

Summary

Rethinking Land in the Anthropocene: from Separation to Integration



The Council Members

Prof Karen Pittel (Chair)

Director of the Ifo Center for Energy, Climate and Exhaustible Resources and Professor of Economics, esp. Energy, Climate and Exhaustible Natural Resources, Faculty of Economics, University of Munich.

Prof Sabine Schlacke (Chair)

Professor of Public Law, Executive Director of the Institute for Environmental Law and Planning Law, University of Münster.

Prof Markus Fischer

Professor of Plant Ecology, Institute of Plant Sciences, University of Bern and Director of the Botanical Garden of the University of Bern. Council Member since April 2020.

Prof Martina Fromhold-Eisebith

Chair of Economic Geography, Department of Geography at RWTH Aachen University.

Prof Ulrike Grote

Director of the Institute for Environmental Economics and World Trade at Leibniz University of Hannover and Senior Fellow at Center for Development Research (ZEF), Bonn.

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Prof Uwe Schneidewind

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Secretariat, Layout, Editorial work: Viola Martin, Dipl.-Kulturarbeiterin (FH); Mario Rinn, B.Sc.; Martina Schneider-Kremer, M.A.



German Advisory Council on Global Change

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Summary

**German Advisory Council on Global Change
(WBGU)**

Secretariat
Luisenstraße 46
D-10117 Berlin
Germany
Phone: +49 30 2639480
Email: wbgu@wbgu.de
Web: www.wbgu.de

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Lead authors: Markus Fischer, Martina Fromhold-Eisebith, Ulrike Grote, Ellen Matthies, Dirk Messner, Karen Pittel, Hans Joachim Schellnhuber, Ina Schieferdecker, Sabine Schlacke, Uwe Schneidewind

Co-authors: Robyn Blake-Rath, Marcel J. Dorsch, Fabian Fahl, Marian Feist, Juliana Gaertner, Jonas Geschke, Maja Göpel, Hans Haake, Ulrike Jürschik, Karen Krause, Carsten Loose, Reinhard Messerschmidt, Susanne Neubert, Johannes Pfeiffer, Benno Pilardeaux, Astrid Schulz, Jan Siegmeier, Nora Wegener

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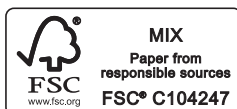
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Summary

Only if there is a fundamental change in the way we manage land can we reach the targets of climate-change mitigation, avert the dramatic loss of biodiversity and make the global food system sustainable. The WBGU proposes five multiple-benefit strategies illustrating ways of overcoming competition between rival claims to the use of land. These should be promoted by five governance strategies, especially by setting suitable framework conditions, reorienting EU policy and establishing alliances of like-minded states.

Where does international sustainability policy stand at the beginning of the 2020s? The answer is sobering. This report appraises the situation and reveals an urgent need for action by many government ministries (e.g. Environment, Education and Research, Agriculture, Development Cooperation) to develop a new approach to land stewardship:

- › It looks like the climate-protection goals of the Paris Agreement can only be reached if, in addition to the decarbonization of the global economy, more areas of land are used to extract carbon dioxide (CO₂) from the atmosphere. However, this not only offers opportunities, it also involves considerable risks.
- › The global food system is in crisis. The food security of a quarter of humanity is under threat, and another quarter suffers from unhealthy overconsumption. At the same time, the environmental damage and other external effects caused by industrial agriculture threaten our natural life-support systems, despite all past efforts – from the ‘Green Revolution’ of the 1960s and 70s to the European Union’s Common Agricultural Policy.
- › Biodiversity is experiencing a dramatic, human-induced mass extinction worldwide, the scale of which has been compared with the great geological extinction events of the past. This also greatly reduces the capacity of ecosystems to contribute to climate regulation and food security.

All this is happening in a situation where multilateral-

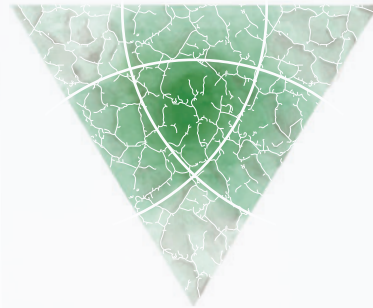
ism is in deep crisis and the COVID-19 pandemic is making things even more difficult. The President of the European Commission, Dr Ursula von der Leyen, put it in a nutshell in her State of the Union Address to the European Parliament on 16 September 2020: “There is no more urgent need for acceleration than when it comes to the future of our fragile planet.”

