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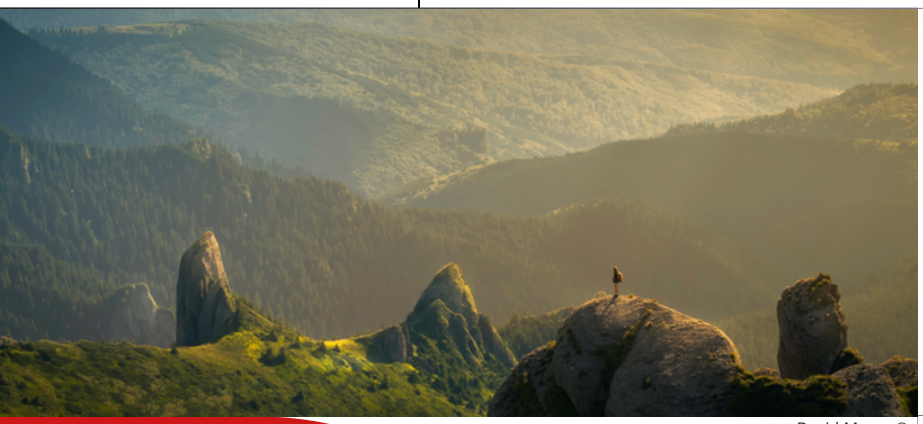
INTEGRATED LAND-USE PLANNING: FROM SILOS TO SYNERGIES IN CLIMATE, BIODIVERSITY AND LAND



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"WE ARE FACING A TRIPLE PLANETARY CRISES OF CLIMATE CHANGE, BIODIVERSITY LOSS AND POLLUTION, AND LAND IS AT THE CENTRE OF ALL THREE"

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Issues of land, food and nutrition security, biodiversity and climate-change crises can no longer be treated independently. Here we explore means and approaches to break down these silos in multilateral environmental agreements and complementary arenas at the science-policy interface and, in integrated land-use planning practices.

More than 70 % of the Earth's ice-free terrestrial ecosystems have changed from their natural state, and[1,2] 35 % of all land is used for agricultural purposes. Meanwhile, the rate of land conversion to produce food and feedstocks for biofuels is accelerating. Due to[3] unsustainable land practices and planning, countries have reported that 1/5 of all land is now considered degraded. The loss of[4] vegetation cover, soil fertility, productivity and biodiversity has led to degradation in ecosystem functions and services, thereby greatly altering food production, yield, water availability and carbon sequestration. Current land degradation is estimated to affect the well-being of 3.2 billion people worldwide, and land conversion is recognised as one of the main drivers leading to a sixth mass species extinction. However, despite its growing importance as an issue, there is no common framework for addressing land as a lever for action on climate, biodiversity and food security. Very little has emerged in the Conference of the Parties (COP) decisions of the three Rio Conventions to translate this formal recognition into concrete actions.

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1. THE PIVOTAL ROLE OF HUMAN-MANAGED LAND RECOGNISED BY ALL

While international negotiation arenas, science-policy interfaces and sustainability sciences recognise the transversal and essential role of land, they still operate in relative silos on the issue.

Land importance for the Rio conventions

Land has been a focus of the United Nations Convention to Combat Desertification (UNCCD) since its adoption in 1994. The UNCCD defines land as 'the terrestrial bio-productive system that comprises soil, vegetation, other biota, and the ecological and hydrological processes that operate within the system'.[5] Land and its natural resources are described as critical assets for rural communities and indigenous peoples. It can be viewed as **a public good which provides food, water, fuelwood and medicinal plants, and which regulates bio-physical cycles** (such as carbon), while at the same time providing security, status, social identity and a safety net for its inhabitants. **Land is also about dignity, culture and identity**. Human communities are embedded in their nearby ecosystems, which shape the land into a mosaic of diverse landscapes.[6]

In recent years, land has become an increasingly important issue addressed in many other political arenas. It appears formally under the term 'land' in several targets of the Kunming-Montreal Global Biodiversity Framework (KMGBF)[7] : in Target 1 on land use and spatial planning, in Target 22 in reference to the culture and rights of Indigenous Peoples and Local Communities (IPLCs), and in Target 23 on the recognition of gender equality in rights and access. Under the term 'areas' more commonly used by the UN Convention on Biological Diversity (CBD), it appears in connection with ecosystem restoration, biodiversity protection, and sustainable agriculture and forestry. It can also be noted that Target 11 refers to 'soil health', while no reference to 'land' has been made in Target 7 on pollution reduction.

