German Environment Agency

Umwelt Bundesamt

Workshop SCALE UP community-driven bioeconomy development

Relevant aspects for sustainable bioeconomy policies

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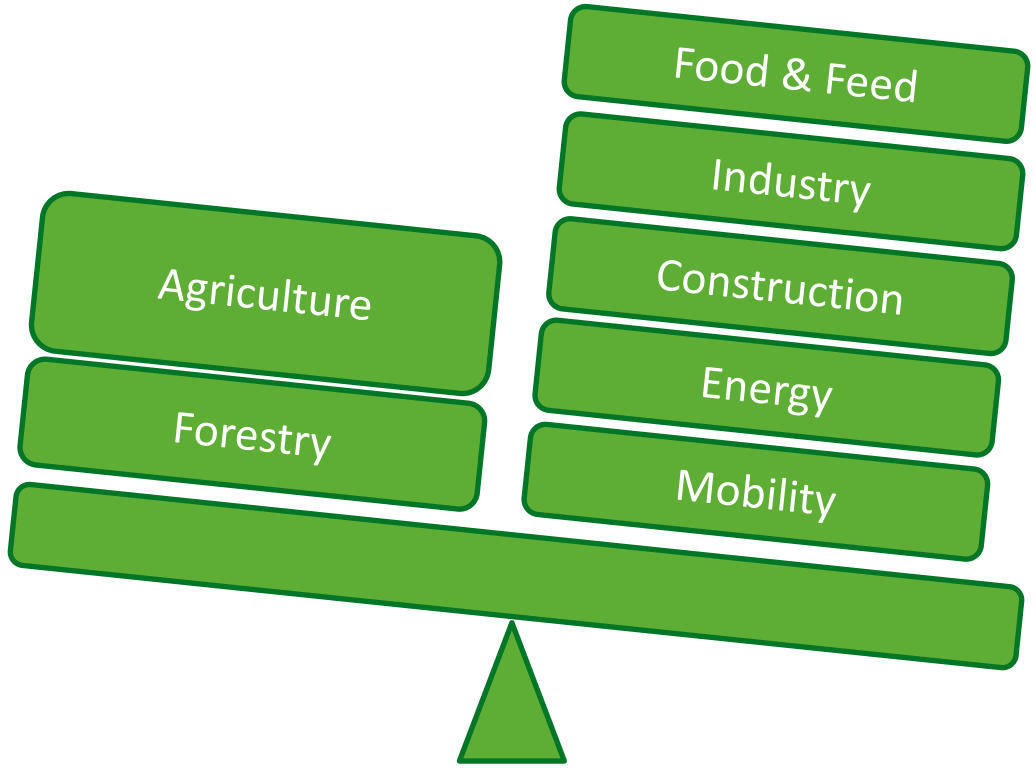
Fundamental Aspects, Sustainability Strategies – and Scenarios,
Sustainable Resource Use

50 Jahre Umweltbundesamt 1974–2024

Overview

1.1 Sustainable bioeconomy – Why does it matter?

- Triple planetary crisis
- Limited sustainable biomass potential vs. rapidly growing demand
- Environmental benefits of biogenic solutions not always given
- Conflicting objectives of biomass use
- Limited availability and overuse of (especially sustainably produced) biomass
- Lack of a hierarchy of use and overarching control mechanisms
- Land use: limited area but many demands including nature restoration, photovoltaic, etc.