The diverse demands made on land for the purposes of climate-change mitigation, food security and the conservation of biological diversity are already in competition with each other, and land degradation will have a negative impact on all three aspects in the short or long term. The WBGU calls this the ‘trilemma of land use’ because, at first glance, it appears that any one of these challenges can only be met at the expense of the other two. This report uses examples to show how combinations of conservation and different uses in the landscape can generate multiple benefits so that competition can be overcome. In this respect, the Conferences of the Parties to the Framework Convention on Climate Change (UNFCCC), the Paris Agreement and the Convention on Biological Diversity (CBD) planned for 2021, as well as the forthcoming UN Decade on Ecosystem Restoration, are key forums for making decisive international progress towards sustainable land stewardship. The necessary land-use transformation will, however, not succeed just by changing existing international legal instruments and forums. The initiative of private actors, companies and societal groups, as well as






Climate protection 

Biodiversity conservation 

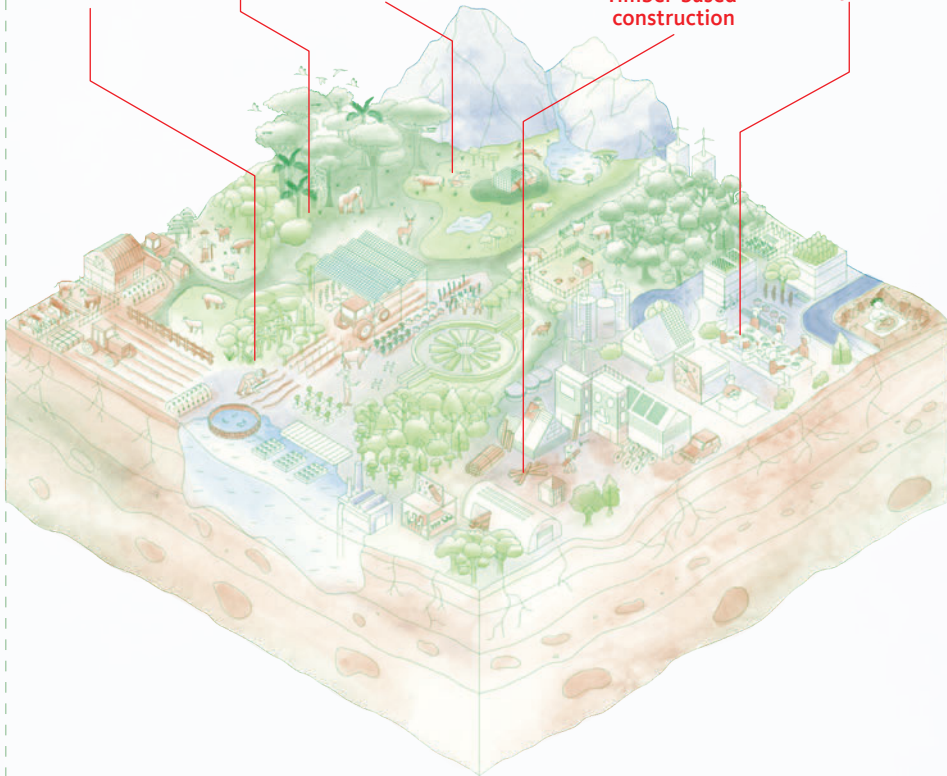
FROM
TRILEMMA TO
INTEGRATION



Food security 

Diversified agriculture 
Protected-area systems 
Ecosystem restoration 
Timber-based construction 
Changing dietary habits 

MULTIPLE-
BENEFIT
STRATEGIES
FOR SUSTAINABLE
LAND
STEWARDSHIP



Normative
compass

TRANSFORMATIVE
GOVERNANCE
FOR
SOLIDARITY-BASED
LAND
STEWARDSHIP

European Union

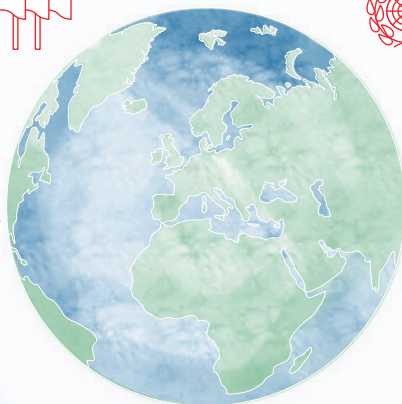


Proactive state 

International cooperation 

Change agents 

New cooperation alliances 



measures at the state and supranational level, are also needed. Furthermore, coalitions of like-minded countries should join together in cooperation alliances to promote the global land-use transformation.

A global land-use transformation towards sustainability is urgently needed

Land is the “the terrestrial bio-productive system that comprises soil, vegetation, other biota, and the ecological and hydrological processes that operate within the system” (definition from the Convention to Combat Desertification, UNCCD, Art. 1e). In the present report, the WBGU presents political design options for sustainable land stewardship. It develops examples of multiple-benefit strategies for the protection and restoration of ecosystems, for agriculture, dietary habits and the bioeconomy; strategies that are transformative because they are scalable and suitable as ‘game changers’. In addition, the report proposes effective instruments for governance incorporating both change agents and the proactive state, the EU, international institutions (including the UNFCCC, CBD and UNCCD) and new, international cooperation alliances.