Land priorities at the science-policy interface

At the science-policy level, the Intergovernmental Panel on Climate Change (IPCC), in a special report on desertification, degradation and sustainable management of land[8] published in 2019, emphasises the need for adaptation, whereas the focus previously was on climate modelling and mitigation processes. The Global Assessment Report[9] published in 2019 by the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES) identifies **land-use changes as the greatest driver of biodiversity loss** since 1970, with agricultural expansion being the most widespread form. IPBES has also published a report aimed at enhancing the knowledge base for policies to address land degradation, desertification and restoration.[10]

Sustainability science

Halting land degradation and restoring degraded land is at the heart of the UN Decade on Ecosystem Restoration.[11] Furthermore, **achieving a land-degradation neutral world** was defined as one of the 169 targets (15.3) of the Sustainable Development Goals (SDGs) adopted in 2015. To break down silos, **we must understand the interactions between the SDGs**, their trade-offs and synergies in the context of multiple crises **and involve all stakeholders in decision-making processes**, including at the local level. As pointed out in the Global Sustainable Development Report, sustainability science,[12] cited as a problem-solving approach to research on 'wicked problems', is one of the levers to address these challenges.

UNESCO and various institutions and organisations active in the field of sustainability launched the BRIDGES[13] initiative in 2020 to bring together a range of partners to jointly design and implement pilot-territory-based projects combining different sources of knowledge and traditions. Since its establishment, the Belmont Forum,[14] an international partnership that mobilises funding for research on environmental change, encourages international transdisciplinary research that provides knowledge for understanding, mitigating and adapting to global environmental change.

BOX 1 Sustainability science

Sustainability science, often presented as **transdisciplinarity**, is a new scientific field **that promotes demand-driven approaches and co-construction of research** to create and apply knowledge to support decision-making to address environmental and societal challenges and achieve the SDGs. Several recognised research institutions have adopted such approaches in their curricula, such as the United Nations University[15] and the international programme Future Earth. And specific scientific journals, such as Sustainability Science,[16] focus on this field. To foster implementation in the Global South, researchers from the French National Research Institute for Sustainable Development (IRD) have also developed a set of suitable tools or **'pattern language'** for sustainability science initiatives which can guide other practitioners and facilitate adaptation to local conditions and contexts.[17]

2. EFFORTS TO BREAK DOWN THE SILOS

To feed decision-making processes and scientific evidence that highlights interactions, we need synergies and trade-offs between environmental, social and economic activities. This common assessment of the **key role of land is already reflected in recent COP decisions of the three Rio Conventions**:

1. The **CBD KMGBF** (Dec. 2022) highlights the role of land for biodiversity, with Target 1 stressing that 'reducing threats to biodiversity' requires 'ensuring that all land and marine areas are subject to integrated spatial planning'.

1 IPBES, 2018: Assessment Report on Land Degradation and Restoration

2 IPCC, 2019 : Special report on climate change and land

3 See note 2

4 UN-STATS, 2020: The Sustainable Development Goals Report

5 UNCCD, 2022: Convention text

6 UNCCD, 2017, 2022: Global Land Outlook

7 UNCBD, 2023: Kunming-Montreal Global Biodiversity Framework

8 IPCC, 2019 : Special report on Climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems

9 IPBES, 2019: Global Assessment Report on Biodiversity and Ecosystem Services

10 IPBES, 2018: Assessment Report on Land Degradation and Restoration

11 UN Decade on Ecosystem Restoration

12 See the box on Sustainability Science

13 UNESCO, 2019, article 'Toward the establishment of BRIDGES: action to promote sustainability science'

14 https://www.belmontforum.org/

15 hhttps://ias.unu.edu/en/

16 https://www.springer.com/journal/11625

17 Sustainability Science Pattern

18 UNCCD, 2022: Report on contribution of integrated land use planning and integrated landscape management to implementing Land Degradation Neutrality

19 United Nations Framework Convention on Climate Change

20 Sharm el-Sheikh Implementation Plan. Revised draft decision -/CP.27

21 International '4 per 1000' Initiative Soils for Food Security and Climate

22 UNCCD, 2023: Synergies Brief: Land Restoration to Safeguard Nature and Livelihoods

23 IFAD - Enhanced Adaptation for Smallholder Agriculture Programme

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2. The **UNCCD COP 15** saw the launch of the report on the contributions of integrated land-use planning and integrated landscape management to achieve land-degradation neutrality.[18] Further, some clear references were made in the COP decisions to foster and support integrated land-use planning and integrated land management as enablers of synergies, complementarities and policy coherence among the three Rio Conventions.
3. For the **UNFCCC**,[19] the interdependence between climate change and land use was officially adopted with the launch of the **Koronivia Joint Work on Agriculture in 2017 (**COP24). The COP27 adopted a decision in November 2022 to keep land and agriculture at the forefront of the climate agenda (Sharm el-Sheikh Initiative).[20]

Moreover, the **need to address the food-climate-biodiversity-water-land nexus** is the backbone of several international initiatives (e.g. 4P1000,[21] Soils for food security and climate)[22] and programmes such as IFAD's ASAP+ (Enhanced Adaptation for Smallholder Agriculture Programme),[23] which focus on the interface between climate, biodiversity, gender and nutrition.

