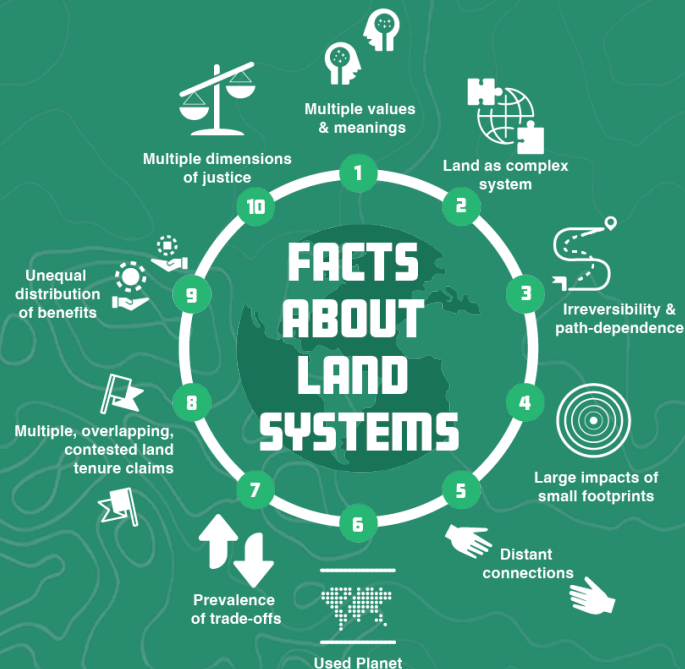


The Global Land Programme: Emerging Science Priorities

LCLUC 25th Anniversary Science Team
Meeting
18 October 2022

Ariane de Bremond
Executive Director, GLP



Who we are

A global network enabling
research for sustainable development
of coupled human-environmental land
systems



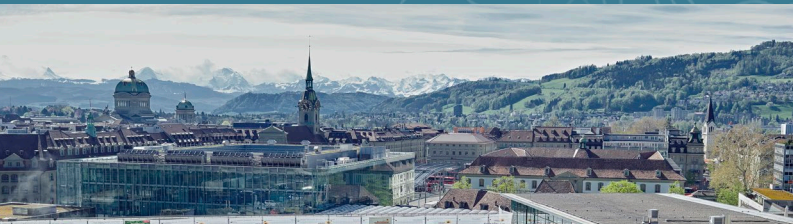
WHY LAND MATTERS

Land systems are the key element to overcoming existential challenges that humanity is facing and to achieving sustainable development. Wise use of global land is at the heart of:

- Securing the livelihood of millions of farmers
- Shaping sustainable food production
- Eradicating poverty and overcoming inequalities
- Valuing different cultures and worldviews, especially those of indigenous peoples and local communities
- Empowering women and ensuring gender equity
- Making cities and urbanization sustainable
- Mitigating and adapting to climate change and conserving biodiversity



- 2257 members across 110 countries (60/40 global North/South)
- 12 working groups (WGs)
- Scientific Steering Committee (SSC), Fellows
- International Programme Office (in Switzerland until Dec 2022)
- ECN



Our three objectives

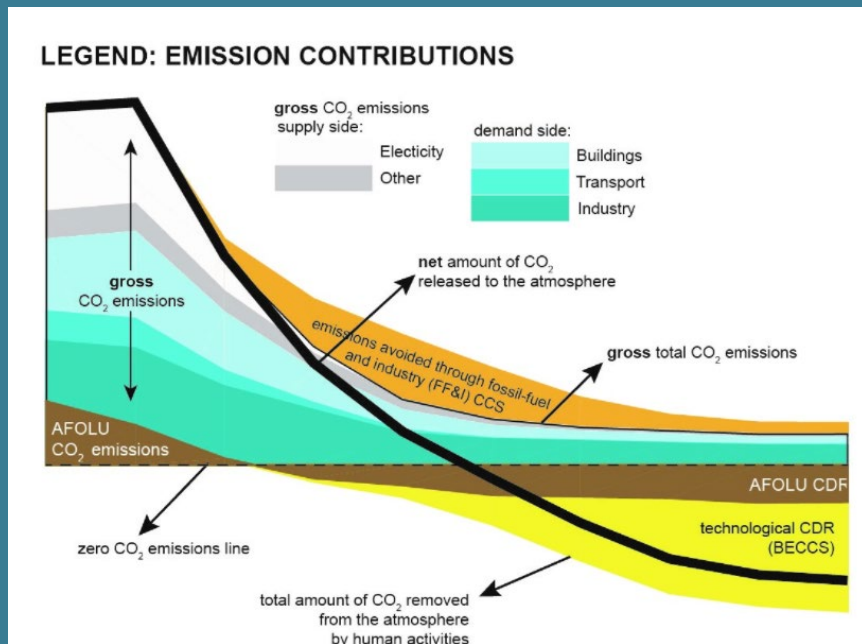
Set and drive an agenda that links groundbreaking scientific advancement to urgently needed societal action

