TEXTE
82/2015

Resource-Efficient Land Use – Towards a Global Sustainable Land Use Standard (GLOBALANDS)

For our Environment

Umwelt Bundesamt

TEXTE 82/2015

Environmental Research of the
Federal Ministry for the
Environment, Nature Conservation,
Building and Nuclear Safety

Project No. (FKZ) 3711 93 101
Report No. (UBA-FB) 002165/E

Resource-Efficient Land Use – Towards a Global Sustainable Land Use Standard (GLOBALANDS)

by

Uwe R. Fritsche, Ulrike Eppler, Leire Iriarte, Sabine Laaks
International Institute for Sustainability Analysis and Strategy (IINAS),
Darmstadt, Germany

Stepanie Wunder, Timo Kaphengst
Ecologic-Institute, Berlin, Germany

Franziska Wolff, Dirk Heyen
Oeko-Institut, Berlin, Germany

Alexa Lutzenberger
Leuphana University, Lüneburg, Germany

On behalf of the Federal Environment Agency (Germany)

Imprint

Publisher:
Umweltbundesamt
Wörlitzer Platz 1
06844 Dessau-Roßlau
Tel: +49 340-2103-0
Fax: +49 340-2103-2285
info@umweltbundesamt.de
Internet: www.umweltbundesamt.de

/umweltbundesamt.de
/umweltbundesamt

Study performed by:
International Institute for Sustainability Analysis and Strategy (IINAS)
Heidelberger Str. 129 1,2
64285 Darmstadt, Germany

Study completed in:
June 2015

Edited by:
Section I 1.1 Sustainable Strategies, Sustainable Resource Use, Instruments
Almut Jering

Publication as pdf:
http://www.umweltbundesamt.de/publikationen/resource-efficient-land-use-towards-a-global

ISSN 1862-4804

Dessau-Roßlau, October 2015

The Project underlying this report was supported with funding from the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear safety under project number FKZ 3711 93 101. The responsibility for the content of this publication lies with the author(s).

Abstract

Given the challenges of future land use policies addressing sustainable natural resources management and socioeconomic aspects, the inter- and *transdisciplinary* GLOBALANDS (Global Land Use and Sustainability) project identified relevant international policy options, their synergies and possible implementation, and initiated and supported respective processes. GLOBALANDS identified also *"windows of opportunity"* to strengthen sustainable land use through international policies based on an extensive screening of the most important international policies - both governmental and non-governmental approaches - with relevant impacts on land use.

Key processes which could strengthen global governance towards sustainable land use are:

- The proposed UN *Sustainable Development Goals* (SDGs) in which land is covered partially.
- *Mainstreaming* of sustainable land use in *existing* UN and international governance systems such as UN conventions to allow for more coherence
- Better *safeguarding* of sustainable land use in *project-level financing* of bi- and multilateral development agencies and bodies.
- The *private sector* can play an increasing role in the governance of sustainable land use, but this may require e.g., a certification system.
- GLOBALANDS developed a new (complementary) approach for land-related indicators which *integrates* environmental and social aspects through the formulation of sustainable land use practices for different actors, and regions. The application of such indicators is possible within the process of regionally or nationally implementing the SDGs.

A final outcome of the GLOBALANDS project are policy recommendation for Germany policy to foster sustainable land use in the international governance system. Also, key open (research) questions were identified.

Kurzbeschreibung

Das vom UBA und BMUB geförderte GLOBALANDS (Globale Landnutzung und Nachhaltigkeit) untersuchte, welche *internationalen Politiken* und Institutionen die nachhaltige Landnutzung auf globaler Ebene voranbringen können und welche Rolle darin ein (Zertifizierungs-)Standard spielen kann. Weiterhin wurde analysiert, welche gegenwärtigen und anstehenden *politische Prozesse* auf globaler Ebene Möglichkeiten zur Stärkung der nachhaltigen Landnutzung bieten bzw. durch GLOBALANDS initiiert oder unterstützt werden könnten. GLOBALANDS arbeitete inter- und *transdisziplinär*.

Basierend auf einer ausführlichen Analyse der heutigen und künftig möglichen globalen Landnutzung wurden die wesentlichen Sektoren und "Treiber" der Landnutzung bestimmt. Weiterhin erfolgte eine umfassende Analyse der gegenwärtigen internationalen Politiken zu Land mit 10 Länderfallstudien und einem Exkurs zum Privatsektor, um *Handlungsfenster* für global nachhaltige Landnutzungspolitiken und dahingehende Instrumente zu identifizieren.

Als *methodischen* Beitrag zur Diskussion, wie sich nachhaltige Landnutzung *messen* lässt, entwickelte GLOBALANDS den Ansatz *systemischer Indikatoren* als Möglichkeit zur sozial inklusiven und regional differenzierten Implementierung.

Auf Grundlage der Analysen und den Diskussionen mit Akteuren bei internationalen und nationalen Workshops wurden *vier Politikpfade* zur nachhaltigen globalen Landnutzung erarbeitet.

Zentrales Ergebnis von GLOBALANDS ist die Ableitung von *Empfehlungen zu nationalen Politiken* Deutschlands zur Stärkung der nachhaltigen Landnutzung in der internationalen Politik. Ergänzend wurden auch *offene Forschungsfragen* identifiziert.

Résumé

Étant donné les défis de l'avenir des politiques de l'aménagement du territoire abordant la gestion durable des ressources naturelles et les aspects socio-économiques, le projet interdisciplinaire et transdisciplinaire GLOBALANDS (Global Land Use and Sustainability - aménagement globale du territoire et durabilité) a identifié les options pertinentes de politique internationale, leurs synergies et la mise en œuvre, et les processus respectifs initiées et soutenues.

GLOBALANDS a identifié des «fenêtres d'opportunité» pour renforcer l'aménagement durable du territoire grâce à des politiques internationales fondées sur un examen approfondi des politiques internationales les plus importantes, á la fois des approches gouvernementales et non-gouvernementales - avec des répercussions pertinentes sur l'utilisation des terres.

Les processus clés qui pourraient renforcer la gouvernance mondiale vers un aménagement du territoire durable sont:

- La proposition des Nations Unies des objectifs de développement durable (ODD) couvrant partiellement l'aspect du territoire.
- L´intégration du territoire durable dans les systèmes de gouvernance existants telles que les conventions des Nations Unies et internationales pour permettre une plus grande cohérence
- Mieux sauvegarder l'aménagement durable du territoire avec financement au niveau des projets et des institutions ou organisations de développement bilatéraux et multilatéraux.
- Le secteur privé peut jouer un rôle croissant dans la gouvernance de l'aménagement durable du territoire, mais cela peut nécessiter, par exemple, un système de certification.
- GLOBALANDS a développé une nouvelle approche (complémentaire) pour les indicateurs liés au territoire, intègrant les aspects environnementaux et sociaux à travers la formulation des pratiques durables pour les différents acteurs et les régions. L'application de ces indicateurs est possible dans le processus de mise en œuvre régionale ou nationale des ODD.

Un des résultats final du projet GLOBALANDS est une série de recommandations politiques envers l'Allemagne visant à favoriser l'aménagement durable du territoire dans le système de gouvernance internationale. En outre, ont a été identifiés des questions (ouvertes) clés de recherche.

Resumen

Teniendo en cuenta los desafíos de las futuras políticas de uso de la tierra que aborden la gestión sostenible de recursos naturales y los aspectos socioeconómicos, el proyecto inter- y transdisciplinar GLOBALANDS (Uso Global de la Tierra y Sostenibilidad) identificó opciones relevantes de políticas internacionales, sus sinergias y posible implementación, e inició y apoyó respectivos procesos.

GLOBALANDS también identificó "ventanas de oportunidad" para fortalecer el uso de la tierra a través de políticas internacionales basadas de un amplio examen de las políticas internacionales más importantes – considerando tanto enfoques gubernamentales como no gubernamentales - con impactos relevantes en el uso de la tierra.

Los procesos clave que podrían fortalecer la gobernanza global hacia el uso sostenible de la tierra son:

- Los propuestos Objetivos de Desarrollo Sostenible (ODS) de la ONU en los que la tierra está cubierta parcialmente.
- Generalizar el uso sostenible de la tierra en los sistemas existentes de la ONU y los sistemas de gobernanza internacional como las convenciones de la ONU para permitir una mayor coherencia.
- Considerar mejores salvaguardas en la utilización sostenible de la tierra en la financiación a nivel de proyecto de las agencias y organismos de desarrollo bilaterales y multilaterales.
- El sector privado puede desempeñar un papel cada vez mayor en la gobernanza del uso sostenible de la tierra, pero esto puede requerir, por ejemplo, un sistema de certificación.
- GLOBALANDS desarrolló un nuevo enfoque (complementario) para los indicadores relacionados con la tierra que integra aspectos ambientales y sociales a través de la formulación de prácticas de uso sostenible de la tierra para diferentes actores y regiones. La aplicación de estos indicadores es posible dentro del proceso implementación de los ODS a nivel regional o nacional.

Un resultado final del proyecto GLOBALANDS son recomendaciones políticas para Alemania con el fin de fomentar el uso sostenible de la tierra en el sistema de gobernanza internacional y un resumen de preguntas clave (de investigación) pendientes.

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Acronyms

AAU	Alpen-Adria Universität
AFOLU	Agriculture, forestry, and other land use
BfN	German Federal Agency for Nature Conservation (Bundesamt für Naturschutz)
BMEL	German Federal Ministry for Food and Agriculture (Bundesministerium für Ernährung und Landwirtschaft)
BMUB	German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (Bundesministerium für Umwelt, Naturschutz, Bau und Reaktorsicherheit)
BMZ	German Federal Ministry for Economic Development and Cooperation (Bundesministerium für wirtschaftliche Entwicklung und Zusammenarbeit)
cap	Capita
CAP	Common Agricultural Policies (of the EU)
CBD	UN Convention for Biological Diversity
CDE	Centre for Development and Environment
CDM	Clean Development Mechanism
CENBIO	Centro Nacional de Referência em Biomassa (Brazil)
CER	Certified Emission Reductions
CFS	United Nations Committee on World Food Security
CGIAR	Consortium of International Agricultural Research Centers
CIFOR	Center for International Forestry Research
COP	Conference of the Parties (to a Convention)
CSM	International Food Security and Nutrition Civil Society Mechanism
CSO	Civil Society Organization
CSR	Corporate Social Responsibility
DIE	German Development Institute (Deutsches Institut für Entwicklungspolitik)
DIM	German Institute for Human Rights (Deutsches Institut für Menschenrechte)
DG ENV	Directorate-General for Environment (of the EC)
DLR	German Aerospace Center (Deutsches Zentrum für Luft- und Raumfahrt e. V.)
EC	European Commission
EAP	Environmental Action Program
ECN	Energy Research Centre of the Netherlands
EEA	European Environment Agency
ELD	Economics of Land Degradation
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FDS	Framework Directive for Soils (of the EU)
FQD	Fuels Quality Directive (of the EU)
FSC	Forest Stewardship Council
FUE	Forum Environment and Development (Forum Umwelt und Entwicklung)
G8	Group of Eight
GBEP	Global Bio-Energy Partnership (of the G8)

GBO	Global Biodiversity Outlook (of the UNCBD)
GCF	Green Climate Fund
GDI	Green Development Initiative
GDP	Gross Domestic Product
GDPRD	Global Donor Platform for Rural Development
GDWGL	Global Donor Working Group on Land
GHG	greenhouse gas(es)
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH
GLF	Global Landscapes Forum
GLII	Global Land Indicators Initiative
GLO	Global Land Outlook (of the UNCCD)
GLTN	Global Land Tool Network
GSP	Global Soil Partnership (of the FAO)
HBS	Heinrich-Böll Stiftung
HDI	Human Development Index
HLPE	High Level Panel of Experts on Food Security and Nutrition of the UN Committee on World Food Security
HLPF	High Level Political Forum on Sustainable Development (of the UN)
IASS	Institute for Advanced Sustainability Studies
ICSU	International Council for Science
ICT	Information and communication technologies
IDDRI	Institut du Développement Durable et des Relations Internationales
IEA	International Energy Agency
IFAD	International Fund for Agricultural Development
IFC	International Finance Corporation
IFPRI	International Food Policy Research Institute
IIED	International Institute for Environment and Development
IINAS	International Institute for Sustainability Analysis and Strategy GmbH
ILC	International Land Coalition
ILUC	Indirect land use changes
IMF	International Monetary Fund
INRA	Institut National de la Recherche Agronomique (France)
IPBES	Intergovernmental Platform on Biodiversity and Ecosystem Services (of the CBD)
IPCC	Intergovernmental Panel on Climate Change
IRENA	International Renewable Energy Agency
ISSC	International Social Science Council
ITPS	Intergovernmental Technical Panel on Soils (of the GSP)
IUCN	International Union for Conservation of Nature
IWG	Intersessional Working Group (of the UNCCD)
JI	Joint implementation (of the Kyoto Protocol)
JRC	Joint Research Centre of the European Commission
KLU	Commission Agriculture at the German Federal Environment Agency (Kommission

	Landwirtschaft am Umweltbundesamt)
LDN	Land degradation neutral(ity)
LPFN	Landscapes for People, Food and Nature Initiative
LUC	Land use change(es)
LULUCF	Land use, land use change and forestry
MDG	Millennium Development Goal
MEA	Millennium Ecosystem Assessment
Mha	Million hectares
MRV	Monitoring, reporting and verification
NAP	National Action Programs
NAS	National Academy of Sciences (of the USA)
NEF	New Economics Foundation
NGO	Non-governmental Organization
NRC	National Research Council (of the USA)
ODI	Overseas Development Institute
OECD	Organisation for Economic Development and Cooperation
PBL	Netherlands Environmental Assessment Agency
RAI	Responsible Agricultural Investment
RED	Renewable Energy Directive (of the EU)
REDD	Reduced Emissions from Deforestation and Forest Degradation
RNE	German Council for Sustainable Development (Rat für Nachhaltige Entwicklung)
RSB	Roundtable for Sustainable Biomaterials
RSPO	Roundtable for Sustainable Palm Oil
SBSTTA	Subsidiary Body on Scientific, Technical and Technological Advice (of the CBD)
SDG	Sustainable Development Goals
SDSN	Sustainable Development Solutions Network
SEI	Stockholm Environment Institute
SFD	Soil Framework Directive
SFM	Sustainable forest management
SLM	Sustainable land management
SPI	Science-Policy Interface (of the UNCCD)
SRU	German Advisory Council on the Environment (Sachverständigenrat für Umweltfragen)
TEEB	The Economics of Ecosystems and Biodiversity
TTIP	Transatlantic Trade and Investment Partnership
UA	Urban Agriculture
UBA	German Federal Environment Agency (Umweltbundesamt)
UN	United Nations
UNCCD	UN Convention to Combat Desertification
UNCED	United Nations Conference on Environment and Development
UNCTAD	United Nations Conference on Trade And Development
UN-DESA	United Nations Department of Economic and Social Affairs

UNDP	United Nations Development Programme
UNECE	United Nations Economic Commission for Europe
UN-Energy	United Nations Inter-Agency Mechanism on Energy
UNEP	United Nations Environment Program
UNEP-IRP	United Nations Environment Programme - International Panel for Sustainable Resource Management
UNEP-WCMC	United Nations Environment Programme World Conservation Monitoring Centre
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	UN Framework Convention on Climate Change
UN-HABITAT	United Nations Human Settlements Programme
UN-OWG	United Nations Open Working Group
UNSD	United Nations Statistics Division
UN-SG	United Nations Secretary-General
USAID	United States Agency for International Development
VGGT	Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security
WB	World Bank
WBGU	German Advisory Council on Global Change (Wissenschaftlicher Beirat der Bundesregierung Globale Umweltveränderungen)
WOCAT	World Overview of Conservation Approaches and Technologies
WRI	World Resource Institute
WTO	World Trade Organization
WWF	Word Wide Fund for Nature

Acknowledgement

The GLOBALANDS project benefited from discussions in the Project Working Group in which representatives from German Federal Environment Agency (UBA) and the German Federal Ministry for Environment, Nature Protection, Building and Nuclear Safety (BMUB) participated, especially

- Almut Jering, Jan Seven, Knut Ehlers, Harald Ginzky, Frank Glante, Claudia Kabel, Matthias Koller, Gertrude Penn-Bressel, Dietrich Schulz (UBA)
- Rolf Bräuer, Frank Hönerbach, Reinhard Kaiser, Anne Miehe (BMUB).

We also thank the Members of the Project Advisory Board, i.e., Kathrin Ammermann (BfN), Dorothea Braun (RNE), Ulrike Doyle (SRU), Christian Graefen (GIZ), László Maráz (FUE), Swantje Nilsson (BMEL), Inge Paulini (WBGU), Maria Akhtar-Schuster (DLR), and Stefan Schmitz (BMZ) for their valuably inputs and comments.

We are further indebted to

- Alexander Müller and Jes Weigelt (IASS), and
- Maryam Rahmanian (Centre for Sustainable Development and Environment, Iran)

for informal comments and discussions, and to the participants of the GLOBALANDS International Expert Workshops (see Annex 1) who contributed significantly with comments, feedback and valuable inputs, especially

- Michael Brüntrup (DIE),
- Victor Castillo (UNCCD Secretariat),
- Christine Chemnitz (HBS),
- Suani Coelho (CENBIO),
- Eve de la Mothe Karoubi (SDSN),
- Jacques Delsalle (EC DG ENV),
- Donald Gabriels (Gent University),
- Marcus Giger (CDE),
- Helmut Haberl (AAU),
- Luca Marmo (EC DG ENV),
- Richard McLellan (WWF),
- Luca Montanarella (EC-JRC),
- Gerard Ostheimer (UN SE4ALL),
- Martina Otto (UNEP),
- Martin Scheele (EC DG AGRI),
- Laura Silva (INRA-IFRIS),
- Ute Sonntag (GIZ),
- Michael Taylor (ILC),
- Sébastien Treyer (IDDRI), and
- Sergio Zelaya (UNCCD Secretariat).

All errors and omissions remain the sole responsibility of the authors.

The GLOBALANDS project was funded by the German Federal Environment Agency (UBA) through the German Federal Ministry for Environment, Nature Protection, Building and Nuclear Safety (BMUB) under R&D contract 371193101.

1 Objectives and Approach of the GLOBALANDS Project

The world is under threat from degradation of land, natural resources, and livelihoods so that innovative and effective governance structures are needed to strengthen sustainable land use practices. Currently there are several international policy initiatives that aim to address this need.

Given this context, the GLOBALANDS[1] project was initiated by the German Federal Environmental Agency (UBA) and funded by the Federal Ministry for Environment, Nature Conservation, Building and Nuclear Safety (BMUB).

The main research questions of GLOBALANDS were the following:

- How can an *international* governance be designed and effectively contribute to more sustainable land use at the global level? Which role can a (private) certification standard play in that?
- Which current and upcoming *political processes* are most promising and can be used for strengthening sustainable land use?
- Which role can the German government play in such processes, and what are key *recommendations for national policies* in that regard?

GLOBALANDS worked interdisciplinary and applied a *transdisciplinary* approach[2], i.e. its research included interaction and discussion not only with the academia but also with key stakeholders especially from governments and civil society to *initiate* processes towards sustainable global land use. For this, several international and national workshops and consultations took place (see Annex 1).

Based on an extensive analysis of current and future global land use, the key sectors and "drivers" affecting land were determined (Chapter 2).

A comprehensive review of international land governance (Chapter 3.2) and 10 respective country case studies (Chapter 3.4) identified possible *windows of opportunities* for global sustainable land use policies and instruments (Chapter 3.5), especially:

- The proposed UN *Sustainable Development Goals* (SDG) in which land is covered partially.
- Extending the UN Convention to Combating Desertification (UNCCD) to a global scope, and developing a legal instrument to address land-degradation neutrality in *all* countries.
- Considering – in the longer-term - a new *Soil or Land Protocol* under the UN Convention on Biological Diversity (CBD), making use of the Ecosystem Approach and taking into account *traditional knowledge*, and social requirements such as land tenure, and livelihoods.
- Coherent treatment of sustainable land use the UN Framework Convention on Climate Change (UNFCCC) and its instruments, especially reporting requirements, REDD+ and the Green Climate Fund.
- Better *safeguarding* of sustainable land use for *project-level financing* of bi- and multilateral development agencies and bodies, taking into account socially inclusive processes, especially the Voluntary Guidelines on the on the Responsible Governance Tenure of Land (VGGT).
- The private sector can play an increasing role in the governance of sustainable land use. There are several approaches and initiatives (e.g. the UN Compact, voluntary agreements between businesses along value chains), and businesses can implement the VGGT (Chapter 3.3).

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[1] Full project title: Resource-Efficient Land Use – Towards A Global Sustainable Land Use Standard; Project No. FKZ 371193101; short title: Global Land Use and Sustainability (GLOBALANDS)

[2] For a brief discussion of this concept with regard to land use see e.g. Cilliers et al., 2014 and Thompson-Klein, 2015; for the German BMBF research on sustainable land use see Repp & Weith, 2015 and Zscheischler & Rogga, 2015.

As the European Union plays an important role in international and global governance, and influences global land use through its domestic policies, GLOBALANDS also addressed EU policies on land (Chapter 4).

As a *methodological* contribution to the discussion of how to *measure* sustainable land use, GLOBALANDS developed the new *systemic indicators* approach for key land use areas (especially agriculture, forestry) as an opportunity for socially inclusive and regionally differentiated implementation (Chapter 5).

Drawing from the results of the (policy) analysis carried out in the project, and from the discussions with stakeholders in the international and national workshops (see Annex 1), GLOBALANDS developed *pathways* for a more sustainable global land use (Chapter 6).

A final outcome of the GLOBALANDS project is the discussion of possible "ways ahead" to foster sustainable land use in the international governance system, with a focus on respective *national policy recommendations* for Germany (Chapter 7), and identifying *open research questions* and possible follow-up work (Chapter 8).

This synthesis report of GLOBALANDS is meant to provide an overview of key data and findings, and draws from a wealth of more detailed discussion, issue and working papers prepared during the course of the research (see Annex 2) which are available at www.globalands.org for download.

Before starting, a fundamental term needs a brief reflection (Box 1).

Box 1: What is "development"?

Development is typically used with regard to *economic* development, i.e. GDP growth and increases in monetary income and consumption of goods and services offered on markets.

There is no UN definition of what "developed" or "developing" countries are, but the World Bank structures countries in four groups, according to their per-capita GDP, and then aggregates the "low-income" and "middle-income" into *developing* countries[3], a term used in this report to distinguish from "industrialized" (high-income) countries.

Yet, the traditional economic perspective ignores that development measured via GDP is a *one-dimensional metric* which needs at least complementing by other indicators such as the Human Development Index (HDI) which considers education, healthy lifetime, and standard of living[4]. Furthermore, societal development (UN-SG, 2014) and planetary boundaries (Steffen et al., 2015; WBGU 2014) should be considered in defining development, as discussed in work on "beyond GDP" metrics[5].

This report uses the terms "developing" countries as defined by the World Bank, and "industrialized" for all other countries, but underlines that this categorization should be seen in the context of the (very) limited definition, and **not** as a qualification of the countries' status towards *sustainable* development (see Chapter 2.3).

[3] http://data.worldbank.org/about/country-and-lending-groups

[4] http://hdr.undp.org/en/content/human-development-index-hdi

[5] See e.g., Enquete, 2013; Martens & Obenland, 2015; IIDRI, 2014; NEF, 2009-2012; WEF, 2011.

2 Global Land Use in Context

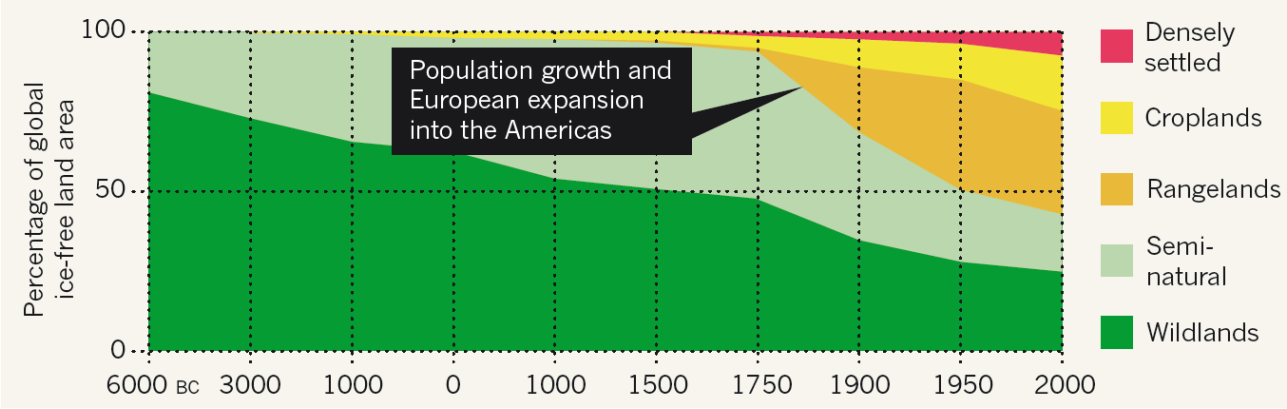
The following chapter summarizes key data and conclusions from a range of analyses and reports related to global-level land use change, with a focus on major trends, main influences and drivers.

2.1 Global Land Use Change: Drivers, Patterns and Trends

Since historic times, humankind transformed land, for herding and hunting, clearing forests for agricultural, resource extraction, and for settlements and respective infrastructures (Ellis et al., 2013).

Research has reconstructed global land use dynamics of the past 8,000 years (Ellis, 2011), which shows that both *pace and extend* of anthropogenic land transformation significantly increased since the 18th century (Figure 1), driven by an unprecedented growth of population, and changing agricultural practices, especially increased pasture. Since the mid-20th century, further population increase, diet shifts and intensified use of biomass for non-food purposes drove the extension of croplands even more (Haberl, 2014).

Figure 1: Global transformation of land from 6000 BC to 2000 AD



Source: Jones, 2011 (based on Ellis, 2011)

To identify drivers, patterns and trends, GLOBALANDS reviewed 33 international level land use studies and data collections[6]. A general overview of global land uses in 2000 and 2010, and respective changes is given in Table 1.