As highlighted in a common synergy brief,[24] **the UNCCD and the CBD are engaging in initial efforts to break down the silos**. However, further work is needed to put these lessons into practice. Instruments and mechanisms must be set up to emphasise synergies and avoid misunderstandings in policies and decisions. **An ad hoc open-ended working group of the Conventions** could be empowered by governments and supported by science-policy panels. It would work on advocacy and solutions at the crossroad of the climate, biodiversity, food and land agendas. It would also be an opportunity to **redesign the scope and mandate of the current Joint Liaison Group of the Rio Conventions**. A single scientific panel on land for the three Rio Conventions, including the High-Level Panel of Experts on Food Security and Nutrition[25] could provide the necessary systematic analysis and assessment of the political and technical aspects of land-use planning.

3. INCLUSIVE TERRITORIAL APPROACHES AS CONCRETE TOOLS

Through innovative integrative planning, management and assessment tools

In order to monitor them effectively, it is crucial to properly assess the impact of land actions. Approaches and technologies to support this goal have changed over the last 20 years. Big data, machine learning, satellites and drone technologies offer new opportunities to monitor the ability of ecosystems to deliver their services and to provide reliable and real-time information. For the European Union, the Copernicus programme provides terabytes of data and information on various land, ocean, atmosphere and climate aspects of our planet, to hundreds of thousands of users every day.[26]

Using this facility, the Ecosystem Natural Capital Accounting approach, developed as part of SEEA[27] Ecosystem Accounting, covers both quantitative and qualitative aspects of ecosystem structures and functions. It ultimately measures the degradation which may occur as a result of human activities, as well as enhancement as a result of sound ecological management.

Through a simplified model, it considers four core accounts that assess land use, water and river condition, bio-carbon content of various biomass stocks and their uses. They are defined and measured separately and aggregated into a composite index of ecological value called the Total Ecosystem Capability unit (TEC), which can be generated at different levels of aggregation (by region, country, watershed, etc.), allowing comparison of trends on a spatial and temporal scale. This approach was developed for Africa at UNCCD COP15.[28]

Another example is the FAO Adaptation, Biodiversity and Carbon Mapping Tool (ABC-Map).[29] Based on Google Earth Engine, it helps project developers and policymakers to measure their potential impacts on biodiversity and carbon stocks and to understand their exposure to climate-change risks.

The tool comprises three sections:
+ An Adaptation section to understand exposure to climate change risks
+ A Biodiversity section to understand the pressures and impacts on biodiversity
+ A Carbon section to estimate greenhouse gas emissions in agriculture, forestry and other land use, using the Nationally Determined Contributions Expert Tool (NEXT).[30]

These tools will also benefit from the unprecedented capabilities offered by the New Space Ecosystem, including high-resolution hyperspectral cameras that can differentiate, with a very high revisit rate, performance between different crops, pastures and forests.

Through financial and social innovations

One aspect of **the strategy to break down silos should be to empower IPLCs, small-scale producers and off-takers** to collaborate in jointly addressing their specific development challenges. This is particularly required by the KMGBF in its Targets 21 (data, information and knowledge), 22 (whole-of-society participation) and 23 (gender equality). Networking, flexibility, capacity and accountability are among the patterns of how initiatives in local nature conservation, ecosystem restoration and sustainable agricultural production can be successful and scaled up. Multi-stakeholder involvement and partnerships, including with private and public sector actors and built on existing networks and organisations, will be necessary to develop a transformative approach with impact at different scales. These partnerships are important for sustainable land management and the informal food economy as well as for knowledge management, policy engagement and development of a strategic vision.

The current GCF-IFAD IGREENFIN Programme[31] in the Sahel shows how innovative approaches using specific green credit lines for smallholders and technical assistance could help encourage the local financial and productive sector (farmers' organisations, small and medium enterprises and cooperatives) to shift to more effective and sustainable agriculture.