Develop new synthesis methods and products that connect contextual understanding to regional or global trends, drivers and consequences

Grow, engage and maintain a vibrant global network of scientists, enabling them to work collaboratively across differences and sectors

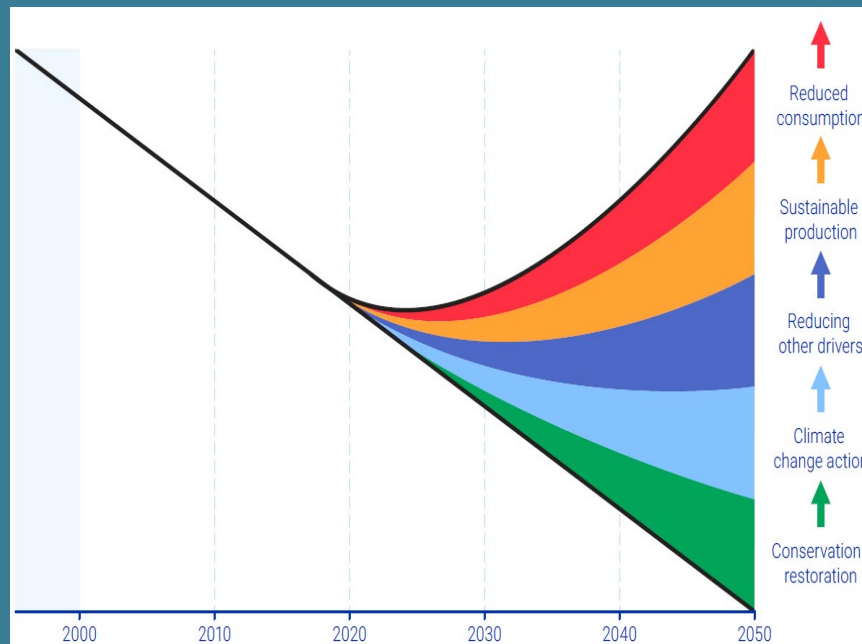
LAND MATTERS

Mitigation pathways compatible with 1.5°C



IPCC, 2021: Sixth assessment report

Aligned actions for protecting and restoring life on Earth



UNEP, 2021: Making peace with nature

Solutions for global challenges in concrete local contexts



Ten facts about land systems for sustainability

Patrick Meyfroidt , Ariane de Bremond , Casey M. Ryan , , and Erasmus K. H. J. zu Ermgassen 

[Authors Info & Affiliations](#)

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[HOME](#) [RESOURCES](#) [ABOUT](#)

Land systems are key to overcoming existential challenges facing humanity and achieving sustainable development. Land System Scientists from around the globe synthesized their knowledge into 10 Facts on Land Systems that together light the way toward a sustainable future.

WISE USE OF GLOBAL LAND IS AT THE HEART OF:

Mitigating and adapting to climate change and conserving biodiversity

10 FACTS ABOUT LAND SYSTEMS FOR SUSTAINABILITY



A REPORT FOR POLICY AND PRACTICE

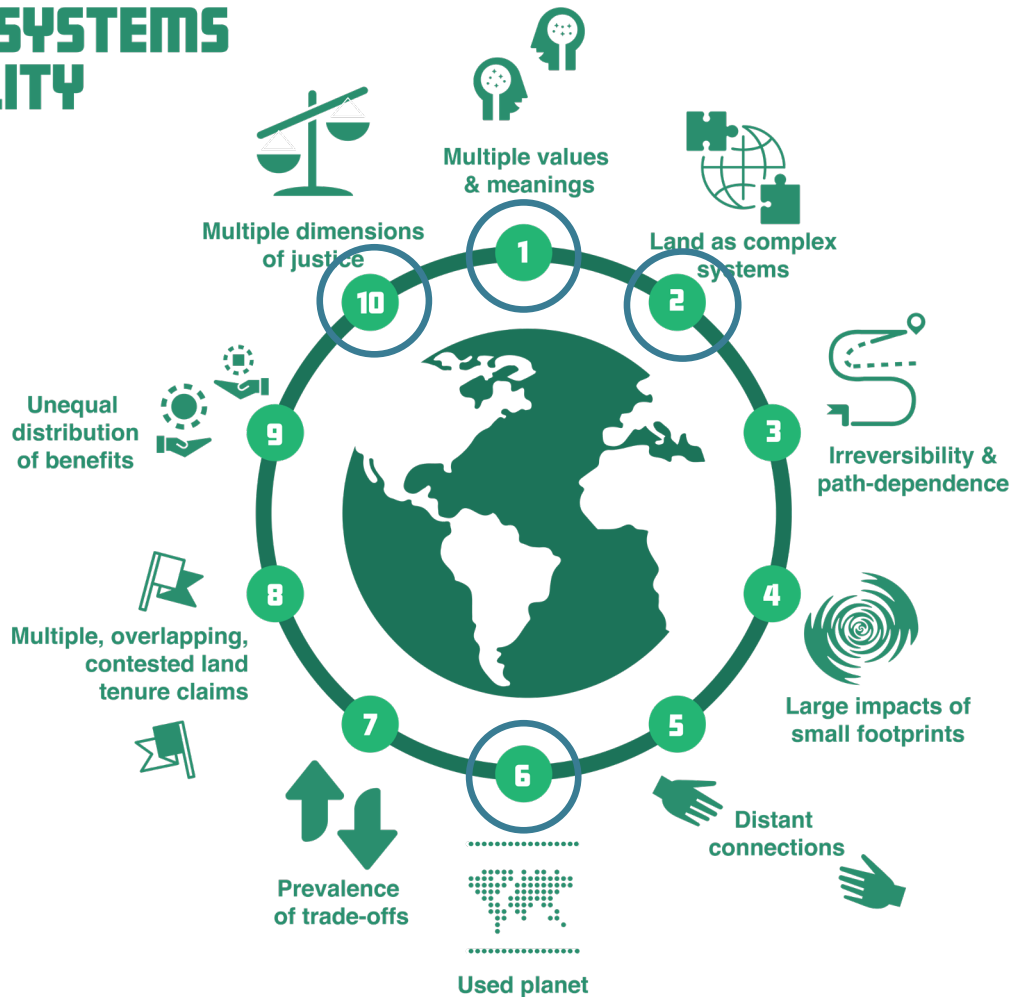
10 FACTS ABOUT LAND SYSTEMS FOR SUSTAINABILITY



Multiple values & meanings



Land as complex systems



NO. 1

MULTIPLE VALUES AND MEANINGS

LAND HAS MULTIPLE MEANINGS AND VALUES

Land provides food, energy, and raw materials to human societies

Understandings of land are also deeply cultural and symbolic

Even as we see land changes differently, some changes -- such as soil erosion have observable negative impacts



NO. 1 – EXAMPLE



LAND DEVELOPMENT IN THE AMAZON: "THE VERY SAME TREES"