Table 1: Global land use in 2000 and 2010, and land use changes

Land use	2000	2010	Change
Cropland	1514	1541	27
Pasture	3420	3353	-67
Forest	4085	4033	-52
Planted forests	161	274	113
Urban & infrastructure	40	65	25

Source: own compilation based on FAOSTAT, 2015 and Woods et al., 2015; data given in Mha

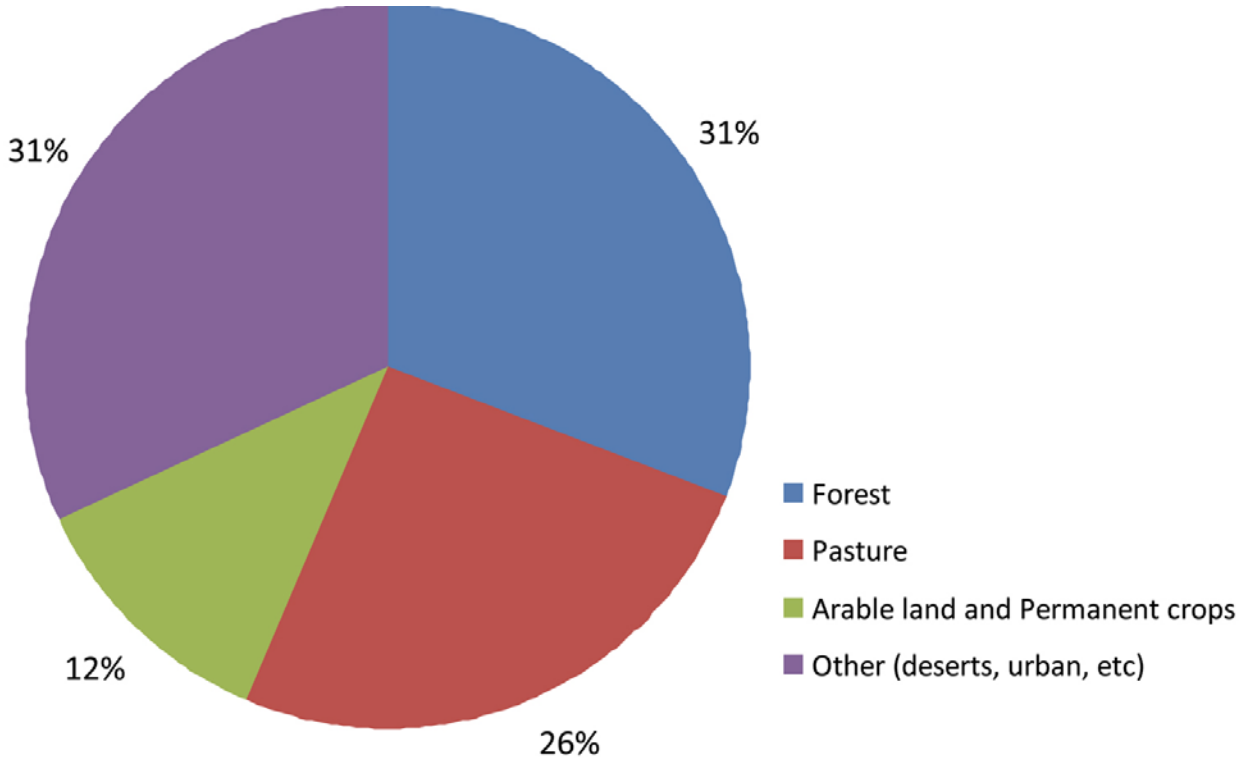
[6] See Lutzenberger, Alexa et al. (2014): Global Land Use Analysis. GLOBALANDS working paper. Lüneburg.

As Table 1 indicates, cropland expansion and urbanization are the most relevant drivers of net land use change over the last decade, with conversion of pasture land and primary forest accounting for the largest areas losses, and planted forests dominating the gains.

2.1.1 Agriculture

Agriculture uses 12% of the world's land surface for crop production, and 26% for pasture (see Figure 2). Globally, only 35% of crop production is dedicated to food, versus 62% for animal feed (which produces food indirectly). 3% is used for bioenergy, seed and other industrial products.

Figure 2: Global land use in 2010



Source: FAOSTAT, 2015; total land area = 13.1 Gha

Over the last 50 years, the world's agricultural production has grown 2.5 times while cultivated land increased only by 12% (FAOSTAT, 2015). In terms of cultivated land per person, the specific value declined to less than 0.25 ha/cap. Cultivated land per person in developing countries is less than half of that in industrialized countries, and its suitability for agriculture is generally lower (FAO, 2011c).

The current agricultural practices especially in large-scale systems which increasingly depend on few crop varieties and external inputs (chemical fertilizers, herbicides, and pesticides) *are unsustainable*, as they reduce both agrobiodiversity and biodiversity in general (Frison, Cherfas & Hodgkin, 2011; Galluzzi et al., 2011; MEA, 2005), require massive amounts of water[7], and lead to significant GHG emissions[8].

[7] It uses of 70% of all water withdrawn from aquifers, streams and lakes (FAO, 2011c).

[8] Agriculture is responsible for 30–35% of global GHG emissions due to fossil energy use, emissions from deforestation, methane release from animals and rice paddies, and nitrous oxide from fertilized soils (IPCC, 2014a).

The existing agricultural productivity gap (Levinson, 2014) between developing and industrialized countries will widen due to climate change[9].

Box 2: Land cover vs. land use

Land cover and land use describe different aspects:

- *Land cover* includes e.g., forests, grassland, tilled land, wetlands and settlements. Sub-classifications are boreal and tropical forests, savannahs and steppes, villages and cities (Gutman, 2004). Changes in land cover can directly affect biodiversity, primary production, soil quality, runoff and deposition rates as well as sources and sinks for carbon, from local to regional and global scales (Brown et al., 2004; Lambin et al., 2001).
- *Land use* means the manner in which the biophysical characteristics of land cover are manipulated by *human* activity, as well as the intentions of the activity. The typical intentions include agriculture, pasture, forestry, extraction of resources, and settlements. Land use changes are e.g., the shift from extensive to intensive pasture, or moving from intensive tilling to fallow land, or deforestation (Ellis et al., 2013; Turner, Lambin & Reenberg, 2007).

It should be noted that the term "land" in this report is used to represent its area dimension, while functional aspects of land such as "soil" are used explicit.

2.1.2 Deforestation

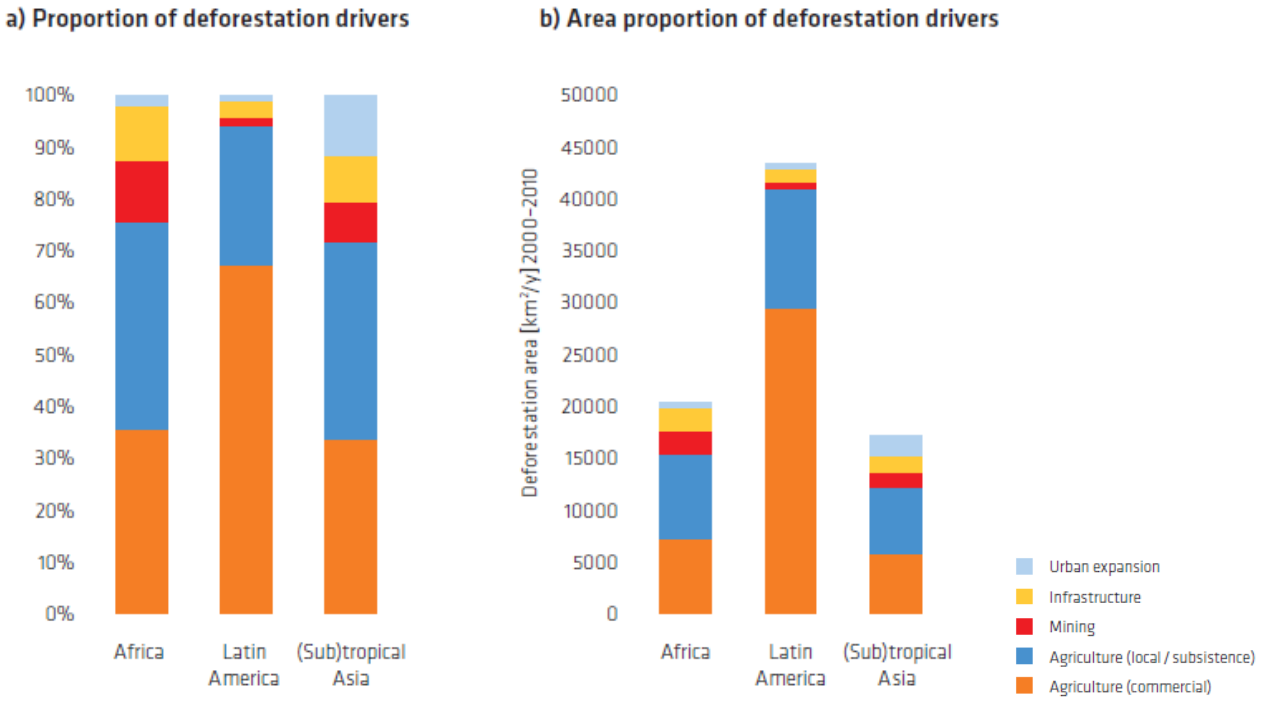
The expansion of cultivated land and pastures has largely been at the expense of forests (Gibbs et al., 2010).

With more spatially explicit data becoming available from remote sensing – especially high-resolution satellite observations – since the 1990ies (Justice, Gutman & Vadrevu, 2015), the causes of deforestation ("drivers") could be determined on a country-base (Kissinger, Herold & De Sy 2012).

This has shown that the drivers differ between continents: while in Africa and Asia more about 70% of deforestation is caused by agriculture, the figure for Latin America reaches 95%, with commercial agriculture alone being responsible for 2/3 of deforestation during that period (see Figure 3).

[9] The finding of early work by Rosenzweig & Parry (1994) that climate change will negatively affect agriculture mainly in developing countries, especially in lower latitudes, and may imply slight improvements in industrialized countries, is confirmed in more recent studies (Gornal et al., 2010; IPCC, 2014a; OECD, 2014).

Figure 3: Disaggregated proportions of deforestation drivers, 2000-2010



Source: Kissinger, Herold & De Sy, 2012

2.1.3 Human settlements, Infrastructure, Mining and other Land Use

As Figure 3 indicates, mining and settlements together with infrastructure caused about 25-30% of land use changes (in terms of deforestation) in Africa and Asia, with mining dominating in Africa and urbanization in Asia. Yet, the current land footprint of human settlements, infrastructure, mining and other activities such as waste management are quite low[10], but especially urban areas are expected to grow significantly in the future (see Chapter 3.5.7).

2.2 Future Global Land Use

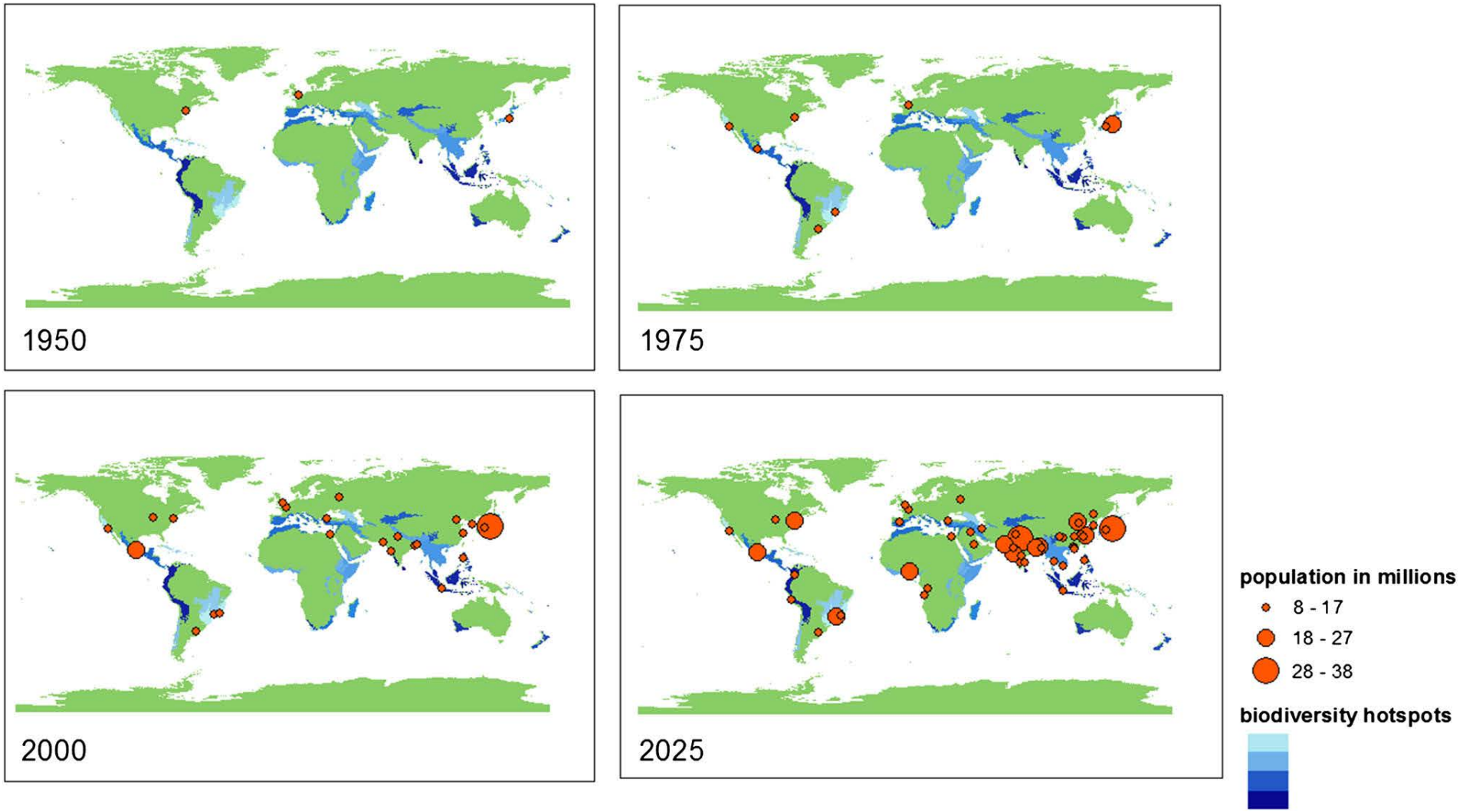
A fundamental driver of future land use is *population growth* – it is expected that by 2050, about 9 billion people will inhabit the earth (UNDESA, 2014)[11]. Related to that, *urbanization* will be the defining trend over the next decades, especially in Asia and sub-Saharan Africa- between 2010 and 2050, the urban population share will grow to more than 2/3 of the world's population, with different shares in major world regions (UNDESA, 2014). The expansion of urban areas and land required for infrastructure is expected to at least keep pace with population growth. An additional 100 Mha of land is estimated to be required for residential, industrial and infrastructure until 2050, more than 90 % of it in developing countries (FAO, 2011).

Future urbanization, especially in Megacities, may have severe impacts on global biodiversity hotspots, as indicated in Figure 4.

[10] see GLOBALANDS paper by Lutzenberger, 2014 (footnote 6).

[11] It should be noted that population dynamics are subject to a broad variety of influencing factors, and some of those are correlated with outcomes of agricultural assumption (e.g. education level, food security, health, income, rural employment) so that there is an internal feedback loop. Not surprisingly, one can find a significant range of global population projections for 2050 and beyond (Eppler, Fritsche & Laaks, 2015).

Figure 4: Historic and future urban expansion into biodiversity hotspots



Source: Schewenius, McPhearson & Elmqvist, 2014. Biodiversity hotspots shown with higher (dark blue) and lower (light blue) levels of biodiversity.

Box 3: Key results of scenarios for future global land use

The future is, by definition, unknown today – but scenarios and respective models are means *to explore* the unknown.

Since the 1970s, various approaches to model the future were developed, and a broad scientific consensus was reached that *global* modeling requires a certain methodology which relies on the (participatory) development of consistent storylines, followed by transparent modeling (Alcamo, 2001). The science-based use of models needs "embedding" with relevant stakeholders to provide consistent and politically relevant scenarios (EEA, 2011). The scenarios and models analyzed for GLOBALANDS all follow this consensus, and the results give a *clear and robust message*:

Up to 2050, the trend (business-as-usual) implies a significant shift in land use from (natural or semi-natural) forested areas and savannahs towards agricultural systems.

Agricultural land will be transformed from pasture, grassland and – to a lesser degree - from forests to arable land, though with significant differences between world regions. The respective impacts on biodiversity, GHG emissions, and water are substantial and *will increase* over time.

Major uncertainties of these trends and baseline projections are in the future yield development which is subject to climate change feedbacks, and in the overall demand for agricultural and forest products. The role of bioenergy (and biofuels) in the scenarios is noteworthy, but has a comparatively small share in the overall drivers (Goldemberg et al., 2014; Wood et al., 2015).

In the next 30 years, the doubling of urban population in developing countries is likely to *triple* the extent of built-up areas (Fragkias et al., 2013). Up to 2030, global urban land cover is expected to increase by over 200 % (compared to 2000), while global urban population growth will be about 70 % within the same timeframe. The most relevant dynamics is expected for Africa where urban land cover is projected to increase by 700 %, while the African urban population will increase by 160 % in the same period (Fragkias et al., 2013).

Future *changes in diets* - in particular in emerging economies – towards more animal products such as dairy and meat are a major influence[12]. By 2050, 70% more food production will be needed globally, and up to 100% more in developing countries, relative to 2009 levels. The main contribution to future growth in agricultural output is expected to come from intensification on existing agricultural land (FAO, 2012).

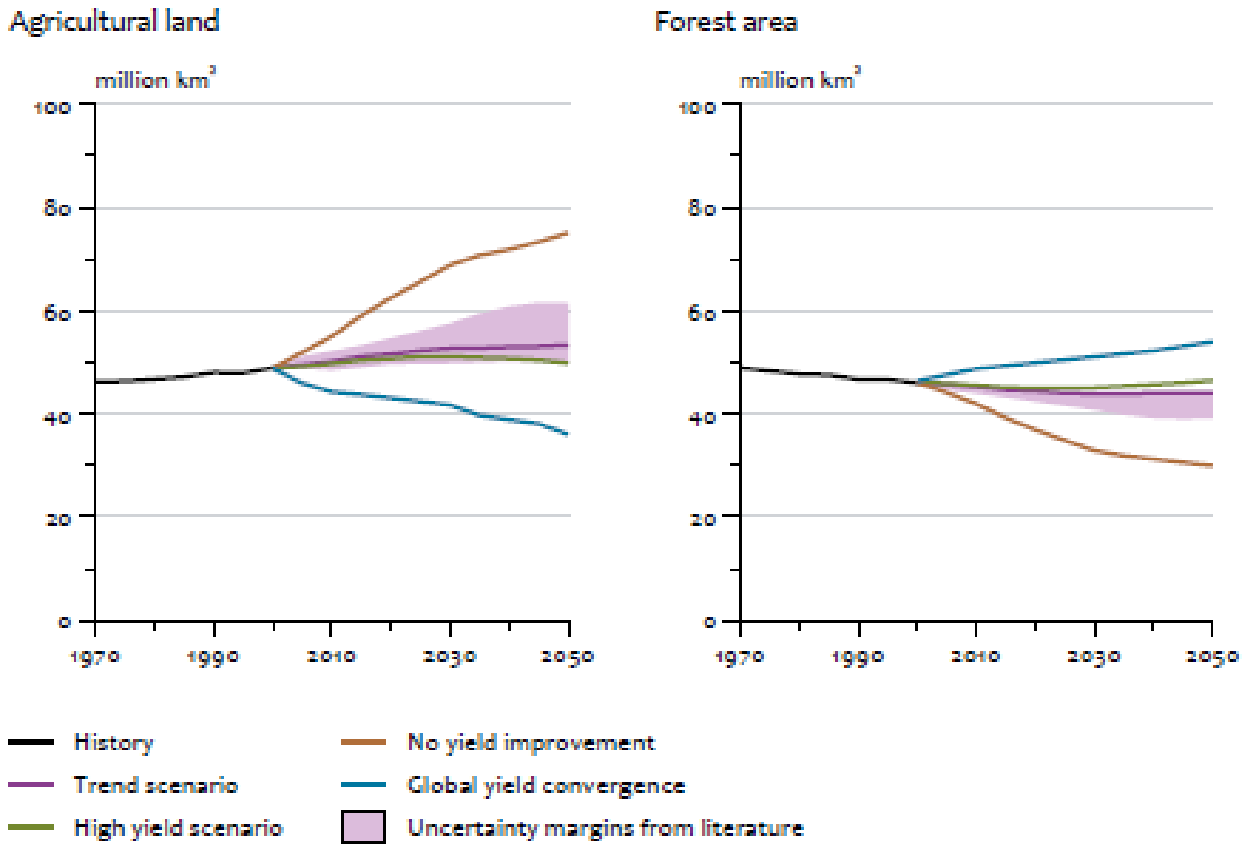
Given the important role of agriculture in future global land use, many studies have tried to identify *alternative development pathways and scenarios*[13].

The results of these studies indicate that there is significant opportunity to reduce future agricultural land use while increasing forest area (Figure 5), i.e. the scenarios show a wide range of *political scope* to influence future land use.

[12] See e.g. Allievi, Vinnari & Luukkanen 2015; Hallström, Carlsson-Kanyama & Börjesson, 2015; PBL, 2011.

[13] See Fritsche, Uwe & Eppler, Ulrike (2013): Global Land Use Scenarios: Key findings from a review of international level studies and models. GLOBALANDS Working Paper by IINAS. Darmstadt.

Figure 5: Global agricultural and forest land use scenarios up to 2050



Source: PBL, 2009

It should be noted that *urban agriculture* could provide a rising share of food supply for urbanized populations, thus lowering the pressure on rural agricultural land (see Box 7)[14].

2.3 What is Sustainable Land Use?

Nowadays, sustainability and sustainable development are ubiquitous terms, but are often poorly understood and defined. Associated terms such as *sustainable land use* may lead to a variety of different interpretations and perspectives. Therefore, a definition of what is understood in the respective context is needed for an informed and constructive discourse.

While concepts exist for sustainable agriculture, forest (management) and biomass use, there are surprisingly few concepts dealing with sustainable land use as a whole, i.e., an integrated definition of sustainable land use that considers the numerous demands from and practices applied in different sectors hardly exists - not to mention acknowledgement of and provisions addressing the various leakage effects (e.g. ILUC) resulting from narrow sectoral views.

Panell & Schilizzi (1999), for example, recognized that a core unresolved question when talking about sustainable agriculture is “Sustainability of what?” That question has multiple facets:

- Consistency between scales: How do land use decisions on a local scale affect the national or even global scale, and how should this be evaluated?

[14] See Fritsche, Uwe; Laaks, Sabine & Eppler, Ulrike (2015): Urban Food Systems and Global Sustainable Land Use. GLOBALANDS Issue Paper by IINAS. Darmstadt, Berlin.

- Difficulty of measurement: Made evident by the current struggle to find adequate indicators for sustainable land use, which provide sufficient data and measurability[15].
- Competing objectives: Maximizing carbon sequestration is not always compatible with biodiversity, and may affect land rights and cultural values.
- Uncertainty: Land use decisions depend on a wide range of variables with a comparably high degree of uncertainty and are often long-term and irreversible (especially in the forestry sector).

To overcome these challenges, existing concepts often restrain their approach to a list of certain (guiding) principles, which can be further adapted to different scales or specific conditions.

Since the early 2000s, many suggestions were made for sustainable biofuels, and bioenergy[16]. Many of these principles and criteria provide an understanding of the diversity of issues to be considered when attempting to define sustainable land use.

More recently, the Global Bioenergy Partnership (GBEP), after an intensive consultation process, came up with a comprehensive list of 24 sustainability indicators for bioenergy (GBEP, 2011).

For each of the three pillars of sustainability, different themes are defined with a set of indicators. Although focusing on bioenergy, most of these themes also reflect land use in general.

Table 2: Themes relevant for land use identified by GBEP

Environmental	Social	Economic
Greenhouse gas emissions	Price and supply of a national food basket	Resource availability and use efficiencies, conversion, distribution and end use
Productive capacity of the land and ecosystems	Access to land, water and other natural resources	Economic development
Air quality	Labor conditions	Economic viability and competitiveness
Water availability, use efficiency and quality	Rural and social development	Access to technology and technological capabilities
Biological diversity	Access to energy	Energy security/diversification of sources and supply
Land use change, including indirect effects	Human health and safety	Energy security/Infrastructure and logistics for distribution and use

Source: GBEP, 2011

Another approach outlined in the principles of sustainable land use management developed by FAO (1993) acknowledges the *multifunctionality* of land use. Multifunctionality includes cultural and aesthetic aspects that go far beyond mere food and material production[17] and highlights in more general terms that negative social impacts to local populations from land use have to be avoided.

[15] For a discussion of this issue see Chapter 5.1.

[16] See e.g., Lewandowski & Faaij, 2004; Franke et al., 2013; Fritsche, 2010a-c+2012; Fritsche & Iriarte, 2014; Fritsche et al., 2004-2014; Hunt et al., 2006; Leopoldina, 2012; PBL, 2012; Schweinle, 2015; SEI, 2005; Souza et al., 2015; SRU, 2007; Thrän et al., 2005; UBA, 2012; UN-Energy, 2007; UNEP, 2006+2007; UNEP-IRP, 2009; WBGU, 2009.

[17] Especially in agriculture, the concept of multifunctionality has been widely applied as a kind of operationalization of sustainability, more recently by IAASTD (2009) which created a profound alternative vision for global agriculture in contrast to the "green revolution" model.

Interestingly, the implementation of this concept seems impossible without a certain authority ("land use manager") who is able to decide on land use at a certain governance level.

In other words, land use management implies a person, institution or regulatory authority, which oversees land use activities beyond farm scale, since the concept only applies to the interplay between different land users. This presumption is not trivial and essentially counts for every attempt to define sustainable land use. Sustainable land use cannot be defined and applied by isolated actors, but necessitates collective decision-making processes and joint implementation.

With respect to "global sustainable land use", this returns to the question of scales (see above). While most concepts could provide guidance for sustainable land use at specific sites and to some extent also at regional level, they cannot provide a vision as to how land use should take place at global scale.

Given these complexities, some crucial components for a definition can be derived from the discussed theories and concepts:

1. A *general cap for the conversion of land to agricultural area* seems necessary. Otherwise, the ongoing loss of forests and other ecosystems will not be stopped, even if the agricultural area would be managed sustainably. Such a cap can only be operational if applied at a national or even regional level. Moreover, it should be discussed whether other forms of land conversion (for example, for settlements or transport infrastructure) should also be capped as currently discussed in the European Union.
2. Based on such a cap, *principles and criteria could be applied within a general framework for sustainable land use* (not only for agriculture and forestry but also for mining, infrastructure, settlements, etc.) taking the interplay between different land uses (at landscape level) into account. Principles and criteria should emphasize both social and environmental issues and should be based on the concept of multifunctionality.
3. Commonly agreed criteria and principles could form a framework, which will have to be adjusted to regional and local conditions respectively through *consultation and decision-making processes*, ensuring a high level of participation from relevant stakeholders and the public.

Despite the difficulties outlined above, GLOBALANDS defined sustainable land use in a pragmatic way as follows[18]:

Global sustainable land use *serves the needs* (for food, energy, housing, recreation, etc.) of all human beings living on earth today and in the future, respecting the *boundaries and the resilience of ecological systems*.

Clearly referencing ecological boundaries, this suggestion can be assigned to a *strong concept* of sustainability.

[18] See Kaphengst, Timo (2015): Towards a definition of global sustainable land use? A discussion on theory, concepts and implications for governance. GLOBALANDS Discussion Paper by Ecologic Institute. Berlin

3 Global Governance for Sustainable Land Use

When looking at opportunities to improve global governance for sustainable land use, an analysis of the status quo is essential. Therefore, GLOBALANDS conducted a "Governance screening of global land use" in order to identify the most important international policies and assess their relevance for sustainable land use[19]. The following chapter presents the main results of this governance screening and will draw conclusions with regard to the global governance of sustainable land use.

The screening was not limited to the main land use sectors such as agriculture and forestry, but included other policies that affect large areas of land despite the fact that these policies do not explicitly target land use, such as trade and investment, development and energy policies.

In total, more than 120 international policies were analyzed. The analysis provided a thorough overview of policies at the international/global level and even included some particularly relevant EU policies. For each policy field, the most relevant policies were analyzed in relation to their objectives, mechanisms, and (estimated) relevance for sustainable land use. In addition, ten national case studies provided further insights into different land-related policies (Brazil, Bolivia, Argentina, Cuba, Kenya, Niger/Burkina Faso, India, Australia, Belgium and Germany, see Chapter 3.4).

The screening also identified windows of opportunity (WOO) for future action on the international policy level (see Chapter 3.5) as well as barriers and "blind spots" where international policy is currently lacking or ineffective at influencing important drivers of unsustainable land use (Box 5).