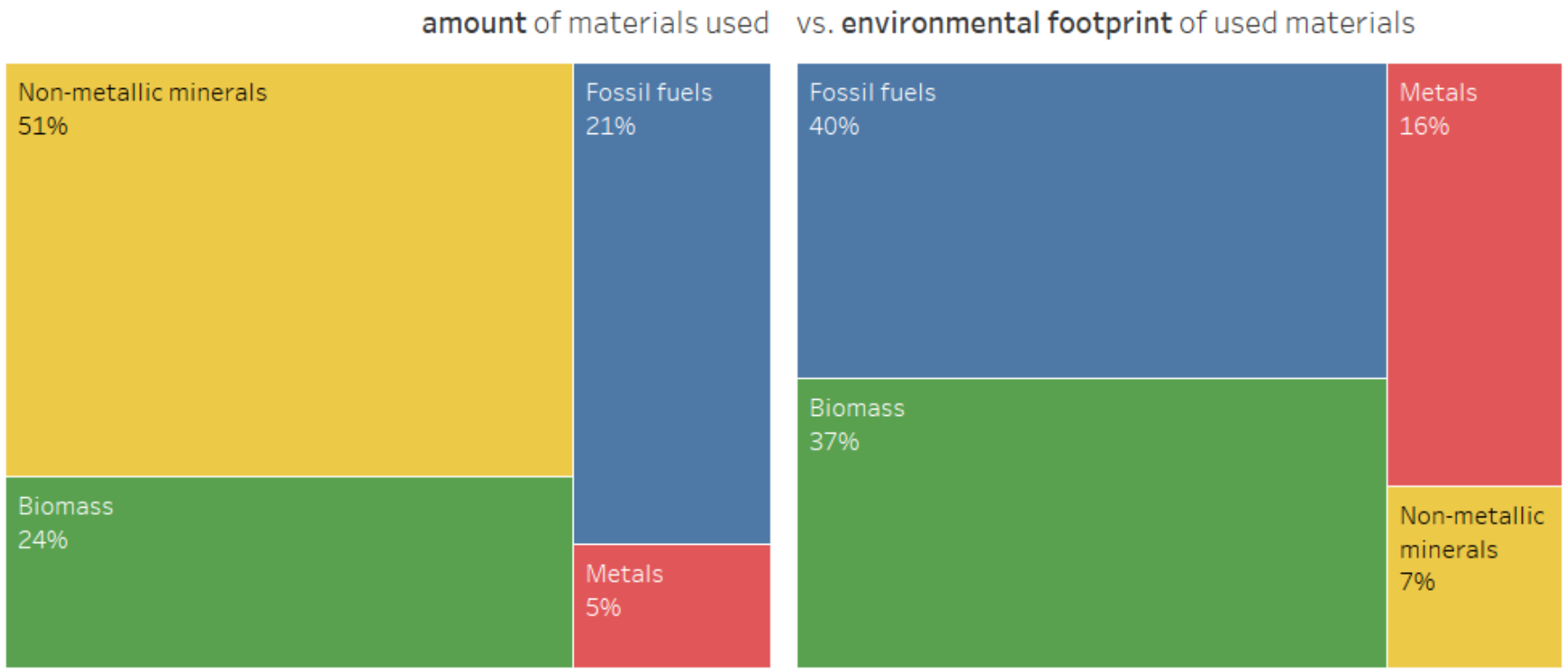


1.2 Current controversies and issues

- Determination of sustainable biomass potential in the context of climate and biodiversity protection
- Role of natural carbon sinks incl. BECCS
- What are the priority areas of use, particularly in the context of climate protection and energy and raw material security?
- How can limited potential be channeled into priority areas of application?
- Implementation within the framework of the 2030 Agenda:
  - How can the primacy of food security be implemented?
  - Economic development of exporting countries
  - Fair access to natural resources such as land, water, etc.

