

Governance screening of global land use

Discussion Paper prepared by GLOBALANDS Project



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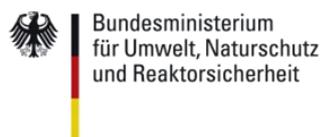


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Berlin, October 2013

on behalf of
**Umwelt
Bundes
Amt** 
Für Mensch und Umwelt

funded by



Recommended citation:

Wunder et al (2013): "Governance screening of global land use", discussion paper produced within the research project "GLOBALANDS – Global Land Use and Sustainability", authors: Wunder, Stephanie^{*}; Hermann, Andreas[#], Heyen, Dirk Arne[#]; Kaphengst, Timo^{*}, Smith, Lucy^{*}, von der Weppen, Johanna^{*}, Wolff, Franziska[#]; Berlin, Ecologic Institute^{*} and Öko-Institute[#], October 2013

Abstract

The pressure on land and natural resources is increasing worldwide be it for food, feed, fuel or fibre production. Moreover, land is essential to provide ecosystem services. While there are many sectoral policies tackling different environmental problems, land use is not regulated in an integrated and overarching way.

The aim of the project “GLOBALANDS– Global Land Use and Sustainability“ is to identify promising existing land use policies and to develop possible governance approaches towards a more resource efficient and sustainable global land use. The project is funded by the German Federal Environmental Agency (UBA) and runs until 2014. This discussion paper “Governance screening of global land use“ is one part of the work done within this project and wants to serve as an input to the debate on the development of international governance on land and soil.

The paper gives an overview of the most important international policies with relevant impacts on land use and identifies “windows of opportunity“ to further strengthen sustainable land use through international policies. The screening was not limited to the main land use sectors such as agriculture and forestry, but broadens the analysis to other policies that have an important impact on large areas of land, even if these effects are not intended by the specific policy.

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1 Objectives and methodological approach

1.1 Background and objectives

The pressure on land and natural resources is increasing worldwide. While there are many sectoral policies tackling different environmental problems, land use is not regulated in an integrated and overarching way. To address sustainable land use more efficiently and effectively, it is therefore important to identify those policies with the largest impact on land use and to understand the challenges and opportunities to foster a more sustainable land use through (international) policies.

Against this backdrop and as a substantial part of the research project “GLOBALANDS – Global Land Use and Sustainability”¹, this discussion paper on international governance screening of global land use was developed. The aim of the GLOBALANDS project on the whole is to identify promising existing land use policies and to develop possible governance tools towards a more resource efficient and sustainable global land use.

In a first step of this research project, two papers that have been prepared and published in 2012 and 2013 (Fritsche and Eppler 2013, Knickel 2012) that assessed past and current land use patterns by sector for all countries in order to identify the driving forces and trends behind major historical changes in global land use.

In parallel, an international governance screening of global land use was undertaken, which is presented in this paper. In essence, it has to two objectives:

1. To give a structured overview about the most relevant policies² and governance structures influencing global land use. The analysis focuses on policies on global level and the most relevant policies on multilateral level (especially EU). Case studies, which give complimentary insight into promising policies at national level, will be presented in a second part of this paper.
2. To identify policies, windows of opportunities, approaches, governance constellations, instruments etc. that can be used to improve sustainable land use worldwide.

¹ Original title “Ressourceneffiziente Flächennutzung – Organisation eines Global Sustainable Landuse Standard (GLOBALANDS)” FKZ 3711 93 101, project duration 2011-2014, project partners: IINAS; Ecologic Institute, Öko-Institute, Leuphana University and Dr. Karlheinz Knickel, see www.globalands.org

² According to Volker Schneider, policy is defined as options for actions and/ or strategic approaches to achieve certain goals or to solve problems (3e). They are not restricted to the state sector – policies of international organizations, trade associations or environmental groups are also relevant.

1.2 Selection of relevant policies

Due to the complexity of global land use the selection of the relevant policies was an intense and challenging working process. It included a substantial literature review, discussions within the project team and with representatives of the German Federal Environmental Ministry and German Federal Environmental Agency as well as a dialogue with experts at several national and international workshops.

The policy selection was conducted along two major criteria: the “quantitative land use relevance” at global scale³ and a high degree of qualitative impact (negative or positive), a policy might have on soil and land use. The first criterion was regarded as higher in priority than the second.

Once a policy met both criteria, it was analyzed according to the following parameters:

- Author (Who is responsible for the creation of the policy?)
- Scope (Is it an explicit EU policy, a UN convention etc?)
- Aim (What is the main thrust?)
- Land use sectors that are affected by the policy
- Type of policy, mechanisms of action and degree of binding obligations, amongst others:
 - Laws and regulations for land use practice
 - Regulation of land ownership and land distribution
 - Ecological and social impact assessment
 - Taxes and subsidies with direct controlling effects for land use (including environmental harmful subsidies)

This set of parameters were combined in the section “objectives and mechanisms” of the respective policy.

A second section analyzes different aspects of “relevance for sustainable land use” and describes the following parameters:

- Quantitative and qualitative land use relevance/ sustainability of land use
 - De facto and potential quantitative land use relevance (as far as possible name dimension and prove it if data is available)
 - If relevant also qualitative impact on sustainability of land use
 - If known compliance
 - If known impact (positive and negative)
 - potential opportunities to further strengthen the analyzed policies with regard to sustainable land use

In cases where the availability of data is limited – especially in the field of compliance / effectiveness – the paper had to rely on well-founded assumptions from experts. While the chapters on the identified policies distinguish between “objectives and mechanisms” and

³ For example, extractions of tar sand or mining projects have a high qualitative impact on land use, but have not been considered as highly relevant with regards to quantitative land use on a global scale.

“relevance for sustainable land use” further differentiations were made for different thematic sections of the paper:

Each thematic chapter (e.g. on forestry) includes an “overview” subchapter that describes the breadth of the screening, i.e. why policies have been chosen, why others are not considered relevant etc. and gives a brief summary of the main insights of the analysis.

From there on, all policies in this chapter are grouped in three subsections:

- International governmental approaches⁴
- Regional governmental approaches (mainly EU)⁵
- Hybrid⁶ and non-governmental approaches⁷

1.3 Classification and presentation of policies

In the screening, it was recognized that policies could be structured in various ways. Different categories were found, which distinguish a policy from another and could therefore be used for a structured overview of identified policies:

- a) policy level (global, multilateral, national and regional),
- b) policy actors, in essence governmental versus non-governmental actors (private sector, associations, academia, lobby organizations etc.)
- c) policy sector (agriculture, forestry, nature conservation etc.)
- d) related environmental goods (biodiversity, climate, soil water etc.)

We followed a stepwise approach for a systematic screening of land use policies at international level, making use of the identified categories above while at the same time avoiding overlaps between these different levels of analysis. This approach ensured that each identified policy is clearly assigned to and analyzed within only one category.

On the basis of the UNECE (1993) “Readings in international Environment Statistics”⁸ the following sectors were analyzed first:

⁴ In the project understanding a treaty is global, if it was ratified (and not just signed) by more than 130 states (which corresponds to 2/3 of all states)

⁵ In the project understanding policies are regional/ multilateral if they include 3 or more member states. The category multilateral (regional) refers to a treaty whose authors are concentrated regionally (such as the EU in contrast to the OECD or G8).

⁶ Approaches that are developed in cooperation of governmental and non-governmental actors (such as the FAO Sustainability Assessment of Food and Agriculture systems (SAFA), which was initiated by FAO and ISEAL) are covered in this category.

⁷ Non-governmental actors include the private sector, non-governmental organizations, academia, lobby etc. on global and regional level. In the focus of attention are mainly international initiatives for land use, which are generally based on voluntary regulation (such as standard initiatives, guidelines, certification systems, roundtables, codes of contacts and the like).