Land is a global commons: humankind must accept and assume its responsibility for land in order to mitigate climate change, conserve biodiversity and safeguard food security; it must discharge this responsibility nationally and enforce it internationally. The focus should be on halting the destruction of terrestrial ecosystems and on investing massively in their conservation and restoration. Globally sustainable land stewardship is a prerequisite for compliance with planetary guard rails and for meeting the UN Sustainable Development Goals (SDGs). The key strategies and governance requirements set out by the WBGU in this report can be characterized by the terms *systemic*, *synergistic* and *solidarity-based*.

Systemic interrelations as a key to global sustainability

A wide variety of interactions characterize the interplay between, on the one hand, land use and land degradation and, on the other, climate change, greenhouse-gas emissions and sinks, the loss and degradation of ecosystems and biodiversity, the exploitation of biogenic resources, and the increasingly critical state of the food systems. Fragmented and unsustainable land management leads to multiple conflicts concerning its protection and use, and to competition for land. The WBGU therefore urges a systemically substantiated, sustainable approach to land stewardship, which is an important key to the Great Transformation towards

Sustainability. Ecosystems and their diverse services are essential bases for human life and economic activity and deserve to be at the centre of attention, whereby remote effects (telecouplings) – e.g. of material cycles or the world trade in agricultural goods – on land-use changes and land degradation must also be taken into account.

Synergistic interaction: from separation to integration

In selected thematic areas (ecosystem restoration, ecosystem conservation, agriculture, dietary habits, bioeconomy), the WBGU has developed five examples of *multiple-benefit strategies* for protecting and using areas of land, which contribute to a wide range of synergies and, overall, to sustainable land stewardship. In many cases, focusing on monofunctional land uses leads to competition between protection and different uses. A sustainable land stewardship that simultaneously enables climate-change mitigation, biodiversity conservation and food security, requires multifunctionality and synergies on areas of land and in the landscape. This is the only way to achieve multiple benefits overall and to overcome the trilemma of climate-change mitigation, biodiversity conservation and food security. The WBGU therefore recommends multiple-benefit strategies for sustainable land stewardship that combine several objectives and their implementation in one and the same landscape. For example, consideration should be given simultaneously to expanding and upgrading systems of protected areas (to cover 30% of the Earth’s surface), accelerating land restoration, diversifying agriculture in various parts of the world, and changing people’s dietary habits. Using timber in construction can combine climate protection, sustainable biomass production and a responsibly limited use of biogenic resources.

Solidarity-based assumption of responsibility

Multilateral policy approaches are indispensable for implementing overarching strategies for a transformation of land use at all levels of governance – from local, national and European to international. Land as a global commons requires actors at all levels to assume responsibility. International institutions, for example the three Rio Conventions UNFCCC, CBD and UNCCD, whose activities relating to land are currently not sufficiently coordinated, need more solidarity-based cooperation, scientific support across topics, and better stakeholder involvement. Furthermore, new multilateral alliances should be forged in order to promote the Great Transformation towards Sustainability before it is too late. They should above all bring together countries that are responsible for a particularly large proportion of global resource consumption.

Concept of the integrated landscape approach

The strategic approaches for sustainable land stewardship – as summarized by the ‘triad’ systemic, synergistic, solidarity-based – must be implemented in practice on the land. The concept of the integrated landscape approach can provide some orientation here. The landscape provides a suitable frame of reference for governance: it is small enough to keep decision-making processes manageable, but large enough to accommodate the different interests of civil society, private and public stakeholders. In this context, a landscape is defined as an area characterized by specific geographical, natural, ecological and historical similarities and interacting structures which distinguish it from other areas. The integrated landscape approach underlying this report has the following characteristics:

- ▶ *Multifunctionality and multiple benefits:* The WBGU’s normative compass and the identification of land-use synergies that can overcome the trilemma offer a basis for identifying a target system that can be shared by the different actors, as well as for strengthening multifunctionality in the landscape and developing solutions that are viable in the long term. The aim is to generate multiple benefits by the multifunctional use of suitable land and the combination of different pieces of land (e.g. agricultural fields that are also home to a wide range of agrobiodiversity, or pastures that are also a carbon sink).
- ▶ *Participation and reciprocity of stakeholders:* The private, public and civil-society stakeholders representing different interests should not only be identified and consulted; above all they should be encouraged to participate in the decision-making processes on how land should be managed. A suitable form of institutionalization would be the establishment of long-term multi-stakeholder forums that meet regularly and are also oriented towards the SDGs and other internationally agreed goals.
- ▶ *Shared framework for monitoring and evaluation:* This is an essential prerequisite for putting the negotiation processes on a common evidence base. In the sense of transdisciplinary approaches, local stakeholders should be encouraged and trained to each contribute their respective knowledge to facilitate joint learning.
- ▶ *Adaptive management:* Processes that take place in – or impact on – landscapes are dynamic and frequently non-linear. Adaptive management has proved its worth in coping with these potentially unpredictable and disruptive dynamics (e.g. economic or climate crises).