→ BIOECONOMY AFFECTS KEY CORE AREAS OF NATIONAL AND INTERNATIONAL ENVIRONMENTAL AND SUSTAINABILITY POLICY

2. EU27's environmental footprint of ready-for-use materials

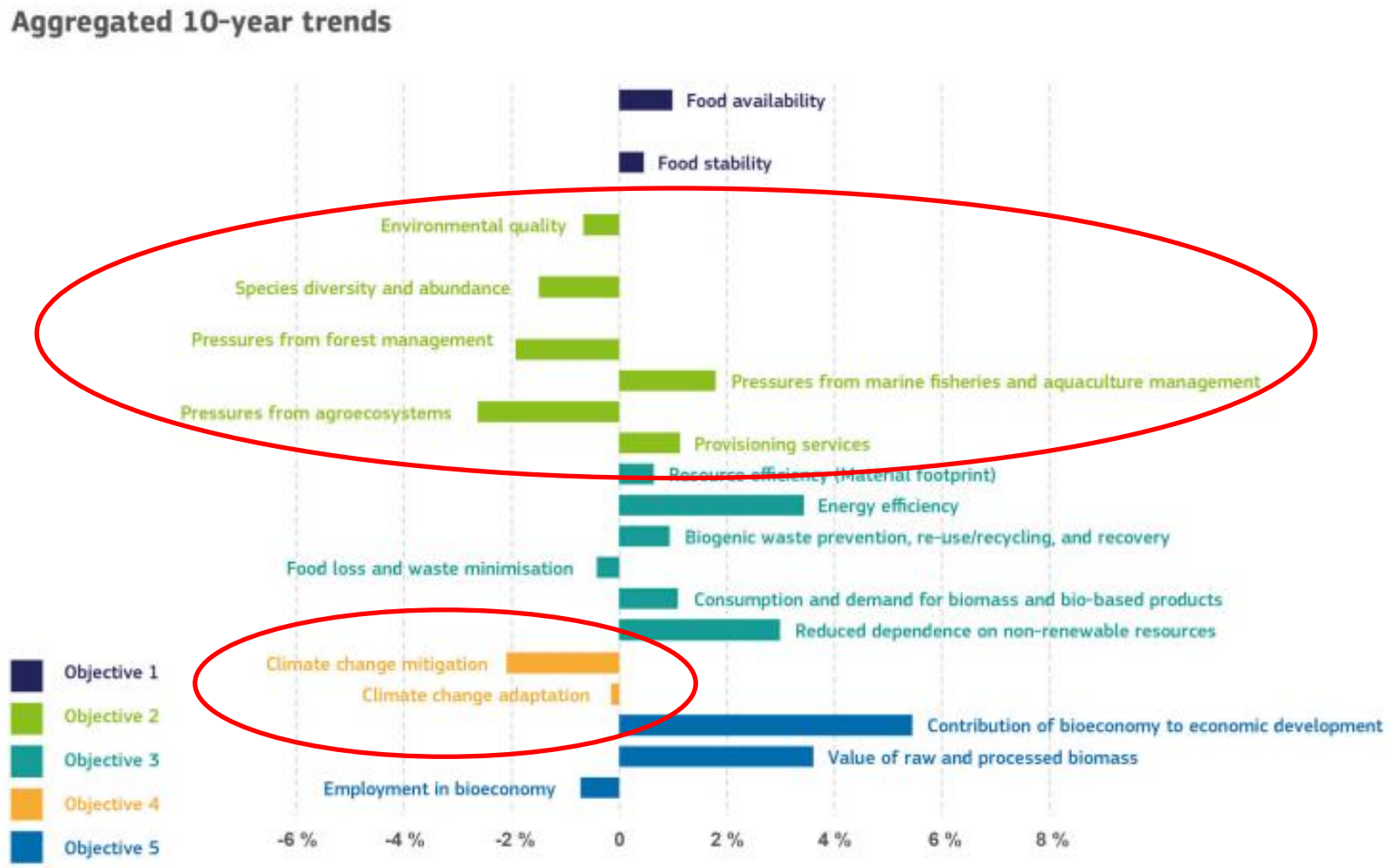


Biomass, particularly agricultural activities, dominates several impact categories:

- **acidification 50 %**
- **eutrophication freshwater 88 %**
- **eutrophication terrestrial 61 %**
- **land use 72 %**
- **water use 76 %**
- **ecotoxicity 46 %**

SOURCE : CHRISTIS, M., NUSS, P., MARRA CAMPANALE, R., & STEGER, S. (2023). ANALYSIS OF THE CIRCULAR MATERIAL USE RATE AND THE DOUBLING TARGET (ETC CE REPORT 2023/6). EUROPEAN ENVIRONMENT AGENCY.