1. Agriculture
2. Forestry
3. Built-up areas/mining areas (particularly industrial and settlement areas, infrastructure and energy, mining)

Furthermore, cross-cutting policies for specific environmental media/ environmental goods are analyzed, which cannot be categorized according to the different sectors above, but whose effects partly show a high relevance for land use. Here, the following policy areas were examined:

4. Climate policy
5. Biodiversity policy
6. Soil protection policy and
7. Water policy

More integrated policies that address different sectors and environmental media at the same time, are analyzed in a third section:

8. Explicit sustainability policy
9. Environmental impact assessment/ strategic environmental assessment (EIA and SEA)
10. Land use planning and management

Furthermore, the following cross-cutting policies were examined that do not focus on a specific sector or environmental good, but nevertheless have a relevant effect on sustainable land use:

11. Energy policies
12. Trade policies
13. Investment policies
14. Land tenure policies
15. Development and cohesion policies
16. Corruption/ Transparency policies

Such division ensured that a duplication of policies could be avoided in the analysis. Where policies fit to more than one category, the allocation drew on the main objective of the respective policy, as shown in the following two examples:

^{8 8} 1. Agricultural land, 2. Forest and other wooded land, 3. Built-up and related land. Furthermore the UNECE names four more types of land use: 4. Wet open land, 5. Dry open land 6. Open Land without vegetation cover, 7. Waters (Water areas are not considered in the GLOBALANDS Projects).

- The UN Convention to Combat Desertification is – for instance – examined in the analysis of soil protection policy (even though there are e.g. strong implications for agriculture)
- Emissions trading systems are analyzed in the section on climate policy, even though they have a strong impact on the biomass production in agriculture and forestry due to their rating of biomass as carbon neutral etc.

However, in addition other cross cutting issues with relevance to land use could be identified, for which (effective) policies are entirely missing. These policies are analyzed in another category and include the following issues:

- Dietary change (especially the globally increasing demand for animal products)
- Food losses and food waste
- Global population growth
- Gender equality
- Public goods and the internalization of externalities
- Environmental liability

The chapter dealing with the missing/ineffective governance diverts from the above mentioned methodological approach in the way that the focus was laid on the description of land relevance of the respective area and potential (new) governance approaches in this area.

1.4 Limits of the governance screening

The governance screening that has been undertaken in this project analyses more than 100 international policies that have been considered relevant for sustainable land use. Nevertheless, there are many more policies that have an impact on land use and that could not be analyzed here. Examples that should be further investigated include policies on human rights⁹, education, defense or research, which all could have an indirect but important impact on land use.

Moreover, it needs to be considered that the policies described here are often subject of dynamic developments (such as international soil policy, efforts for increased transparency etc.) which might have continued after the finalization of this text (November 2012 for most of the international policies and July 2013 for the national case studies).

1.5 Structure of the report

After an introduction of the methodological approach, this paper is basically structured in three parts: First the international governance screening, second the national case studies and third, an outlook on conclusions and windows of opportunity for further action.

⁹ Such as the Universal Declaration on Human Rights; the 2007 United Nations Declaration on the Rights of Indigenous Peoples; the United Nations Guiding Principles on Business and Human Rights - a global standard for preventing and addressing the risk of adverse impacts on human rights linked to business activity (also called the "Ruggie Principles"); the International Labour Organization Convention 169 which deals specifically with the rights of indigenous and tribal peoples or the 2006 International Declaration on Agrarian Reform and Rural Development (ICARRD).

2 Results of the international governance screening

2.1 Land use policies per sector

2.1.1 Agriculture

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Overview

From the 13.4 billion hectares of land available worldwide 37% (i.e. roughly 5 billion hectares) is agricultural land. This implies that agriculture in quantitative terms is the single most important land use sector¹⁰. Accordingly, the role of agriculture is of great importance when discussing sustainable land use. However, there are few policies on the international level explicitly targeting agriculture. Those analyzed in this policy screening and with identified land-use relevance include (categorized according to governmental policies, hybrid policies (including both governmental and non-governmental actors) and non-governmental policies):

- the World Food Program as a large-scale and influential buyer of agricultural products
- the Common Agricultural Policy as it sets the regulatory and financial framework for agriculture in the EU with influential impacts in the EU and abroad
- agricultural standards and certification schemes and standards for organic farming (analyzed in two separate chapters below) as they often aim at more sustainable practices in agricultural production even if they are mainly relevant for smaller market shares.
- the FAOs Sustainability Assessment of Food and Agriculture Systems (SAFA), with its ongoing work to develop a sustainability framework for agriculture that targets both governments and private actors
- the work and impact of the International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD) as the largest, peer-reviewed multi-stakeholder effort to date with potentially the most authoritative set of options for addressing hunger and poverty through sustainable development in agriculture.

Many other policies that strongly affect the agricultural sector have not been tackled in this chapter but elsewhere, e.g. the WTO Agreement on Agriculture and other important trade policies in the → trade chapter, the Renewable Energy Directive and its bioenergy targets within the → Energy chapter, soil policies within the → soil chapter and land use policies within the chapter → spatial and land use planning.

Moreover, national policies are often of great importance (such as the US “Farm Bill”), but were outside the focus of this international governance screening.

Other policies have been analyzed but have not been included in this report given their comparably lower relevance for sustainable land use. This includes the “International Treaty on

¹⁰ Agriculture is further expanding, nowadays mainly in the tropics, replacing forests, thereby making agriculture the biggest cause of deforestation (an estimated 5-10 million ha are cleared annually for agriculture). See Foley, J. et al. (2011)

Plant Genetic Resources for Food and Agriculture” (ITPGRFA) that aims at guaranteeing food security through facilitating the conservation, exchange and sustainable use of plant genetic resources for food and agriculture, or on the EU level, the “European Innovation Partnership - Agricultural Productivity and Sustainability” that aims to translate research results into actual innovation by bringing together and facilitating exchange between farmers, scientists, advisors, and other stakeholders. Moreover, use and support (including that from companies and foundations such as the Gates Foundation) of genetically modified crops already play a large role in agriculture and have an impact on the sustainability of land use, but these developments are hardly addressed by policies (see also → Development and → Biodiversity chapter).

Finally, there are two more trends that are hardly addressed by policies but that significantly influence agricultural production, with large qualitative and quantitative implications for land used globally. Those are:

1. The (increasing) production of meat and dairy products:

The production of meat and dairy products requires large amounts of agricultural land worldwide both for grazing and for growing feed. Compared to the direct use of agricultural land for food production for human consumption (rather than animal feed), animal products require much larger areas to produce the same amount of calories. A reduction of the amount of land used for meat production is possible through reducing meat and dairy product consumption (see → chapter on dietary change), which may be stimulated by future agricultural (or land use planning) policies on all (national/regional/international) levels. In particular the numbers of animal units per hectare does not only influence the pressure on soil, water, nutrient balances etc. but eventually the price for meat and dairy products, thus influencing the amount of consumption. Moreover, the link to animal welfare requirements, i.e. “livestock density per hectare”, can be a potential entry point for designing policies that will have an impact on the land used for meat production.

However, the mentioned approaches hardly play a major role in current policies. To a certain extent the Common Agricultural Policy (CAP) addresses livestock density with their Standards of Good Agricultural and Environmental Conditions (GAEC standards), which cover minimum livestock stocking rates. Moreover, organic production requirements include “land-related crop cultivation and livestock practices” and “restriction of external inputs”¹¹. However, these approaches do not play a major role in the general agricultural system yet, as organic products are still a niche market.

2. Food waste:

Roughly one-third of food produced for human consumption is lost or wasted globally. This inevitably also means that huge amounts of natural resources, including land, are used in vain. Strategies to address this problem hardly exist both in the public and in the private sector and tackling food loss is a relatively new issue on the policy agenda and can only partly be addressed through agricultural policies. First steps taken include the FAOs compendium on “Food Losses and Food Waste” (FAO 2011a) and an EU initiative from January 2012 when the European Parliament

¹¹ Article 4 of EC 834/2007 on organic production and labeling of organic products

adopted a non-legislative resolution that called for action to halve food waste by 2025. Strategies differ between low-income and medium-/high-income countries. In the latter, food is wasted to a significant extent at the consumption stage. In low-income countries, food is lost mostly during the early and middle stages of the food supply chain, mainly connected to financial, managerial and technical limitations in harvesting, storage and cooling related to difficult climatic conditions or problems with infrastructure, packaging and marketing systems.