3.1 Approach and Classification of Policies

The selection of policies to be part of the analysis was conducted according to two major criteria: the estimated quantitative land use relevance at global scale and a high degree of qualitative impact (negative or positive) that a policy might have on soil and land use. Nonetheless, there are many more policies that have a potentially significant and at least indirect impact on land use which could not be analyzed in the report, such as policies on human rights, education, defense or research.

In order to structure the screening process, a classification of policies needed to be undertaken (Table 1). We followed a stepwise approach to systematically screen land use policies at international level, differentiating between:

1. Land use policies (for agriculture, forestry, built-up areas/mining areas)
2. "Cross-cutting policies for specific environmental media/environmental goods", including policies which do not specifically belong to one land use sector but rather aim to protect environmental goods (climate policy, biodiversity policy, soil protection policy and water policy).
3. "Integrated policies", which address different sectors and environmental media at the same time and explicitly try to take an integrative perspective (explicit sustainability policy, environmental impact assessment/strategic environmental assessment (EIA and SEA), land use planning).
4. "Cross-cutting policies", including policies that do not focus on a specific land use or environmental good, but which nevertheless have a relevant effect on sustainable land use such as energy, trade, investment, land tenure, development & cohesion as well as policies addressing corruption/transparency.

[19] See Wunder, Stephanie et al. (2013): Governance screening of global land use. GLOBALANDS Discussion Paper by Ecologic Institute and Oeko-Institut. Berlin.

5. Last but not least, the screening also identified "cross-cutting issues with a lack of effective policies", or "blind spots". These are policy areas highly relevant to sustainable land use, such as resource-intensive (western) diets, population growth, as well as gender issues, environmental liability regulation and the lack of internalization of external (environmental) costs.

Such division ensured that a duplication of policies could be avoided in the analysis. If a policy fit into more than one category, the allocation drew on the main objective of the respective policy in order to determine the most relevant category.

Table 3: Scope of analysis, classification and number of international policies analyzed in the governance screening

Land use policies per sector	Specific environmental media/goods	Integrated (different environmental media/goods)	Cross-cutting policies (non-sectoral)	Blind spots/cross-cutting issues with lack of (effective) policies
Agriculture (6 policies analyzed)	Biodiversity (7)	Sustainability (4)	Energy (10)	Food/global diets/food waste
Forestry (28)	Water (2)	Spatial planning (3)	Trade (6)	Population increase
Built up land (13)	Climate (7)		Investment (5)	Public goods, internalizing externalities
	Soil (3)		Development (7)	Gender
			Land tenure (1)	Liability
			Corruption (4)	

Source: Wunder et al., 2013

3.2 Conclusions from the Global Governance Screening

Building on the broad screening of land-use relevant international policies (Wunder et al., 2013), this chapter outlines the main findings from the governance screening.

The chapter does not repeat and discuss the broad range of insights and information that can be found in the screening itself, but focuses on some clear messages. For illustration purposes, examples of policies are given where they support the findings and theses formulated in this chapter.

First and foremost, the GLOBALANDS governance screening revealed that a *large number of international policies* with relevance for the sustainable use of global land resources already exist to date.

However, there is *no overarching sustainable "land (use) policy"* at international level, even though the three most relevant UN conventions (CBD, UNCCD and UNFCCC) deal with land-related issues and various international processes continue to put more and more emphasis on land (e.g. the Voluntary Guidelines on the Responsible Governance of Tenure, see Chapter 3.5.5).

The various land-related policies identified in the GLOBALANDS screening directly address land use only in the context of agricultural, forestry, biodiversity, climate, resource or development policies.

Other policies, such as trade and investment, do *not consider land use as an explicit issue* but have *substantial (often negative) side-effects* on the sustainability of land use (see box below).

Box 4: The role of trade and investment policies

The assessment of trade and investment policies showed that while land use itself is not among the objectives of these policies, they can have a relevant land use impacts. Current *trade policies* mostly focus on liberalizing markets and better market access, and often provide economic incentives for additional land conversion. Through better market access, trade agreements between countries enable economic actors from developed countries to invest in land-related businesses (e.g., biofuels, mining), which often drive land intensification in the respective country and might even lead to land conflicts (if tenure rights are insufficiently addressed or not respected/enforced). This is particularly the case when investments lead to conversion of land resources in order to grow arable commodities for export. A common rule in trade policy is the non-discrimination of goods and services, which means that they have to be treated equally in terms of subsidies and regulation. Exceptions to the rule of non-discrimination can be determined in trade agreements between countries, which would allow for special treatments with regards to sustainability, but these do not primarily address environmental goods (such as land) in foreign territories.

Similar to trade policy, bilateral and regional investment treaties have an indirect impact on land use, e.g., removal of regulatory investment barriers resulted in a tremendous growth of foreign direct investment in OECD countries and increasingly in developing countries in recent decades. Higher flows of investment are likely to exacerbate the extraction of weakly regulated resources and increase exploitation of land. However, there are also windows of opportunity to improve sustainable land use through trade and investment policies. This includes the revision of the *World Bank's Environmental and Social Framework* (see Chapter 6.3). The development of a new framework could much more strongly align with the Voluntary Guidelines on Land Tenure (see Chapter 3.5.5). The current draft of the Framework, though, is still characterized by omissions with regard to land rights, treatment of indigenous people and environmental impacts (Kaphengst, 2015).

The *Transatlantic Trade and Investment Partnership (TTIP)* is a comprehensive bilateral trade and investment agreement under negotiations between the EU and the US since 2013, aiming to foster trade and investment between the two parties. Even if TTIP is not a multilateral, let alone global agreement, it is conceived as providing a blueprint for similar agreements with other parties (e.g. China). Its impact is likely to extend beyond the US and the EU also because it is likely to affect global trade flows. More indirect impacts may result from regulatory changes within the EU and US as a consequence of TTIP, which also apply in relation to third countries. However, the overall impact of the planned agreement on sustainable land use cannot be meaningfully assessed at present as TTIP is still under negotiation. Only a few of the specific policy areas included in TTIP are directly relevant to land use, e.g. pesticide use in agriculture and biofuel sustainability standards. Yet, some of the mechanisms that according to the EU's textual proposals are to be included in TTIP – e.g. investor-state dispute settlement and regulatory cooperation – might pose risks for future land regulation, may slow down regulatory processes or tilt the political playing field towards economic and trade interests at the expense of sustainability[20].

The *World Trade Organization's* Ninth Ministerial Conference (Bali, December 3-7, 2013) adopted the so-called Bali Package which includes a proposed list of green-box-eligible general services[21] of particular interest to developing countries, e.g. programs for land rehabilitation, soil conservation and resource management. Such services could be eligible for domestic support measures (e.g. subsidies), which could increase the sustainability of land use by the beneficiaries.

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[20] See Gerstetter, Christiane (2015): The Transatlantic Trade and Investment Partnership (TTIP) and its relevance for global sustainable land use. GLOBALANDS Discussion Paper by Ecologic Institute. Berlin.

[21] These are services, which are declared as being eligible for domestic support (e.g. subsidies) under the WTO. Domestic support for services assigned to other boxes are regarded as trade distorting and therefore forbidden for domestic support (red box) or trade distorting under certain conditions (amber box).

The analysis has further shown that no policy approach so far addresses competing land uses and demands in their complexity of interactions. Instead, *sector-specific policies still predominate* (e.g. biofuel polices that do not consider the sector's interaction with the food and feed sector, agricultural policies that do not consider interactions with biodiversity, etc.).

International policies that aim to promote sustainable land use (in addition to the UN Rio Conventions, also the Non-Legally Binding Instrument on All Types of Forests and other initiatives) *tend to be weak*: they often lack appropriate financial resources, suffer from a low level of implementation, or they are restricted to certain regions (e.g., UNCCD's focus on arid, semi-arid and sub-humid areas).

Notwithstanding the findings of GLOBALANDS for the international level, the analysis of the national case studies (see Chapter 3.3) showed that implementation of global policy frameworks strongly *depends on national or even regional conditions* (e.g., which actors are involved, local governance, level of corruption, etc.). These conditions influence which effects can be expected from a (national or international) policy on sustainable land use.

Also, it must be noted that *current international policies do not or ineffectively address the most significant drivers* of unsustainable land use (herewith called "blind spots" in international governance - see Box 5).

Box 5: Blind spots - lack of (international) policies to address major land use drivers

The governance screening also showed important factors or drivers for land use that are not or ineffectively addressed through international policies. Such "blinds spots" of relevance are:

High animal product consumption/western diets: Livestock production is by far the single largest anthropogenic use of land. Its major importance to sustainable land use stems from the fact that the increasing global population and shifting dietary habits in developing countries further add to the pressure on land as well as water and biodiversity (see Chapter 2.1.1). The expansion of livestock production is also a key factor in deforestation (Chapter 2.1.2). Depending on the type of meat, land requirements are roughly 10 times larger for meat protein than soybean production (Reijnders & Soret, 2003). As, on average, meat consumption in industrialized countries is above healthy levels, a transition towards less meat-intense diets would reduce demand for land.

Food waste: The reduction of food waste has a potential to reduce pressures on (agricultural) land use and resource inputs. According to data from Gustavsson et al. (2011), about 1/3 of all food production worldwide is lost or wasted in food production and consumption systems. This means that huge amounts of land and other resources used in food production could have been avoided.

Gender equality: Because of the differences between men and women with regard to access to land, land-use management and involvement in decision making processes, it is important to include a gender perspective within land-use governance. In developing regions, women typically have far less opportunities or rights to officially own, rent or manage land, though women may in fact be responsible for a large percentage of the farm labor. The unequal access to productive resources and services reduces women's productivity, also translating into lower yields. According to FAO (2011a), enabling women to access productive resources to the same extent as men would increase yields on their farms by 20–30%. In addition to increases in production and income, closing the gender gap in agriculture and strengthening women's access to resources and income would generate broader social and economic benefits. Women also tend to have a good knowledge of local crop species, show a greater environmental awareness, and are more sensible towards environmental risks (Schultz et. al., 2001).

Population increase: The increase in global population may have an enormous impact on land use (see Chapter 2.2). Addressing population growth is also strongly connected to human rights, gender equality and education. The importance of education and the particular role of girls and women are underlined in many studies, illustrating the links between more education and lower fertility.

Comparing the different policies and forms of international governance that have been analyzed, the following observations can be made:

- Policies vary significantly in their *levels of institutionalization and enforcement*, ranging from a quasi non-regime for international forestry and agriculture to areas of internationally agreed targets supported by binding mechanisms, such as in the UN climate convention.
- Some policy areas show a high level of *fragmentation and (regional) overlap* (such as forestry) while others are consolidated under the *umbrella of a single UN convention* (e.g. biodiversity under the CBD and soil desertification under the UNCCD). Yet others are *hardly regulated* at all and are only dealt with at national or regional level (e.g. agriculture).
- Shifts in forms of international governance could be observed in the last years, in particular: *Market-based instruments* play an increasing role, with REDD+, the Clean Development Mechanism (CDM) with its afforestation and reforestation projects, and the Green Development Initiative (GDI). Moreover, highlighting the costs of policy inaction with regard to climate change and biodiversity protection, the Stern Review, the Millennium Ecosystem Assessment (MEA) and the report on The Economics of Ecosystems and Biodiversity (TEEB) and the Economics of Land Degradation (ELD) have a strong influence on policy makers. These developments support an apparent shift in policies from command-and-control instruments towards market-based instruments.
  In some cases, *private governance* has emerged as a result of governments failing to develop or effectively implement sustainability policies. This can be observed in forestry (e.g. FSC), in the biofuels sector (e.g. Roundtable for Sustainable Biomaterials, Roundtable for Sustainable Palm Oil, etc.) as well as in cross-cutting issues such as corporate transparency (e.g. the Global Reporting Initiative).
- In recent years, *global public policy networks* emerged (e.g. the Global Soil Partnership by the FAO) and *stakeholder participation* became more important (e.g. participation of non-governmental actors in the development of the VGGT, see Chapter 3.5.5).

With regard to the main trends in global land use, it can be concluded that despite the numerous international policies and initiatives addressing sustainable land use directly or indirectly and an increasing awareness of this issue, land is continuously under pressure from various sectors.

At the same time**,** the *complex interconnection* of environmental media/goods, sectors, local/cultural diversity between regions and time *requires a more integrated policy approach* in order to address the various underlying causes of unsustainable land use (see Chapter 7).

3.3 Conclusions from 10 Country Case Studies

In addition to the global governance screening, which mostly focused on the international and multilateral level, the national case studies undertaken within GLOBALANDS aimed to provide some more detailed and specific insights into land-related governance in selected countries across the globe.

Hence, the case studies are regarded both as an underpinning or contradicting analysis to the findings of the international governance screening and as a complementary analysis adding new aspects and perspectives to the multi-faceted field of land use governance.

The case studies highlight some regionally specific land use challenges and discuss the impacts of national policies, mechanisms or strategies responding to these challenges. Accordingly, the case studies do not aim to provide a comprehensive picture of national policies with land use relevance, but rather a distinct analysis of a particular land issue that may provide examples of relevance for international land governance.

Moreover, the national case studies were intended to also unveil unconventional, innovative and integrative policy approaches which could serve as a good example or starting point for possible implementation at a wider (e.g. multi-lateral) level.

The following table gives an overview of the selected case studies and the issues stressed in the analyses. In summary, there are four case studies in Latin America, two examples from Africa, two from Europe and one from Asia and Australia.

The majority of case studies in Latin America are derived from the fact that not only interesting policy approaches exist (such as in Bolivia and Cuba) but also land-rich countries, which have a significant influence on international land use (e.g. through agricultural trade and recent land use changes), can be found in this region.

Table 4: Overview of GLOBALANDS national case studies

Country	Title	Main focus of the analysis
Brazil	Policies for reducing deforestation – ambitious, though not always coherent	Mix of deforestation policies and their impacts
Bolivia	Mother Earth Law: A solution for deforestation in Bolivia?	Effects of a law assigning the Earth legal personality and thus collective rights of public interest
Argentina	Beef production decline, soy expansion and their interrelationship	Interplay between policies regulating export and domestic production and dynamics of land use and consumption
Cuba	Necessity - the Mother of Invention?	Main factors behind the rapid transformation of agriculture from industrialized sugar production towards decentralized organic farming after 1989
Kenya	Pastoralism and land governance	National land governance and its effects on land grabbing and land use dynamics in the Tana River area
Niger/Burkina Faso	Recultivating the desert (“Green Wall”)	Sustainable land use practices in problematic areas and patterns of their expansion
India	Afforestation and reforestation	Mix of deforestation policies and their impacts
Australia	Mining Agreements	Legal status of mining agreements and potential for their global application to foster environmental standards in mining
Germany	The landscape planning system	Structures and transferability of the German landscape planning system, focus on measure to reduce “land take”
Belgium	City of Ghent: The rise of the Veggie Day	How to launch a voluntary, non-governmental initiative to address meat consumption (as a large driver of land use change), how to increase its impact.

Source: own compilation

The results of each case study can be found in a comprehensive GOBALAND paper[22]. An analysis for similarities and differences between the national cases provided additional insights and conclusions relevant to the successful design of policies for sustainable land use:

- Sustainable land use requires more than explicit "sustainability policies". Abolishing perverse incentives and creating coherence amongst various policy fields would support sustainable land use. Abolishing such countervailing policies is particularly relevant at the national level (see examples from Argentina and Brazil).
- Changes in governance/policies that may have an influence on land need to consider market dynamics, interrelations with other sectors and other potential side effects as far as possible in order to avoid unintended effects (see examples from Argentina, Bolivia and Brazil).
- The introduction of new/experimental policies/governance approaches is helpful and needed, but needs to be backed by (financial and political) support in order to be effectively implemented (see examples from Belgium, Bolivia, Germany and Niger/Burkina Faso).
- An overarching governance system for land use planning requires a well-functioning administrative system and needs to fit into national institutional settings (see example from Germany and an additional analysis of land use planning in Indonesia).
- The success of many instruments in land governance depends on economic, environmental and cultural pre-conditions that vary locally/regionally. This means that any land policy must take local conditions into account and should be designed in a flexible way so as to adequately respond to these conditions (see examples from Niger/Burkina Faso, Cuba and India).
- Policies should identify relevant actors with important influence on land use decisions and land management (entrepreneurs, local leaders, etc.) to involve them early in decision-making processes and to enable them to support the implementation of the policy (see examples from Cuba, Niger/Burkina Faso and India).

3.4 Role of the Private Sector

Land use is a multi-sectorial, multi-faceted activity which involves multiple actors: governments and public agencies, local landholders as well as corporate, industrial and financial actors. In many land use sectors, the role of corporate actors - as opposed to small-scale land users such as family farmers, community foresters, artisan miners etc. - has increased in the past decades. This is a result of the progressive expansion of commercial-industrial relations in these sectors (e.g., for agriculture see IAASTD, 2009; p. 7).

It is also reflected in the trend towards large-scale land acquisitions which to a significant extent are driven by companies (Anseeuw et al., 2012; p. 21). Sectors with both a particular dependence and sustainability impact on land include the food and beverage, leisure and travel, and basic resource sectors (ELD, 2013; p. 6). Thus, a share of responsibility for sustainable land use rests with corporate actors, both domestic and multinational ones. This holds particularly in countries where the state's governance capacities are low.

(Multinational) Corporations can both be 'problem creators' and 'problem mitigators' with regard to sustainable land use. On the one hand, companies have driven massive land consumption, land use changes and the degradation of land, soils and biodiversity, including through deforestation, conta-

[22] Wunder, Stephanie et al. (2013): Governance screening of global land use. GLOBALANDS Discussion Paper by Ecologic Institute and Oeko-Institut. Berlin.

mination, overexploitation of natural resources (Barkemeyer, 2011; Brandon, 2013; Doh, 2009; Idemudia, 2011; McMichael, 2012; Meyfroidt, 2013). They also have contributed to land conflicts and to land and food tenure insecurity of local inhabitants, and they have been involved in forced evictions (Abdul-gafaru, 2008; Abebe, 2012; Adeola, 2001; Bob, 2010).

On the other hand, corporate actors can also contribute to mitigating land degradation, restoring land, conserving and sustainably using natural resources and ecosystem services (Bishop et al., 2009; Daily & Ellison, 2012; TEEB, 2012); ultimately, they can thus contribute to making the SDGs a success (Nieuwenkamp, 2015).

The main pathway through which (multinational) companies can contribute to a global sustainable land use is to render more socially or ecologically responsible their *business models*, their core *business operations* and their *value chains* wherever land use is involved (Beltramello et al., 2013; Dobers & Halme, 2009; Rondinelli & Berry, 2000; Visser, 2008).

Further forms of Corporate Social Responsibility (CSR) include (land-related) community projects (Muthuri et al., 2012) and the shaping of public policy dialogue and institutions towards more sustainable development, and land use, respectively (Kourula & Halme, 2001). For companies, to systematically account for sustainability issues in their operations, a multitude of standardized instruments exist (Barth & Wolff, 2009) which may be developed and 'owned' by business, governmental or civil society actors as well as by combinations of these. Unlike company-specific policies and tools, they are not developed by individual companies. The instruments include codes of conduct, management systems, certification (labelling) schemes, accountability and reporting instruments as well as membership in targeted initiatives.

Table 5: Selection of standardized private sector tools relevant for sustainable land use

Instrument type	Land use sector	System/tool with relevance to sustainable land use
Codes of conduct	Cross-sectorial	UN Guiding Principles on Business and Human Rights
		UN Global Compact
		OECD Guidelines for Multinational Enterprises
		Transparency International's Business Principles for Countering Bribery
	Agriculture	Global Compact Food & Agriculture Business Principles
		FAO-OECD Guidance for Responsible Agricultural Supply Chains (Draft)
	Mining	International Council on Mining and Metals' Sustainable Development Principles
	Finance	UNEP Financial Initiative's Statement of Commitment by Financial Institutions on Sustainable Development
		Equator Principles
Management systems	Cross-sectorial	EMAS
		ISO 14000
Certification/ labeling schemes	Cross-sectorial	ISO 14001
		EU's Eco Management and Audit Scheme (EMAS)
	Forestry	Forest Stewardship Council (FSC)
		Program for the Endorsement of Forest Certification (PEFC)
		Voluntary timber legality certification
		Standards for forest and agricultural carbon projects in voluntary carbon market, e.g., Verified Carbon Standard (VCS), VER+, Gold Standard, Voluntary Offset Standard (VOS), ISO-14.065, Social Carbon Standard, the Community & Biodiversity Standards (CCBS)
	Agriculture	Fairtrade labels, e.g. Fairtrade International, Fairglobe, Fair for Life, For

Instrument type	Land use sector	System/tool with relevance to sustainable land use
		Life, El Puente, Fair Rubber, GEPA
		Organic farming labels, e.g. IFOAM, EU-Bio, Naturland
		Rainforest Alliance/ Sustainable Agriculture Network (SAN) standard
		Global Partnership for Good Agricultural Practice (GLOBAL GAP)
		UTZ Certified
		Better Cotton Initiative (BCI)
		Cotton made in Africa (CmiA)
		Common Code for the Coffee Community (4C)
		Nespresso AAA
		C.A.F.E Practices
		Ethical Tea Partnership Standard
		Bonsucro
		ProTerra
		Danube Soya Initiative
		Roundtable on Responsible Soy (RTRS)
		Roundtable on Sustainable Palm Oil (RSPO)
		Roundtable for Sustainable Biomaterials (RSB)
		International Sustainability Carbon Certification (ISCC)
Accounting & reporting	Cross-sectorial	Global Reporting Initiative (GRI)
		Carbon Disclosure Project (CDP)
		Greenhouse Gas Protocol (Corporate Standard)
Multi-stakeholder & business co-operation	Cross-sectorial	Consumer Goods Forum
		The International Land Coalition (ILC)
	Agriculture	Sustainable Agriculture Initiative (SAI) Platform
		Global Bioenergy Partnership (GBEP)
		Ethical Tea Partnership
	Mining	National multi-stakeholder platforms of Extractive Industries Transparency Initiative (EITI)
	Finance	UNEP Financial Initiative
		Sustainable Stock Exchange Initiative (SSE)

Source: own compilation

Among these tools for more sustainable land use by the private sector, especially certification schemes have proliferated enormously in the past one to two decades.

Their attractiveness lies in the *assumption* that they allow companies to take price premiums and thus to cover the additional costs of a more sustainable production. The prerequisite: there is market demand for more sustainably produced products, and the certification scheme is considered as credible by consumers. A broad review of sustainability initiatives (Potts et al. 2014)[23] finds that in

"the average annual growth rate of standard-compliant production across all commodity sectors in 2012 was a stunning 41 per cent (...) and sustainability standards have forcefully penetrated mainstream markets (with certified coffee reaching 40 per cent, cocoa 22 per cent, palm oil 15 per cent and tea 12 cent of the global production)" (ibid, p. 8).

[23] The review covers the banana, biofuels, cocoa, coffee, cotton, forestry, palm oil, soybean, sugar and tea markets.

At the same time, there is a significant oversupply of standard-compliant production[24]. This implies on the one hand that companies have sufficient choice for sourcing sustainably, on the other

"that the market may be placing downward pressure on the prices of sustainable products due to over-supply" (ibid).

While three-quarters of the surveyed schemes make use of third-party certification (ensuring independence of their claims), newer, more mainstream-oriented standards exhibit a lower scope and ambitiousness (ibid, 9).

The observable proliferation of certification schemes results from a trend to (sub-) sector-specific, single-sector schemes (for biofuels, palm oil, soy etc.). In addition, in many of the (sub-) sectors more than one standard exists, so that schemes with varying stringency and specificity compete. Subsequently, the 'label market' is becoming more intransparent, which may promote the commitment of less ambitious companies to less stringent labels and ultimately undermine the credibility of schemes. The focus on certification schemes implies that a "greening" of resource extraction and production is above all of interest in export-oriented markets, and in particular in national markets whose products are exported to Europe.

Table 3 indicates that the landscape of standardized private sector tools is irregular not only with regard to instrument types, but also that there are much more instruments in some land use sectors than in others: while instruments abound in agriculture, specifically due to commodity-specific certification schemes, there are hardly any sector-specific instruments pertaining to the land use sector of settlements (with the construction and infrastructure industries). This is due to, among others, the fact that the respective industries do not produce consumer goods.

In addition to the standardized instruments, companies can contribute to sustainable land use by engaging in philanthropy and "corporate citizenship", e.g., though funding nature reserves or donating to land-related community projects. More to the point, they can develop and implement their own specific sustainable land-use policies and tools.

A GGLOBALANDS paper analyzed exemplary land-use related policies by three multinational corporations (Unilever, Coca Cola Company, Allianz SE)[25]. All three companies address sustainable land use issues to a significant extent. For selected commodities or raw materials, they have introduced relatively ambitious sustainability targets and have implemented various sustainability tools (certification schemes, company-owned sustainability guidelines, supplier codes etc.) to achieve them. Companies obviously combine multiple tools in their approach to sustainable land use.

Nonetheless, a lack of consistency in the respective corporate polices can be observed. Put differently, sustainable land use is not mainstreamed as a cross-cutting topic within the respective company policies. Such inconsistency can lead to competing and even contradicting objectives between corporate policies, suggesting that the policies' impacts on the ground may be diminished.

Above instruments and practices directly implemented by companies, it should be mentioned that other actors can also stimulate companies' responsible behavior with regard to land use:

- Consumers can include sustainability considerations in their buying decisions, most easily by buying products with labels that reflects more sustainable forms of land use;

[24] I.e., less standard-compliant produce than available is actually sold as 'standard compliant'.

[25] Klink, Dennis & Wolff, Franziska (2015): Sustainable land use and the private sector: recent trends. GLOBALANDS Issue Paper by Oeko-Institut. Berlin.

- civil society organizations and the media can act as watchdogs, *naming and shaming* companies that act irresponsibly, or they may co-operate with them to improve corporate awareness and practices with regard to sustainable land use questions;
- financial institutions and investors (both institutional and non-institutional ones) can improve access to capital for responsible companies, by issuing, and respectively investing in, socially responsible investment (SRI) funds or by investing in companies listed in sustainability indices such as the Dow Jones Sustainability or FTSE4Good Indexes;
- governments and international organizations can promote learning and the exchange of best practices among companies. They can (co-) develop voluntary standards as well as specify mandatory regulation with relevance to sustainable land use. Recent examples include the development, within the UN Global Compact, of the GC Food and Agriculture Business Principles and, within the CFS, of the VGGT and the RAI Principles. Though the latter two are not exclusively targeted towards companies, companies can and should draw on these guidelines as benchmarks for their own policies and practices.

3.5 Windows of Opportunity for Sustainable Land Use

The analysis undertaken in the international governance screening of GLOBALANDS covered more than 120 policies. The screening indicated that there are even more policy fields impacting on land use than those that could be investigated in this study, especially when indirect links to land use are taken into account (see Chapters 2.1 and 4.3).

However, despite the broad number of relevant policies, some stand out as *particularly relevant* because they are undergoing changes or a process might provide opportunities to improve (requirements for) sustainable land use, or they can act as catalysts to strengthen global governance towards sustainable land use. In the following, insights to key windows of opportunity are given.

3.5.1 UN Sustainable Development Goals (SDG)

The broadest international process that has the potential to promote global sustainable land use is the development of the United Nations *Sustainable Development Goals* (SDGs) which have the purpose to address poverty eradication, environmental protection, sustainable consumption and production, and to overcome shortcomings of the earlier Millennium Development Goals (UN, 2012) which expire end of 2015.

The SDGs are meant as an integrated, indivisible set of global priorities for sustainable development, focusing on measurable outcomes, be action oriented, global in nature and universally applicable, but as well take into account different national realities, capacities and levels of development and respect national policies and priorities.

The preliminary outcome of this process is the *SDG proposal* (UN-OWG, 2014), and the synthesis report (UN-SG, 2014). The proposed SDGs are shown in Table 6.