2. Trends for the EU Bioeconomy Strategy objectives

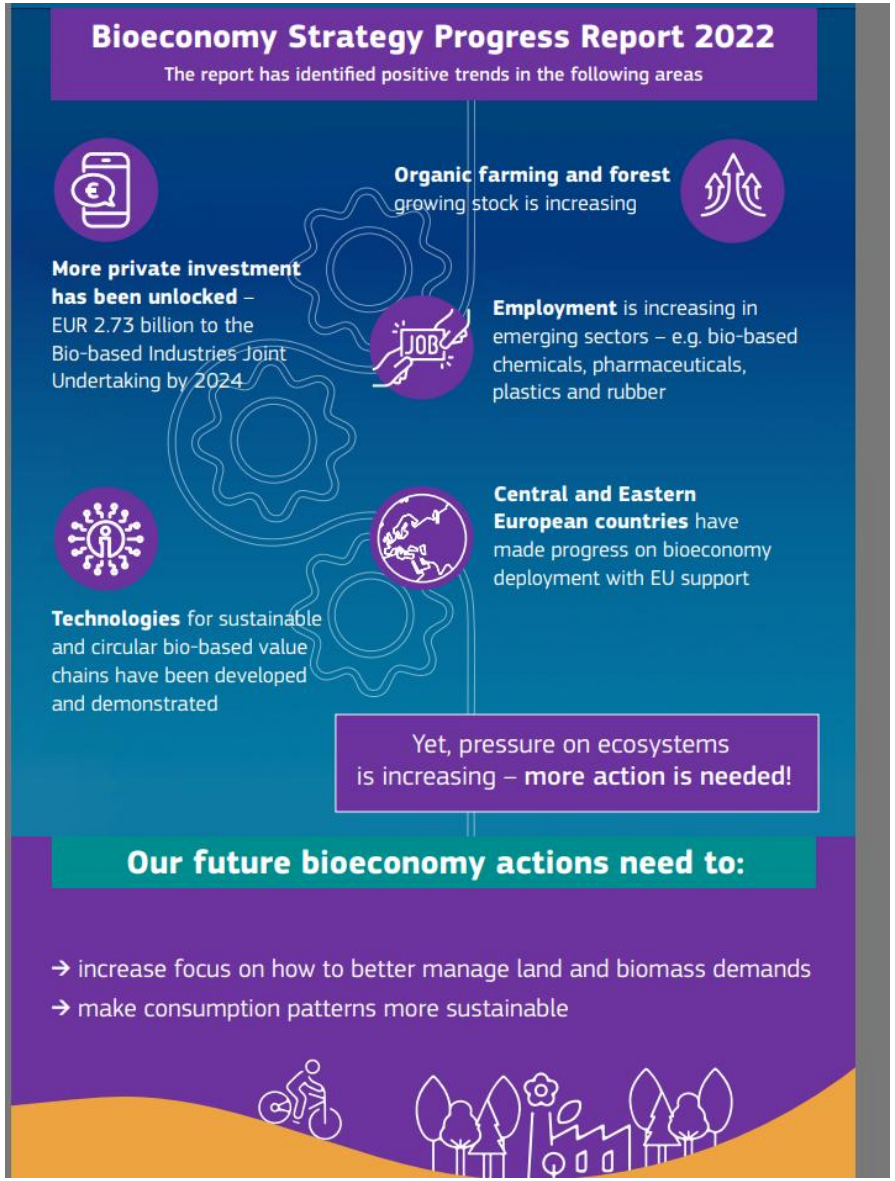


Source: European Commission, Korosuo, A., Borzacchiello, M.T., Giuntoli, J., Lasarte Lopez, J., M`Barek, R., Mubareka, S.B. and Camia, A., Trends in the EU bioeconomy - update 2024, Publications Office of the European Union, Luxembourg, 2024, https://data.europa.eu/doi/10.2760/0141556, JRC140285.