International governmental approaches

United Nations World Food Program (WFP)

Objectives and mechanisms: The UN World Food Program is dedicated to fighting undernourishment and malnutrition. Also, it responds to crisis by supplying food. It also aims to strengthen food security on a durable basis with the ultimate goal of eliminating the need for food aid itself.

According to the WFP, 3.7 million tons of food are distributed per year in 73 countries, with 90 million beneficiaries. There is a historical shift from the WFP as a food aid agency distributing food donations to a WFP as a food assistance agency. With that shift, the share of food donations to the WFP is decreasing in favor of financial donations. The WFP commits itself to as much as possible to local purchase - at least three quarters of the distributed food is bought in developing countries where most assistance is allocated.

Relevance for sustainable land use: As the WFP is a large buyer of agricultural products, it could in theory support sustainable land use by preferring food produced in a sustainable manner. However, there are no conditions on the sustainability of the products, land use etc. except that the WFP tries to buy food as close to where it is needed, as well as the "Food for Assets" program that provides food rations for work. Among the projects financed by the "Food for Assets" program are projects that focus on soil conservation, planting trees, building irrigation or terracing amongst other soil and water conservation measures¹².

However, given the urgency of food assistance in regions of crisis it is questionable whether introducing sustainability standards for land use regarding areas where the food is purchased by the WFP is, a realistic or favorable option. In fact, the WFP has received an increased amount of cash contributions from donors in the last years that impose conditions on their donations¹³. However, the WFP asks their donors to refrain from extra conditions in order to be able to make cost-effective purchases with little administrative burdens.

FAO Sustainability Assessment of Food and Agriculture Systems (SAFA)

Objectives and mechanisms: The FAO Sustainability Assessment of Food and Agriculture systems (SAFA) aims at building on existing efforts of companies and of national strategies to develop a

¹² <http://www.wfp.org/food-assets>

¹³ e.g. the money must be spent in a certain country (see WFP's Food Procurement Annual Report 2011, <http://www.wfp.org/procurement>). It is not known to the authors whether the donors also require sustainability/land use criteria to be fulfilled.

Sustainability Framework (see also → subchapters on agricultural standards and certification systems). The initiative started in 2009 in an iterative process with the International Social and Environmental Accreditation and Labeling (ISEAL) Alliance in order to develop a practical definition of sustainability. To date, there is still no international benchmark defining what “sustainable production” actually entails and there is no universally accepted set of indicators to measure sustainability performance. The initiative reacted to an explosion of policies, instruments and initiatives, from both governmental and market actors, to achieve sustainable development outcomes across a broad range of economic sectors, including supply chains, pointing to a collective failure in establishing operational and practical ways to understand what sustainability actually means, and to deliver it effectively. (FAO 2011b)

The initiative has three goals:

- (1) Definition of a Sustainability Framework with an agreed set of core sustainability issues that could be implemented at any level (national, supply chain or operational unit) and thus to provide a common understanding of what the term “sustainability” means in a practical context.
- (2) Provision of international guidelines on the Sustainability Assessment of Food and Agriculture systems (SAFA) to facilitate comprehensive sustainability assessments.
- (3) Development of an international tool for the SAFA for the use of food businesses to assess and improve their own endeavors and contributions towards sustainability.

It is hoped that the guidelines and tool for the SAFA shall provide a means to assess food chains and companies in a more quantitative and standardized manner than is presently done via corporate social responsibility reporting.

In order to seek views of stakeholders from agri-food industry, science, international institutions and civil society, e-fora were conducted in 2011 and 2012. The SAFA will be mainly developed for companies (FAO2011b).

Relevance for sustainable land use: As the SAFA definitions and guidelines aim to be implemented at any level (national, supply chain or operational unit) and to provide a common understanding of what the term “sustainability” means in a practical context, they can have an impact in the future, depending on how exactly the indicators are defined and how many companies will apply the (voluntary) standard. The standard is promising in that it aims to address sustainability holistically in comparison to existing public and private sector policies that are often restricted to only one or a few aspects of sustainability.

Regional governmental approaches

Common Agricultural Policy (CAP)

Objectives and mechanisms: The EU’s Common Agricultural Policy (CAP) is the policy framework under which European farmers operate. It sets out a range of requirements for farming, environmental and rural development activities as well as controlling EU agricultural markets. It is the single largest common policy within the European Union (EU).

The CAP was introduced in the 1950s. Its primary aim then was to ensure a stable supply of affordable food by encouraging improved agricultural productivity. By the 1980s the CAP had not only eliminated post-war food shortages but also resulted in surpluses of major agricultural

commodities. The MacSharry reform in 1992 was the first step away from a system of market supports to a system of direct payments to farmers and put a greater emphasis on the environmental dimension. The Agenda 2000 reform further reinforced this shift away from market supports and established two pillars within the CAP which remain the core of its structure to this day: The first pillar provides direct farm payments and limited market intervention measures, whereas the second pillar supports rural development more broadly. Agri-environment schemes, first introduced at the EU level in 1992, became a compulsory element of rural development policy.

A major reform of the CAP in 2003 (Regulation (EC) 1782/2003) linked direct payments to the respect of environmental, food safety and animal welfare standards, called compulsory cross-compliance.

In 2008, the Health Check reform aimed to strengthen the CAP's contribution to dealing with new environmental challenges: climate change, bioenergy, water management and biodiversity. Environmental sustainability also remains a central theme in the current round of reform, which will determine the policy for the upcoming programming period 2014-2020.

Relevance for sustainable land use: Agriculture is the major land use sector in the EU, occupying approximately 50% of the total land area (EU 27). Also, it is the largest sector of the EU budget, absorbing more than 40% of the budget. The CAP has contributed to two parallel processes: intensification of agricultural production in the EU (with increasing inputs of fertilizers and pesticides, reduction in diversity of crops, increasing intensity of mechanization with negative impacts on soil, biodiversity and water) 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. CAP subsidies also have an effect beyond the EU borders 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.

The debate of the future CAP after 2013, but also after 2020, could play a big role in designing this policy more towards sustainable land use. In this regard, reforms both of the first and second pillar payments are important.

As for the first pillar, cross compliance requirements can play a bigger role in order to increase sustainability; Through the formulation of compulsory "Good Agricultural and Environmental Conditions" (GAEC) within cross compliance compulsory standards for limiting erosion, retaining and improving organic matter, and avoiding compaction already exist. In October 2011, the Commission, taking stock of the experience gained, proposed to further clarify and specify soil-related standards in the context of the overall CAP reform for 2020¹⁴. In particular, it proposed a new GAEC on organic matter protection, including an obligation not to plough wetlands and carbon-rich soils. Other greening measures of the first pillar proposed by the Commission, including the "ecological focus areas", stricter protection of grasslands, and measures to reduce management intensity might further improve the sustainability of the CAP.

¹⁴ http://ec.europa.eu/agriculture/cap-post-2013/legal-proposals/index_en.htm. as cited in COM/2012/046 final

Approaches to design the CAP in a more sustainable way and towards sustainable land use through the second pillar are diverse and include, among others the selection of “dark green measures”¹⁵, e.g. those that support soil-protective operations (8.8% of the budget spent in 2007-2008¹⁶). It is expected that 21.4% of utilised agricultural area will be covered by measures targeting soil quality in the period 2007-2013, as compared to 30.7% dedicated to avoiding marginalisation and 33.0% to protect biodiversity¹⁷. Therefore, there is scope for increasing the uptake of soil protective/ dark green measures and extent of surface area covered.¹⁸

The stronger use of farm advisory services to extend the application of sustainable farming practices is also a way to increase the extent of sustainable managed areas.

In addition, the new rural development proposal strengthens the objectives of sustainable management of natural resources and climate mitigation and adaptation through improved soil management and enhanced carbon sequestration in agriculture and forestry, amongst other means¹⁹.

However, with regard to the first and second pillar, member states have a broad margin of implementation flexibility – such as discretion in determining national GAEC obligations for farmers provided that the EU framework is respected²⁰. Hence, national implementation plays a major role too.

Hybrid and non-governmental approaches

International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD)

Objectives and mechanisms: The IAASTD was a three-year collaborative effort (2005–2007) that internationally assessed the impacts of agricultural knowledge, science and technology (AKST) on:

- the reduction of hunger and poverty
- improvement of rural livelihoods and human health and
- equitable, socially, environmentally and economically sustainable development.