Five multiple-benefit strategies for sustainable land stewardship

In order to show how the trilemma of land use can be overcome, the WBGU presents five examples of multiple-benefit strategies. These relate to the thematic fields of ecosystem restoration, ecosystem conservation, agriculture, dietary habits and the bioeconomy.

1. Ecosystem restoration: make land-based CO₂ removal synergistic

Measures for removing CO₂ from the atmosphere are no substitute for a massive reduction of CO₂ emissions with the aim of cutting emissions to zero. However, in order to reach the climate-protection goals of the Paris Agreement, additional measures to remove



CO₂ from the atmosphere can hardly be avoided, although they involve considerable uncertainties and risks depending on the method, scope and effectiveness of implementation and can potentially increase the pressure on the land. When setting targets for climate policy and designing timetables and accounting structures, a clear distinction should therefore be made between reductions in CO₂ emissions and CO₂ removal from the atmosphere. Net emission targets or climate-neutrality targets should, if at all, only be formulated if the assumed contributions of CO₂ emissions reductions and CO₂ removal respectively are explicitly stated; otherwise, the chances of achieving the climate protection goals might be jeopardized. The sustainably achievable potential of the individual approaches to removing CO₂ from the atmosphere should be explored locally, nationally and internationally and firmly integrated accordingly into climate-policy strategies as well as accounting and incentive structures.

If an ambitious reduction of global CO₂ emissions is achieved at an early stage, this will make it possible to avoid risky, large-scale methods of CO₂ removal and to focus on approaches which, while offering only limited potential for CO₂ removal, promise significant additional benefits for biodiversity and food security. One especially promising approach to CO₂ removal from the atmosphere is the restoration of degraded land ecosystems, a multiple-benefit strategy which has particularly high political appeal in view of the forthcoming UN Decade on Ecosystem Restoration. Rewetting and restoring peatlands has great potential for conserving very specialized ecosystems and for storing CO₂ sustainably. The site-specific reforestation of deforested areas offers sustainable potential for CO₂ removal

and, moreover, opens up the possibility of contributing to sustainable livelihood systems or directly to human food supplies by establishing or creating agroforestry systems. Projects for afforesting hitherto unforested areas should be critically and individually appraised. The WBGU recommends that the target set by the Bonn Challenge of restoring 350 million hectares of terrestrial ecosystems worldwide by 2030 (which is equivalent to about 2% of the Earth's terrestrial surface) should be not only achieved, but significantly expanded; the focus should be on restoring biodiverse forests that are adapted to local conditions. In addition, not only reforestation but also the restoration of wetlands (rewetting) and grasslands (reducing grazing pressure) should be addressed.

The WBGU recommends that the multiple potential benefits of restoring degraded land should be exploited at an early stage over large areas. In addition, national and international research should be intensified on the costs, feasibility and permanence of ecosystem restoration and on how much land area is potentially available worldwide for this purpose. Furthermore, in order to finance restoration measures, payment systems for the creation and conservation of ecosystem services should be developed; these should be implemented much more consistently and systematically than hitherto, not only with regard to possible CO₂ removal, but also in general with regard to ecosystem services that can be characterized as commons.

2. Expand and upgrade protected-area systems

Effective and well connected systems of protected areas form the backbone of ecosystem conservation and are a decisive prerequisite for defusing the global biodiversity crisis and maintaining basic ecosystem services. Preventing the further degradation and destruction of ecosystems also benefits climate-change mitigation by avoiding CO₂ emissions and preserving natural carbon reservoirs. The value and conservation of the land inhabited by Indigenous Peoples and Local Communities (IPLCs) is of key importance here since most of its ecosystems are as yet untouched by intensive forms of cultivation.

Protected-area systems are characterized by the fact that their priority goal is the effective conservation of ecosystems and biodiversity. Protected areas that use zoning – i.e. division into areas with different combinations of conservation and sustainable use – allow the coexistence of valuable nature with human activities that are compatible with biodiversity conservation.



Multiple benefits for food security can be realized in these protected areas, e.g. by allowing sustainable forms of use in certain zones which can even be a prerequisite for biodiversity conservation.

The WBGU recommends expanding terrestrial systems of protected areas to cover 30% of the Earth's land area while consistently applying internationally agreed quality criteria, and proposes this goal for the CBD's post-2020 framework. However, international negotiations must not be reduced to area targets; rather, existing Aichi quality criteria for protected areas should be maintained and compliance regulations tightened. As part of an integrated landscape approach, there should be improved networking, both between the protected areas and with restored areas and the surrounding land. In addition to the top-priority conservation goals, the other dimensions of the trilemma should also be borne in mind, checked for possible synergies and, in the landscape context, integrated more closely into the management plans of protected areas. Industrialized countries should make greater use of their financial capacity, where possible in combination with private financing, to expand and upgrade protected-area systems both at home and in developing countries. In order to secure the valuable conservation effect of regions inhabited by IPLCs, their traditional rights and traditional knowledge should be formally recognized not only at the UN level but also in national contexts.