In addition to the goals, the proposal included 169 targets, i.e. specific levels of ambition to achieve implementable elements of the goals.

The SDG proposal has received some critique, especially regarding the level of ambition, the non-integration of cross-cutting issues ("silo approach") and the larger number of targets[26], but the fur-

[26] See e.g., Adams & Luchsinger, 2015; DIE, 2015; Herrmann, 2015; ILC, 2015; a recent scientific review of the SDG targets concluded that "*Out of 169 targets, 49 (29 %) are considered well developed, 91 targets (54 %) could be strengthened by being more specific, and 29 (17 %) require significant work*" (ICSU & ISSC, 2015).

ther political process, as agreed by the UN General Assembly in September 2014, will not allow major changes[27].

[27] Yet, the ongoing negotiations concern also some re-wording, and proposals for changes in the targets, see Box 5.

Table 6: The SDGs as proposed by the UN-OWG

	Goal		Goal
1	End poverty in all its forms everywhere	10	Reduce inequality within and among countries
2	End hunger, achieve food security and improved nutrition, and promote sustainable agriculture	11	Make cities and human settlements inclusive, safe, resilient and sustainable
3	Ensure healthy lives and promote well-being for all at all ages	12	Ensure sustainable consumption and production patterns
4	Ensure inclusive and equitable quality education and promote life-long learning opportunities for all	13	Take urgent action to combat climate change and its impacts
5	Achieve gender equality and empower all women and girls	14	Conserve and sustainably use the oceans, seas and marine resources for sustainable development
6	Ensure availability and sustainable management of water and sanitation for all	15	Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
7	Ensure access to affordable, reliable, sustainable, and modern energy for all	16	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels
8	Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	17	Strengthen the means of implementation and revitalize the global partnership for sustainable development
9	Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation		

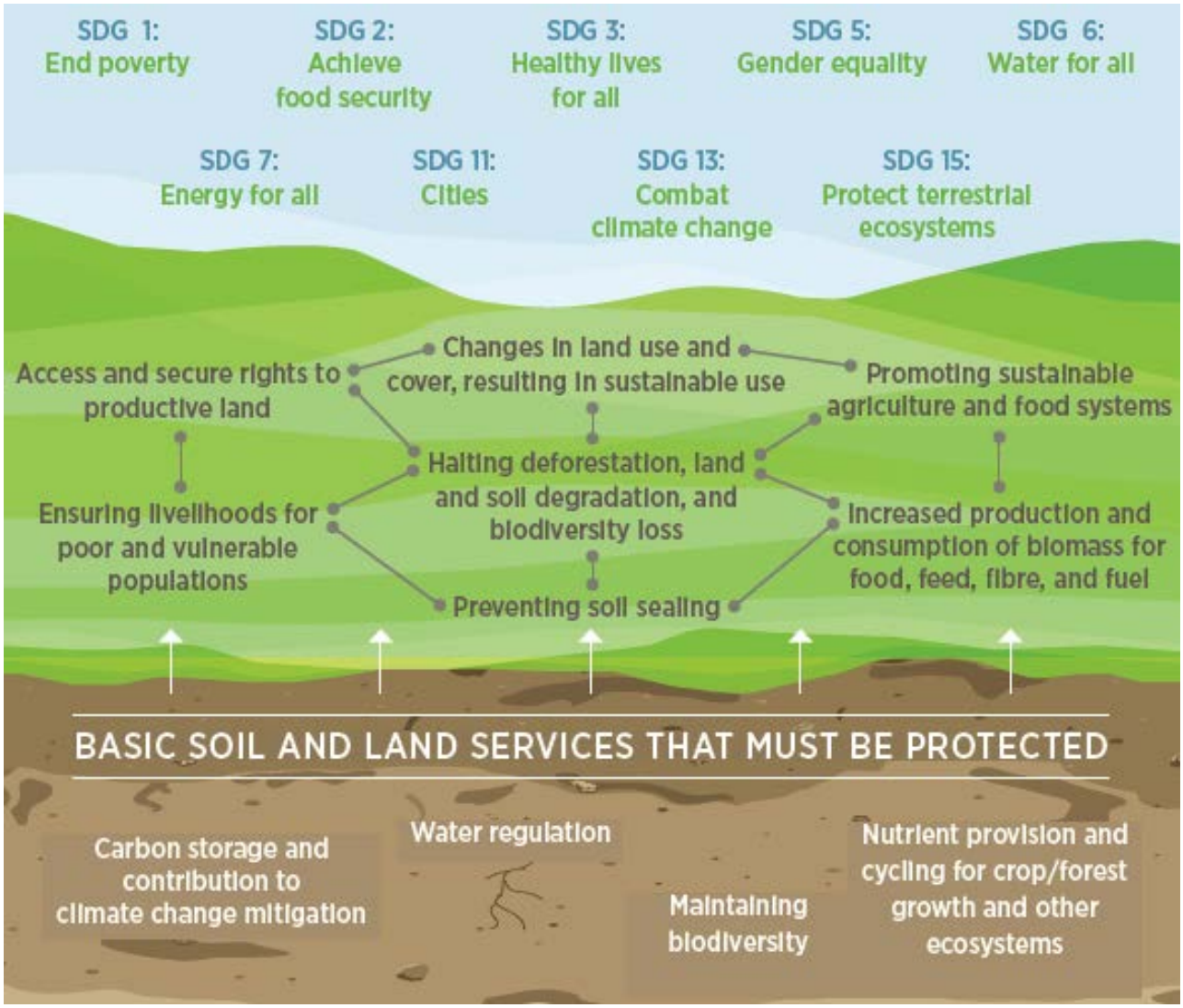
Source: UN-OWG, 2014

Land in the SDGs is covered directly in SDGs 1, 2, 11 and 15. Furthermore, the SDGs address land indirectly in Goals 6 (water), 7 (energy, via biomass[28]), 8 (resource efficiency), and 13 (climate change) through linkages to food, materials consumption, etc.

The linkages of the various SDGs to land are illustrated in the following figure.

[28] For a specific discussion of the role of biomass in the SDGs see IASS, 2015b.

Figure 6: The role of land and soils in the proposed SDGs



Source: IASS, 2015a

It will be important in the ongoing negotiations that this broad coverage of land *will be maintained* in the final decision on the SDGs in September 2015 by the UN General Assembly, especially with regard to the target of a *land-degradation neutral* (LDN) world in Goal 15, and the respective targets (see Box 6).

In parallel to the negotiations, a framework on *accountability* and *monitoring* is being developed (see Chapter 7.1.1) which includes relevant indicators[29] to ultimately "measure" the SDG implementation success (UNSD, 2014), and several contributions to this have been made already (GDPRD, 2015; Gennari, 2015; SDSN, 2015).

The UN Statistical Commission (UNSC) recently published a draft report with recommendations on indicators for all SDG targets, taking into account assessments from national statistical offices, and reflecting on *over 300 indicators* (UNSC, 2015).

[29] See Chapter 5.1.1 for a brief discussion, and the need to extend the scope of land indicators.

Box 6: Last-minute changes in SDG targets for land?

In a recent *proposed revision* to the wording of the SDG targets, the Co-Chairs of the OWG suggested to "adjust" the previous targets

- 15.2 (halt deforestation, restore degraded forests…) and
- 15.3 (combat desertification, restore degraded land and soil, strive to achieve a land degradation-neutral world)

from the original "by 2020" timeline to "by 2030" (Donoghue & Kamau, 2015).

This can be seen as a *weakening* of the SDG ambition, but the Co-Chairs argue that the changes are needed to be consistent with the UNCCD's target of land degradation neutrality by 2030 (see Chapter 3.5.2) and to be compatible with the Aichi Targets (see Chapter 3.5.3).

Beyond the consistency issue, it might be unfeasible to achieve LDN by 2020, as there will be a need for further clarifications, agreement on methodological issues and implementation by countries (Chasek et al., 2015; Grainger, 2015).

The UNSC also endorsed a new Inter-Agency and Expert Group on SDG Indicators, and proposed to establish a parallel "High-level Group" under the UNSC. The UNSC report also includes a *road map* for developing the SDG indicator framework:

- A first note on possible global and universal indicators and an indicator framework by July, 2015
- A proposal from the Expert Group for consideration by the UNSC in December 2015
- Endorsement of the indicator framework at the 47th UNSC meeting in March 2016.

This proposal is currently discussed and no final decision by the UN is available (as of May 2015).

3.5.2 UN Convention to Combat Desertification (UNCCD)

According to the UNEP clustering of the UN conventions, the UNCCD[30] is the only convention classified as a "land convention". Together with the UN Convention on Biological Diversity (CBD) and the UN Framework Convention on Climate Change (UNFCCC), the UNCCD is part of the three so-called "Rio Conventions" which are outcomes of the 1992 UN Conference on Environment and Development (UNCED) held in Rio de Janeiro[31].

Different to the CBD and the UNFCCC, though, the international status and public awareness of the UNCCD is much weaker due to a range of structural problems in the Convention. Most importantly, the UNCCD does not cover all land and soils globally but instead *focuses on arid, semi-arid and dry sub-humid areas*, thereby targeting approximately 41% of the global land surface and living space for 35% of the world population (MEA, 2005). That means that a large fraction of land, including degraded land in large parts of northern Europe, central South America, North America and Asia are not within the scope of the Convention.

The UNCCD divides its 194 member countries into two groups: affected country parties and developed country parties. All country parties have to develop National Action Programs (NAP): Affected country parties must describe relevant strategies and implementation of their action program(s). De-

30 The acronyms for the "Rio Conventions" follow no clear logic: the "UN" component is maintained in the UNCCD and UNFCCC acronyms, but has been dropped in the CBD. This report follows this practice without further comment.

31 See UNCED (1992): The Earth Summit, Rio de Janeiro http://www.un.org/geninfo/bp/enviro.html

veloped countries must report on measures taken to support action programs in the affected country parties (e.g. providing financial assistance or facilitating relevant knowledge/technology transfer).

While the NAPs are the key instrument to implement the Convention, they are often criticized to focus too much on the process of setting up the plan rather than the actual implementation of measures. There is also no common target to be fulfilled with the NAPs (such as restoration of degraded land, etc.) and NAPs themselves often lack implementation (Smith, 2015).

However, in the last three years, there has been some political momentum: In 2012 the UNCCD Secretariat started an initiative and produced a policy paper on introducing a potential goal of zero net land degradation (UNCCD, 2012). The aim "to achieve a land degradation neutral world in the context of sustainable development" (UN, 2012) included in the Rio+20 outcome document is a direct result of the UNCCD Secretariat initiative. Also, discussions on the further development of the UNCCD started then (which, however, have lost momentum by now), exploring the added-value of a new UNCCD instrument (protocol or annex) as a means to strengthen the UNCCD and to address soil-related issues that had come out of the Rio+20 process (UNCCD, 2012; Weigelt et al., 2012).

The window of opportunity that can now be seen is that the concept of Land Degradation Neutrality (LDN) is part of the SDG negotiations. Although not legally binding, a SDG target relating to LDN can provide new momentum to include the concept of LDN into NAPs and

"would help to make the Convention more practical (…) If NAPs have been an end in themselves, they have the chance to reposition themselves as a means to the end of LDN" (…) "knowing that they have to report on a SDG" (Smith, 2015).

The SDG 15 with its target on LDN is also expected to advance and confirm internationally accepted indicators on land degradation, which still do not exist (UNCCD, 2015)[32].

Having the concept of LDN in the SDG negotiations may also help the UNCCD to better position itself vis-à-vis the two other Rio Conventions, for example, by advocating LDN as an essential part of (land-based) climate adaptation at the 2015 Paris climate conference (Smith, 2015).

However, the opportunities to be seized also depend on the support structures put in place to work towards the targets agreed upon. Moreover, there is still a need to elaborate on and further define the LDN concept, which is currently being developed by the UNCCD's Intersessional Working Group (IWG), to be finalized by COP 12 in Turkey, October 2015.

3.5.3 UN Convention on Biological Diversity (CBD)

At first sight, it does not seem obvious that the CBD could function as a new trigger of sustainable land use in international politics. The term "sustainable land use" does not appear very prominently in CBD documents, "land use" is even missing in the articles of the Convention.[33] Furthermore, biodiversity seems to be only a sub-aspect of (sustainable) land use which also encompasses water availability and quality, soil erosion and degradation, nutrients balances etc.

However, the substantive link between the protection of biodiversity and land use is more than obvious. Intensive agriculture and deforestation leading to destruction and contamination of habitats and ecosystems are the main drivers of biodiversity loss. In other words, halting the loss of biodiver-

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[32] UNCCD (2015): Monitoring and Assessment in combatting desertification and land degradation and drought mitigation strategies – Highlights from the UNCCD 3rd Scientific Conference in Cancun. March 11, 2015, http://www.unccd.int/en/media-center/MediaNews/Pages/highlightdetail.aspx?HighlightID=371)

[33] This may be the case rather for political than for substantive reasons. Agriculture and forestry are highly contested issues at the UN level and most countries see their authority at risk if regulation is adopted by international agreements.

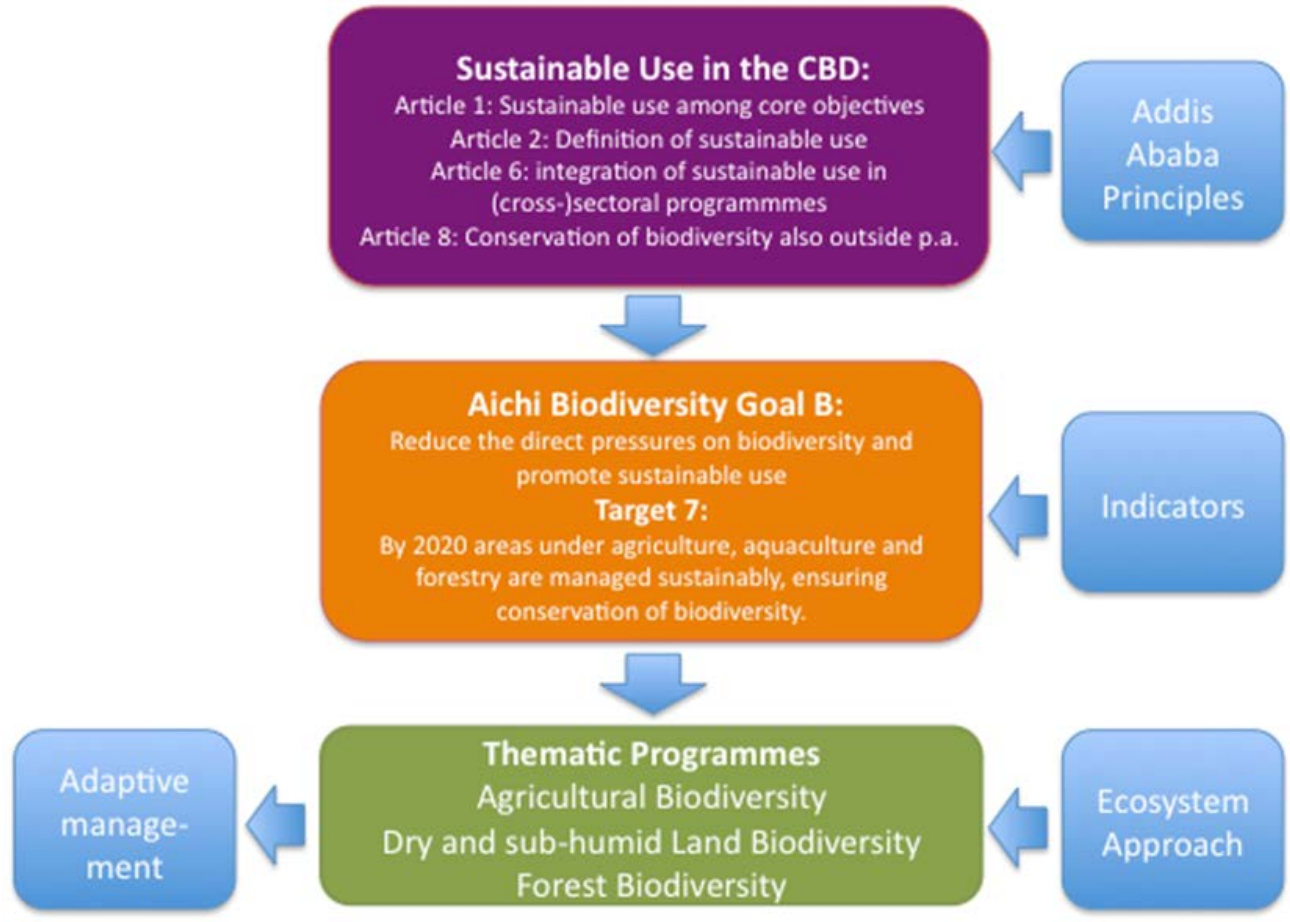
sity – the key goal of the CBD – would inevitably mean changing land use around the world towards more sustainable practices.

Consequently, in the history of the CBD, the issue of land use was not ignored but addressed indirectly in a number of components which play a crucial role in the implementation of the CBD objectives. Given the rising awareness in the recent years on "peak soil", food security, international investments and land tenure (to name only a few issues), sustainable land use has become a nexus-issue which can no longer be ignored by related international institutions such as the CBD. As we will show, almost every aspect of sustainable land use is directly and indirectly addressed by the CBD. It rather seems a question of (re-)bundling the different cornerstones under the thematic roof of sustainable land use within the CBD than introducing it as a new topic.

The most relevant elements of the CBD that could be potentially serve as a basis for strengthening global sustainable land use include:

- The CBD's goals, targets and indicators
- The Ecosystem Approach
- The Addis Ababa Principles on Sustainable Use of Biodiversity
- Satoyama Initiative
- Thematic programs of work

Figure 7: Conceptual elements of the CBD with particular relevance for sustainable land use



Source: own compilation

Objectives, targets and indicators: The "sustainable use of all components of biodiversity" is as one of the CBD's core objectives (Art. 1). Sustainable use is defined as use "in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations" (Art. 2). Components of biodiversity encompass genes, species and ecosystems (Art. 2). Especially the term "ecosystem" widens the scope of biodiversity to a dynamic system and a functional unit, of which human beings and their activities constitute an integral part. Land use is generally taking place in ecosystems, be it agro-ecosystems, forests, coasts, savannah or others.

The imperative to not only conserve biodiversity (in situ and ex situ), but also to use it sustainably reoccurs at different places within the Convention, such as Art. 6 (on the development of national strategies and programs) and Art. 8 (COP Decision V/25 established sustainable use of biodiversity as a cross-cutting issue of the Convention. Most recently, the Strategic Plan for Biodiversity 2011-2020 takes a broader perspective on what is needed to preserve biodiversity and to use ecosystems more sustainably by focusing on food security, human health, local livelihoods, clean air, water and so on. The resulting *Aichi Biodiversity Targets* are mostly set for 2020 (partly for 2015), and they are accompanied by a vision for 2050. All strategic goals guiding the Aichi Targets can be linked to land use more or less directly, e.g. Target 7 under Strategic Goal B (Reduce the direct pressures on biodiversity and promote sustainable use) which relates to areas currently used for agriculture, aquaculture and forestry and their management. The target is to ensure that "*by 2020 [these areas] are managed sustainably, ensuring conservation of biodiversity*".

Substantial experience with definition, selection and interpretation of indicators has been made under the CBD. Indicators used for measuring the Aichi Goal B (especially targets 5, 7 and 8) and, most notably, in the CBD Secretariat's "Global Biodiversity Outlook" (GBO), are of direct use for monitoring the sustainability of land use.

As the CBD's primary framework for action (Decision V/6, VII/11), the Parties to the Convention have adopted the *Ecosystem Approach* which is a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way. The approach requires adaptive management to deal with the complex and dynamic nature of ecosystems, as well as precautionary action in the absence of complete knowledge or understanding of ecosystem functioning. It recognizes that humans and their activities are an elementary part of an ecosystem. Based on this integrative perspective, the principles of the ecosystem approach could actually provide an adequate basis for a potential framework on sustainable land use. Most of the principles could directly apply to a general understanding how sustainable land use and land management at global level could be achieved. For terrestrial ecosystems, "ecosystem management" could well be replaced by "land management".

In its Decision VII/12 the COP adopted the *Addis Ababa Principles on Sustainable Use of Biodiversity* as "an important tool to achieve the 2010 target endorsed by the World Summit on Sustainable Development, the Millennium Development Goals and the three objectives of the Convention". The Addis Ababa Principles are not prescriptive but provide a governance framework for sustainable use of components of biodiversity. As a framework, which also includes guidelines and a few instruments, it can be used by governments, resource managers, indigenous and local communities, the private sector and other stakeholders, who are not only dealing with the protection of biodiversity alone but are also confronted with the question how land use can be managed in a sustainable way.

Although land use is not mentioned at all in the Principles, many components could serve as a fundament for a governance framework of sustainable land use.[34]

The *Satoyama Initiative* which was launched at the COP 10 in Nagoya in 2010 expands the integrated view of the Ecosystem Approach and Addis Ababa Principles on the conservation and sustainable of biodiversity towards the "conservation and advancement of socio-ecological production landscapes and seascapes (SEPLS) that secure ecosystem services and conserve biodiversity to support and enhance human well-being". The Satoyama Initiative aims at a broadening global recognition of the value and importance of biodiversity to mainstream biodiversity in production activities. On a conceptual level, there overlap with frameworks serving for a sustainable land use.

Over the years, the COP has endorsed seven *thematic programs of work* that reflect the major biomes of the world and provide concrete guidance by describing principles, key issues, outputs and timetables. Within the program of work on agricultural biodiversity, the pillar on impacts of agricultural systems and practices on biodiversity in different ecosystems has a clear link to land use (practices). Impacts of agricultural practices are not only considered for agro-ecosystems but also at the interface with adjacent and other ecosystems. The program has also adopted the "International Initiative for the Conservation and Sustainable Use of Soil Biodiversity". Among the three objectives of this framework one refers to

"cooperation actions towards mainstreaming soil health and biological management into agricultural land management and rehabilitation programmes" (Mulongoy, 2008).

In broader terms, the idea of mainstreaming biodiversity into management practices could also be a key aspect of an integrated approach towards sustainable land use. The program is administered in close cooperation with FAO.

The program of work on forest biodiversity consists of three elements:

(i) conservation, sustainable use, and benefit-sharing,

(ii) (ii) an institutional and socio-economic enabling environment,

(iii) (iii) knowledge, assessment, and monitoring.

With the agreement on "Non-legally Binding Authoritative Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of all Types of Forests" (adopted at the Rio Summit 1992), governments built the basis for numerous forest-related processes at the international level which increasingly focus on the creation and refinement of forest indicators that allow for assessing the status of forest resources globally.

To conclude, the broad approach of the CBD, which includes conservation and sustainable use of biodiversity (also reflected in the strategic plan and the Aichi targets), shows a strong overlap to conceptual approaches towards sustainable land use. While not explicitly addressed as the term "sustainable land use", components of it can be found at every conceptual level of the CBD. The ecosystem approach (including its adaptive management) as well as the Addis Ababa principles could serve also as conceptual basis of how land could be sustainably used at various levels. Furthermore, the CBD's experiences with indicators and their application for measuring progress towards targets could be a good basis for monitoring of land related aspects of biodiversity protection.

[34] E.g., multi-level governance and consideration of scales (Principle 1 and 7); adaptive management (Principle 4); international cooperation (Principle 8); consideration of multiple values (of biodiversity) (Principle 10, 12); rights-based and participatory approach (Principle 2, 9 and 12); education, awareness raising and communication (Principle 14).

3.5.4 UN Framework Convention on Climate Change (UNFCCC)

The UNFCCC and its Kyoto Protocol (KP) aim at avoiding dangerous climate change, especially by stabilizing greenhouse gas (GHG) concentrations in the atmosphere. The KP concretely commits its industrialized (Annex I) parties to reduce their overall GHG emissions. During the first commitment period (2008-2012), this reduction should be at least 5% below 1990 levels during, and during the present second period (2013 to 2020), at least 18 percent below 1990 levels. In the future agreement under the UNFCCC that is presently negotiated, both industrialized and developed country parties are expected to commit to reduction targets.

Climate change mitigation involves two options which are relevant for sustainable land use:

a) reducing emissions by sources through the substitution of (non-renewable) fossil fuels with (renewable) biomass energy[35]; and
b) increasing biological carbon sequestration, i.e. the removal of GHGs from the atmosphere by means of 'sinks'[36] such as forests.

Both options can affect sustainable land use negatively.

At present, there are basically two mechanisms through which Annex I countries can meet their KP targets with the help of biomass and sinks-related (LULUCF or AFOLU [37]) activities:

- domestic activities
- offsetting, i.e. purchasing certificates generated through (biomass energy and forestry) projects under two of the Kyoto Protocol's flexible mechanisms, the Clean Development Mechanisms (CDM) and Joint Implementation (JI), to meet part of the Kyoto commitments[38]
- In addition, a third mechanism is being negotiated to be involved in a post-2015 regime: offsetting or contributing to an international fund, as mechanisms for reducing emissions from deforestation and forest degradation (REDD+)[39]

In reaction to the KP's reduction targets, governments have attempted to substitute (non-renewable) fossil fuels with (renewable) biomass. This has been done through stimulating domestic biomass consumption (for instance, through the EU's RED, see Chapter 4.3), as well as through buying offsets from biomass energy projects under the KP's flexible mechanisms. Both are linked with the well-known direct and indirect land-use changes.

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[35] There is also increasingly made reference to "carbon-negative" bioenergy, i.e. the combination of bioenergy systems with carbon capture and storage (CCS): "*Combining bioenergy with CCS (BECCS) offers the prospect of energy supply with large-scale net negative emissions which plays an important role in many low-stabilization scenarios, while it entails challenges and risks*" (IPCC, 2014b). Given the uncertainty about its feasibility (especially regarding safe "disposal" of captured CO_2) and respective cost, *research* on BECCS has been seen as an "insurance" (Benson, 2014), while others identify large potentials, e.g. for the US (Sanchez et al., 2015). The role of BECCS to meet ambitious climate targets is increasing (Azar, Johansson & Mattsson, 2013; IPCC, 2014b; van Vuuren et al., 2013), which implies not only risks to biodiversity (Canadell & Schulze, 2015; Creutzig, 2015; Smith & Torn, 2013) but can disincentivize inherently low carbon energy systems via lock-in of fossil CCS (Gough & Upham, 2010).

[36] According to Art. 1.8 UNFCCC a "*means any process, activity or mechanism which removes a greenhouse gas, an aerosol or a precursor of a greenhouse gas from the atmosphere*".

[37] Sustainable forest management practices, afforestation and reforestation and sustainable forms of agriculture have been summarised as "*land use, land use change and forestry*" (LULUCF) activities, and more recently, with agriculture explicitly included, as "*agriculture, forestry, and other land use*" (AFOLU) activities.

[38] A new (financial) mechanism is the Green Climate Fund (see Chapter 7.3.3).

[39] 'Reducing Emissions from Deforestation and Forest Degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries' under the UNFCCC.

With regard to scale, domestic activities achieve greater impacts than offsetting by means of biomass energy projects, since the latter has not reached large volumes so far.[40]

Increasing biological C sequestration occurs through domestic LULUCF activities within Annex I countries and potentially, in future, through REDD+ projects. The possibility to credit GHG removals against the KP targets provides a certain incentive to increase LULUCF activities likely to result in such GHG removals.[41]

It depends on the concrete management practices whether such activities render land use more or less sustainable. For instance, monoculture plantations of exotic tree species that are being fertilized may yield a climate benefit but no biodiversity/ environmental benefit.