The project developed out of a consultative process involving 900 participants and 110 countries. The IAASTD was launched as an intergovernmental process under the co-sponsorship of the FAO, GEF, UNDP, UNESCO, the World Bank and WHO.

The outputs from this multidisciplinary and twice-peer-reviewed assessment are a global report (IAASTD 2008) and five sub-global reports, published and formally accepted by 58 countries in 2008.

¹⁵ i.e. those programs that synergistically support different aspects of sustainability

¹⁶ Rural Development Information System-Indicator Database Information Monitoring.

¹⁷ COM(2011) 450.

¹⁸ COM/2012/046 final

¹⁹ COM/2012/046 final cited in COM/2012/046 final

²⁰ http://ec.europa.eu/environment/soil/study1_en.htm as cited in COM/2012/046 final

The IAASTD has been called “the IPCC of agriculture” and contains the most complete and, due to its multistakeholder process, potentially the most authoritative set of options for addressing hunger and poverty through equitable and sustainable development to date.

Relevance for sustainable land use: The IAASTD assessment integrates scientific information on a range of topics that are critically interlinked: agriculture, poverty, hunger, human health, natural resources, environment, development and innovation. The sustainable use of land is therefore not a topic that is specifically addressed but it is tackled in an integrated manner.

The findings of the IAASTD are however relevant for sustainable land use as it suggests that rather than pursuing industrial farming models, agroecological methods are the most viable means to enhance global food security and achieve sustainability targets.

In general, the report:

- warns that continuing on the path of high-input industrial agriculture will fail to meet the world’s food security goals,
- states that the use of genetically modified crops is not a meaningful solution to the complex situation of world hunger and
- recommends practical scientific research based on traditional seed varieties and local farming practices adapted to the local ecology.

However, the IAASTD does “not advocate specific policies or practices” (IAASTD 2008). Rather, it “assesses the major issues facing agricultural knowledge, science and technology and points towards a range of AKST options for action that meet development and sustainability goals” (ibid). It is “policy relevant, but not policy prescriptive” (ibid). The uptake and hence impact of the IAASTD findings in policy making is unclear. For example in 2009, ninety representatives from different NGOs, universities and civil society organizations complained in an open letter²¹ to the FAO about the lack of uptake of results, while others acknowledge that the IAASTD process already influenced policy²². Moreover, it has been criticized that the government representatives who signed the agreement did not launch a national-level equivalent of the process to implement the findings in their policies (Lenne, J. and Wood, D. 2011). Its impact for sustainable land use might therefore be potentially high provided that its findings will be implemented in local, national and international policies.

Private standards and certification systems

Objectives and mechanisms: Standards and systems that aim to certify ecological and social sustainability have been in existence for decades and have been developed for a wide array of goods, services and sectors including, most notably, agriculture.

Agricultural products may be produced according to one of the many organic standards schemes and certified accordingly, or in line with (non-organic) certification schemes for certain

²¹ Stabinsky et al (2009): Doreen Stabinsky and 90 co-signers in an open letter to the FAO, September 22, 2009, www.e-alliance.ch/fileadmin/user.../IAASTD_letter_to_FAO_01.doc

²² e.g. Hans Herren, Co-Chair of the IAASTD acknowledging that the IAASTD process helped to build momentum in Africa for a fundamentally different approach to food security, leading to the decision of the African Union to promote ecological agriculture. See Blog of Hans Herren “A look at the IAASTD”, posted March 9, 2012, <http://blog.ecoagriculture.org/2012/03/09/iaastd/>

commodities such as the Roundtable for Responsible Soy (RTRS), Better Cotton Initiative (BCI), UTZ Certified (coffee, cocoa and tea), or other standards such those from the Sustainable Agriculture Network. Some of these are members of the International Social and Environmental Accreditation and Labelling (ISEAL) Alliance²³, a network to define good practice for developing and increasing the impact of sustainability standards. Summing up, there are numerous certification schemes and they have proliferated in recent decades. As of October 2012, the Ecolabel Index, listed 432 labels in 246 countries and 25 industrial sectors – these labels included agricultural certification schemes but were not limited to them.

In the following, we will address standards and certification schemes in general (including examples) rather than covering all individual standards and certification schemes of relevance. For the specific relevance of → organic farming standards please see the extra chapter. The objective of standards and certification systems generally is to improve the sustainability of production and consumption through market-based incentives for compliance with socially and environmentally preferable practices. The core of any standard system is the standard itself — a defined set of social, environmental, and/or economic principles, criteria and indicators. Certification then provides assurance to customers that the certified products or services meet the criteria.

Relevance for sustainable land use: Standards and certification systems for agriculture are in most cases still covering niche markets, although with growing market shares and land use relevance: For example, 17% of the coffee produced globally and 9% of the world's productive forests are certified (Steering Committee 2012), while about 1% of agricultural production is organic (IFOAM 2012). Many of the standards that aim towards a more sustainable agriculture include criteria that target qualitative improvement of agricultural land use²⁴ but do not tackle land requirements on a quantitative scale.

In the ideal case certification schemes can create a high demand for standard compliant products so that the underlying standards become a de facto condition for market access. However, a review of available research highlights that there is little empirical evidence regarding whether large scale change has occurred, how durable the impacts (including yields) are, and whether they can be attributed to certification (Steering Committee 2012). At the same time, these challenges of impact measurement are not unique to standards and certification alone and also apply to policy instruments and any other interventions. In fact the review concludes that rather than the direct impacts, indirect impacts such as learning, demonstration and spill-over effects (e.g. raising awareness and creating demand), enhancing institutional capacity²⁵ and providing policy recommendations²⁶ are the main positive impacts of standards and certification systems. However, the impact of these indirect impacts on land are hard to quantify. Impacts also critically

²³ <http://www.isealalliance.org/our-members/full-membership>

²⁴ For example the Standard of the Sustainable Agriculture Network (SAN) follows 10 principles. Among them are the following with the most obvious land dimension: 2. Ecosystem Conservation (including requirements on connectivity and buffer zones), number 7. Community Relations (including a criterion on legitimate right to land use and tenure) and 9. Soil Management and Conservation (including the requirement that “Certified farms only establish new production areas on land that is suitable for agriculture and the new crops, and never by cutting forests”). See SAN (2010).

²⁵ E.g. supply chain tracking mechanisms developed for certified products can enhance the capacity of other businesses

²⁶ e.g. certifiers of forest products have offered their expertise in compliance verification and chain-of-custody tracking to help enforce US and EU bans on the import of illegally harvested timber, see Steering Committee (2012)

depend on the quality to which standards are set to sufficiently address the problem or are compromised too much towards business interest lead to “greenwashing”.

Analyses have also shown that certification cannot affect the “bottom of the market”, i.e. producers that operate farthest from the standard, and that in many situations only governments are capable of setting minimum standards. In the words of the Citations from Steering Committee:

“Certification is thus best seen as one instrument in a portfolio of tools: It is effective in bringing about rapid changes in production practices when market-leading firms use it to verify and enforce contractual requirements for better practice and performance by their suppliers. It also is effective in establishing standards for practices in instances in which governments are unwilling or unable to act. It is useful as a complement to regulatory policies, to fill gaps and to introduce mechanisms for adapting to rapid technological change”²⁷. Moreover, those parts of the markets “in which certification is less attractive, less well understood or unimportant to consumers regulatory mandates and incentives might be better situated”(ibid) to influence markets. Given the little attention that “land” (at least currently) receives it may be an issue that is indeed inappropriate to address in a visible label.²⁸

Organic Farming Standards

Objectives and mechanisms: According to the International Federation of Organic Agriculture Movements (IFOAM), an international umbrella organization, organic agriculture is a “production system that sustains the health of soils, ecosystems and people. It relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects. Organic agriculture combines tradition, innovation and science to benefit the shared environment and promote fair relationships and a good quality of life for all involved.”

At the international level, organic standards are set by the FAO/WHO Codex Alimentarius Commission²⁹, which has produced international “Guidelines for Production, Processing, Labeling and Marketing of Organically Produced Foods”. The private sector’s equivalent to the Codex Alimentarius guidelines is the “International Basic Standards for Organic Production and Processing” by IFOAM. Codex Alimentarius and IFOAM guidelines include accepted management principles for the production of plants, livestock, bees and associated products.