CHALLENGE 1:
NOTIONS OF LAND DEGRADATION AND RESTORATION ARE SOCIALLY CONSTRUCTED AND CONTESTED

LAND AS COMPLEX SYSTEMS

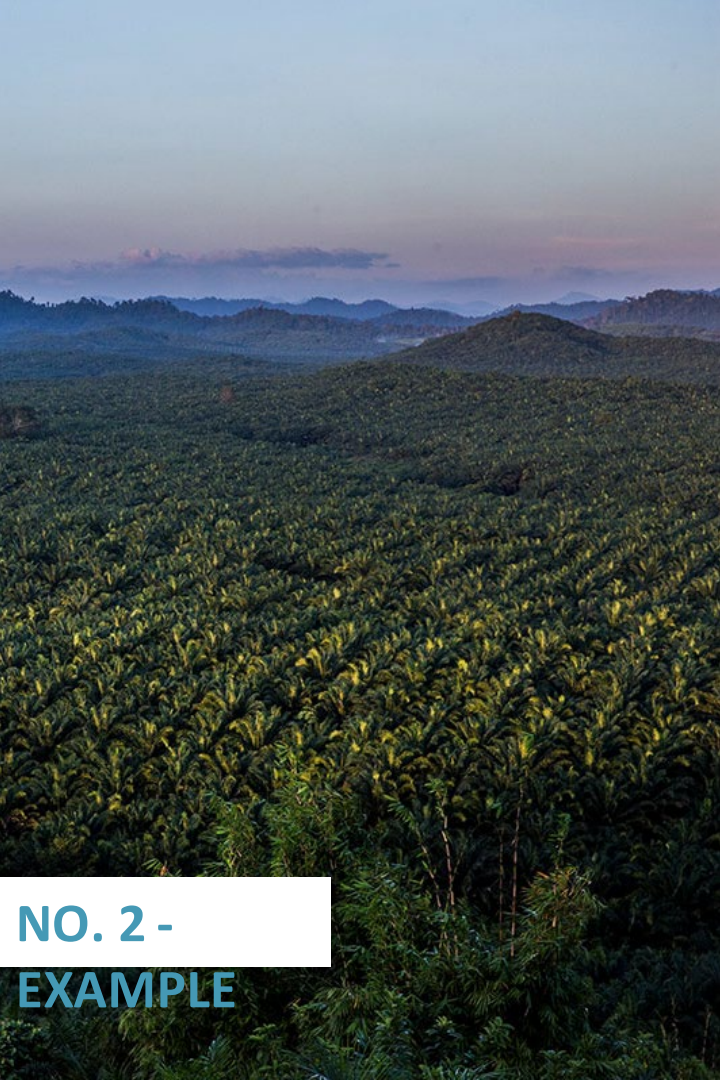
NO. 2



Land systems are complex and behave in unexpected ways

Policy interventions, intended to solve a particular problem, can fail when they ignore this complexity

=> unintended harm to ecosystems, and their services and goods to people that ensure human well-being



UNINTENDED CONSEQUENCES IN SOUTHEAST ASIA: OIL PALM INTENSIFICATION



'Rational' interventions can fail

Oil palm is a cause of extensive deforestation throughout SE Asia

Rational response might be to promote intensification (spare nature)

Enhanced profitability can lead to 'rebound', inducing further expansion

**NO. 2 -
EXAMPLE**

**CHALLENGE 2:
CONSEQUENCES ARE DIFFICULT TO FORESEE AND TRACE**

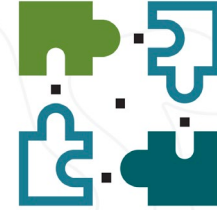
MORE SUSTAINABLE AND JUST SOLUTIONS REQUIRE:



Just solutions acknowledge multiple beliefs, values, visions of justice, and power differences



Contextual, adaptive;
Avoid silver Bullets
“One-Size-Fits-All”
Panaceas



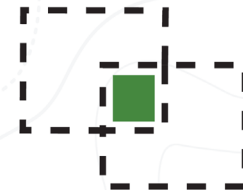
Consider spillovers across spatial and temporal scales



Preventing undesirable, irreversible impact brings more benefit than trying to restore land afterwards



Synergies important but combined with unavoidable trade-offs and managing demand



Avoid reinforcing inequalities address inequalities explicitly and acknowledge unclear land tenure