24 UNCCD, 2023: Land restoration to safeguard nature and livelihoods: UNCCD and CBD working together

25 https://www.fao.org/cfs/cfs-hlpe/en

26 Copernicus Webpage

27 System of Environmental Economic Accounting

28 Copernicea, Afrikenca 2001-2020, Une première série de comptes écosystémique du capital naturel pour le continent africain (direct download).

29 Adaptation, Biodiversity and Carbon mapping tool.

30 FAO, 2022: Technical guidance for the Nationally Determined Contribution Expert Tool (NEXT).

31 https://www.greenclimate.fund/project/fp183

32 https://www.fao.org/documents/card/fr/c/cb9656fr (in French)

33 https://ruralization.eu

34 https://www.iris-france.org/publications/le-demeter-2023/

Baobab, Sahel, E. Diop. ©

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Through responsible governance of land and natural resources

Effective land governance is critical for long-term results in restoration and agriculture activities. To achieve it, **land-tenure security, land-based actions, and the issue of landlessness among youth and women are key components that should be considered simultaneously in all development activities**. FAO produced a technical guide in 2022 on responsible governance;[32] it calls for the creation of an enabling environment to ensure that the objectives of land-degradation neutrality do not compromise local land-tenure systems.

Assessment of existing tools (including participatory approaches for social empowerment and geospatial technologies), ongoing innovative land-tenure approaches and existing low-cost models should be considered to create an enabling environment with inclusive policies and regulations to achieve land-degradation neutrality, the Paris Agreement / NDC goals and the CBD COP15 targets.

4. KEEPING IN MIND LOCAL AND LONG-TERM VISION

Continuous multi-stakeholder dialogue between policymakers, planners, the private sector and civil society partners is key to ensuring the production, capitalisation and dissemination of knowledge. It is also needed to inform the strategic and operational decisions of local, national and international actors. At the same time, in-depth analysis of the impact of existing knowledge and policy interfaces locally and at national levels will help determine how they can be strengthened.

It is crucial to have long-term vision and local foresight that examines the socioeconomic, commercial and environmental dimensions of land and agricultural issues. Such vision and foresight will provide real added value as a decision-making tool for local and national authorities to achieve the ambitions of the CBD 2050 vision and the African Union 2063 agenda. Meanwhile, planning, designing and developing appropriate forms of resilience as well as responding to change should be based on assessing i) current trends (mobilities vs demographics; urbanisation vs food production vs natural resource management, land-based markets, informal and format agricultural aspects, opportunities from tree crop or non-timber value chains) and ii) weak signals (evidence of emerging changes). Prospective exercises, such as the EU Ruralisation project[33] and the Demeter annual report,[34] should also be encouraged. These could be advantageously incorporated into the design of any agricultural or economic development programme that focuses on land use and land-based market.

BOX 2 The Great Green Wall of the Sahel: an example of a long-term multi-stakeholder vision for the benefit of ecosystems and people

Endorsed by the African Union in 2007, the Great Green Wall (GGW) is **one of the earliest international land restoration initiatives**. It has evolved into **a comprehensive integrated programme of ecosystem management and rural development** to combat land degradation, climate change, biodiversity loss, poverty and food insecurity in 11 Sahelian countries, under the umbrella of the Pan African Agency of the GGW. With the **aim of restoring 100 million hectares by 2030**, one of its main challenges is to ensure coordination and alignment between relevant sectoral strategies (environment, water, agriculture, livestock, finance, planning) and GGW actors (civil society, producer organisations, regional organisations, private sector, universities and research institutes, and international donors). National GGW coalitions have been established to develop GGW long-term national strategies and design bankable sustainable/green projects, but their capacity needs to be strengthened, as does support from international donors.

"AROUND 12M HA OF LAND ARE LOST EACH YEAR TO DEGRADATION. IN ADDITION TO HARMING THE WELL-BEING OF AT LEAST 3.2BN PEOPLE, IT COSTS MORE THAN 10 % OF ANNUAL GLOBAL GDP IN LOST ECOSYSTEM SERVICES LIKE PREVENTING HARMFUL NUTRIENT RUN-OFF OR DECREASING THE EFFECTS OF FLOODS. HALTING AND REVERSING CURRENT TRENDS COULD GENERATE UP TO USD 1.4 TRILLION PER YEAR OF ECONOMIC BENEFITS AND GO A LONG WAY IN HELPING TO ACHIEVE THE SDGS"

Achim Steiner, Administrator
United Nations Development Programme (UNDP)

33 https://ruralization.eu

34 https://www.iris-france.org/publications/le-demeter-2023/

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