2. EU Bioeconomy Progress Report 2022

EU Bioeconomy Strategy Progress Report 2022 (p.22):
„Yet, more work needs to be done in order to move from a better understanding towards a better implementation of the bioeconomy within the planetary boundaries.

Knowledge gaps remain on how to better manage biosphere use to meet environmental and economic requirements in a climate neutral Europe, and how to promote more sustainable consumption patterns to guarantee environmental integrity.“



SOURCE : EUROPEAN COMMISSION: DIRECTORATE-GENERAL FOR RESEARCH AND INNOVATION, THE EU'S BIOECONOMY STRATEGY – A POLICY FRAMEWORK FOR SUSTAINABILITY, PUBLICATIONS OFFICE OF THE EUROPEAN UNION, 2022, HTTPS://DATA.EUROPA.EU/DOI/10.2777/787912

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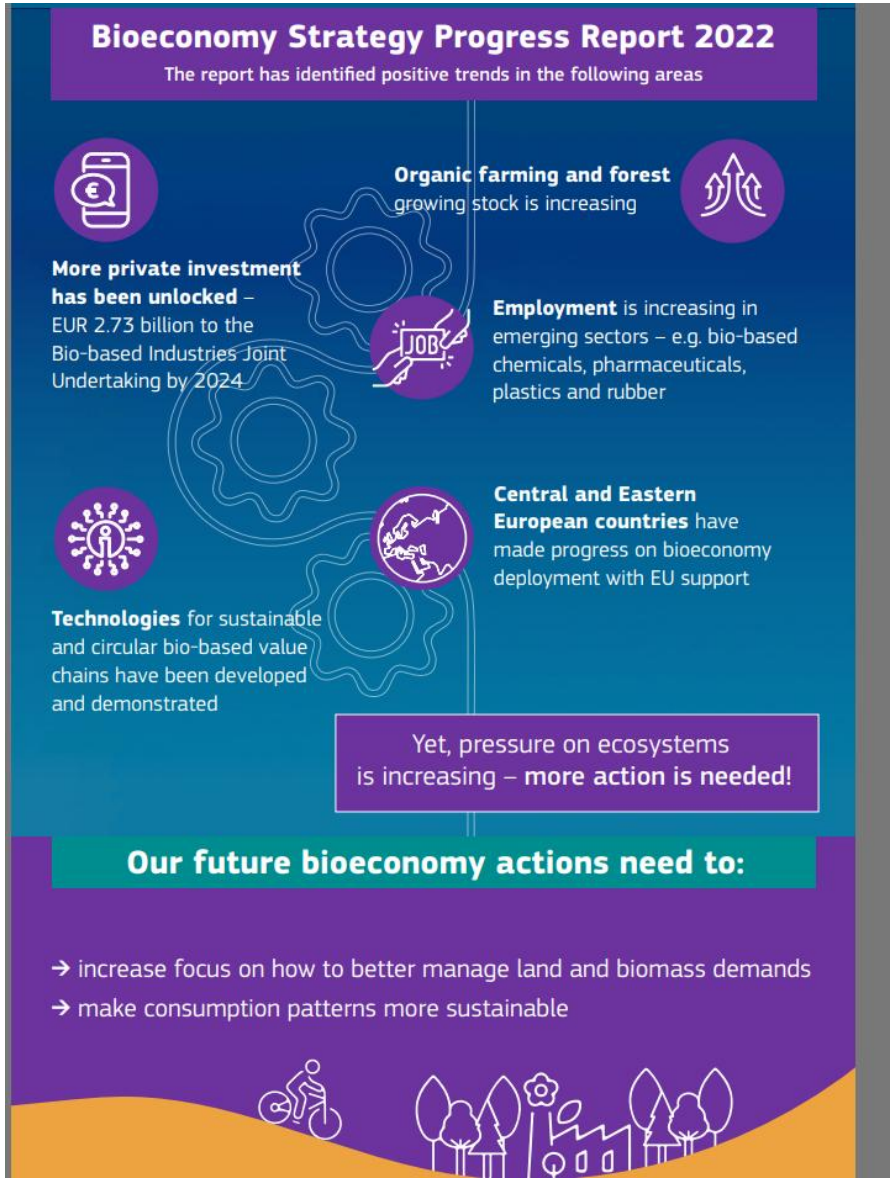