3. Diversify farming systems

Agriculture shapes the landscape and land management in many parts of the world. It is the foundation of food security. However, both industrial agriculture and subsistence farming jeopardize climate-change mitigation and biodiversity and degrade the soils. The WBGU therefore recommends transforming the hitherto largely monofunctional, production-oriented agricultural systems towards ecologically intensive, multifunctional systems, e.g. agro-forestry, focusing on people, agro-ecological practices and the provision of ecosystem services. One of the German Federal Government's priorities should be the necessary transformation of the EU's agricultural policies.

The WBGU recommends that EU agricultural policy should move away from industrial farming methods through a comprehensive ecological transformation. Agricultural subsidies should always be linked to environmental improvements, relying wherever possible on multifunctional production systems. Area-based direct payments should be transformed into payments for



ecosystem services. Agri-environmental and climate-change-mitigation measures with especially positive effects on conserving biodiversity ('dark-green measures') should be further developed despite the additional administrative effort involved. The implementation of the envisaged national strategic plans from 2021 onwards should be monitored by the EU. In line with the concept of a circular economy, crop cultivation should be linked with animal husbandry, nutrient cycles should be closed and efforts made to increase nutrient efficiency and improve the recycling of nutrients (especially phosphorus, but also nitrogen and other nutrients). At the same time, greater efforts should be made to create carbon sinks and protect natural carbon reservoirs.

In order to shift land use towards sustainability, it is essential to involve and consult a wide range of stakeholders. Education and training programmes should provide information on diversified agricultural production systems and agri-ecological practices, explain the aims and requirements of agri-environmental programmes better and encourage participation. This transformation of agriculture will not be possible without the further development and implementation of digitalization in agriculture. The development and implementation of technical innovations for sustainability, e.g. precision agriculture, should be carefully considered and promoted – as long as they are not exclusively oriented towards large-scale systems and large-area agriculture but contribute towards the aims of ecological transformation and multifunctionality. In the medium term, the EU's Common Agricultural Policy (CAP) should be integrated into a more comprehensive system that also promotes ecosystem and biodiversity conservation and the provision of ecosystem services outside of agricultural land.

The productivity of subsistence agriculture in sub-Saharan Africa needs to be sustainably improved to maintain soil quality over the long term. To achieve this, temporary financial support should be provided not only for materials, but also to cover the additional labour input required to ensure that farmers and herders are prepared to take on the additional work during the several years of adjustment that will be needed to restore the soils before yields increase. For a co-management of land use in semi-arid regions, farmers and herders should be familiarized with an integrated landscape approach by experts, and supported in its implementation.

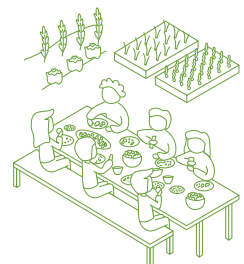
The WBGU is convinced that a global transformation of agriculture can only succeed if it is backed by a stronger orientation of international trade towards sustainability criteria. The design and implementation of certification schemes (e.g. Fairtrade, the 'Bio-Siegel'

organic seal, FSC) and protected labels of origin should be improved and, where appropriate, new schemes developed (e.g. climate labels for agricultural products) to promote sustainability. In regional trade agreements, the development of guidelines for voluntary eco-labelling should be proactively adopted from the planned Agreement on Climate Change, Trade and Sustainability (ACCTS). Furthermore, sustainability in trade should be promoted by supply-chain management, if necessary by passing supply-chain legislation at the European level. Finally, resilience to shocks and food crises should be strengthened: a small number of net exporting countries supply a large number of net importing countries, and most developing countries, specifically in sub-Saharan Africa, are dependent on food imports. Resilience – i.e. the capacity to robustly withstand shocks, climate-change effects and food crises – should be increased through diversified farming systems (especially 'climate-smart' measures), a new fund under the Economic Partnership Agreement (e.g. to promote agricultural productivity in sub-Saharan Africa), and through Aid for Trade measures for sustainable products.

4. Transform dietary habits: enable and encourage the assumption of responsibility on the demand side

The dysfunctionality of the global food system is one of the main drivers of the trilemma of land use. Above all, diets heavy in animal products in industrialized countries and the growing middle classes in emerging economies and developing countries are exacerbating land-related problems for climate and biodiversity protection and making sustainable food security more difficult. Promising potential for alleviating this problem lies in changing dietary habits. In Europe, a corresponding shift in values towards lower levels of meat consumption is already evident.