The Codex Alimentarius and IFOAM guidelines are minimum standards for organic agriculture, intended to guide governments and private certification bodies in standard setting. As such, they can be considered as the standards for standards. Governments can use these texts to develop national organic agriculture programs, which are often more detailed as they respond to specific country needs³⁰.

²⁷ Citations from Steering Committee (2012)

²⁸ Citations from Steering Committee (2012)

²⁹ the inter-governmental body that sets standards for all foods

³⁰ See overview at the IFOAMs website about organic standards <http://www.ifoam.org/sub/faq.html> and Codex Alimentarius information website: <http://www.codexalimentarius.org/about-codex/en/>

Most national standards are specified in regulations that are legally binding. In the EU, rules for organic farming are laid down in the Council Regulation (EC) No 967/2008³¹ and in a part of the Common Agricultural Policy of the EU (see separate chapter within → agriculture) because of pillar 1 direct payments and pillar 2 measures for rural development³². In some countries (e.g. Germany), additional (voluntary) certification programs (e.g. Demeter, Bioland etc.) also produce their own standards, which can be more stringent than the EU regulation.

Relevance for sustainable land use: According to Willer and Kilcher (2012), the share of total agricultural land under certified organic agriculture was 0.9% (equal to 37 million hectares). Furthermore, non-agricultural organic areas (mainly wild collections) count for another 43 million hectares.

Organic farming offers many advantages compared to conventional farming: there is no use of synthetic fertilizer or pesticides; by favoring mixed farming and enriched crop rotations, organic farming often displays greater habitat diversity and supports a greater range of wildlife; soils are in general less compacted and more stable, thereby storing more carbon, being less prone to erosion and capable of better water retention; and by favoring on-site production, use and recycling nutrient cycles are relatively closed.

However, while the environmental advantages of organic farming are widely acknowledged, the land efficiency of organic agriculture is controversially discussed. Given the partly lower yields compared to conventional farming, at least in the first years, the argument is that a world dependent on organic farming would have to farm more land than it does today. For example, scientists at the Research Institute for Organic Agriculture in Switzerland (FiBL), found out that organic farms were roughly 20 percent less productive than conventional plots over a 21-year period (Mäder P, et al. 2002)³³.

However, many studies from around the world have shown that organic farms can produce about as much as conventional farms and in some cases even more. For example after more than 20 years of experimentation researchers from the Rodale Institute from Pennsylvania have concluded that organic and conventional maize and soybean grown side by side produced roughly the same yields (Lotter et al 2003), and during drought years the yields were commonly 20-40 percent higher (in some cases 100%) than those in conventional plots.

Also, studies in developing countries have shown that organic farming can achieve better results than conventional farming; In a 2006 study from the University of Essex, researchers looked at over 200 agricultural projects in the developing world that converted to organic and ecological approaches (Pretty, J., and R. Hine 2006)³⁴. They found that for all the projects, involving 9 million farms on nearly 30 million hectares, yields increased an average of 93 percent. In one of the

³¹ Council Regulation (EC) No 967/2008 of 29 September 2008 amending Regulation (EC) No 834/2007 on organic production and labelling of organic products. More detailed rules on organic production, processing, distribution, labelling and controls have been adopted in the Commission Regulation (EC) No 889/2008 of 5 September 2008 laying down detailed rules for the implementation of Council Regulation (EC) No 834/2007 on organic production and labelling of organic products with regard to organic production, labelling and control

³² The European Action Plan for Organic Food and Farming recommends full use of the CAP's rural development programs for the support of organic farming.

³³ Although input of fertilizer and energy was reduced by 34 to 53% and pesticide input by 97% (Mäder, P, et al 2002).

³⁴ for more studies see summary in Halweil, B. (2006)

studies cited from the Maikaal District in central India involving 1,000 farmers cultivating 3,200 hectares, the study authors found that average yields for cotton, wheat, chili, and soy were as much as 20 percent higher on the organic farms than on nearby conventionally managed ones. Farmers and agricultural scientists attributed the higher yields in this dry region to the emphasis on cover crops, compost, manure, and other practices that increased organic matter in the soils.

This trend indicates that an increase in the total area organically farmed seems recommendable with regard to sustainable land use, given that organic practices are ecologically favorable and in many cases allow long term optimized agricultural yields. However, increase in organic farming largely depends on increased consumer demand and its higher price certainly is a barrier. Whilst some of these costs are due to certification costs and higher labour demands, organic produce is also more expensive than conventional products because the price of conventional products does not sufficiently internalize negative environmental effects (see → chapter public goods and the internalization of externalities). Moreover, the policy framework and incentives are often not appropriate to support organic farming. For example, the level of support for organic farming compared to conventional agriculture varies considerably³⁵. For the EU, the CAP reform plays a considerable role to better support organic agriculture in the period after 2013. The Report to the Council and the European Parliament on the application of Regulation (EC) No 834/2007 also offers an opportunity for an exchange on the future of organic farming. The external evaluation of the regulatory framework on organic farming, whose results should be available by mid-2013, will further contribute to that debate (Cioloş 2012).

2.1.2 Forestry

(Lead author: Franziska Wolff)

Overview

In 2005, forest covered ca. 30% of the world's land surface, accounting for a total forest area of 3.69 billion hectares (FAO and JRC 2012: 4). Forests are distributed unevenly over the globe, with 44% of the world's forests in the tropical climatic domain, 34% in the boreal domain, 13% in temperate and 9% subtropical domains (ibid). In regional terms, 29% of forests are in Europe, 22% in South America, 19% in North and Central America, 14% in Asia, 13% in Africa, and 3% in Oceania (ibid: 5). Together, these different forest types offer diverse habitats for plants, animals and micro-organisms, and provide a habitat for a large percentage of the world's terrestrial species (SCBD 2004: 1). Forest biological diversity also provides a wide array of goods and services for human populations, ranging from timber and non-timber products to purifying, recycling and storing water, mitigating climate change, and providing livelihoods and jobs for hundreds of millions of

³⁵ For example in Sweden, payments for arable land in 2009 counted up to €555/ha, while in England it is just €66/ha. In some Member States, intensively managed conventional agriculture receives more support than organic. In the Madrid autonomous region, the substitution of irrigated arable crops with irrigated tree crops (often intensively managed olive groves) receive an annual Pillar 2 payment of almost €900/ha while irrigated organic arable crops receive less than €250/ha. See Factsheet "The CAP & Organic Agriculture" Birdlife, IFOAM EU Group et al, no date (likely: 2011), http://www.ifoam.org/about_ifoam/around_world/eu_group-new/workareas/policy/php/factsheets/FS6-theCAPandOrganicAgriculture-0614.pdf

people worldwide (SCBD 2004: 1-2). Even though forests are acknowledged as having a wide array of fundamental function for human beings, deforestation continues at an unsustainable rate. Between 1990 and 2005, deforestation is estimated to have totaled at 14.2 million hectares per year (between 1990 and 2000), respectively at 15.2 million hectares per year (between 2000 and 2005); it was partially compensated by afforestation and reforestation (FAO and JRC 2012: 4). From a regional perspective, the highest rate of forest conversion to other land uses between 1990 and 2005 occurred in South America, followed by Africa; its major driver is agriculture (Foley et al. 2011). Asia was the only region with net gains in forest area (FAO and JRC 2012: 4).

The following screening covers a range of international and regional as well as non-governmental policies pertaining to the (sustainable) management of forests. Policies governing the management and conservation of forests are also included in → biodiversity; e.g. the CBD's Work Program on Forests, → chapter climate; e.g. REDD+. We did not include a range of policies³⁶ or organizations/ platforms/ partnerships³⁷ not deemed to have a major impact.