What we've been up to

No. 1

Set agendas and facilitate synthesis in LSS



No. 3

Inform and support science-based policy on land

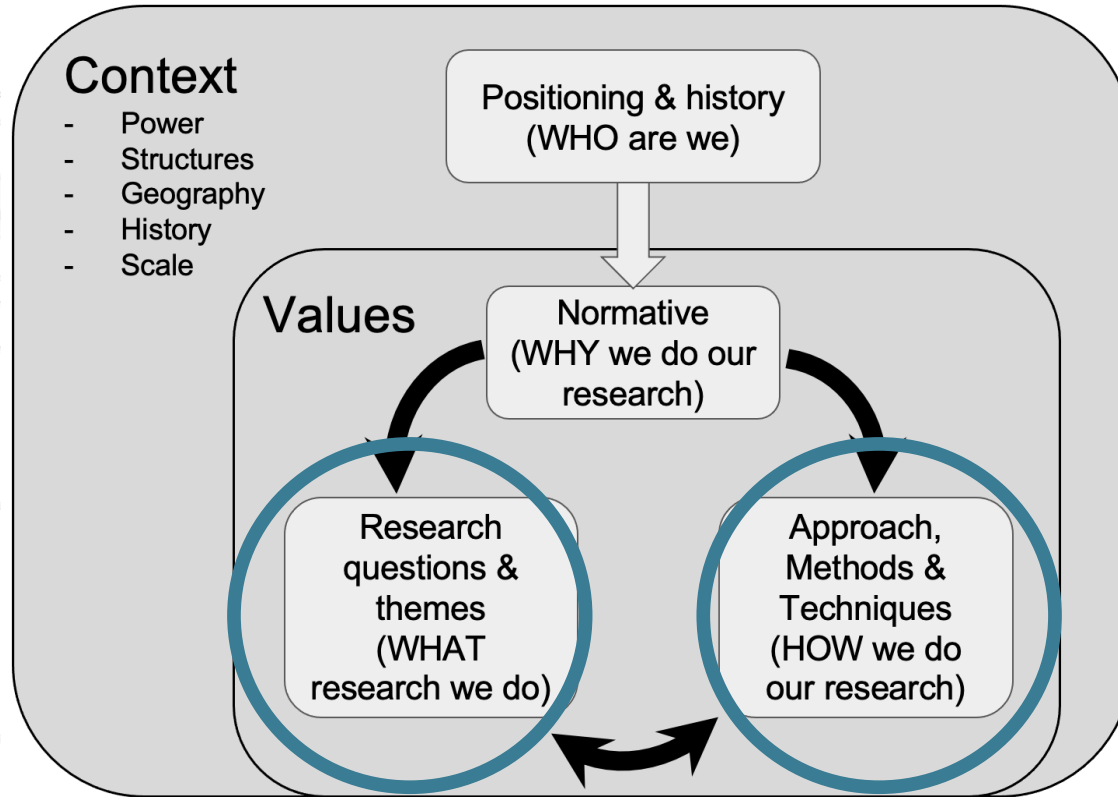


10 FACTS ABOUT LAND SYSTEMS FOR SUSTAINABILITY

The infographic features a central globe with 10 numbered facts arranged in a circle around it. Each fact is accompanied by a small icon: 1. Multiple values & meanings (lightbulbs); 2. Land as complex systems (globe with puzzle pieces); 3. Irreversibility & path-dependence (dashed arrow); 4. Large impacts of small footprints (concentric circles); 5. Distant connections (hand pointing to a globe); 6. Used planet (globe with grid); 7. Prevalence of trade-offs (up and down arrows); 8. Multiple, overlapping, contested land tenure claims (flag and hand); 9. Unequal distribution of benefits (scales and hand); 10. Multiple dimensions of justice (scales).

A REPORT FOR POLICY AND PRACTICE

Structure of the 2023–27 science plan



2023-27 science plan

Goals of LSS :

- **Descriptive & explanatory (what IS)**
 - Characterizing land systems (temporal dynamics and patterns)
- **Normative (what should be)**
 - Understanding what people want/claim/who wants what
 - How can we support identifying and deciding on goals, priorities, etc. (negotiating land futures)
- **Transformative (how do we get there)**
 - Building pathways for transformation, innovations for systemic interplays, adaptive learning

Questions we're asking : 2023–27 science plan

Land systems in the Anthropocene

(Fire, acceleration of plant speciation; land use as geoengineering; mega projects, mines, dams and infrastructures; urban systems and migration impacts on land use systems; impact of new/disruptive ag technologies; habitat fragmentation)

Questions we're asking : 2023–27 science plan

Nature/Land-based solutions to climate change, land degradation, restoration of nature, biodiversity and wilderness

Forest landscape restoration; and cultivated lands; land as a source of solutions for other sectors (e.g., Climate & IAMs; Biodiversity) – ‘Carbon unicorns’; Global and regional ecological restoration projects and their effects; Restoration/Rewilding; bright spots

Questions we're asking : 2023-27 science plan

One Health and land systems

Advance science, policy applications and partnerships on land systems science and Global Health – focus on complexity of direct (e.g., LUCC-vector habitat-epidemiological impact cycles) and indirect pathways (e.g., cycles connecting agrarian policy – with rural land dispossession/urban migration – with shifting and inequitable health/disease burdens)

in which Land systems are implicated in epidemiological and health challenges, inequities, and outcomes.

Areas for future cooperation: GLP-LCLUC

Developing the global and local datasets for
“socializing the pixels”



Areas for future cooperation: GLP-LCLUC

- Land cover 2.0; Land use v0.1 Land tenure v0.01; Land governance v 0.0001 (pre-alpha);
- New round of global cropland expansion/abandonment and identification of global hotspots; pasture extent and pasture/grassland use intensity
- Land prices / land rent;
- Big data advances (new kinds of data: geo-wiki, Collect Earth, Facebook population density, iBird, etc.)
- Advances in land cover monitoring
- Continuing advances in using remote sensing and other tools to advance land monitoring for sustainability (changes in land management (intensity), crop types, field sizes, farm sizes)



Areas for future cooperation: GLP-LCLUC

- Changing Land Management and intensification. Towards a general approach to land function
- Data challenge on inputs and outputs, changes within a landcover / land use
- Poor data on management and tenure
- Conceptual challenge (land use intensity, quasi-natural processes (fire, ...))
- Understudied land systems (e.g. savannas)

More highly promising tools....with an enabling community to support their use..



Thank you!



Read the paper &
Download the
policy report at
www.glp.earth