In the WBGU's view, there is an urgent need for a transformation of the global food system and of worldwide dietary habits. Both must be geared equally to human health and the conservation of ecosystem services. In particular, it is essential to encourage changes in consumer behaviour towards a reduced consumption of animal products. The necessary transformation of dietary habits can be decisively promoted by making consistent changes to framework conditions, establishing sustainability-oriented norms and creating corresponding incentives for business and consumers. In addition to the already mentioned EU CAP reform and corresponding changes in development cooperation,



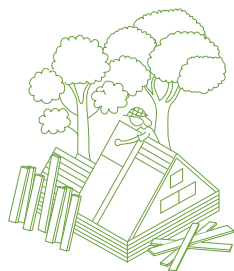
the components of such a transformation include an information and education offensive and resolute implementation of nutritional guidelines in line with the Planetary Health Diet (PHD). The PHD's guiding principle is that part of daily meals should be based on reduced amounts of animal products, especially red and processed meat. This should be laid down by the relevant institutions (e.g. in Germany by the Federal Centre for Nutrition – BZfE) as a principle for new nutritional guidelines, and also recommended by the German Federal Government. To create a role model, meals based on the PHD nutritional guideline should be offered in public communal catering or break-time catering, e.g. at the conferences of public institutions. Furthermore, a 'Sustainable Food Supply' certificate could be introduced for the retail sector, guaranteeing that what is on offer complies with the basic principles of the PHD and that food products are offered with sound information on environmental externalities.

The WBGU is also convinced of the urgent need to establish framework conditions to ensure that ecosystem services and the costs of their degradation are reflected as fully as possible in food prices. For example, hitherto neglected external costs of climate change and environmental degradation should be systematically documented by research and internalized by appropriate measures (certification, taxation, financial support). Social hardships related to price increases should be monitored and, where appropriate, cushioned.

Finally, the Federal Government should use trade as an engine for achieving sustainable and healthy nutrition. International trade and investment agreements should take into account impacts on the nutrition of populations. The Principles for Responsible Investment in Agriculture and Food System developed by the Committee on World Food Security strengthen food security and the right to adequate nutrition and should be consistently implemented. This applies in particular to regional and bilateral trade agreements, which offer investors particularly strong protection.

5. Shape the bioeconomy responsibly and promote timber-based construction

The use of materials or energy from biomass in the bioeconomy offers a wide range of options for replacing emissions-intensive processes and fossil resources. However, the growing demand for land for biomass production is increasingly competing with the land requirements for food security and biodiversity conser-



vation. In order to shape a bioeconomy based on sustainable land use, it is therefore necessary to create a framework limiting the use of biomass and setting priorities according to types of use. Taking the conservation of biodiversity and natural carbon reservoirs into account, a hierarchy in the use of biomass should give first priority to food and only then to materials and specific energy-related uses. Preference should be given to uses in which carbon is stored, or for which there are no other non-fossil energy alternatives. To achieve this, reduction targets for material consumption should be defined and, as material uses of biomass are stepped up, the sustainability demands on its production should be tightened and expanded in parallel; non-bio-based climate-protection strategies should be pursued. The use of by-products from agriculture and forestry for materials or energy can also contribute to economically sustainable development and food security, especially in developing countries and emerging economies.

The WBGU recommends boosting the use of timber in construction. Timber from locally adapted, sustainable forestry offers effective possibilities for long-term carbon storage. Specifically for the promotion of timber-based construction, the WBGU recommends proclaiming a global 'Mission for Sustainable Construction' together with international partners. This mission would strategically link the development and large-scale implementation of sustainable (timber-based) construction methods to a sustainable supply of raw materials, involve state actors as well as business, science and civil society, and develop global strategies on sustainable raw materials and building-material use. It is particularly important in this context to factor-in environmental costs (e.g. CO₂ prices in the cement and steel sectors, environmental requirements for sand), which would also make sustainable construction more attractive relative to conventional construction and create incentives for material efficiency and reuse. In order to establish all stages in the value chain of sustainable construction worldwide and also in rural areas, the necessary knowledge must be disseminated (e.g. information on materials, construction methods, standards and certification, as well as recycling options). A greater number of practice-oriented, inexpensive engineering and dual-training courses and advanced training in sustainable construction should be offered, and not only by industry/trade associations.

Industrialized countries should adjust their legal frameworks (e.g. building codes), remove relevant obstacles and promote a circular economy and sustainable public construction. Accordingly, the WBGU supports the approach taken by the President of the European Commission, Dr von der Leyen, in striving for this goal within the European Green Deal and creating a

Summary

'New European Bauhaus' to support this ambitious project.

In developing countries and emerging economies, the establishment of regional, sustainable building-materials and construction industries should be promoted. Especially countries with high construction needs or sustainable resource potential should be supported in the production of sustainable building materials and in the planning, construction, maintenance and reuse of regionally adapted sustainable buildings. One example is the collaboration between local farmers and foresters, construction companies and R&D institutions, linked to local programmes of investment and international trade.