In terms of content, the (often multi-purpose, overlapping) policies covered by the screening can be grouped into the following categories:

- Policies regulating the timber trade (e.g. ITTA)
- Policies aiming at increased forest productivity (e.g., EU Forestry Strategy, ASEAN Strategic Plan of Action on Forestry)
- Criteria/indicators for and policies promoting sustainable forms of forest management (e.g. ITTO C&I, Montréal Process C&I, UNCED Forest Principles, NBLI, EU Forestry Strategy, SADC Protocol on Forestry, FSC etc.)
- Legality assurance schemes (FLEG Initiative, EU FLEGT Action Plan, EU Timber Regulation, Draft ASEAN Timber Legality Assurance Scheme)
- Funding and capacity building mechanisms for forest management at national level (e.g., GEF incentive mechanism for forests, PROFOR, Growing Forest Partnership)
- Voluntary certification schemes for sustainable forest management
- Partnerships and networks

The screening shows that while there exists a multitude of forestry policies at international and regional levels there is not yet a legally binding global convention. There were, however, efforts to create such a Convention but after years of negotiation, only the "Non-Legally Binding Instrument on all Types of Forests" was agreed upon (NLBI, 2007). An international binding convention on forests is sometimes referred to as "the missing Rio convention" (UN 1997). As a consequence of this lack of overarching global mechanisms, efforts to facilitate the implementation of sustainable forestry through national programs might actually be particularly relevant.

³⁶ E.g. the Tehran Declaration and Tehran Process on low forest cover countries, the UN/ECE Forestry and timber program, policies of the Regional Forestry Commissions under the FAO etc.

³⁷ E.g., the Growing Forest Partnership, the Asia Forest Partnership, the Asia-Pacific Network for Sustainable Forest Management and Rehabilitation, the African Timber Organization, the African Forest Forum, the Congo Basin Forest Partnership, the Conference on Humid and Dense Forest Ecosystems of Central African Rainforests, the International Model Forest Network, the IUCN Forest Conservation Program, or the International Union of Forest Research Organizations.

Considering that additional policies with relevance to forests are covered outside this chapter, the forest regime is characterized by complexity, partly by institutional competition and by a lack of integration. A significant part of the policies analyzed can be expected to have a positive relevance for sustainable land use. However, none of the current policies have an explicit focus on countering deforestation and forest degradation (see, however, → REDD+) and, at least at international level, none of the listed policies are legally binding or provide significant incentives to protect forests' non-productive functions. The concept of Sustainable Forest Management (SFM) is widespread in many of the policies but its relative openness lends it to a very varied interpretation.

International governmental approaches

International Tropical Timber Agreement (ITTA, 1983/ 1994/ 2006)

Objectives and mechanisms: The International Tropical Timber Organization (ITTO) is an intergovernmental organization promoting conservation and sustainable management as well as the use and trade of tropical forest resources worldwide. The organization was established under the International Tropical Timber Agreement (ITTA), which was sponsored by the United Nations Conference on Trade and Development and ratified in 1985. The ITTO develops internationally agreed policy documents (among others through "ITTO Action Plans") to promote sustainable forest management (SFM) and forest conservation and assists tropical member countries to adapt such policies to local circumstances and to implement them in the field through projects. In addition, the ITTO collects analyses and disseminates data on the production and trade of tropical timber and funds activities aimed at developing industries at both community and industrial scales (Art. 1(h)).³⁸ ITTO's mandate was renewed by the revised ITTA in 1994 and again by the ITTA in 2006. The 1994 agreement established a (non-binding) goal to achieve that all exports of tropical timber products originate from "sustainably managed sources" by 2000 (Art. 1(d) ITTA-1994; also named "ITTO Objective 2000"). It also created the Bali Partnership Fund to assist timber producing countries in achieving this objective. Text was added to the effect that timber prices should "reflect the costs of sustainable forest management" (Art. 1(e)). Attempts to renegotiate ITTA-1994 as a global (rather than tropical) timber agreement were thwarted by timber consuming countries. ITTA 2006 did not add much with regard to the sustainable management of forests. ITTA has no compliance mechanism or sanctions at its disposal.

Relevance for sustainable land use: ITTO's member-countries host about 80% of the world's tropical forests and 90% of the global tropical timber trade. Assessment of the 1983 ITTA varies, from the perception among environmentalists that the agreement failed its mission to promote trade based on sustainably managed timber resources (Lyke and Fletcher 1992) to the assessment that ITTA has contributed to a decrease of deforestation in producing member countries (Chirchi 2004). Proposals by environmental NGOs to introduce forest certification and labelling as a compliance mechanism to ITTA-1983 were at the time rejected by tropical timber exporting countries (Gale 1998; FoE UK 2012). With regard to ITTA-1994, the ambitious "ITTO Objective

³⁸ All projects are funded by voluntary contributions, mostly from consumer member countries (Art. 20(c)), in particular Japan, Switzerland, United States, Norway, the Netherlands and the European Union (ITTO 2011).

2000” was not met by any producer country, though improvements were made and deforestation rates in member countries slowed down (Chirchi 2004). Of the eight member countries evaluated by Chirchi (2004), Malaysia, was found to be the most compliant in improving the environmental situation regarding timber. With ITTA-2006 having entered into force in December 2011, there is not yet much information available on its performance.

Criteria and indicators for sustainable forest management of the International Tropical Timber Organization (ITTO) (1990s)

Objectives and mechanisms: The ITTO C&I, developed during the 1990s, are tools used to define, assess and monitor progress towards sustainable forest management. They list the main factors that influence the health and productivity of a forest ('criteria') and suggest indicators that, if measured over time, will help managers assess the extent to which management practices are consistent with the sustainability of forests and of forest-dependent communities.

Relevance for sustainable land use: ITTO pioneered the development of criteria and indicators (C&I) for the sustainable management of natural tropical forests in the early 1990s and has continued to provide leadership in their review and improvement. The organization conducts national-level workshops in tropical member countries (representing some 80% of the world’s tropical forests) to train forest concessionaires, industry workers and government officials in applying the C&I, both nationally and at the forest management unit level.

Tropical Forestry Action Plan (TFAP) (1985)

Objectives and mechanisms: In 1985, the Tropical Forestry Action Plan (TFAP) was set up by FAO (as TFAP coordinator), UNDP, the World Bank and the World Resources Institute representing the first large-scale initiative to counter tropical deforestation. Its objective was to reduce deforestation by stimulating donor financing and coordination with the aim of raising 8 billion USD by 1991. A major component of the plan was to provide support to tropical countries in establishing sustainable management plans for their forests. The FAP had five priority areas: forestry and land use, forestry-based industrial development, fuelwood and energy, conservation of tropical forest ecosystems, and institutions (FAO 1986). TFAP involved over 70 tropical countries that covered ca. 85% of the world’s rainforests (WRM 1994). Following critical reviews by its sponsor organization, the Plan was restructured in 1991 and later abandoned.

Relevance for sustainable land use: TFAP is reported not to have raised as much aid as envisaged and not to have reduced deforestation rates (Sizer 1994). Part of its failure is attributed to its exclusive focus on the forestry sector itself which failed to adequately address the non-sectoral causes of deforestation (such as agriculture). It is also criticized for not having sufficiently involved stakeholders and to have neglected national capacity-building. The TFAP was suspected to have created perverse effects as a number of national plans promoted increases in logging in primary forests (WRM 1994) and to have funded commercial plantations through TFAP loans rather than the restoration of forest ecosystems (WSM s.a.).

UNCED Forest Principles (1992)

Objectives and mechanisms: The Forest Principles (FP) is the informal name given to the "Non-Legally Binding Authoritative Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of All Types of Forests". It was negotiated under the

auspices of the → United Nations Conference on Environment and Development (UNCED) in 1992, informally known as the Rio Earth Summit, at which 172 governments participated. The principles and elements adopted in this statement reflect the first global consensus on the sustainability of forest management and acted as a stepping stone for the later (2007) adopted → “Non-legally Binding Instrument on all types of forests” (NLBI) (see below). The FP aim is to improve reforestation, afforestation and forest conservation efforts in all geographical regions (Art. 8(a), FP), but most notably in developed countries. Article 9 states that the international community should support the efforts of developing countries to strengthen the sustainable development of their forest resources (Art. 9(a) FP).³⁹ Hence, the document constitutes a compromise between developing nations in the Group of 77 and developed nations. Signatories are also expected to develop economic and social alternatives for forestry (Art. 9(b) FP).

