste legislation) need to be removed and model projects and pilot regions for a circular bioeconomy need to be established.

7. Supporting local and regional bioeconomy initiatives and international cooperation

In the bioeconomy, as with the underlying principle of sustainability, it is important to think globally and act locally. The European Union's "bioeconomy regions" approach shows that regional strategies are necessary for the successful implementation of the bioeconomy. They can serve as a blueprint for other regions. To this end, participatory initiatives for the development and implementation of bioeconomy strategies should be supported and their networking encouraged. This will help to exploit the diverse opportunities for local use of bioeconomic solutions and strengthen the social anchoring of a sustainable bioeconomy. At the same time, Germany should expand its international networking and support the development of an international bioeconomy platform.

8. Preparing to shape a sustainable future for future generations

The implementation of a sustainable bioeconomy requires a wide range of actors, including experts in the necessary technologies and those who can shape the transition to a sustainable economic system. To this end, educational curricula with content related to the bioeconomy need to be strengthened at all levels and in all areas of the education system, from primary schools to universities and vocational training. This will require programmes to develop and implement future-oriented teaching formats. Education on bioeconomy solutions should be linked to established concepts of Education for Sustainable Development (ESD) in order to train appropriate bioeconomy 'change agents' in the medium and long term.

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The Future-Oriented Bioeconomy Initiative is an interdisciplinary body of former members of the German Federal Government's Bioeconomy Councils (BÖR I-III), representatives of the German national bioeconomy initiative and other bioeconomy experts. They represent the German bioeconomy nationally and internationally and work as an active think tank to provide impetus for the development of a future-oriented bioeconomy and to address policymakers on issues relating to the further development of a future-oriented bioeconomy.

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