Five governance strategies for a solidarity-based land stewardship

As part of the global commons, terrestrial ecosystems and their services depend on all stakeholders assuming broad and solidarity-based responsibility. The multiple-benefit strategies offer starting points for important changes, but a global land-use transformation is a challenge that goes far beyond individual multiple-benefit strategies. It is important that suitable framework conditions and incentive systems are created by governance at all levels – local, national, European, international and transnational.

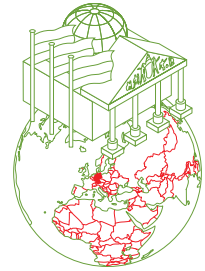
1. Support change agents

Solidarity-based consumption habits that are sensitive to the scarcity related to productive land are becoming increasingly widespread. Now there are numerous examples of change agents trying out new land-related protection and use practices. Some landowners are making their land available for ecosystem conservation or uses that are more sustainable, or are themselves trying out restoration and alternative cultivation methods; consumers are falling back on a wide range of options for growing food themselves and seeking sustainable alternatives when buying products made of wood. In order to broadly promote such pioneering activities and solidarity-based consumption, networking and visibility should be supported and financial resources provided.



2. Set political framework conditions for solidarity-based land stewardship

The challenge for governments lies in developing a consistent system of different instruments (e.g. price incentives, voluntary and mandatory sustainability standards, spatial planning, subsidies) to support a land-use transformation not only for change agents but also for society as a whole and to break down barriers. States should ensure that both those who use land and those who consume products produced on the land take into account the negative impacts their actions have on ecosystems – and that their positive contributions to the conservation or restoration of ecosystems and ecosystem services are rewarded by society. Building on a large number of partial, sectoral regulations, a system of coordinated instruments is therefore needed that is as comprehensive as possible in terms of areas, (sectoral) biomass uses and actors, especially when demand for new uses of land and biomass is greatly increasing, e.g. as a result of higher CO₂ prices. This can be achieved, for example, by linking sustainable resource strategies with standards and certification systems, promoting circular and cascading uses, offering financial incentives, and gearing research and development towards sustainability.



Furthermore, particular challenges for the proactive state lie in enforcing domestic requirements on land stewardship also at the international level (e.g. through free trade agreements or border tax adjustments), in order to prevent displacements of unsustainable modes of behaviour and thus indirect land-use changes. These challenges also involve identifying and cushioning distributional effects of government action and the transformation of land use in general. In particular, indicators for, and monitoring of, the sustainable use of land and biomass should be further developed. Selected, existing instruments for production and trade – ranging from voluntary certification and financial incentives to restrictions, the establishment of protected areas (e.g. for nature conservation or groundwater protection) and outright bans (e.g. on pesticides) – should be improved and enforced in the interest of sustainable land stewardship. Finally, it is necessary to develop a consistent system from the partial, sectoral governance approaches.

The legal implementation and planning of the integrated landscape approach in Germany should primarily use existing planning instruments – e.g. spatial planning, which seems particularly suitable due to its interdisciplinary and broad approach. In particular, the possibility of using planning law to plan and designate

multifunctional land uses should be integrated as a guiding concept into national planning law and planning activities.

3. Tackle land-use transformation in the European Union

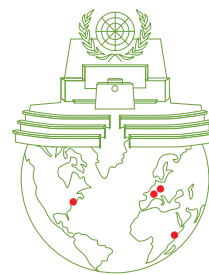
As a community of shared laws and values whose territory is largely interconnected, the EU is particularly well suited for testing a land-use transformation over a large area. In this sense, the European Green Deal can be used to advance not only climate neutrality by 2050 but also a transformation in land use towards sustainability. It also bears particular international responsibility because of the high demand for land outside the EU, which it can take into account primarily through its trade policy. The key policy for a European land-use transformation is the EU's Common Agricultural Policy (CAP). Within the EU, funds are needed not only for the ecological transformation of agriculture, but also for sustainable forestry, establishing and expanding protected-area systems, restoring ecosystems and, where appropriate, developing more land-based approaches to CO₂ removal – as well as for other objectives that impact on the quality, protection and use of land. In order to establish uniform framework conditions and funding conditions for all these concepts of land use and protection, the CAP should in future be further developed into a Common Ecosystem Policy (CEP). Furthermore, the EU should set quantified targets for reducing the consumption of resources – analogous to its climate-mitigation targets – and gear the circular economy to them. A sub-target should limit the use of biomass. Sustainability standards like those that already apply to the promotion of bioenergy and biofuels should be extended to other uses of biomass.

The WBGU believes it is essential that the EU use its foreign-trade policy to promote a global land-use transformation. The EU should make the sustainable stewardship of land a key issue in the negotiations on future – and the reform of existing – trade agreements. It should furthermore use its weight in trade policy to integrate the protection of global commons more fully into the regulations of the World Trade Organization and promote the development and production of sustainable goods and services by reducing relevant trade barriers. Unilateral actions at its external borders should be further pursued and explored in line with the objectives of EU environmental policy.