The REDD+ scheme which emerges in the UNFCCC negotiations for the 2015 agreement is based on the idea that tropical forest country parties to the UNFCCC which successfully carry out a number of activities – concretely: reducing emissions from deforestation and forest degradation, conserving forest carbon stocks, sustainably managing forests and enhancing forest carbon stocks – are to be financially compensated for these activities, either through an international fund (fund-based approach) or through the direct or indirect use of carbon markets (market-based approach). In both approaches, finance will be results-based.

To determine whether REDD+ activities have indeed yielded results (i.e., emission reductions and removals), changes will be measured against a benchmark scenario (developed on the basis of forest reference emission levels or forest reference levels) and these will be monitored, reported and verified (MRV). Participating countries will start implementing REDD+ by developing national strategies or action plans, building up forest monitoring systems and implementing demonstration projects. It is likely that performance-based payments will be put in place only as an ultimate step.

Safeguards are to prevent negative effects in particular on indigenous and local communities and on biodiversity[42]. REDD+ will potentially influence land use practices in all developing countries participating in the future scheme. The potential quantitative relevance for land use is hence substantial. In *qualitative* terms, the expected positive effects encompass the reduction of deforestation and forest degradation as well as more sustainable forest management.

However, land use may also be affected negatively, e.g., if REDD+ policies lead to the physical displacement of people, increased insecurity of tenure, limited access and benefit sharing, or elimination of traditional management practices. There is also a debate on whether REDD policies may negatively impact biodiversity and ecosystem services (Pistorius et al., 2011), e.g. provided current forest definition remains in place, activities enhancing forest carbon stocks can create incentives for converting primary forests and degraded forests into commercial tree plantations.

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40 There are currently 448 biomass energy projects registered under the CDM, which are expected to generate 116 million Certified Emission Reductions (CERs) until 2012, thus making up 5,3% of the expected CERs of all registered CDM projects. In addition, there are 33 JI biomass energy projects plus 6 biogas projects which are expected to jointly generate 3.2 Mio ERUs. They would thus make up 2.3% of the expected ERUs of all registered JI projects. However, the de facto land use impact of these projects is nearly zero, as no biomass cultivation projects have been approved yet under the CDM due to problems in defining adequate methodologies to cover "leakage".

41 E.g., through afforestation and reforestation; forest management; crop and grazing land management by means of, e.g., improved agronomic practices, nutrient use, tillage and residue management; re-vegetation through e.g. restoration of organic soils that are drained for crop production, and restoration of degraded lands. Figures from the national inventories of Annex I countries show indeed that net GHG removals through the said activities have increased between 2008 and 2009 (UNFCCC, 2011, p. 11). However, it seems premature to attribute this development of intensifying sink activities solely to the KP. This is due to the fact that, among others, these figures do not reveal the *causes* for this development. Also, due to the low number of data available at present, conclusions from these data are not very reliable.

42 See for details: http://reddplussafeguards.com/

With REDD+ focusing exclusively on (quantitative) biomass production and disregarding (qualitative) forest biodiversity – which is crucial for the resilience of forest ecosystems and the permanence of forest carbon stocks –, the successful reduction of deforestation could also amplify the pressure on non-forest ecosystems with a high relevance for biodiversity conservation ("inter-ecosystem leakage").

Yet, there is no common understanding of the concept of sustainable forest management, as several competing criteria and indicators for SFM co-exist and legally binding definitions are missing.

REDD+ being still under negotiation, questions about compliance and impact cannot yet be empirically addressed. However, it is generally agreed that corruption (which is widespread in a number of relevant countries) and high opportunity costs (i.e., costs for foregoing alternative uses of forested land such as agriculture) can provide major barriers for both compliance and impact.

The ongoing negotiations of the post-2015 climate treaty provide a window of opportunity to sustainable land use issues (see Chapter 7.1.1) [43].

3.5.5 Voluntary Guidelines on the Responsible Governance of Tenure (VGGT)

In May 2012, the *UN Committee on World Food Security* (CFS) adopted the Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security (CFS, 2012) – in short: VGGT – which was the result of a multi-year and multi-stakeholder negotiation process carried out in response to negative impacts of large-scale land investments mainly in developing countries ("land grabbing").

The remarkable issue about the VGGT is that they were agreed among a broad global partnership of international, regional and national organizations of different types.

Although voluntary, they entail clear provisions on responsible land tenure, providing an internationally *agreed benchmark* for future legally binding measures on land tenure at national and international levels, and can be applied also by sub-national bodies (e.g. cities and regions, see Wehrmann, 2015).

The VGGT also broadened participation of non-state actors – i.e., civil society organizations, and the private sector - in the negotiations and accepted non-scientific knowledge inputs such as *traditional knowledge* (Rahmanian, 2014).

The CFS's *High-level panel of Experts on Food Security and Nutrition* (HLPE) was the first UN science-policy interface recognizing different bodies of knowledge, including science and more traditional forms. This model pushed the boundaries of what and whose knowledge is legitimate to be included in policy processes such as, e.g., CBD. This achievement is key for any future global land-related governance scheme.

In 2013, several governments formed the *Global Donor Working Group on Land* (GDWGL)[44] to foster VGGT implementation, and currently support respective projects in countries such Burkina Faso, Ethiopia, Niger, Senegal, South Sudan, Sierra Leone, and Tanzania[45].

Based on the GDWGL's data collection, there are currently (May 2015) 589 projects in 127 countries with a total value of 4.9 billion US$ related to the VGTT implementation[46].

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[43] At re recent SBSTTA meeting in June 2015 in Bonn, a preliminary agreement on REDD+ safeguards was achieved which is now subject to further negotiations and possible approval at COP21 in Paris in December 2015.

[44] The GDWGL is facilitated by the secretariat of the Global Donor Platform for Rural Development (GDPRD). For details see http://www.donorplatform.org/land-governance/global-donor-working-group-on-land

[45] For more details see http://www.donorplatform.org/land-governance/g8-land-partnerships

The VGTT are meant not only for countries, but also for the private sector (see Chapter 3.3): Businesses are increasingly considering the VGTT as a possible response to complex land-related financial and reputational risks (Myers, 2015).[47] In response, several donors and organizations have prepared guidance documents for the private sector implementation of the VGGT:

- AFD Guide to Due Diligence (AFD, 2014)
- FAO-OECD Guidance on Agricultural Supply Chains (FAO & OECD, 2015)
- UK "Playbooks" to Operationalize the VGGT with the Private Sector (Krebber, 2015)
- USAID Operation Guidelines for Responsible Land-based Investment (Boudreaux & Neyman, 2015)

During the World Bank Land and Poverty Conference 2015, a session addressed the problem that these guidance documents are not harmonized, and concluded that more "alignment" is needed[48]. Furthermore, private sector representative indicated during this event that there are few company resources to deal with implementing the VGGT, even if a streamlined guidance document would be available, and called for a certification standard (see Chapters 7.1.5 and 8.4).

Although there are promising signs of "uptake" of the VGGT, there is a need to demonstrate their impact "on the ground", i.e., implementing the VGGT requires evidence-based *monitoring* to allow for accountability.

The existing World Bank *Land Governance Assessment Framework* (WB, 2012) could be used as a starting point in this (Tonchovska & Egiashvili, 2014), but the overall concept needs surely more thought (FIAN, 2012), and is subject of ongoing discussions.

Furthermore, implementation of the VGTT may be an opportunity to *enlarge the scope* to address more coherently not only the social aspects of land but also key *environmental concerns*. Respective safeguards would relate especially to biodiversity and land-related carbon emissions, but also to other ecosystem services fundamental to sustainable land use (Chapter 7.1.5).

3.5.6 Principles for Responsible Investment in Agriculture and Food Systems (RAI)

The *Principles for Responsible Investment in Agriculture and Food Systems* (in short: RAI Principles) [49] were developed by the CFS and adopted in October 2014 (CFS, 2014). They are a set of voluntary, non-binding principles and responsibilities for rendering investment in agriculture and food systems more responsible.

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[46] See http://www.donorplatform.org/land-governance/programme-map

[47] For the still slow engagement of companies in that regard see discussion at the World Bank Land and Poverty 2015 conference: http://www.donorplatform.org/land-governance/latest/1357-amid-donors-efforts-to-implement-the-vggt-challenge-to-engage-the-private-sector-remains

[48] See https://www.conftool.com/landandpoverty2015/index.php?page=browseSessions&cols=4&form_session=249&mode=table&presentations=hide

[49] The "RAI Principles" are to be distinguished from the "Principles for Responsible Agricultural Investment that Respects Rights, Livelihoods and Resources" (PRAI) developed by the World Bank, UNCTAD, FAO and IFAD in 2009/2010. The RAI Principles were developed by the CFS in reaction to the PRAI which had been criticized, among others, for an insufficiently inclusive process of development (Global Campaign for Agrarian Reform & Land Research Action Network 2010).

The Principles are addressed at different actors: governments, investors, financing institutions and donors, farmers (including smallholders), workers, international and civil society organizations etc.

They relate to public and private investments of both foreign and domestic, of large, medium and small investors along the whole supply chain, from food production via processing to marketing and retail.

The overarching objective of the RAI Principles is to

"promote responsible investment in agriculture and food systems that contribute to food security and nutrition, thus supporting the progressive realization of the right to adequate food in the context of national food security" (CFS, 2014; para 10).

Thus, the Principles are to mitigate both the need for investment in agriculture and food systems on the way towards food security and the challenges involved in (large-scale) land acquisitions ("land grabbing", see FAO, 2012 - 2014). They were developed to *complement* the VGGT, and the development of the two policy documents was coordinated.

The RAI Principles describe how responsible agricultural investments can (and should) contribute to enhancing food security and nutrition, creating decent employment opportunities, eradicating poverty, fostering social and gender equality, and ensuring sustainable development. Concretely, the Principles stipulate that (and specify how) investment should:

1. contribute to food security and nutrition;
2. contribute to sustainable and inclusive economic development and the eradication of poverty;
3. foster gender equality and women's empowerment;
4. engage and empower youth;
5. respect tenure of land, fisheries, forests and access to water;
6. conserve and sustainably manage natural resources, increase resilience, and reduce disaster risks;
7. respect cultural heritage and traditional knowledge, and support diversity and innovation;
8. promote safe and healthy agriculture and food systems; and finally,
9. incorporate inclusive and transparent governance structures, processes, and grievance mechanisms.

Civil society stakeholders have criticized the RAI Principles as not far-reaching enough. Among others, they criticize that the Principles do not sufficiently address the fundamental role of smallholders and landless in agricultural investment and their affectedness by it; that the strong references to trade rules weaken the human rights positions involved in the document; that the Principles do not acknowledge that some production and food systems (e.g., local food systems, agro-ecology) have less environmental impacts than others; and that ultimately they 'offer little protection against land and resource grabbing' (CSM, 2014).

However, the RAI Principles do provide a first consensual international definition of sustainable investment in agriculture and in food systems.

The principles as well as the sketched out responsibilities for different actors provide an important benchmark for the development of national policies, both in the target countries of investment and in donor countries. At the same time, they provide a blueprint for promoting and formalizing responsible investment practices in the private sector (investors, intermediates) which can contribute to all nine principles.

The development, implementation, monitoring and evaluation of such public and private policies and practices thus are a crucial window of opportunity for promoting at international level a better sustainability governance of land investments and, ultimately, land use (see Chapter 7.1.5).

3.5.7 Urban Policies

Urbanization is a continuing megatrend: In 1950, 30% of the world's population was urban. In 2014, 54% of the global population now lives in urban areas and in 2050, it is anticipated that two-thirds of the world's population will be urban, with 95% of that growth taking place in developing countries (UNDESA, 2014).

Urban areas account for less than 2% of the Earth's surface, but are expected to increase to 4-5% by 2050 (HBS & IASS, 2015). However, simply considering the actual land occupied by urban areas is too short-sighted: cities also account for 50% of all waste, generate 60-80% of all GHG and consume 75% of natural resources (UNEP, 2012a).

Therefore, a significant share of negative land use impacts (through food and energy production, transport, etc.) are attributable to urban areas and should inform future policy making with regards to urban expansion and landscape management.

At the same time, cities can achieve higher resource-efficiency per capita. With the density of people living in urban areas and housing, transport and IT infrastructures in place, urban areas can function as "innovation laboratories" to experiment and test innovative solutions to cope with the challenges of "the great transformation" (WBGU, 2011) ahead. In light of these opportunities, cities can therefore also be catalysts of sustainable global land use.

Beyond resource flows strong urban-rural linkages[50] also exist in other areas:

- flows of people (migration, commuting),
- flows of knowledge (either in forms of a "brain drain" or a "brain gains" if through (social) remittance ideas, practices and capital are exchanged)
- flows of goods (food, energy, infrastructure etc.) and
- connectivity and interdependency of ecosystem services.

A clear separation of urban and rural territories is also not possible due to urban sprawl, informal slums, and new urban configurations such as urban corridors. This indicates that a separation of urban and rural areas is rather artificial.

However, the differentiation between urban and rural it is still predominant within policy making, leading to sub-optimal policies and investments (Berdegué et al., 2014). Nonetheless, it must be noted that integrated urban-rural governance is particularly difficult to achieve. This is because

- rural and urban development policies and agencies need to be coordinated;
- coordination is challenged by the fact that large territories with numerous and diverse localities, often cutting across administrative boundaries, would be included; and
- sectoral (e.g., infrastructure, labor, SMEs, agriculture) policies and agencies often do not follow a coherent approach (OECD, 2013) and
- the fact, that interlinkages do not only exist between cities and their rural hinterland but that in a globalized world cities are linked with rural areas even in other continents through trade, tourists and global environmental effects (Berdegué et al., 2014).

[50] For a closer analysis see Eppler, Ulrike; Fritsche, Uwe & Laaks, Sabine (2015): Urban-Rural Linkages and Global Sustainable Land Use. GLOBALANDS Working Paper by IINAS. Berlin, Darmstadt.

There is also a need for a coherent approach between different levels of policy making. While the majority of challenges to steer urbanization and integrated urban-rural development in a sustainable direction will be faced and solved at city level, cities can only act within the framework provided at national and even international level. In this sense, it is relevant to consider what is already being done and what can/should be done at the global level (see Wunder & Wolff, 2015 on global urban policies and sustainable land use).

The two most important processes at UN level in this regard are the SDG process (se Chapter 3.5.1), with a proposed standalone urban goal (SDG 11 "Make cities and human settlements inclusive, safe, resilient and sustainable"), and the HABITAT III conference in 2016. They may also bring more support for the global work of UN-HABITAT - the official UN body dedicated to (sustainable) urbanization - which is still hampered from expanding its global work due to funding constraints.

The SDG goal for sustainable cities might serve as a call for action, research and funding and may underline the significance of the SDGs and their implementation for city authorities.

The impact of HABITAT III on policy making remains unclear at this stage. However, HABITAT conferences in the past have shown that

"the drafting process of these international action plans involves many staff from governments and international agencies and this exposes them to new ideas and gives them new contacts. This in turn helps promote new ideas and new and more effective policies" (Satterthwaite, 1998).

In that context, it must be noted that within the broad range of thematic issues under sustainable urbanization, land use and the importance of considering urban-rural linkages play an increasing role at UN level (as also reflected in the April 2015 Governing Council meeting of UN-HABITAT).

In parallel, cities and regions (and their national and international networks) also have a growing influence as international players, both due to the rapid urbanization and growing number of (mega)cities but also due to the increasing acknowledgement of a need to move from sectoral to city-based approaches for planning and policy in order to achieve sustainable urbanization. They are acknowledged as key actors that will need to shape and implement change on the ground. This increasingly raises the question if and how the influence of city authorities within national urban frameworks can be improved and how to achieve coherent integrated planning that does not focus on sectors and promote "siloed thinking".

Activities on the UN level that focus on capacity and partnership building, technical assistance, the preparation of implementation guidelines, etc. can help in that regard and should be strengthened in the future. As the urban-rural linkage receives more attention in preparing for the HABITAT III conference (UN-HABITAT, 2015a+b), it also remains crucial to better define the role of land use within sustainable urbanization in the "New Urban Agenda" that will be agreed at HABITAT III.

Some further results from GLOBALANDS analysis of on urban-rural interlinkages are discussed in Chapter 8.5.

A specific aspect of urban-rural linkages is food – and even there is no current "window of opportunity" on that issue on the global level, its potential impact on sustainable land use should be considered, and is briefly presented in Box 7.

Box 7: Food and the Cities

The global food system (value chain of production and consumption of food as well as transport, processing etc.) *changed radically* over the last centuries, from subsistence agriculture and food production within and close to villages and cities to more rural production and urban consumption patterns nowadays, with a growing role of international trade (UNCTAD, 2014).

The future of the global food system is rather uncertainty due to climate change impacts, diet dynamics, and yield developments (see Chapter 2.2). With cities and urban areas being "hotspots" of sustainability challenges (Chapter 2.1.3), *urban food* systems (as subsets of the global food system) are of interest, even if urban food production cannot have a major *direct* impact on global land use.
Yet, there are specific agricultural land uses which can possibly be replaced by so-called *Urban Agriculture* (UA), and activities favoring urban food systems may have important indirect effects.

UA ranges from subsistence production and processing at household level to fully commercialized agriculture, and typically *complements* rural agriculture. UA is not a new issue: especially in developing countries, it is practiced by 800 million people worldwide out of which 200 million sell products on the market. UA uses organic wastes and wastewater as fertilizers, and aims at perishable products such as vegetables and dairy products.

In industrialized countries, urban infrastructures are typically more evolved and due to limited (and costly) urban land, agri- and horticultural businesses aim for integrating into buildings (indoor farms, rooftop gardens and greenhouses). Many projects focus on hydro- or aquaponic systems which can effectively control in- and outputs. These systems often are capital-intense, but integration in existing buildings may lower the cost.
UA accounts for 5–15% of total agricultural production in developing countries (Zezza & Tasciotti, 2010), which can be translated in a respective reduction of non-urban agricultural land use, though due to expected lower productivity, the net reduction effect may be lower than the production share.
There is not (yet) any quantification available for "modern" UA in industrialized countries, but due to its comparatively recent development, overall effects can be expected to be lower than 5% of overall food production[51].

The results from various projects on UA demonstrated that there are many opportunities in developing countries for the urban poor, contributing to food security and nutrition, and providing additional employment, and income. Yet, there are environmental and health risks of UA, mostly related to developing countries. On the *social* side, the key challenge is insecure land tenure in cities.

Besides security of tenure, land *price* risks are crucial for UA, as this has a large influence on production cost. Also, there is few evidence on employment aspects of "modern" UA in industrialized countries which must be seen as a constraint in mainstreaming UA activities, and may imply that its quantitative relevance in high-wage urban areas of industrialized countries will be restricted.
There is clear evidence, though, that the broader concept of urban food systems – i.e. going beyond UA and integrating the consumers – can have positive impacts on urban biodiversity, social cohesion and cultural integration (BMUB, 2015).

[51] See Fritsche, Uwe; Laaks, Sabine & Eppler, Ulrike (2015): Urban Food Systems and Global Sustainable Land Use. GLOBALANDS Working Paper by IINAS. Darmstadt, Berlin.

The educational value of urban food production and its impact on urban diets may be an important opportunity to foster behavioral changes towards less meat consumption and reducing food waste, which would have significant net gains in terms of land demand (Hallström, Carlsson-Kanyama & Börjesson, 2015).

Conclusions from the GLOBALANDS analysis of urban food systems are presented in Chapters 7.6 and 8.5.

4 Focus on EU Policies and Sustainable Land Use

While the GLOBALANDS governance screening focused on international policies, there are also many EU policies that not only affect EU Member States, but they often have an influence on international land use beyond EU borders. Some of these policies are of relevance because of their widely perceived international impact (such as the Common Agriculture Policy).

Others are relevant because of their ambitious objectives (e.g. the Resource Efficiency Roadmap) or their (innovative) approach towards land use that may serve as an example for other regions (e.g. the Water Framework Directive that links water and land use management through integrated river basin management).

Several EU policies, including biodiversity, climate, energy and soil have, therefore, been included in the governance screening[52]. However, there are no immediate opportunities to influence these policies in 2015, although many of these policies are of high relevance for international land use. It is also difficult to predict how EU land use policy will develop in the near future, as there is still a high level of uncertainty regarding the political priorities of the EC, which has been in place only late in 2014.

Nonetheless, as current dynamics are high and situations may change in light of dynamics on the international level, e.g. with regards to the implementation of the SDGs, progress in the climate negotiations, etc., EU policies and policy makers remain important in shaping international land use policy.

The following, therefore, provides a brief overview of the current state of EU policies with the highest relevance for international land use.

4.1 EU Agricultural Policy

The Common Agricultural Policy (CAP) is the EU policy framework under which European farmers operate. It is one of the most influential EU policies on land use. Agriculture occupies more than 50% of land in the EU. Agriculture is also a main source of land degradation, diffuse water pollution and biodiversity loss (EEA, 2010b; KLU, 2011; Heißenhuber et al., 2015).

The CAP sets out a range of requirements for farming and financial support, environmental and rural development activities as well as controlling EU agricultural markets. It is the single largest common policy within the European Union (EU), absorbing more than 40% of the budget. It does not only have significant impact on land in the EU but CAP subsidies also have an effect beyond the EU boarders by hampering developing countries from exporting agricultural produce to the EU on a level playing field, particularly as subsidized products from the EU affect markets in developing countries (Wunder et al., 2013).

[52] See for details: Wunder, Stephanie et al. (2013): Governance screening of global land use. GLOBALANDS discussion paper by Ecologic Institute & Oeko-Institut. Berlin.

First designed in the 50s with the intention to help to increase food production for EU citizens in the post war-years, the CAP has seen many reforms and changes in the last 50 years. With regard to the sustainability and intensity of land use it has contributed to two parallel processes: intensification of agricultural production in the EU in order to increase net productivity on the one hand, and marginalization of production that was no longer competitive on the other hand. These two processes have occurred at different scales and intensities. Fertile and more accessible areas have been intensified and production in less accessible or naturally handicapped areas has been reduced or abandoned (EEA, 2015b; Wunder et al., 2013).

Due to the significant impacts of the CAP on the environment, there have been many attempts to "green the CAP". The last reform in 2013 that set out the framework for the CAP between 2014 and 2020 again tried to put a greater emphasis on the environmental dimension of the CAP, an effort that started in 1992 with the MacSharry reform.

While the CAP greening measures in the 2013 reform (including obligatory crop rotation, grassland maintenance, and more specific agri-environment measures, aimed at climate change mitigation and biodiversity conservation) are a step in the right direction[53], they do not seem to sufficiently address the resource efficiency of agriculture (EEA, 2015b).

More powerful policy interventions are, therefore, needed for the CAP after 2020. While this debate has not yet started, it is useful to start thinking about the next reform because of at least three reasons (see Buckwell & Baldock, 2014):

1. With full codecision legislative procedure it now takes three years to conduct a serious reform from a first communication, to full implementation readiness.
2. Experience suggests that genuine reform requires a broad, shared understanding of the purpose and direction of a new policy. It takes several years to assemble the EU-wide evidence to back sound reform proposals.
3. In any case, the mid-term review of the Multiannual Financial Framework during 2016 and the mandated reviews of ecological focus areas etc. will be raising questions potentially central to a new CAP in the next few years.

This suggests that particularly 2017 and 2018 will already be important years to shape the CAP beyond 2020.

Discussions about the future of the CAP will likely be based on arguments that were already relevant in past reforms, e.g. the continued lack of justification of payments (public money for public goods), the lack of significant environmental improvements and the inability of support schemes to restructure and innovate the agricultural sector with decreased dependency on public support (Buckwell & Baldock, 2014).

Agricultural policy will also continue to face the dilemma, that extensification would benefit semi-natural habitats and reduce local pressures on soil, water and air but increase the area needed for agricultural production (EEA, 2012) – but one should see this in the context of the narrowing "yield gap" between conventional and organic agriculture, and the need to reflect on overall "capped" production levels to meet the planetary boundaries (Rockström et el., 2009; Heißenhuber, Haber & Krämer, 2015).

Suggestions to *green* the CAP often focus on the objectives and "architecture" of the CAP that is organized in two pillars:

[53] Ex-ante studies indicate a mildly positive effect on the environment, and much will depend on the actual implementation of the measures (EEA, 2015b).

- Pillar 1 "Market support measures and direct subsidies to EU producers" receives most funding, while
- Pillar 2 "rural development programs" that is more targeted towards environmental sound management practices receives considerable less funds.

They often include to (further) shift pillar 1 funds to pillar 2 (a process called "modulation").

For example, Heißenhuber, Haber & Krämer (2015) demand that in order to green the CAP it is needed to:

- reduce first pillar direct payments, while keeping (or strengthening) environmental and other legal requirements for agriculture[54]
- increase payment for public goods and agricultural services that are not covered by the market (e.g. environmental services)
- further develop and strengthen the second pillar, (e.g. through concentration on so called "dark green measures" [55], i.e. those measures that support soil-protective operations.

A long term transition of the CAP that supports more environmentally friendly farming would also needed to be flanked by measures to promote consumption changes and efficiency gains in the food chain (e.g. dietary changes, lower meat consumption, more effective distribution chains, food waste prevention etc., see EEA, 2015b).

The fact that the CAP has become increasingly complex and excessive both for farmers and administrations might also lead to increased calls for simplicity that can potentially go along with substantial reforms.

4.2 EU Soil Policy

At EU level different policies which are primarily focused on agriculture, nature protection, urban development, etc. also contain requirements to protect soils. However, given that these policies have other aims and scopes of action, the EU Commission did not consider those provisions sufficient to ensure an adequate level of protection for all soil in Europe. In 2006 the European Commission therefore adopted a Soil Thematic Strategy (COM(2006) 231) with the explicit objective to protect soils across the EU. The Strategy consists of four pillars (awareness raising, research, integration, and legislation), including a legislative proposal for a Soil Framework Directive (COM(2006) 232).

The proposal for an EU Soil Framework Directive (SFD) sets out the common principles for protecting soils across the EU. Within this common framework, the EU Member States would be in a position to decide how best to protect their soil and how to use it in a sustainable way within their own territory. It provides for measures to identify problems and soil threats, prevent soil degradation, and remediate polluted or degraded soil.

The proposed SFD, however, was not adopted. Since 2007 the proposed Directive was blocked in the European Council by Austria, France, Germany, the Netherlands and the UK based on the principle of subsidiarity and fear of increased administrative costs.

Ultimately, in April 2014 the EC took the decision to withdraw the SFD proposal. However, the EC still remains committed to the protection of soils as stated e.g., in the 7th Environmental Action Pro-

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[54] This includes cross compliance requirements and the strengthening of compulsory "Good Agricultural and Environmental Conditions" (GAEC). (*Cross-compliance* links CAP *support* for farmers to the respect by these farmers of standards of environmental care, plant health and animal welfare).

[55] i.e. those programs that synergistically support different aspects of sustainability.

gramme (EAP), which was adopted in 2013 and identifies the EU's priority objectives regarding environmental protection for the period up to 2020, including the objective of improved (legal) protection of soils. The EC acknowledged that after the proposed SFD had been pending for eight years, in its given format it would not be agreed by a qualified majority. By withdrawing it, the Commission aimed to open the way for an alternative initiative.

4.3 EU Resource Policy and Land

Within EU resource efficiency policy, the consideration of land as a finite resource is growing in importance. The most relevant initiative with regard to land use is the 2011 adopted "Roadmap to a Resource Efficient Europe" (COM (2011) 571 final), which sets the EU's longer-term vision, strategy and actions for 2050. It proposes a milestone that "*by 2020, EU policies take into account their direct and indirect impact on land use in the EU and globally*", with a view for achieving "*no net land take*" by 2050.