Relevance for sustainable land use: Due to the large number of participating countries, and the document’s coverage of all types of forests in all geographical regions, the UNCED Forest Principles have a potentially significant quantitative relevance for sustainable land use. The real world impact may be smaller, due to its non-legally binding nature. While impact is difficult to gauge on a global level, progress has been documented on the regional level. For example, three eastern African countries have engaged in various processes to implement these principles as if they were binding, instituting legal, policy and institutional reforms that reflect the UNCED commitments in general and the FP in particular (Tumushabe 2002). According to Schneider (2006), adequate progress in the FP’s implementation was still lacking in 2006; the Principles were superseded by the NLBI in 2007 (see below).

Montréal Process criteria and indicators for forest conservation and sustainable management (Santiago Declaration) (1993)

Objectives and mechanisms: The Montréal Process, also known as the working group on criteria and indicators for the conservation and sustainable management of temperate and boreal forests, was formed at a 1993 UN conference in Montréal, Canada. The Montréal criteria and indicators are a voluntary tool and a framework for data collection and reporting, with the aim to maintain a broad and specified range of forest values.⁴⁰

Relevance for sustainable land use: The twelve member countries⁴¹ account for 90% of the world's temperate and boreal forests (as well as areas of tropical forests) and 60% of all forests of the world. However, in qualitative terms, due to the low degree of compulsion and the voluntary membership, the relevance for sustainable land use is limited. The flexible approach of the Montréal Process allows countries to adapt the indicators to take into account varying forest

³⁹ However, developed nations resisted demands by developing nations for further foreign aid in order to compensate for missed profits as a result of the establishment of forest reserves.

⁴⁰ The following criteria (C), accompanied by indicators (I) for monitoring, were agreed upon in the working group’s ‘Santiago Declaration’: conservation of biological diversity (C1), maintenance of productive capacity of forest ecosystems (C2), maintenance of forest ecosystem health and vitality (C3), conservation and maintenance of soil and water resources (C4), maintenance of forest contribution to global carbon cycles (C5), maintenance and enhancement of long-term multiple socio- economic benefits to meet the needs of societies (C6), legal, policy and institutional framework (C7).

⁴¹ Argentina, Australia, Canada, Chile, China, Japan, Republic of Korea, Mexico, New Zealand, Russian Federation, United States of America and Uruguay

situations (e.g., DAFF 2009). This, however, makes it difficult to assess the impact of the Montréal Process which can only be as effective as its members are committed.

Program on Forests (PROFOR) (1997)

Objectives and mechanisms: PROFOR is a (governmental) multidonor trust fund program founded in 1997 and housed at the World Bank (initially at the United Nations Development Program). The initiative supports national forest programs (NFPs) or other national forest policy processes around the world. It also works to implement internationally agreed priorities and objectives related to forests, including the proposals for action of the Intergovernmental Panel on Forests and the International Forum on Forests, as well as broader sustainable development agendas such as the → Millennium Development Goals (MDGs). In addition to providing financial and implementation support, PROFOR develops and distributes analytical work and knowledge in the form of lessons learnt and new tools and approaches on key issues within the forest sector, such as forests-poverty linkages.

Relevance for sustainable land use: In the last ten years, PROFOR has undertaken some 100 activities to improve knowledge and capacities, forest policy dialogue and partnerships. Disbursements and outstanding commitments totalled at \$20.6 million (2002-2011).⁴² Some activities can be assumed to have achieved tangible local impacts, such as improving the way in which timber is tracked (Liberia chain-of-custody system) and logging permits are issued (Guatemala mahogany conversion tables), or identifying areas of forest degradation (Ghana landscape restoration map).

G-8 Action Program on Forests ('Birmingham Program') (1998-2000)

Objectives and mechanisms: Between 1998 and 2000, the G8 Action Program on Forests served to address five issues of particular importance in achieving sustainable forest management (SFM) through sharing of experience and support of partner countries: monitoring and assessment, national forest programs, protected areas, the private sector and illegal logging. While the Action Program has formally ended, G8 forest experts continue to meet informally to advance forest issues. This initiative sought to complement the extensive range of actions being undertaken by the international community at that time and has evolved in tandem with various regional and international processes to which it lent its authority and enthusiasm.

Relevance for sustainable land use: The G8 Action Program on Forests has increased the political commitment to forests and advanced individual and collaborative action towards SFM through national forest programs, which are now well advanced in G8 countries and can be assumed to work in favour of sustainable land use. In particular, improvement in the ability to monitor and assess trends in forest conditions and forest management has resulted from the G8 Action Program due to the development and implementation of criteria and indicators capable of measuring progress toward sustainable forest management (G8 Final Report 2000). However, at the same time some G8 members undermine forest protection with subsidy programs that accelerate forest loss (Sizer 2000).

⁴² Own calculation, based on PROFOR (2012: 24).

Regional Forest Law Enforcement and Governance (FLEG) Initiatives (2001)

Objectives and mechanisms: As of 2001, timber producer and consumer countries together with the World Bank hosted a series of regional ministerial conferences that triggered forest law enforcement and governance processes in Europe and North Asia, East Asia, and Africa. These conferences resulted in commitments from both producer, consumer and donor governments – in collaboration with other stakeholders – to increase efforts to combat illegal logging as well as the associated trade and corruption in the forest sector (World Bank 2012).

Relevance for sustainable land use: Illegal logging is one of the major driving forces of deforestation. The regional FLEG initiatives therefore – depending on their operationalization and implementation – can contribute significantly to reducing deforestation and can play an important role as a dialogue platform for multi-stakeholder solutions. We discuss the empirical performance of this governance instrument using the example of the → EU's FLEGT Action Plan (see regional policy).

National Forest Policy Facility/ National Forest Program Facility (2002)

Objectives and mechanisms: The National Forest Policy Facility (NFP Facility) was created in 2002 by FAO and the World Bank as a response to intergovernmental dialogue that recognizes the essential role of national forest programs (NFPs) in addressing forestry issues. NFP Facility is hosted by FAO and financed through a multi-donor trust fund. As of 2012, it supports (through a competitive grant process) seventy countries and organizations (including NGOs) in developing and implementing NFPs that effectively address national priorities and at the same time reflect internationally agreed principles, such as the IPF's and IFF's proposals for action.

Relevance for sustainable land use: With over 70 participating countries the NFP Facility covers a good portion of the world's forests. Its impact on sustainable land use is hard to quantify, as it only takes a supporting role in implementing NFPs through enabling stakeholder participation. However, efforts to facilitate the implementation of sustainable forestry through national programs might actually be particularly relevant due to the lack of any legally binding international or global legislation on forestry, indicating that the NFP Facility may have a relevant qualitative impact.

World Bank's Forests Strategy and Operational Policy (2002)

Objectives & mechanisms: The World Bank's Forests Strategy and Operational Policy (OP 4.36, cf. WB 2002)⁴³, approved by the Executive Board of Directors in October 2002, are based on the three equally important pillars of economic development, poverty reduction and protection of global forest values. The Bank's operational policies are to ensure that Bank operations with potential impact on forest take specific effects and outcomes in consideration. The Bank's 2002 Operational Policy on Forests applies to all Bank investment operations that potentially impact (all types of) forests, whether or not they are specific forestry sector investments. It encourages the development of private sector markets and marketing arrangements for ecosystem goods and

⁴³ www.worldbank.org/opmanual

services provided by forests. Targeted conservation of critical natural habitats replaces the outright prohibition of Bank financing of commercial logging operations. Furthermore, the policy supports investment to improve forest management outside critical forest areas.

Land-use relevance: The World Bank Group is the largest international financier for forests, and the Forests Strategy and Operational Policy affected investment in 289 projects in 75 countries valued at US\$ 2.6 billion between July 2002 and June 2011 (IEG, 2013, p. x). These projects include 100 protected areas projects; some 10 payment schemes for forest ecosystem services (PES); funding for participatory forest management and sustainable land management; support for legal and institutional reforms of forest management; investment in timber harvesting and the forest product sector; insurance for forest-related projects; and further activities – including forest carbon projects (A/R, REDD, SFM etc.) – within the World Bank’s partnerships in the forest sector.