4. Strengthen international cooperation and coordination with a focus on land

Numerous international organizations, institutions and conventions under international law are working on the global land-use transformation. The WBGU focuses here on cooperation under the Rio Conventions, scientific assessments of land use, and the potential for increasingly 'glocal' interlinkage.



The WBGU recommends convening a 'Global Land Summit' in 2025 – a joint conference of the parties to all three Rio Conventions. In this way, for the first time, a lot of attention can be generated for the global land-use transformation, and many resources can be made available to develop a common vision for sustainable land stewardship. This cooperation should be supported by upgrading the Joint Liaison Group, the link between the three conventions. Not least, the CBD's post-2020 framework should be resolutely developed and implemented.

The synthesis potential of global scientific assessments should be used across the board. Local solutions and process knowledge for implementation at the landscape level should also be scientifically assessed and processed. Regional research and competence centres should be expanded to research and test regional approaches to sustainable land stewardship in practice. In order to effectively address global environmental change, indigenous and local positions should not only be given a higher profile in international forums; rather, the role of IPLCs as knowledge carriers, transformation actors and locally affected people should also be consistently strengthened and better integrated.

5. Establish new cooperation alliances for the global land-use transformation

Existing forums for a global transformation of land use are indispensable. To enable rapid progress, they need to be strengthened and, in addition, new forms of cooperation set up. The WBGU therefore recommends the establishment of new cooperation alliances by like-minded states and subnational regions.



The first model that the WBGU is developing and proposing is that of *regional alliances* which aim for the cross-border implementation of integrated landscape approaches. Regions should cooperate institutionally more closely as neighbours to make cross-border land

Summary

uses possible, e.g. in the form of the proposed multiple-benefit strategies. Regional alliances of sub-national regions can, for example, establish regional circular economies and value chains, further develop existing biosphere reserves into forerunners of integrative landscape areas, or set up regional innovation hubs for sustainable farming methods.

The aim of the WBGU's second model is for states around the world to assume responsibility by joining forces to form a *supranational alliance for a global land-use transformation*. The purpose of these alliances is to unite countries that want to jointly pursue sustainable land stewardship and agree on common values and regulations to achieve this aim, e.g. common production standards. Member states of these alliances can be spread over different regions of the world. They become effective by transferring specific sovereign powers to the alliance, following the EU model. These powers can be enforced vis-à-vis the member states by alliance institutions. Such supranational alliances can form pioneering alliances for sustainable world agricultural trade, jointly implement transparent and sustainable supply chains, and effectively advance a Green Deal globally.

The WBGU's third model consists of *global conservation alliances* for valuable ecosystems. In these conservation alliances, states and other – also private – actors join forces with the aim of conserving and restoring valuable ecosystems in third countries, which should also be members of the conservation alliance. Conservation alliances can, for example, jointly lease such areas and, in this way, move beyond the often passive role of being mere 'donor countries' and inclusively assume joint responsibility together with local stakeholders.

global transformation of land use towards sustainability. It requires pioneers who explore and pursue new ways; states that set framework conditions, enforce the necessary measures and cooperate with each other; and mechanisms for achieving a fair balance between stakeholders. This can be driven forward by a supportive EU policy and a stronger focus on land in international cooperation, as well as new alliances of like-minded states. This report aims to vigorously advocate making the global land-use transformation a political priority.

Committing to initiating the global land-use transformation

In order to overcome the trilemma of land use, this report offers options for overcoming land-use competition between climate-change mitigation, biodiversity conservation and food security. This requires a fundamental change in our approach to land stewardship. The aim is to show the way forward with a combination of the exemplary multiple-benefit strategies presented above and their implementation as part of an integrated landscape approach. Almost 30 years after the Rio de Janeiro Earth Summit, the international community has a framework of institutions at its disposal to address these problems. However, in view of the crisis of multi-lateralism, committed and rapid action by like-minded states is more important than ever. Political will, creativity and courage are required for the urgently needed

The German Advisory Council on Global Change

(Wissenschaftlicher Beirat der Bundesregierung Globale Umweltveränderungen – WBGU)

The WBGU is an independent, scientific advisory body to the German Federal Government set up in 1992 in the run-up to the Rio Earth Summit. The Council has nine members appointed for a term of four years by the German Federal Cabinet. The Council is supported by an interministerial committee comprising representatives of all ministries and the German Federal Chancellery. The Council's principal task is to provide scientifically-based policy advice on global change issues. The Council:

- › analyses global environment and development problems and reports on these,
- › reviews and evaluates national and international research in the field of global change,
- › provides early warning of new issue areas,
- › identifies gaps in research and initiates new research,
- › monitors and assesses national and international policies for the achievement of sustainable development,
- › elaborates recommendations for action, and
- › raises public awareness and heightens the media profile of global change issues.

The WBGU publishes flagship reports every two years, making its own choice of focal themes. In addition, the German government can commission the Council to prepare special reports and policy papers.

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