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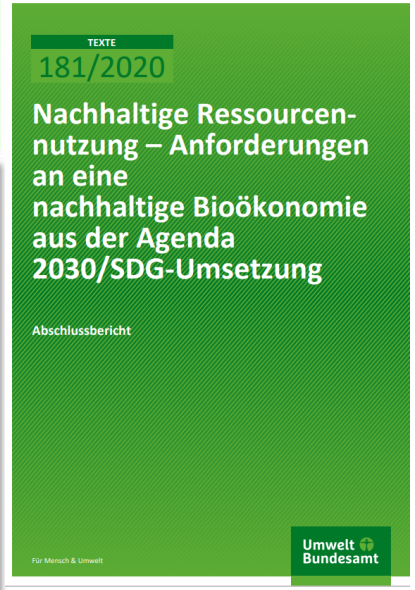
3. Approaches for a bioeconomy within planetary boundaries

- Ensuring the priority of food security
- Priority for material use in the non-food sector
- Consideration of the sustainable biomass potential
- Consistency with objectives to strengthen natural sinks
- Balancing competition for land
- Efficient use of residual and waste materials
- Research and innovation policy on the bioeconomy must be geared towards its social and environmental benefits
- Technology assessment to mitigate the risks of biotechnology, digitalization and other cross-cutting technologies for bioeconomic development
- Consideration and application of circular economy principles (incl. sufficiency) and use of recycling options



3.1 Circular bioeconomy as a central lever

- The framework conditions are set in such a way that **natural resources are conserved** and material flows are always directed to the most efficient and effective use.
- The consumption of food is based on **sustainable dietary recommendations** and the **consumption of bio-based products is based on needs with high long-term benefits.**
- **Energy use takes place at the end of a utilization cascade** or is reserved for products in which pollutants have to be removed.
- **Residual materials** from primary agricultural and forestry production, which accumulate and are used as crop residues, residues from livestock farming or in forestry**, remain in the systems** in order to ensure humus and nutrient cycles, for example, or to fulfill nature and species conservation tasks.
- In the development of bio-based products, **complex material compounds and hazardous substances are avoided** so that the individual materials are very well separated, reused and utilized in further cascades.

3.2 Building blocks for a sustainable bioeconomy policy (i)

Recognize and consistently reduce sustainability deficits

- intensification vs. preservation and expansion of carbon sinks
- reduction/extensification must not be compensated for by increasing imorts
- meaningful monitoring including consideration of effects along the entire value chain
- strong environmental policy and well-implemented regulatory law necessary

Prioritize biomass flows and uses

- clear orientation towards the goals of climate protection, biodiversity conservation and the right to food
- change demand and consumption patterns
- consideration of environmental impacts based on the precautionary principle
- integration of other policy areas
  - food security
  - climate change mitigation and adaptation
  - biodiversity protection
  - resource conservation and circular economy
  - development cooperation

3.2 Building blocks for a sustainable bioeconomy policy (ii)

Resolving competing uses

- energetic vs. material use
- land requirements for climate and biodiversity protection vs. biomass production
- significant reduction in our energy and raw material requirements
  - cascade use and circular bioeconomy
  - no bioenergy from primary biomass
  - reduction of food waste

Consider globally equitable access to resources and the environmental impact of imports

- focus on the global distribution debate
- reducing inequalities in the use of resources
- improve global framework conditions for a sustainable bioeconomy:
  - global governance urgently needed
  - funding mechanisms for sustainable land and area management, soil and forest protection

Thank you for your attention!

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https://www.umweltbundesamt.de/publikationen/nachhaltige-ressourcennutzung-anforderungen-biooekonomie

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