In order to achieve this, the EC announced to put forward a "Communication on Land Use" (hereinafter called Land Communication) by 2014. Janez Potocnik, the (former) Environment Commissioner, summarized the intentions of the Land Communication on several occasions in 2013. According to Potocnik, the Land Communication will take into account targets and milestones contained in the Resource Efficiency Roadmap, the 7th EAP and the Rio+20 follow-up. It will aim to develop the scientific knowledge base for biotic material, land-use effects and trends, and spatial planning, including impacts at global level and effects on trading partners, as well as raise awareness and highlight best practices in the Member States. He also said that it will ensure that the development of EU policy in the domain of land use emphasizes a "*coherent and sustainable approach to land use*"[56].

The Land Communication was supposed to be published in 2014 following a consultation. It was then postponed to 2015. According to EC officials in DG Environment, however, in February 2015 the EC decided not to include the Communication on 'Land as a Resource' in its work program for 2015.

The remaining relevant items within the work program are:

- Draft a joint technical report on land use together with the European Environment Agency that will help to establish a robust set of indicators for land efficiency, land take and land degradation. This report should be published in the 2nd half of 2015.
- Following the inclusion of a SDG on a "land degradation neutral world", the EC will also look into the question of how to implement such a SDG in the EU.
- During 2015 – which is the International Year of Soil – the EC will discuss with Member States and stakeholders how best to implement the 7th EAP commitments on soil.

4.4 EU Bioenergy Policy

The heart of Europe's climate and energy policy is the EU Renewable Energy Directive of 2009 (RED; 2009/28/EC), which sets binding targets for the use of renewable energy and for bioenergy.

First, it states that the EU as a whole must ensure that 20% of total energy consumption comes from renewable sources by 2020. Second, it specifically promotes the use of energy from renewable sources within the transport sector, requiring 10% of all transport fuels to be delivered from renewable sources by 2020 in every Member State.

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[56] Sources: EU issue tracker, March 2013; EurActiv 2012: "European Commission concerned about land and soil", December 13, 2012, http://ec.europa.eu/environment/resource_efficiency/news/up-to-date_news/13122012_en.htm; Lewis, Kayleigh (2103): "EU must 'transform' agriculture sector", says Potocnik, The Parliament, March 8th, 2013, http://www.theparliament.com/latest-news/article/newsarticle/eu-must-transform-agriculture-sector-says-potocnik/#.UUMMxGeyKHs

The RED as well as the Fuel Quality Directive include "sustainability" criteria, requiring that all biofuels counting towards the target must reduce GHG emissions. Moreover, biomass feedstocks cannot be derived from land of high biodiversity value, such as natural forests, protected areas and special kinds of grassland, and may not be produced from land with high carbon stocks.

These sustainability provisions (the criteria as well as compliance mechanisms, e.g. certification schemes), however, have been criticized by NGOs and scientific institutions for not being effective. A major issue is that indirect land use change (ILUC) is not (yet) taken into account when assessing the sustainability of biofuels. ILUC occurs when biomass production displaces other land uses to other areas, which can lead to deforestation and conversion of grass- and cropland for food production.

Moreover, many researchers and NGOs have argued that the rising production of food crops for use as biofuels contributes to global food insecurity through rising food and feed prices.

In response and to improve sustainability, the EC proposed stricter rules for biofuels in October 2012 (EC, 2012a). The proposal aims to "cap" the use of biofuels from food-based feedstocks at 5% by 2020 and to increase the use of advanced biofuels from non-edible feedstocks, such as wastes, algae, straw, etc. Regarding ILUC, the proposal foresaw a reporting requirement. Alternative proposals from the European Parliament (EP) and the European Council were made, and after intense negotiations between the EC, the European Council and the EP, a final agreement was reached in April 2015 to introduce a 7% cap, and reporting obligations for ILUC – a rather weak outcome compared to the earlier ambitions of the EC and the EP.

However, the debate around the sustainability of biofuels in the EU is *not over*: The agreement allows Member States to introduce sub-targets for advanced, low-ILUC biofuels.

Furthermore, a parallel European policy debate to *extend* the scope of the RED sustainability criteria to the use of solid and gaseous biomass sources in electricity, heating and cooling resulted in the EC decision to "allow" Member States to do so on their own, i.e., without EU-wide harmonization, until 2020, and to re-consider this if there will be evidence that current sustainability requirements will not suffice, or threaten the internal market (EC, 2014a).

The EU discussion on sustainability of bioenergy and related land use impacts has been extended to address the wider *bioeconomy*: In 2012, the EC adopted its strategy *Innovating for Sustainable Growth: A Bioeconomy for Europe* which was meant as a comprehensive approach to address ecological, environmental, energy, food and natural resource challenges that the EU and the world are facing (EC, 2012b)[57].

Bioeconomy - also known as *bio-based economy* - encompasses *all* biomass supply and uses, i.e. agriculture, fisheries, forests, the waste sector and concerns food and feed, fiber, and fuels – it is a cross-sectoral concept (Scarlat et al., 2015). The approach builds on earlier work (OECD, 2009) and represents more of a policy framework without any direct legal implication. Accordingly, the EC follows-up on its bioeconomy strategy mainly in the form of research (EC, 2014b) [58], and policy proposals[59] aiming at a more level playing field between biofuels, bioenergy and biomaterials have not been taken up by the EC. Given that the bioeconomy is a broad concept for all biomass, the sustainability and related land use challenges are *even larger* than for biofuels or bioenergy alone[60], but due to its

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57 Besides the EC, several Member States have prepared bioeconomy "roadmaps" or strategies (see e.g. BMBF, 2014).

58 The EC is funding through its 7th Framework Programme a project on *Sustainable supply and delivery of non-food biomass to support a "resource- efficient" Bioeconomy in Europe*; for details see www.s2biom.eu

59 See e.g., Carus et al., 2011; Carus, Dammer & Essel, 2014+2015; Lahl, 2014.

60 See e.g., UBA, 2012; WGBU, 2009; Lahl, 2014; Fritsche & Iriarte, 2015.

cross-sectoral nature it might be the adequate framework to avoid ILUC and displacement effects of specific policies.

Following up on that, an "umbrella" concept for the sustainability of the bioeconomy has been proposed (PBL, 2012; Fritsche & Iriarte, 2014). It needs to be seen how the EC, the European Parliament and the EU Member States will deal with that in the coming years, though.

5 A New Kid on the Block: Systemic Indicators

5.1 The Role of Indicators for Sustainability Governance

Within the ongoing processes to establish goals, targets and instruments (e.g. SDGs, VGGT, etc.) for - at least some - aspects of sustainable land use, the question of how to *adequately express* sustainable land use in terms of *practical measurements* eligible for policy development becomes relevant, i.e., *metrics* for compliance and monitoring are required:

"Sustainable Development Goals are accompanied by targets and will be further elaborated through indicators focused on measurable outcomes" (UN-OWG 2014).

A survey and compilation of land-related sustainability indicators in various sustainability policies and certification systems carried out by GLOBALANDS concluded that currently *no existing* set of indicators consistently describes sustainable land use in both the environmental and social domains[61].

Yet, there is the unique possibility to establish a coherent sustainable development in all its dimensions with the SDGs. As the Outcome Document of the UN-OWG clearly states:

"The goals and targets integrate economic, social and environmental aspects and recognize their interlinkages in achieving sustainable development in all its dimensions" (UN-OWG 2014).

The following subsections present a short overview on recent processes framing sustainable development with a direct linkage to land.

5.1.1 Indicators for the SDGs

The SDGs will be further elaborated through indicators during 2015 and a proposal for a respective framework will be decided upon by the UN General Assembly in September 2015. After that, it is expected that the indicators will be discussed further during 2016 (UNSD, 2014; UNSC, 2015).

The Sustainable Development Solutions Network (SDSN) has compiled a comprehensive list of indicators for the SDGs which consist of 100 "core indicators", including many related to land (SDSN 2014a). In the public consultation of this document, concerns were raised that 100 would be too many (SDSN 2014b)[62]. Further discussions on SDG indicators consider data availability (SDSN, 2015), and use of "big data" opportunities (Gennari, 2015).

With regard to the discussion on land within the SDGs, the large number of suggested indicator creates not only the problem of measuring *many* environmental land characteristics (e.g., biodiversity status, degradation and erosion levels, soil qualities etc.)[63], each on the appropriate scale, but im-

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61 See Eppler, Ulrike & Iriarte, Leire (2013): Sustainable Land Use Indicators - A Compilation for WP3. GLOBALANDS Working Paper by IINAS. Berlin, Madrid.

62 Other commentators argued that even 100 would be not enough. It should be noted, though, that the 100 "core" indicators also include many "tier 2" sub-indicators so that the total number of indicators suggested by SDSN is well above 200, with about 10 for land-related issues.

63 For example, an ad-hoc working group during the Global Soil Week 2013 aimed to substantiate wording on goals and indicators for "zero net land degradation" spend much time just to discuss how soil C is to be measured. In the context of the GBEP sustainability indicators for bioenergy it took more than 3 years to elaborate and agree upon a set of 24 indicators – derived from an original list of more than 250 (GBEP, 2011).

plies also available human capacities to do so, and available budgets to cover respective costs for equipment and staff.

In many cases, sound indicators exist, but they are not collected on a systematic basis – particularly in low-income countries. As highlighted recently by the SDSN, major gaps exist, particularly for key social and environmental metrics (SDSN, 2014c).

The *possible proliferation* of indicators and the implied costs of implementing a *large number* of indicators are severe problems which could hamper (political) agreement on the UN level.

In the CBD (see Chapter 3.5.3 for details), the twenty Aichi targets under the Strategic Plan for Biodiversity 2011–2020 have *five land-linked targets* defined by operational indicators which are expressed in trends (Annex I in CBD, 2014).

The UNCCD progress indicators - formerly known as impact indicators - are developed under the 10 year strategic plan and framework to enhance the implementation of the Convention (2010–2018). At its 11th Session the COP adopted a refined set of six progress indicators which will be used for the first time during the 2nd leg of the 5th reporting process in 2016 (CCD, 2014b). The set includes two indicators for each strategic objective. Relevant to land are the strategic objectives 2: "*To improve the condition of affected ecosystems*" and Strategic objective 3: „*To generate global benefits through effective implementation of the UNCCD*" with e.g. the Core indicator S-7: „*Areas of forest, agricultural & aquaculture ecosystems under sustainable management*" - XI Land under SLM. The progress indicators were tested through pilot exercises conducted at the national level[64].

5.1.2 Summary of Current Indicator Processes

Most of current indicators proposed by the presented initiatives or working groups concern environmental *characteristics* of land, aiming to ensure (or restore) its potential uses, including ecosystem services. These indicators address the *impact* side through defining acceptable levels of interference, or targeted levels of improvement.

For example, suggested SDGs and accompanying targets by RNE (2014) and WBGU (2014) concentrate on the environmental domain. In parallel, the Global Land Indicators Initiative (GLII)[65] aims to agree between major players on key indicators for land in the SDGs (GLII 02014a+b). The focus of the proposed "core" indicators was mainly on securing land tenure, i.e. lacks inclusion of environmental issues such as biodiversity, land degradation, soil quality etc.

During the 2014 and 2015 World Bank conferences on "Land and Poverty", many sessions discussed options to use remote sensing (e.g. from satellites) and crowd sourcing of data (e.g. from mobile phones) to reduce cost for land demarcation, registries, and related information to secure land tenure. The socio-economic aspects of land use *in combination* with environmental ones are fundamental for any sustainable land use SDG target and respective indicators (Niamir-Fuller, 2015).

Thus, the challenge is to develop default practice indicators for *integrative* SDGs which are:

- not too many (to avoid proliferation),
- reasonably implementable (to avoid excessive cost), and
- open for improvement (to avoid endless discussions about "completeness").

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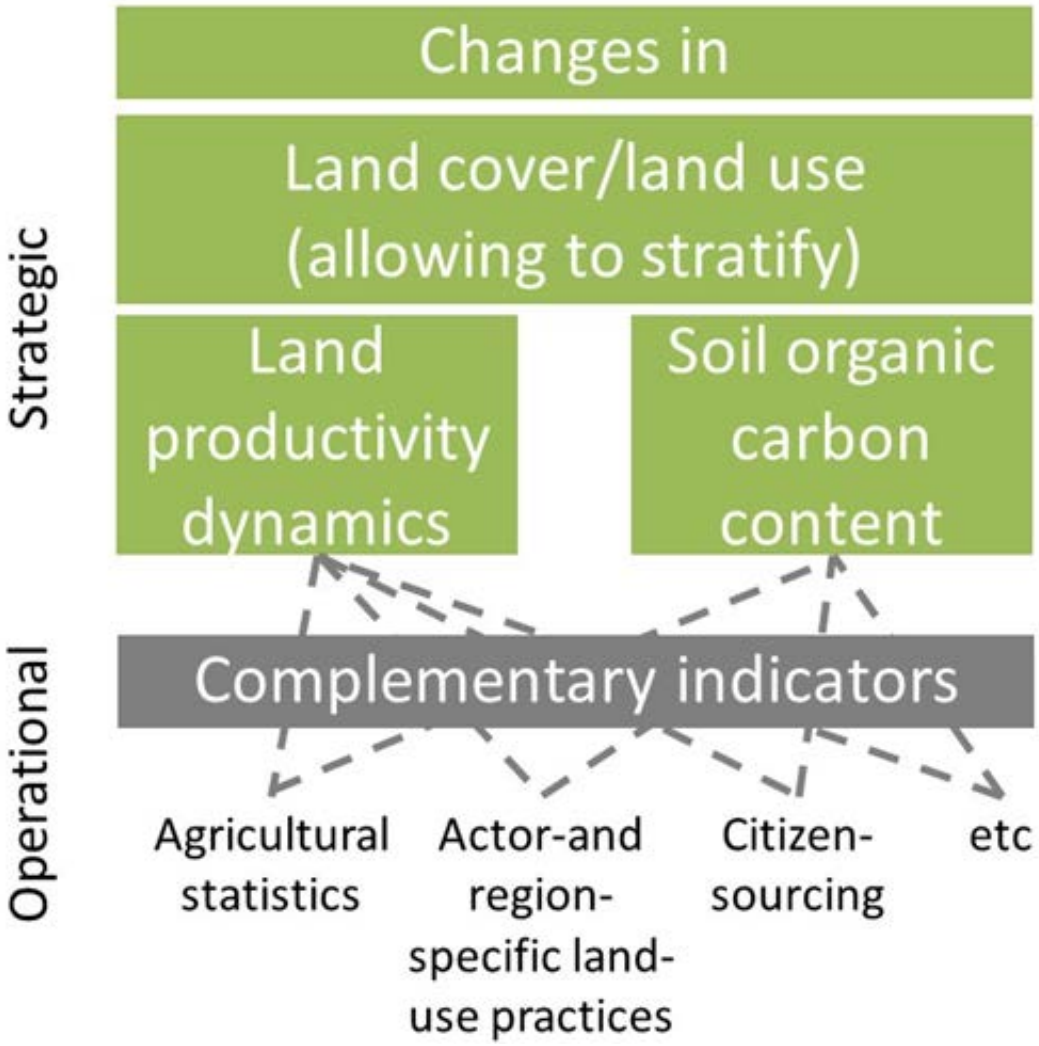
64 See: Results and Conclusion of the pilot testing of UNCCD Progress Indicators. A satisfactory level of successful reporting was found for Indicator XI 'SLM'. This level of reporting suggests that Parties have the potential to report against these indicators but that they could be further refined in light of the difficulties raised by some countries - http://www.unccd.int/en/programmes/Science/Monitoring-Assessment/Documents/Pilot_Conclusion-Report.pdf

65 See http://www.gltn.net/index.php/projects/global-land-indicator-initiative for details

Discussions during several international workshops in which GLOBALANDS participated (see Annex 3) led to an agreement (EEA, GLTN, GLII & IASS 2015) to explicitly call for land use change, agricultural productivity and soil organic carbon as global-level indicators, and to also include *complementary* national and sub-national indicators (see Figure 8). In consequence, GLII adjusted its proposal and took up these recommendations (GLII, 2015).

Figure 8: Land indicator proposal for the SDGs



Source: EEA, GLTN, GLII & IASS, 2015

5.2 Introducing Systemic Indicators

To be applicable in the context of the SDGs or other international policies, and to be negotiable in the respective policies, it seems reasonable to consider a more *compact* and *inclusive* approach to indicators for sustainable land use than the long lists that current proposals involve (e.g. SDSN, 2014-2015; UNECE, 2013; UNEP, 2013; UNSD, 2014; UNSC, 2015).

Following-up on this, GLOBALANDS developed so-called *systemic* indicators[66]. The leading thought for this is to distinguish between the one view on ***land*** use, and the other one on land ***use***, and to combine both in a sequence to derive the aggregated proxy.

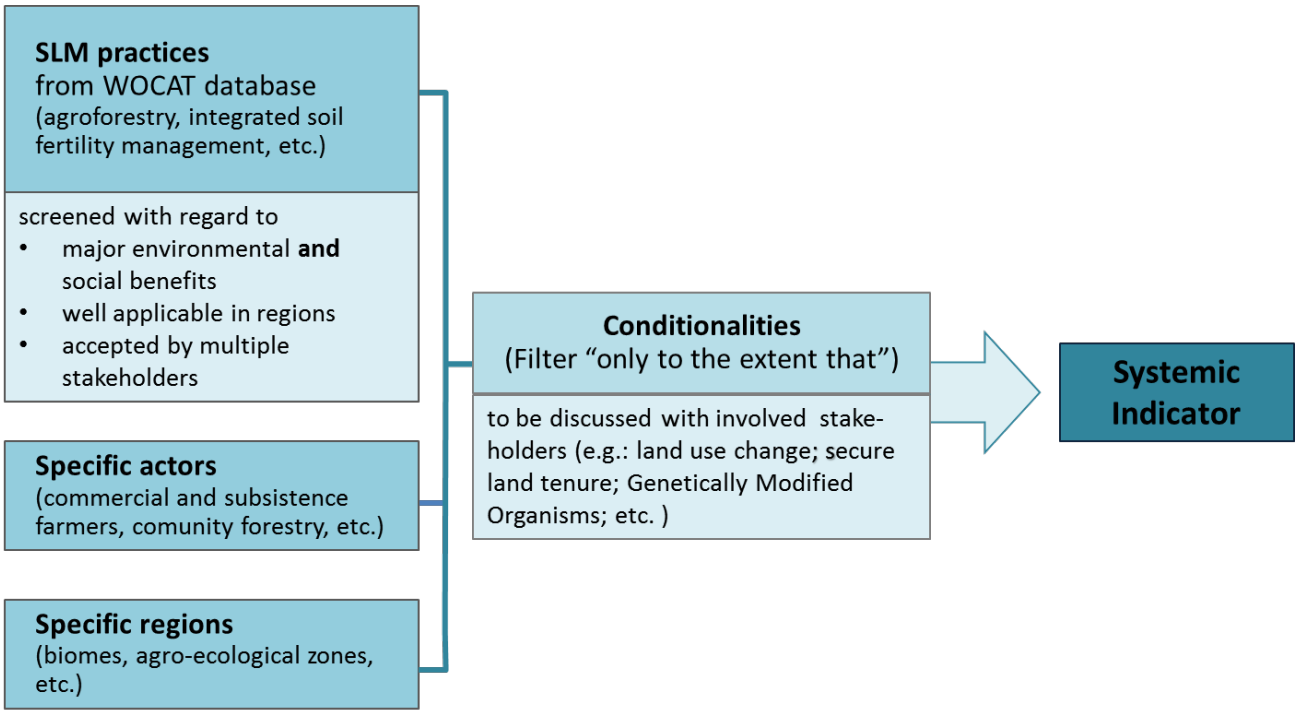
For this, evidence-based land-use *practices* which are sustainable when carried out by specific *actors* (socio-economic context) in a given *region* (geographical context) are meant to represent an integrated (i.e. systemic) concept for land–related indicators.

To determine systemic indicators, three steps are needed:

- First, existing metrics and indicators on land use are used to qualify which *practices* are sustainable. For this, current knowledge and evidence on e.g. sustainable land management in agriculture (IAASTD, 2009; LPFN, 2013; UNCTAD, 2013; SDSN, 2014b) is used.
- Next, this list is differentiated to reflect applicability for relevant actors (e.g. small-scale farmers, community forestry, large-scale corporate operations). The last step is to regionally differentiate the sustainable land use practices (e.g. Liniger et al., 2011).
- Between Step 1 and 2, iteration is needed to reflect the social contexts especially regarding land tenure, and to consider *traditional knowledge* (Rahmanian, 2014).

GLOBALANDS carried out an exhaustive literature review and discussed the definition of qualifying parameters to *define sustainable practices* in several international expert workshops (see Annex 1), which resulted in referring to sustainable land management (SLM) practices identified and characterized by the World Overview of Conservation Approaches and Technologies (WOCAT)[67].

Figure 9: Details on the screening of land use practices in the systemic indicator approach



Source: Fritsche, Eppler & Iriarte, 2015

[66] See for details: Fritsche, Uwe; Eppler, Ulrike & Iriarte, Leire (2015): Global Sustainable Land Use: Concept and Examples for Systemic Indicators. GLOBALANDS Working Paper by IINAS. Darmstadt, Berlin, Madrid.

[67] WOCAT was launched in 1992, more information: https://www.wocat.net/en/about-wocat.html

The two screening step are *essential* in the systemic indicator approach:

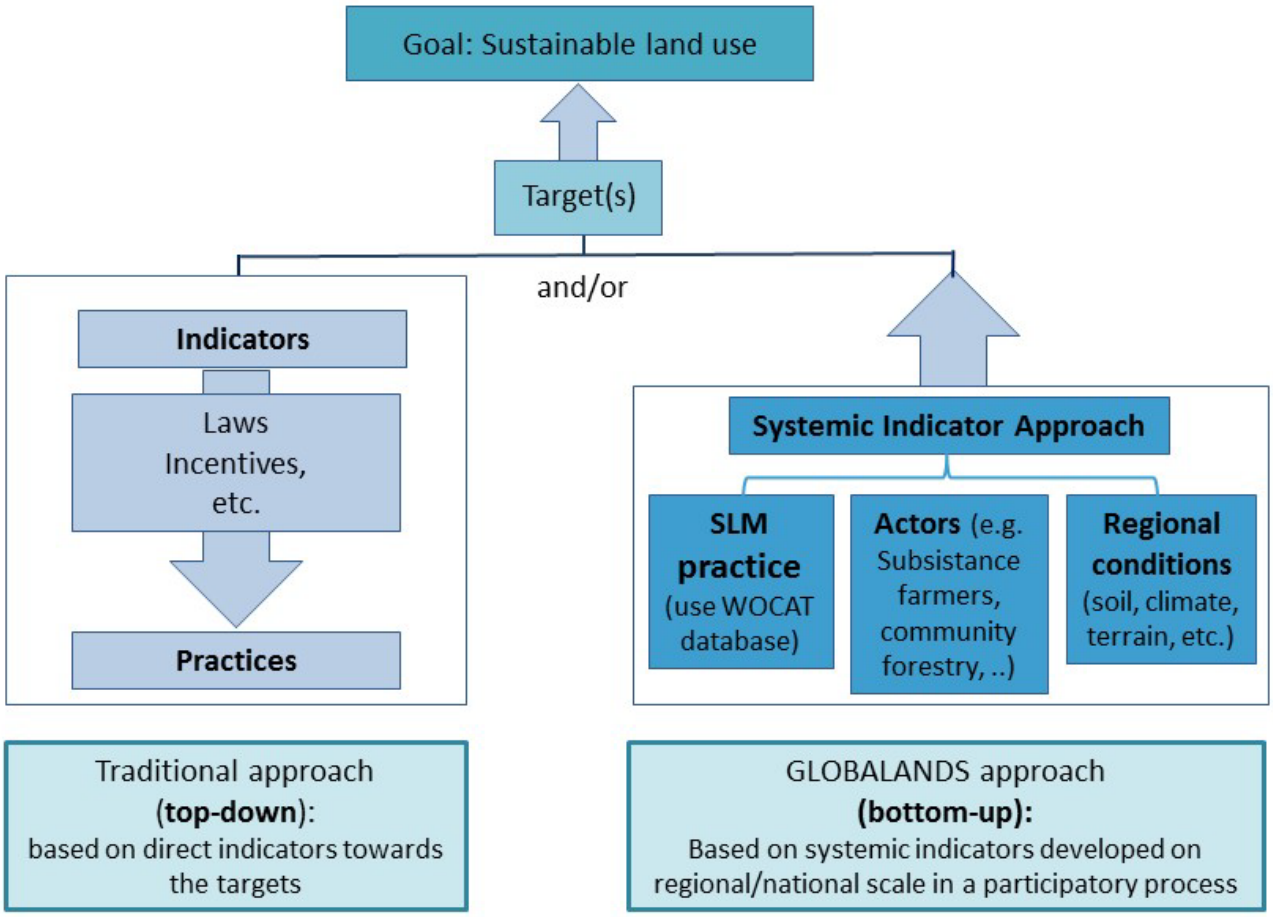
- The first level (left boxes in Figure 9) ensures that only meaningful combinations of land use practices with actors (and regions) are considered.
- The second step (middle box in Figure 9) "secures" against possible negative environmental and social effects of applying certain land use practices.

The screening requires a (regionalized) participatory process with all relevant stakeholders.

5.3 Top-down versus bottom-up

The essence of the systemic indicator approach (bottom up) is shown in the following figure in comparison to the "traditional" indicator approach (top-down).

Figure 10: Overview of the systemic indicator approach



Source: Fritsche, Eppler & Iriarte, 2015

To operationalize land tenure and land right aspects in indicators, GLOBALANDS assumes that the VGGT (see Chapter 3.5.5) serve as a framework.

GLOBALANDS explored how far it is possible to define systemic indicators for key land use sectors (agriculture, forestry) which especially include *small-scale land users* and take into account *traditional knowledge*, and respective evidence[68]. Both aspects have played an increasing role in current

[68] Fritsche, Uwe; Eppler, Ulrike & Iriarte, Leire (2015): Global Sustainable Land Use: Concept and Examples for Systemic Indicators. GLOBALANDS Working Paper by IINAS. Darmstadt, Berlin, Madrid.

international policy processes, such as the development of the VGGT that – as described above – were developed with a broad alliance of actors and put an increasing focus on the inclusion of traditional knowledge. Another example is the *Intergovernmental Platform on Biodiversity and Ecosystem Services* (IPBES) that aims to mainstream issues of biodiversity and ecosystem services guided by the principle to "(...) recognize and respect the contribution of indigenous and local knowledge to the conservation and sustainable use of biodiversity and ecosystems" (UNEP, 2012b Appendix 1, para 2d). Therefore, systemic indicators should also integrate traditional knowledge (Rahmanian, 2014).

5.4 The Normative Base for Systemic Indicator Approach

The systemic indicator approach does *not* deliver sustainable land use indicators automatically - it requires *normative* decisions by stakeholders which practices are *deemed sustainable* if carried out by certain actors, and in certain regions. For the global level, the prospective SDGs with their goals and targets for sustainable land use may well provide this normative base once they are agreed upon (see Chapter 3.5.1). For regional or national processes, the normative context will have to be provided through respective political discussions in the regions or countries.

To facilitate such an integrative approach, *multi-stakeholder participation* is essential, as the value-based character of sustainability requires the full participation of all members of communities. Stakeholders should be consulted in the indicator development process as early as possible (see Chapter 2.3).

The traditional top-down process at all levels of decision making needs to give way to a *bottom-up* approach, based on a binding participation of relevant stakeholders and representatives of small farmers, fishermen and indigenous people, including the most marginalized and under-represented.

There are examples of inclusive processes in the international arena with interesting results that could be followed - the endorsement of the VGGT (3.5.5) is one example. Still, the adoption of non-binding principles is only a starting point in terms of what is necessary (see Chapter 6). Two *examples* of systemic indicators have been prepared by GLOBALANDS[69].

5.5 Implementing Systemic Indicators

The new approach of *systemic* indicators for sustainable land use which reflect both analytical and traditional knowledge is *complementary* to existing, detailed biophysical or socially explicit approaches, and is meant to facilitate complex negotiations - such as the SDGs - by offering suitable proxies. The discussions around *indicators for the SDGs* opens the window to implement the Systemic Indicator approach as part of the *indicator framework* for the SDGs, focusing on how to deal with sustainable land use in the SDGs (Chapter 3.5.1). In this context, the systemic indicator concept should be disseminated further[70] to international platforms and discussed with interested countries and stakeholders participating in the SDG and post-2015 development agenda process.

The "real" application of the SI approach would then take place when SDGs are i*mplemented on regional and national scales*. For this, participatory processes will be required to allow for adequate screening and agreement on safeguards (see Chapter 5.2.1). Other opportunities can be seen in the ongoing discussions and procedures around national sustainability and resource efficiency plans in which land plays a major role. Furthermore, the *safeguarding* approach for sustainable land use in

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[69] See Fritsche, Uwe; Eppler, Ulrike & Iriarte, Leire (2015): Global Sustainable Land Use: Concept and Examples for Systemic Indicators. GLOBALANDS Working Paper by IINAS. Darmstadt, Berlin, Madrid.

[70] i.e. beyond the presentations at GLII und during the Global Soil Week 2013/2015 and the World Bank Land and Poverty Conferences in 2014 and 2015 (see Annex 3)

existing UN schemes – especially CBD and UNFCCC – could make use of systemic indicators, e.g. in REDD+ schemes (Chapters 3.5.4 and 7.1.4).

A final possibility may arise with the implementation of the VGGTs which requires inclusive processes on the national level (see Chapters 3.5.5 and 7.1.5).

All these possible activities are meant to increase credibility and endorsement of the systemic indicator approach, and should be open to further development and refinement.

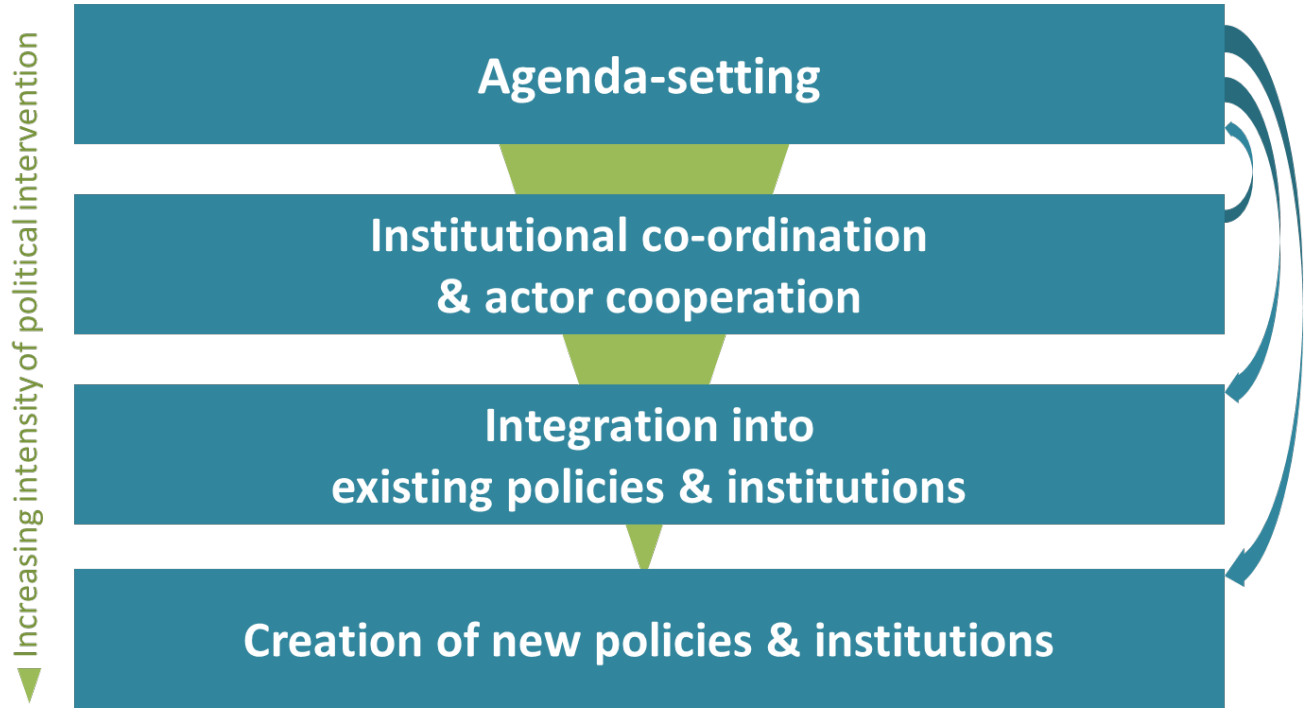
6 Pathways towards Global Sustainable Land Use

The core question of GLOBALANDS was whether an international "standard" for global sustainable land use – potentially linked to a certification scheme – would provide an adequate answer to the sustainability challenges of global land use (see Chapter 1). In the course of the project, the view broadened towards a wider set of options: instead of a single approach, a range of different *pathways* was identified to strengthen the international governance of sustainable land use in the future. They can be categorized as follows:

1. Agenda-setting
2. Promoting institutional co-ordination and actor co-operation
3. Mainstreaming sustainable land use concerns into existing policies and institutions
4. Creating new policies and institutions.

Figure 11 presents the pathways in their possible interaction, and in the order of increasing "intensity" of political intervention (from top to bottom).

Figure 11: Pathways towards global sustainable land use



Source: own compilation

These pathways can overlap and most pathways implicitly involve agenda-setting (Pathway 1). For instance, integrating sustainable land use concerns into pre-existing regulations (Pathway 3) can result in creating a new, self-standing standard (Pathway 4). The four pathways can be pursued by

governments as well as by non-governmental actors and by public-private networks, both voluntary or mandatory, legally non-binding or binding.

"Policies and institutions" are understood here to be more or less *institutionalized sets of rules* including, e.g., legally binding multilateral environmental agreements and their protocols or voluntary principles, policies developed by intergovernmental (UN) bodies, donor-funded programs operated by an agency, industry codes of conduct, multi-stakeholder certification schemes etc.

In the following, the pathways are presented in some detail, referring to existing cases and highlighting policy options where no empirical examples exist.

6.1 Agenda-setting

Among the four pathways, agenda-setting is the one with the lowest intensity of intervention. However, it is not necessarily a "soft" option, in particular when it comes to issues that are not yet (properly) recognised by policy makers. Agenda-setting is the feeding-in of an issue (here: sustainable land use) into (here: international) policy processes. The aim is to prepare policy formulation with regard to the issue. Agenda-setting has a strong discursive component (Kingdon, 1984, 1995; Sabatier, 1999; D. A. Stone, 1989): typically, it involves the (at least initial) definition of "the problem" (what is sustainable land use?) among a broad range of actors/ actor coalitions; the demarcation of who is legitimized to address the problem (the UN, national governments, the private sector, farmers' coalitions...); and the framing of potential solutions to the problem (regulation, planning, markets, participation...). These definitions and frames create the basis for the subsequent political debate, the selection of actors to be involved in the process, the range and even content of policy alternatives. Proactive agenda-setting both requires and at the same time creates discursive power, access to political processes and to financial resources.

Agenda-setting is a process that takes place both among governments, private actors (industry, civil society) and in multi-stakeholder networks. In public policy (and in particular in international policy-making), the possibility to influence agendas is more formalized than in the development of private standards.

As to the *status quo* of agenda-setting for sustainable land use, it has been highlighted above that there is no overarching sustainable land (use) policy at international level, even though the Rio conventions (Chapters 3.5.2 - 3.5.4) deal with land-related issues and various international processes put more emphasis on land (see e.g., the VGGT in Chapter 3.5.5 and the RAI Principles in Chapter 3.5.6). There is not even a common understanding of what defines the problem of unsustainable land use.[71]

As a consequence, agenda setting – in the sense of broadening the basis for a common understanding of what sustainable land use is about – is a *first and basic pathway* in promoting more sustainable land use at international level. Setting this agenda needs to address the blind spots (see Box 5), i.e. impact of international trade (law) or diets on sustainable land use, and the role of cities and urban-rural-linkages (Chapter 3.5.7).

What are presently windows of opportunity to advance the agenda of sustainable land use? One such window is the implementation of SDG-11, the goal to "*make cities and human settlements inclusive, safe, resilient and sustainable*". Implementing this "cities goal" will provide an opportunity to address the question of what sustainable land use means in urban contexts and in the interplay between cities and their surrounding area (see Chapter 7.6). Another opportunity to highlight this spe-

[71] The very aim of GLOBALANDS was to contribute to strengthening this discussion (see Chapter 1). Since 2013, the Global Soil Week provides a platform whose main purpose is to promote the international agenda regarding "soil".

cific perspective on sustainable land use is the HABITAT III conference in 2016. It will adopt a "*New Urban Agenda*" which will address sustainable urbanization (Chapter 8.5).

Furthermore, agenda-setting will be key to forward the longer-term discussion on a legally binding instrument on global sustainable land use (Chapters 7.1 and 8.4).

6.2 Promoting Institutional Co-ordination and Actor Cooperation

A second pathway to improve international governance with regard to sustainable land use is to promote governance and actor linkages – that is, to improve the co-ordination of policies and institutions with relevance for sustainable land use as well as the co-operation between the relevant actors. The aim is to create awareness of potential synergies and conflicts, to promote learning, reduce duplication of work and ultimately increase the coherence between rules and activities.

Institutional co-ordination between two or more international institutions (e.g., treaties) and their bodies (e.g., treaty secretariats) is advisable when one institution affects the effectiveness of the other(s), as discussed by Oberthür & Gehring (2006). In the case of land use there is no single "source institution" that comprehensively governs sustainable land use and whose coherence with other treaties ("target institutions") would need addressing.

However, there are several (voluntary and non-voluntary) policies – e.g., the CBD, UNCCD, VGGT or UNDRIP[72] – that govern *individual aspects* of sustainable land use and whose greater coherence among each other would be desirable. Concrete mechanisms for institutional co-ordination include: the request for and exchange of information between secretariats or governing bodies, joint activities such as training workshops and working groups; and, as more institutionalized form of collaboration, formal Memorandums of Understanding or of Cooperation between secretariats of conventions. These specify joint work plans and may result, for instance, in the streamlining of reporting requirements, indicators and scientific data collection.

An issue to be taken into account with institutional co-ordination is that the membership of conventions concerned may not be identical.[73]

At present, channels of institutional co-ordination exist between different multilateral environmental agreements, e.g., the Rio Conventions and other biodiversity-related conventions (Böhringer, 2014; Morgera, 2011). However, co-ordination so far does not substantially address the issue of sustainable land-use[74], so that the intensity of co-ordination could certainly be increased.[75].

Moreover, co-ordination is not so common between environmental and other treaties (such as trade-, investment- or human rights-related ones) that have direct or indirect effects on the sustainability of land use (e.g., Rosendal, 2006). Thus, improving co-ordination and coherence between environmental, land and resource-related conventions especially with trade- and investment related agreements

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72 UNDRIP is the United Nations Declaration on the Rights of Indigenous Peoples. It defines indigenous peoples' rights to lands, territories and resources (see http://undesadspd.org/indigenouspeoples/declarationontherightsofindigenouspeoples.aspx for details).

73 As a consequence, parties to one treaty may be disinterested in aligning their behavior to another treaty's goals which they have not subscribed to.

74 An important exception is the attempt of the Global Soil Week 2015 to bring together CBD's IPBES, the UNCCD's SPI and the GSP's ITPS - which all work on land indicators – in two joint sessions, see http://globalsoilweek.org/pillar-i/1-6-dialogue-session-joint-itps-spi-meeting-at-the-occasion-of-the-global-soil-week-2015-land-degradation-neutrality-and-its-contribution-to-climate-change-mitigation-and-adaptation and http://globalsoilweek.org/pillar-iii/3-3-dialogue-session-soil-and-land-indicators-for-the-international-policy-agenda-towards-joint-action

75 The Rio Convention's Joint Liaison Group (founded in 2001), for instance, has not yet adopted a joint work program, though land plays a role in the work on joint indicators agreed by the Rio Conventions' Joint Liaison Group in 2014 (see footnote 74).

would be crucial, though its political feasibility seems low. A more likely starting point for the second pathway is to make sure that the Rio Conventions and the SDGs are aligned with regard to land and soil, especially regarding the concept of a *land degradation neutral world*.

Actor co-operation can involve both private and public actors (scientists, business associations, civil society groups, international organizations etc.). Mechanisms for actor-cooperation range from information exchange and joint problem analysis; joint strategy development; co-ordination of activities; sharing of resources; to the pooling of distributed governance capacities (Benner et al. 2002). Platforms for actor-coordination include multi-stakeholder conferences and initiatives, roundtables, expert panels, learning forums, committees etc. They can be more or less formal, inclusive and long-term, building the basis of transnational policy networks (Beisheim & Liese, 2014; Pattberg, 2005).

Existing cases of actor co-operation with relevance to sustainable land use include, among others, the Global Soil Partnership (GSP), International Land Coalition (ILC), Global Donor Platform for Rural Development Working Group on Land (GDPWGL), Global Bioenergy Partnership (GBEP), Ethical Tea Partnership (ETP), Consortium of International Agricultural Research Centers (CGIAR), UNEP's International Resource Panel (UNEP-IRP), the private sector's International Agri-Food Network (IAFN), and the Committee on World Food Security (CFS) with its non-governmental CFS Advisory Group.

While these forms of co-operation cover specific facets of sustainable land use – such as access to land (ILC), land use efficiency (UNEP-IRP) or environmental sustainability in individual sectors (GBEP, ETP) – there seems to be not yet any network comprehensive in terms of both issue coverage and (multi-stakeholder) membership. This implies that none of the existing networks has the legitimacy to tackle sustainable land use in its entirety.

6.3 Mainstreaming Sustainable Land Use Concerns into Existing Policies and Institutions

As stated above, there is no single treaty mandated with sustainable land use - rather, there is a fragmented landscape of policies and institutions that promote *individual* aspects of sustainable land use. In addition, there are numerous standards that have the potential to positively or negatively affect the sustainability of land use.

Mainstreaming (i.e., better integrating) sustainable land use concerns into these latter-mentioned policies and institutions is a further pathway to improve the governance of sustainable land use, and can be differentiated in two strategies:

- The *pull* strategy of mainstreaming (here referred to as *safeguarding*) is the consideration of sustainable land use concerns within existing policies and institutions that have the potential to *negatively* affect the sustainability of land use. There already exist examples. The RAI Principles (Chapter 3.5.6) are a reaction to the harms resulting from large-scale land acquisitions ('land grabbing') developed by the Committee on World Food Security to safeguard aspects of sustainable land use within investments in agriculture and food systems. The RAI Principles cover both social and ecological aspects though the latter are less detailed. In a next step, thus, increasing coherence would mean to promote ecological aspects of sustainable land use in the RAI Principles' implementation (Chapter 7.4). An example of potentially harmful policies is the emerging REDD+ scheme under the UNFCCC (Chapter 3.5.4) which might set incentives for replacing natural forests by plantations. The UNFCCC's Cancun Agreements delineate a set of safeguards that national-level REDD+ initiatives should consider[76], but this needs strengthening (Chapter 7.1.4). With regard to lending policies, the "Environmental and Social Framework" (WB, 2014) are the

[76] Appendix I to Decision 1/CP.16, UNFCCC/CP/2010/7/Add.1. http://cancun.unfccc.int/

sustainability safeguards within the World Bank's project lending policy; sustainable land use concerns need to be strengthened within this Framework (see Chapter 7.1.6)[77]. To date, trade and investment policies have received only scant attention when it comes to safeguarding sustainable land use (see Box 5) so that these policies need more attention (Chapter 7.6).

- The *push* strategy of mainstreaming aims at integrating sustainable land use provisions into existing standards which have the potential to *positively* affect sustainable land use. These provide anchoring points to better incorporate (additional, more specific etc.) aspects of sustainable land use. One example is the process to establish SDGs (see Chapter 3.5.1)[78]. It reflects the attempt to integrate various aspects – access to and control over land, land and soil quality and productivity, land degradation neutrality – in the international sustainable development policy. This approach should be strengthened (Chapter 7.2). Another example is the CBD which, with regard to sustainable land use, focuses on the conservation and sustainable use of (terrestrial) biodiversity. Other aspects of sustainable land use such as land degradation, soil erosion, soil quality (with regard to toxics or nutrient loads) as well as water quality are indirectly covered by the CBD's mandate (as they affect the state of biodiversity); mainstreaming sustainable land use into the CBD would provide an opportunity to address them more stringently under the CBD. To do so, a range of measures is conceivable: for instance, 'awareness raising' workshops; introducing the topic as a *new and emerging issue* within the CBD's scientific body (SBSTTA) or institutionalizing it as *cross-cutting issue* for COP meetings; integrating it into the review of national action plans and into the next Strategic Plan; amending the CBD's Addis Ababa Principles by sustainable land use aspects not yet covered (see Chapter 7.1.3). Similarly, the VGGT have a high relevance for sustainable land use, and are also relevant indirectly to other sustainable land use aspects such as environmental sustainability and the non-degrading use of natural resources. Mainstreaming sustainable land use into the VGGTs – or even into the guidelines for their implementation and monitoring – implies that such other aspects would be strengthened (Chapter 7.1.5).

6.4 Creating New Policies and Institutions

A fourth pathway of rendering the international governance of land use more sustainable is to create new standards explicitly aimed at promoting sustainable land use (beyond integrating sustainable land use concerns into pre-existing polities and institutions). The aim is to create a central authority either for policy development or policy preparation (at the science-policy interface), with sufficient political clout to assert itself.

Different types of such new policies and institutions are conceivable. Their differences are based, among others, on:

- *objective*: an international policy/institution can have a regulative function or it may be geared towards collating knowledge at the science-policy interface
- *ownership*: according to the actors that developed a policy/ institution and that are 'in charge' of it, public, private and hybrid (public-private) policies/institutions can be differentiated;
- *institutional setting*: there are self-standing policies/institutions as well as 'derived' policies/institutions that are created under the umbrella of pre-existing standards (e.g., a protocol to an international treaty);
- *bindingness*: policies may be legally binding or non-binding and voluntary; voluntary ones again can be differentiated into standards with verification or compliance mechanisms (e.g. indepen-

[77] See for details: Kaphengst, Timo (2015): The World Bank Safeguard Policies – Chance or risk for global sustainable land use? GLOBALANDS Discussion Paper by Ecologic Institute. Berlin.

[78] " particularly SDG-15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and *halt and reverse land degradation* and halt biodiversity loss" (italics added by the authors).

dent verification, exclusion from standard organization in case of violation) and voluntary standards without such mechanisms;
- *geographic scope*: policies/institutions can theoretically be global in scope or can be restricted to (geographic or political) regions, such as drylands or the EU;
- *sector scope*: a policy/institution can be sectoral (i.e., relevant for individual land use sectors, such as agriculture, or sub-sectors, such as biofuels or coffee production) or cross-sectoral (i.e., relevant for several different forms of land use);
- *issue scope*: while narrower policies/institutions cover individual or few facets of sustainable land use, broader standards cover many such facets and are more holistic;
- *level of specificity*: policies/institutions can provide detailed rules or more generic rules.

The *status quo* is that there are some new elements in the fragmented institutional landscape on (sustainable) land use, e.g. the RAI Principles, the VGGT, and the SDGs (especially SDG-15). These elements are partly a result from mainstreaming efforts (Pathway 3). Under the UNCCD, a protocol on 'Zero Net Land Degradation' had been proposed in 2012 which would have represented a new, legally binding policy. While this proposal was rejected by the UNCCD's parties, other new policies might still be feasible (Chapter 7.3.1).

In recent years, a range of new policies and institutions has been created or at least discussed that address aspects of sustainable land use (see Table 7).

One of the successfully adopted new *public* policies are the VGGT of 2012 and the UN Global Compact "Food and Agriculture Business Principles" (2014).[79] New *private* standards include, among many others, the Roundtable on Sustainable Palmoil (RSPO)'s certification scheme (2004/ 2013) or the International Council on Mining and Metals' (ICMM) 10 Sustainable Development Principles. Altogether, private and non-binding standards are in greater abundance than public and binding ones. Most of the policies address quite specific aspects of land use (narrow issue scope).

In reaction to this constellation, *proposals* have been made to develop in future binding and broader institutions. For instance, private sector representatives at the World Bank Land and Poverty Conference 2015 called for the creation of *Roundtable on Sustainable Land* which could be the platform to develop a certification standard on "Good Land Governance" (Myers 2015). This standard could transpose the VGGT and RAI Principles into concrete principles, criteria and indicators for companies (Chapter 7.1).

The earlier proposed *Global Commission on Sustainable Land Use* (WBGU 2011) would have the purpose to, among others, review the scientific state of the art and assess options for a global land management. Members of UNEP's IRP have suggested an international convention on sustainable resource management and the establishment of an international agency for sustainable resource management (Bringezu & Bleischwitz, 2009).

Similar to such a resource management convention, a *Land Convention* would be a stand-alone treaty, which could be tied institutionally to UNEP or FAO (see Chapter 8.4).

[79] Note that we have accounted for the RAI Principles (2014) in the previous section on "mainstreaming".

Table 7: Classifying some new (and potential future) policies and institutions with relevance to sustainable land use

Example	Ownership			Institutional setting		Bindingness			Geographic scope		Sectoral scope		Issue scope re. SLU		Level of specificity	
	public	private	Hybrid	self-standing	derivative	binding	voluntary (with VCM)	voluntary (w/o VCM)	international	regional	sectoral	cross-sectoral	narrow	broad	detailed	generic
VGGT	x			x				x	x			x	tenure		x	
RAI Principles	x			x				x	x		x (agri)		invest-ment		x	
Potential land-protocol to UNCCD	(x)				(x)	(x)				x		(x)	(land degr.)			
Potential land-protocol to CBD	(x)				(x)	(x)			x			(x)		(x)		
Roundtable on Sustainable Palmoil		x		x			x		x		x			x	x	
Global Compact F+A B-Principles		x			x (GC)			x	x		x (agri)		(env.)			x
ICMM's 10 Principles		x		x			x		x		x (mining)			x		x

Source: own compilation; SLU = sustainable land use; with VCM = with verification or compliance mechanism; w/o VCM = without verification or compliance mechanism

The GLOBALANDS suggestion for a protocol to the CBD on sustainable land use[80] was made despite that at present, the political feasibility of such a protocol seems low, but a *binding* international and integrative (not merely sectoral, issue-specific) policy on sustainable land use is needed in the longer-term (Chapters 7.1 and 8.4). The proposal reflects that the CBD already deals with aspects of sustainable land use (under the term "sustainable use of biodiversity"). The Protocol's goal could hence be defined with reference to Art. 1 CBD (which highlights the sustainable use of all components of biodiversity as one of the core objectives) as well as Aichi Target 7 ("*areas currently used for agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity*").

The fundamental principles to be defined in the Protocol could draw on the CBD's Ecosystem Approach and the Ababa Principles for sustainable use of biodiversity. Obligations resulting from these would need to be developed by the CBD parties. With its existing institutional architecture and binding framework, the CBD could in the medium to long term provide a good anchoring point for the international governance of sustainable land use.

6.5 Conclusions on Policy Pathways

GLOBALANDS elaborated four pathways through which the international governance of sustainable land use can be strengthened. These pathways can be followed in parallel; they do not mutually exclude each other, though the focusing of political attention and resources may become an issue, if too many strands are followed at the same time.

The developed matrix of the pathways (Figure 11) builds the basis to structure where political action is needed and where respective windows of opportunity are to foster global sustainable land use.

This will be taken up in the following two chapters, i.e., in the context of policy recommendations (Chapter 7) and as open questions requiring more research (Chapter 8).

[80] See Wolff, Franziska & Kaphengst, Timo (2015): Global sustainable land use: Exploring the possibility of strengthening sustainable land use within the Convention on Biological Diversity. GLOBALANDS Discussion Paper by Oeko-Institut and Ecologic Institute. Berlin.

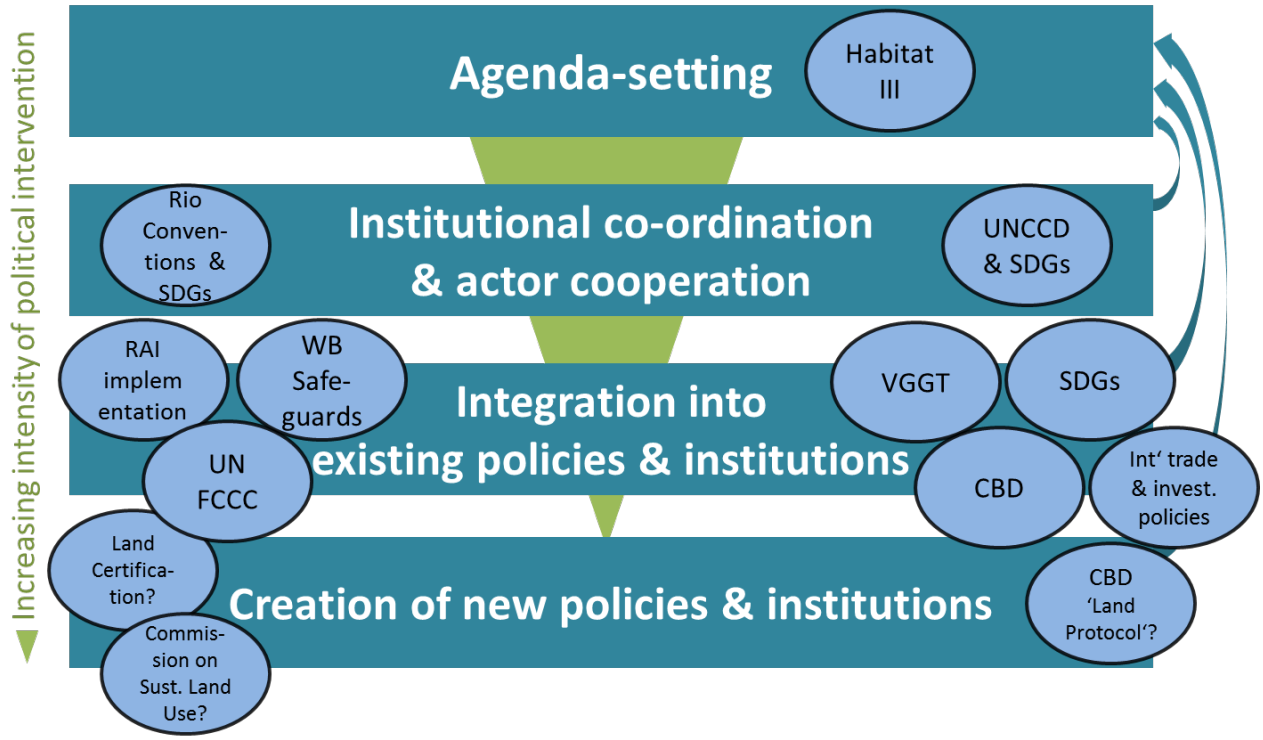
7 Recommendations for German Policy

A key finding of GLOBALANDS is that environmental and social issues of land use should not be regarded as competing but rather as mutually reinforcing dimensions of sustainable land use, i.e. a focus of future policies should be given for *integration* of theses "pillars", and collaboration between the respective bodies and organizations.

The recommendations for German policy derived by GLOBALANDS consider the various *windows of opportunity* identified in Chapter 3.5, and combined them with the policy pathway matrix for international sustainable land use presented in Chapter 6.

The following figure makes used of this matrix to order the respective policies and processes with regard to their "intensity".

Figure 12: Principal orientation of options for strengthening international sustainable land use in the GLOBALANDS policy pathways matrix



Source: own compilation

As can be drawn from the figure above, the following recommendations for German policy addresses the full spectrum of the matrix, and are meant to be mutually supportive. For example, the VGGT implementation (see Chapter 7.4) will help operationalizing a possible land certification standard (Chapter 7.1), and a possible "land protocol" would provide the normative base for a private sector certification standard. Similarly, mainstreaming sustainable land into the existing UN Rio Conventions would improve reporting, and this would facilitate the creation of a "Commission on Sustainable Land Use" which in turn may help to improve institutional coordination and cooperation (Chapter 7.3).

Thus, the following recommendations should be seen as an *integrated proposal*, and not as a shopping list to draw from only selectively.

7.1 A Global Land Convention, a Protocol or a Standard?

Given the limitations of voluntary approaches (VGGT, RAI…) and the yet unclear implementation of the land-related SDGs by countries, Germany should continue to explore *additional* options for a medium- to longer-term *global and binding instrument* for sustainable land use.

The GLOBALANDS discussions with stakeholders indicated that e.g. a new UN *convention on land/soil* would take years to conceptualize und discuss, with an uncertain perspective for agreement.

A possibly less challenging *Land Protocol under the CBD*, as discussed in a GLOBALANDS paper[81], might be the base to start respective agenda-setting and research, and Germany should consider this as a relevant issue for further work, taking into account near-term options such a standard for the private sector to certify sustainable land use (Chapter 7.5).

A "global standard" for sustainable land use should thus be seen as an *evolving issue*, and German contributions to the evolution should be part of a broader international process in which research and agenda-setting would be the key near-term activity need German support (Chapter 8.4).

7.2 Maintain Land in the SDGs and Improve Indicators, and Monitoring

The process of the SDG development is an opportunity for both integrating and specifying sustainable land use in international policies, even though the current draft of SDGs does not envisage an own "land goal" (see Chapter 3.5.1). Yet, the proposed target 15.3 to achieve a *land-degradation neutral* (LDN) world should be seen as an important step.

Therefore, the LDN target should be maintained (see Box 6), and Germany should use its influence during the negotiations in that regard.

Concerning indictors for the SDGs, Germany should follow-up on opportunities to make use of the *systemic indicator* approach (Chapter 5.6), and also support its further development (Chapter 8.2).

In parallel to negotiating the final SDGs there is a need to define a global mechanism for *monitoring and accountability* to ensure global uptake, and implementation of the SDGs. Some preliminary proposals have been made (Beisheim, 2015; Beisheim, Chen & Pintér, 2015) but need further discussion, especially with CSO participants. Germany should continue to support respective activities, both regarding dialogue, and research (see Chapter 8.3).

With regard to its *national policies* on sustainable land use, it is recommended that Germany

- implements the SDGs in a *participatory* and comprehensive way, especially regarding land use, as part of updating its national sustainability strategy, and explicitly addresses tradeoffs between the SDGs to prioritize policies[82];
- develops improved national and sub-national *indicators* on sustainable land use, and considers including systemic indicators in that;
- extends the current resource program (ProgRess) to also cover land, and soils;
- continues supporting the Land Matrix as tool for transparency in (international) land transactions.

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[81] Wolff, Franziska & Kaphengst, Timo (2015): Global sustainable land use: Exploring the possibility of strengthening sustainable land use within the Convention on Biological Diversity. GLOBALANDS Discussion Paper by Oeko-Institut and Ecologic Institute. Berlin.

[82] In that, recommendations given by RNE (Bachmann & Kraemer, 2015) should be considered which also underline the need for dialogue between the various levels of governance (federal, state, regional and cities/villages) and civil society in implementing the SDGs in Germany, and also ask for an active German role towards implementation by the EU.

7.3 UN Rio Conventions

7.3.1 UNCCD: Scope and Indicators

Due to the land- and soil-related international mandate, the UNCCD remains – disregarding its structural shortcomings (see Chapter 3.5.2) an important international convention.

In the ongoing processes within the UNCCD Germany should strengthen those activities which contribute to the international discourse on soil protection, especially the operationalization of the *LDN target*, even if Germany is represented only indirectly through the EU in the IWG.

Furthermore, the development of indicators for land and soils for the SDGS should make use of the practical experiences from the UNCCD monitoring, and should *seek synergies* in the *joint communication* aiming at implementation of strong land and soil targets, and respective indicators. In that, Germany should especially support the newly founded SPI and help providing funds for *more collaborative activities with the other conventions* (CBS's IPBES, see below), and the GSP's ITPS. The very first steps of collaboration between these bodies are taken (see footnote 74), but given the institutional inertia, Germany should push for further steps.

In the medium- to longer-term, Germany can be a relevant actor in developing alternative international governance options for land and soil protection, both within the UNCCD (e.g., a new Annex or a Protocol) and in the broader arena (see Chapter 7.1 above, and Chapter 8.4).

It will be decisive to have (legal) requirements *beyond* national action plans, including e.g. binding obligations for soil rehabilitation, for avoiding further degradation, and global specifications for all soils – not only for drylands as now.

7.3.2 CBD: Strengthening Implementation and Integration

Within the Rio Conventions, the CBD could play a more important role in the future – it provides an opportunity to address sustainable land use in an integrated way, but needs more support in achieving practical relevance. With the Ecosystem Approach it already embraces integrated protection of biodiversity, and sustainable land management is increasingly addressed in CBD programs and initiatives.

Encouragingly, work of CBD's IPBES on soils will support the UNCCD's SPI considerations, and the global discussion on land- and soil-related indicators already benefitted from working-level collaboration between IPBES, SPI and ITPS (GLII & IASS, 2015). This should be *extended* through German-supported initiatives for future collaboration on the SDG indicator implementation, and practical exchanges concerning land and soil related information.

Beyond indicator work, it is necessary to promote the integration of sustainable land use aspects within the CBD. This may include a range of activities (of varying levels of ambition) that the German government could support. In the medium- to longer-term, Germany should explore the option to develop a global "Land/Soil Convention" or a respective Protocol under the CBD as a *binding* international and integrative policy on sustainable land use[83] (see Chapter 8.4).

[83] Wolff, Franziska & Kaphengst, Timo (2015): Global sustainable land use: Exploring the possibility of strengthening sustainable land use within the Convention on Biological Diversity. GLOBALANDS Discussion Paper by Oeko-Institut and Ecologic Institute. Berlin.

Last but not least, the earlier proposal to establish a "Global Commission on Sustainable Land Use" (WBGU, 2011) should be considered as a potential *inter-conventional body* that would report on global land issues, similarly to IPBES on biodiversity, and the IPCC on climate change[84].

7.3.3 UNFCCC: Sustainable Land Use in Global Climate Policy

With the upcoming COP21 in Paris which will be a decisive milestone for future climate change policies, the third of the Rio Conventions will be in the global focus after the expected SDG adoption in September 2015.

Yet, the UNFCCC has a broad umbrella and several relevant issues relating climate policies to sustainable land use *await action* also:

- Domestic activities on land use, land use change and forestry (LULUCF): The design of national GHG reporting with regard to LULUCF activities should consider sustainable land use effects, i.e. environmental (beyond carbon) and social effects. Here, Germany could become a *forerunner by creating exemplary country-level reports*, and support respective capacity building;
- REDD+: in the finalization of the scheme, drivers of deforestation will need to be taken into account as guidelines for the development of national REDD+ policies and projects, and *robust safeguards* need to be developed for such policies and projects – Germany should engage in defining such safeguards together with other prospective REDD+ donors, and supporting their implementation;
- Green Climate Fund (GCF): depending on its financial fitting-out, the GCF will play an important role in the diffusion of climate-friendly technologies in developing countries; land use implications – especially for biomass-related projects – will have to be considered with regard to non-carbon environmental and social aspects, and Germany should become active in suggesting respective safeguards, taking into account the ones to be developed for REDD+ projects, and project finance in general (see Chapter 7.5);
- Agriculture: within the deliberations of the UNFCCC's technical body (SBSTA) on agriculture (mandated by decision 2/CP.17), the debate should go beyond the adaptation of agriculture to climate change and turn to the climate-mitigating effects of sustainable agriculture, and respective sustainable land use practices. Here, Germany should support exploring to what extent the *systemic indicator approach* can be useful.

7.4 VGGT and RAI: Implementation and Monitoring

As discussed, the VGGT and RAI constitute a *framework* for good governance of land-related investments, but they are not legally binding – they need implementation through interested parties (see Chapters 3.5.5 and 3.5.6).

Yet, both give room to integrate social *and* environmental concerns during national and regional implementation.

Here, Germany should continue its support for the VGGT and RAI through the Global Donor Working Group on Land (which it currently chairs), and should consider funding *explicit integration* of social and environmental issues in country implementation cases.

[84] This would not be an alternative to the "Global Land Outlook" to be prepared by UNCCD as a flagship report aiming at analysis and assessment of policies, trends and development perspectives of land degradation and sustainable land management (http://nr.iisd.org/news/global-land-outlook-discussed-on-sidelines-of-unccd-3rd-scientific-conference/)

7.5 Standards for Project Finance

In the ongoing discussion about the new World Bank *Environmental and Social Framework* (WB, 2014) which will provide safeguards for project financing (see Chapter 6.3), Germany should consider the results of respective GLOBALANDS analysis[85] and follow-up on the recently announced redrafting of the framework (Lindsay, 2015) to *further land-related safeguards*, and consistency with the VGGT.

As BMZ will soon publish a study by IASS which compares the VGGT, World Bank safeguards and IFC Performance Standards and is preparing a best practice handbook on overcoming possible gaps (Gerhardus, 2015), further dialogue through its representation on the boards of multilateral finance institutions should be used to call for *more stringent project-related safeguards* for sustainable land use, and their implementation.

As an important step in this, Germany should *showcase that KfW* - as its own bilateral financial institution – is pro-actively (and consistently with regard to the VGGT) implementing respective safeguards.

In addition, Germany should react to the call of private sector representatives during the 2015 World Bank Land and Poverty Conference as regards a "Sustainable Land Roundtable" (Myers, 2015).

This proposed initiative was received by the World Bank and the Global Donor Working Group on Land representatives with enthusiasm, and the German Executive Director in the World Bank Board, as well as BMZ (through GIZ and KfW) should consider follow-up activities (see Chapter 8.4).

7.6 Moving Beyond Blind Spots

As indicated before, there are important blind spots in the current global governance of land (Box 5) of which at least the most prominent ones should be taken up by German international policies.

One element in that is the role of *global trade*. As indicated (Box 4), the ongoing TTIP negotiations should be used by Germany to underline the need for environmental and social safeguards.

Second, the issue of *urban-rural linkages* (Chapter 3.5.7) should receive more attention. In that regard, GLOBALANDS highly welcomes that Germany recently decided to establish an inter-ministerial high-level working group on “sustainable urban development in national and international perspectives” led by BMUB (Bundesregierung, 2015). Based on this it is recommended to make not only cities an issue of implementing the SDG-11 (see Chapter 7.2) but to *fully address* the linkages between sustainable urban *and rural* development, both in Germany, and internationally. This could be a significant contribution to the upcoming HABITAT-III conference to be held in October, 2016.

As part of the urban-rural linkages, the issue of *food* should be taken up - beyond the current focus on food security. It should be brought to the international floor with regard to opportunities for sustainable land use through healthier and better diets (including promotion of diets with increased fruits and vegetables, animal products only within healthy levels), less food waste and opportunities for improved urban agriculture (see Chapter 8.5).

[85] See Kaphengst, Timo (2015): The World Bank Safeguard Policies – Chance or risk for global sustainable land use? GLOBALANDS Discussion Paper by Ecologic Institute. Berlin.

8 Open Questions and Further Research

In addition to the recommendation for German policies presented above, GLOBALANDS elaborated on key open questions which should be addressed in future research.

8.1 Mainstreaming Sustainable Land Use in Global Governance

The GLOBALANDS concept to mainstream and "safeguard" sustainable land use in *existing* global governance schemes – especially the CBD (Chapter 7.3), the UNFCCC (Chapter 7.4) and project-based financing (Chapter 7.6) – is worked out only to the extent that the *basic logic* and some *immediate* action items were highlighted.

Yet, the further developments in these processes – from the SDG adoption in September 2015, the climate COP21 in December 2015 to the HABITAT III conference in October 2016 and CBD COP13 in November 2016 – will bring further information on opportunities to mainstream sustainable land use in the emerging global governance system.

The broad "non-siloed" approach to identify linkages and relevant options for interactions and the *transdisciplinary inclusion* of international stakeholders applied by GLOBALANDS should, therefore, be continued in follow-up activities.

8.2 Indicators for Sustainable Land Use

The discussion of the possibilities to implement systemic indicators (Chapters 5.6) identified several opportunities to further this approach which should be considered in future research, especially regarding indicator processes during the regional or national implementation of the SDGs (Chapter 7.2) which needs scientific support.

In that, the inclusion of systemic indicators in the "safeguarding" (see above) would be an important element, and should receive respective attention.

8.3 Monitoring of Global Land Use Governance

As briefly discussed in Chapter 7.5, the VGTT and RAI will need participatory approaches to monitor their implementation.

This is a research issue which should be seen in context to the ongoing conceptual work of the CFS, and which could clearly benefit from the active German role in the Global Donor Working Group on Land together with its initial activities carried out by IASS and DIM.

8.4 Moving towards a Global Land Use Standard

The recent private sector proposal to develop a *Certification Standard for Good Land Governance* by a prospective *Sustainable Land Roundtable* (Myers, 2015) should be considered as an *option* to strengthen sustainable land use in the private sector, and respective research and steps towards practical implementation should be included in near-term research activities. In this, a close collaboration with the World Bank can be envisioned.

In *parallel*, though, the medium- to longer-term prospects of a *binding* global standard for sustainable land use, e.g., in form of a protocol (to the CBD)[86], are worth to explore more. Here, collaboration with the UNCCD will be essential, as well as respective initiatives on the EU level.

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[86] Wolff, Franziska & Kaphengst, Timo (2015): Global sustainable land use: Exploring the possibility of strengthening sustainable land use within the Convention on Biological Diversity. GLOBALANDS Discussion Paper by Oeko-Institut and Ecologic Institute. Berlin.

Furthermore, the Global Soil Week format could be a platform for the broader inclusion of stakeholders for both the near- and the longer-term activities.

In these activities it would be worth researching to what extend sustainable land use could – especially in conjunction with soils – become a "*global commons*". Land use is often considered a non-transboundary issue, but there are good reasons to address sustainable land use globally[87].

8.5 A New Focus on Urban-Rural Linkages

The brief discussion of urbanization and rural development (Chapter 3.5.7) indicated that the functional *and* spatial decoupling of cities and their **"**hinterlands" is a challenge for governance. Some of the literature argues for a global approach, as local and regional governance is not able to deal with international competition and increasing *translocal* nature of urban-rural links. To further conceptualize, discuss and implement such an approach in an inclusive way is a key issue for future research. The *Global Landscapes Forum* could be a platform to further this (GLF, 2014a+b), and exchanges with the US and especially Africa and Asia should be considered. The upcoming HABITAT III conference could be an opportunity to share first thoughts.

As discussed in a GLOBALANDS paper[88], local and country case studies as well as recent literature give some evidence of the sustainable potential of *urban food systems* (see Box 7), but the complexity of influencing factors makes it difficult to give reliable figures on the overall urban agriculture potential (Jennings et al. 2015), and a systematic evaluation of its land use implications is *yet missing*. Thus, research is required on the capacity of urban agriculture and its economic and social co-benefits.

Other options should be considered as well, e.g. so-called Metropolitan Food Clusters which are high-tech concepts inclusively linking rural farms to rural cities and larger urban centers, aiming at diversity and efficiency. These options need not be seen as alternatives to UA, but may well be complementary and could help transform the – dominating - industrial agricultural system.

Urban food systems are becoming a key issue in the process towards the HABITAT III conference, as recent papers indicate (UN-HABITAT, 2015a+b).

Thus, it can be expected that more research results, evidence from UA practitioners, and related actors will become available in the near future. This should be followed-up closely.

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87 A key international aspect of domestic land use, e.g. agriculture and forestry, is that is causes roughly 25% of all anthropogenic GHG emissions – mainly from deforestation and agricultural emissions from livestock and soil management, and these emissions increased by 12 % between 1970 and 2010 (IPCC, 2014a). Land use is thus linked to destabilizing the climate, a global common. Similarly, degrading biodiversity through unsustainable land use has been classified a "common concern of humankind" within the CBD, highlighting its international dimension. Many species threatened by human impacts and land degradations migrate across country borders (e.g. birds and mammals), which requires transnational efforts in protecting them. International rulemaking can strengthen domestic land use regimes and foster learning processes with positive effects on sustainable development both nationally, and internationally.

88 See Fritsche, Uwe; Laaks, Sabine & Eppler, Ulrike (2015): Urban Food Systems and Global Sustainable Land Use. GLOBALANDS Working Paper by IINAS. Darmstadt, Berlin.

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Annex 1: GLOBALANDS Workshops

The following listing is in chronological order. For direct access to files click on the underlined text.

1st International Expert Workshop May 27, 2013 in Berlin – Agenda, Workshop Notes and presentations:

- Almut Jering (UBA): Global Land Use and Sustainability - Options towards a global standard for sustainable land use (GLOBALANDS)
- Stephanie Wunder (Ecologic Institute) and Franziska Wolff (Oeko-Institut): Current international governance of land use: key findings from GLOBALANDS
- Martina Otto (UNEP): State and Perspectives of Sustainable Land Use Governance on the International Level – A View from the UN
- Helmut Haberl (AAU): Sustainable global land use? Some thoughts
- Inge Paulini (WBGU): Global Land Use and Sustainability: A View from the WBGU
- Uwe Fritsche (IINAS): Approaches to Global Sustainable Land Use: First Thoughts

2nd International Expert Workshop Oct. 31, 2013 held during the Global Soil Week 2013 in Berlin – Workshop notes (incl. list of participants)

3rd International Expert Workshop April 7-8, 2014 in Paris, in cooperation with UNEP and UNCCD Secretariat – Agenda, Input Paper, Notes and presentations:

- Alexander Müller (IASS): The Role of Indicators in International Processes
- Maryam Rahmanian (CENESTA): Drawing from Indigenous Knowledge to understand Complexity: Lessons for Developing Indicators on Land
- Leire Iriarte (IINAS): Systemic Indicators for Forest Land
- Ulrike Eppler (IINAS): Systemic Indicator for Agricultural Land

4th International Expert Workshop Oct. 6-7, 2014 in Paris, in cooperation with UNEP and UNCCD Secretariat - Agenda, Workshop Notes and presentations:

- Marcus Giger (WOCAT): Knowledge Management and Decision Support for scaling-up SLM best practices
- Martina Otto (UNEP): SDGs and Land
- Victor Castillo (UNCCD): Indicators in the UNCCD context: Monitoring & Evaluation
- Franziska Wolff (Oeko-Institut): The Role of the Private Sector
- Jacques Delsalle (EC, DG ENV): State of Indicator Development for Land Use Efficiency in the EU

5. GLOBALANDS Workshop „Deutschlands mögliche Rolle in der internationalen Landnutzungspolitik – Ableitung von nationalen Empfehlungen zur Stärkung nachhaltiger Landnut-

zung“ am 18. November 2014 im BMUB, Berlin – Programm, Hintergrundpapier, Ergebniszusammenfassung und Präsentationen:

- Uwe Fritsche (IINAS): Kurzvorstellung des Vorhabens
- Stephanie Wunder (Ecologic Institute): Überblick zur Nutzung von "windows of opportunity" in internationalen Politiken
- Uwe Fritsche (IINAS): Verankerung von Land-Zielen und Indikatoren in die SDGs
- Timo Kaphengst (Ecologic Institute): Integration von „Land“ in die World Bank Safeguard Policies
- Timo Kaphengst (Ecologic Institute): Mögliche Governance-Formen einer global nachhaltigen Landnutzung
- Stephanie Wunder (Ecologic Institute): Handlungsempfehlungen für eine Verstärkung des deutschen Engagements

Dialogue Session “Soil and land indicators for the international policy agenda: towards joint action” at the Global Soil Week 2015, April 22, in Berlin - presentation “Systemic Indicators”

Open Space at the Global Soil Week 2015, April 23 in Berlin – presentations

- Urban-Rural Linkages
- Urban Governance

Abschlusstreffen zu GLOBALANDS am 19.05.2015 in Berlin - Programm und Präsentationen:

- Uwe Fritsche (IINAS): Kurzvorstellung des Vorhabens
- Franziska Wolff (Oeko-Institut): Politikpfade und konkrete Ansatzpunkte in aktuellen Prozessen
- Stephanie Wunder (Ecologic Institute): Neue Handlungspfade: Stadt-Land-Beziehungen und Ernährung
- Uwe Fritsche (IINAS): Empfehlungen an die deutsche Politik und offene Fragen

Annex 2: GLOBALANDS Papers

The papers are listed in chronological and then in alphabetical order. For direct access to files click on the underlined text.

Knickel, Karlheinz (2012): Land Use Trends, Drivers and Impacts: Key findings from a review of international level land use studies. GLOBALANDS Working Paper. Frankfurt.

Eppler, Ulrike & Iriarte, Leire (2013): Sustainable Land Use Indicators - A Compilation for WP3. GLOBALANDS Working Paper by IINAS. Berlin, Madrid.

Fritsche, Uwe & Eppler, Ulrike (2013): Global Land Use Scenarios: Findings from a review of key studies and models. GLOBALANDS Working Paper by IINAS. Darmstadt, Berlin.

Wunder, Stephanie et al. (2013): Governance screening of global land use. GLOBALANDS Discussion Paper by Ecologic Institute and Oeko-Institut. Berlin.

Eppler, Ulrike & Fritsche, Uwe (2014): Actor Mapping. Internal GLOBALANDS Working Paper by IINAS. Berlin, Darmstadt (unpublished).

Eppler, Ulrike; Fritsche, Uwe & Iriarte, Leire (2014): Global Sustainable Land Use: Concept and Examples for Systemic Indicators. Input paper for the 3rd GLOBALANDS International Expert Meeting. Berlin, Darmstadt, Madrid.

Fritsche, Uwe et al. (2014): Global Governance for Sustainable Land Use - Status and Opportunities. Paper for the World Bank "Land and Poverty Conference 2014: Integrating Land Governance into the Post-2015 Agenda" March 24-27, 2014 in Washington DC.

Fritsche, Uwe et al. (2014): Integrating land governance into the post-2015 agenda. In: Governance for Development 2014-15: 35-39.

Fritsche, Uwe et al. (2014): Global Governance of Sustainable Land Use – Status and Perspectives. Paper for the 2nd Annual International Conference on Sustainable Development Practice "Advancing Evidence-Based Solutions for the Post-2015 Sustainable Development", September 17-18, 2014 in New York City

Kaphengst, Timo (2014): Towards a definition of global sustainable land use? A discussion on theory, concepts and implications for governance. GLOBALANDS Discussion Paper by Ecologic Institute. Berlin.

Lutzenberger, Alexa et al. (2014): Global Land Use Analysis. GLOBALANDS Working Paper by Leuphana University. Lüneburg.

Wunder, Stephanie u.a. (2014): Deutschlands mögliche Rolle in der internationalen Landnutzungspolitik – Ableitung von nationalen Empfehlungen zur Stärkung nachhaltiger Landnutzung. Hintergrundpapier zum GLOBALANDS-Workshop am 18.11.2014 im BMUB erstellt durch Ecologic Institut, IINAS & Oeko-Institut. Berlin, Darmstadt.

Eppler, Ulrike; Fritsche, Uwe & Laaks, Sabine (2015): Urban-Rural Linkages and Global Sustainable Land Use. GLOBALANDS Issue Paper by IINAS. Berlin, Darmstadt.

Fritsche, Uwe et al. (2015): Global Governance for Sustainable Land Use - Results of the GLOBALANDS Project. Paper for the World Bank "Land and Poverty Conference 2015: Linking Land Tenure and Use for Shared Prosperity" March 23-27, 2015 in Washington DC.

Fritsche, Uwe; Eppler, Ulrike & Iriarte, Leire (2015): Global Sustainable Land Use: Concept and Examples for Systemic Indicators. GLOBALANDS Working Paper by IINAS. Berlin, Darmstadt, Madrid.

Fritsche, Uwe; Laaks, Sabine & Eppler, Ulrike (2015): Urban Food Systems and Global Sustainable Land Use. GLOBALANDS Issue Paper by IINAS. Darmstadt, Berlin.

Gerstetter, Christiane (2015): The Transatlantic Trade and Investment Partnership (TTIP) and its relevance for global sustainable land use. GLOBALANDS Discussion Paper by Ecologic Institute. Berlin.

Kaphengst, Timo (2015): The World Bank Safeguard Policies – Chance or risk for global sustainable land use? GLOBALANDS Discussion Paper by Ecologic Institute. Berlin.

Klink, Dennis & Wolff, Franziska (2015): Sustainable land use and the private sector: recent trends. GLOBALANDS Issue Paper by Oeko-Institut, Berlin.

Wolff, Franziska & Kaphengst, Timo (2015): Global sustainable land use: Exploring the possibility of strengthening sustainable land use within the Convention on Biological Diversity. GLOBALANDS Discussion Paper by Oeko-Institut and Ecologic Institute. Berlin.

Wunder, Stephanie & Wolff, Franziska (2015): International governance screening of global urban policies and their impacts on sustainable land use. GLOBALANDS Discussion Paper by Ecologic Institute and Oeko-Institut. Berlin.

Annex 3: GLOBALANDS Contributions to Conferences and Workshops

The following listing is in chronological order. For direct access to files click on the underlined text.

- 1st European Resource Forum, Nov. 13, 2012 in Berlin - presentation
- Symposium „Biomasse – Kein Kraut gewachsen?“ Wie lassen sich Anbau und Verbrauch von Biomasse in nachhaltige Bahnen lenken?, November 15, 2012 in Berlin - Präsentation
- Tagung „Ökologische Grenzen ernst nehmen“ der Evangelischen Akademie Tutzing, 19.-21.4.2012 - Präsentation
- Global Soil Week, Oct. 27-31, 2013 in Berlin: see 2nd GLOBALANDS International Expert Workshop Oct. 31, 2013 in Berlin (Annex 1)
- AG Land am 17.2.2014 im BMZ, Berlin - Präsentation
- World Bank "Land and Poverty Conference 2014: Integrating Land Governance into the Post-2015 Agenda" March 24-27, 2014 in Washington DC – conference paper and presentation
- Treffen der Initiative Nachwachsende Rohstoffe (INRO) am 10.4.2014 im BMEL, Berlin - Präsentation
- SDSN 2nd Annual International Conference On Sustainable Development Practice: "Advancing Evidence-Based Solutions for the Post-2015 Sustainable Development", September 17-18, 2014 in New York City – conference paper and presentation
- EEA, GLII, IASS Thematic Workshop “Possibilities for indicators on sustainable land management for the Global Land Indicators Initiative” 5-6 February 2015 in Copenhagen – presentation
- Conference “Soils, food security, and sustainable land management for sustainable development post-2015”, February 11-13 Ev. Akademie Tutzing, Germany – Working Group Summary on Systemic Indicators and presentation
- World Bank "Land and Poverty Conference 2015: Linking Land Tenure and Use for Shared Prosperity” March 23-27, 2015 in Washington DC – conference paper and presentation
- Global Soil Week, April 19-23, 2015 in Berlin - presentations “Systemic Indicators”, "Urban-Rural Linkages" and “Urban Governance”