A 2013 evaluation by the Bank’s Independent Evaluation Group (IEG) concludes that the strategy’s goals, in particular with regard to poverty reduction, have not been met (ibid). While there are success cases, in particular where projects were designed as participatory projects, a number of evaluated operations are flawed.⁴⁴ While the Bank endorsed the IEG’s recommendations for better evaluation indicators and a greater focus on projects promoting participatory management by local communities, they rejected to carry out a comprehensive review of the outcomes associated with World Bank support for industrial timber concession reforms in tropical moist forest countries, as called for by the IEG. Already the Bank’s 1991 Forestry Strategy and its 1993 Operational Policy had been evaluated by the IEG as unsatisfactory, and as “irrelevant” in slowing deforestation (WB 2002).

Non-legally Binding Instrument on all types of forests (NLBI) (2007)

Objectives and mechanisms: The Non-Legally Binding Instrument on all Types of Forests (NLBI)⁴⁵, negotiated under the auspices of the United Nations Forum on Forests (UNFF) and adopted in 2007, is the major output of a number of contested UN policy processes on forests. These started with the Rio Conference on Environment and Development (UNCED, 1992) and were subsequently pursued at the Intergovernmental Panel on Forests (IPF), the Intergovernmental Forum on Forests (IFF) and the UNFF, all of which failed to result in a legally binding forest convention.

The NLBI builds upon the earlier (and likewise non-legally binding) → “Forest Principles” adopted at the Rio Conference. It aims to strengthen political commitment and action to effectively implement sustainable forest management and to achieve the previously agreed Global Objectives on forests; to enhance the contribution of forests to the achievement of the internationally agreed development goals; and to provide a framework for national action and international cooperation (Art. 1 NLBI). At its core, the NLBI defines “sustainable forest management” (SFM) as a “dynamic and evolving concept” which aims to “maintain and enhance the economic, social and

⁴⁴ For instance, protected area projects have largely missed their livelihood aims due to lacking meaningful integration of communities; participatory forest management projects were too highly regulated to successfully reach out to the informal forestry sector in many poorer countries; sustainable land management projects were technology-focused and neglected land rights and continued participation of local stakeholders; and only a minor share of investment activities achieved certification as planned or provided verified information on sustainable sourcing (ibid).

⁴⁵ Resolution adopted by the General Assembly, A/RES/62/98, 74th plenary meeting, 17 December 2007

environmental values of all types of forests, for the benefit of present and future generations” (Art. 4 NLBI). The management process itself is not specified, but seven thematic elements are : (i) extent of forest resources; (ii) forest biological diversity; (iii) forest health and vitality; (iv) productive functions of forest resources; (v) protective functions of forest resources; (vi) socio-economic functions of forests; and (vii) legal, policy and institutional framework. (Art. 6(b)). In the NLBI, the UNFF member states reaffirm the Global Objectives and agree to achieve progress towards their achievement by 2015 by: reversing the loss of forest cover worldwide through sustainable forest management (Global Objective 1); enhancing forest-based economic, social and environmental benefits (Global Objective 2); increasing significantly the area of protected forests worldwide and other areas of sustainably managed forests, as well as the proportion of forest products from sustainably managed forests (Global Objective 3); increasing official development assistance for sustainable forest management that has been in decline for decades (Global Objective 4). Procedurally, the main mechanism of the NLBI is the development and implementation national forest programs, which are to take into account proposals for action of the IPF, IFF and UNFF (Art. 6(a) NLBI). There was no agreement on quantifiable and time-bound targets in this Article (Kunzmann 2008). The NLBI covers all forests on a global level (and partly trees outside forests), in addition tropical forests or forests within protected areas.

Relevance for sustainable land use: Due to the universal membership of the UNFF (as a subsidiary body of the UN’s Economic and Social Committee) and the NLBI’s coverage of all types of forests, the NLBI has a potentially great quantitative relevance for sustainable land use. A caveat, however, is that due to its soft law nature the pressure to actually implement the recommended national and international measures remains limited. In qualitative terms, the vagueness of the SMF concept makes it difficult to assess e.g. biodiversity implications. Ideally, “strengthen[ing] forest law enforcement and promot[ing] good governance” (Art. 6(n) NLBI) as one of many recommended actions will likely result in biodiversity co-benefits. However, the lack of clearly defined criteria and indicators allows defining practices such as reduced impact logging even in previously intact primary forests as a form of SFM, although they are likely to cause biodiversity loss and to reduce resilience (SCBD 2009).

In terms of compliance, a UNFF summary (based on 16 voluntary national reports) concludes “that many countries, building on existing efforts, have introduced or strengthened policy, institutional and normative measures and other actions that support the implementation of the forest instrument and its four global objectives, while others are in the process of doing so. (...) Nevertheless, developing countries in particular identified challenges encountered, especially resource constraints” (UNFF 2010). No evidence on impact is available.

Options that have been discussed to strengthen the NLBI’s potential for sustainability impact include, among others, an agreement on criteria and indicators for SFM; a clearer commitment towards good governance and against illegal practices in logging and trade; quantifiable and time-bound targets in national forest programs to assess progress; a boosting and merger of the fragmented sources of financing; as well as a legally binding nature. However, these proposals failed already in the NLBI’s negotiations.

FAO Strategy for Forests and Forestry (2009)

Objectives and mechanisms: The FAO Committee on Forestry adopted its Strategy for Forests and Forestry at its 19th session (COFO-19) in 2009. The strategy’s core functions are: generating,

disseminating and applying information and knowledge; leading the development of voluntary guidelines; supporting the development of national legal instruments and promoting their implementation; providing technical support to promote technology transfer, catalyse change and build effective and sustainable institutional capacity for SFM. The strategy adds more detail to the policy framework provided in the → NLBI on all types of forests (see above). In particular, this strategy assists member countries with implementing the global policy framework to support the delivery of sustainable forest management.

Relevance for sustainable land use: FAO with its wide membership basis of 191 countries contributes to sustainable land use by providing policy advice, capacity development and technical assistance on SFM. COFO-19 stressed the need for sufficient financing. With the first phase of the strategy ending in 2013, it is too early to assess its outcomes. The FAO Medium-Term Plan that is developed for this time period will include indicators for these outcomes.

Regional governmental approaches

Forest Europe (Ministerial Conference on the Protection of Forests in Europe)

Objectives and mechanisms: Forest Europe, or the Ministerial Conference on the Protection of Forests in Europe (MCPFE), is a high level political initiative towards the protection and sustainable management of forests in Europe. Forty-six European countries, the European Commission as well as international organizations take part in this voluntary, collaborative process, which has shaped the pan-European dialogue on forests for over twenty years now. Since 1990, nineteen resolutions have been adopted at five ministerial conferences, which contributed to defining the concept of SFM within Europe, developing criteria and indicators for SFM as well as guidelines for implementing it. Specific other issues covered by the commitments include, among others, the conservation of forest genetic resources; increasing use of woody biomass for energy generation; adaptation of European forests to climate change; encouraging partnerships among public and private forest owners; as well as identifying and removing unintended barriers to an increase of sustainable wood production. In 2011, the MCPFE decided to take their efforts a step further and develop a → Legally Binding Agreement on Forests in Europe.

Relevance for sustainable land use: Forest Europe/ the MCPFE is a well-established and recognized entity in the European and global forest policy arena. The so-called Strasbourg Resolutions adopted at the first ministerial conference initiated a broad scientific and technical co-operation throughout Europe (Grygier 2007). Forest Europe's relevance for sustainable land use derives, among others, from its forest monitoring functions and the regular reports it publishes on State of Europe's Forests which include information on the progress towards SFM in Europe. Implementation of the various resolutions is on-going but Forest Europe recognises that "the existing European concept for sustainable forest management, developed and promoted by Forest Europe lacks full recognition by all relevant institutions and needs consistent implementation" (Forest Europe 2010). A number of European countries with strong forestry and timber sectors contest a more far-reaching and more clearly defined SFM concept. NGOs criticise that Forest Europe "focuses too narrowly on the promotion of the concept of sustainable forest management, without addressing its lack of implementation" (FERN 2011a) and fails to balance "the most efficient use of European forests for various ... industries and the maintenance of environmental and social services" (WWF and Greenpeace 2007), neglecting the concerns of nature conservation.

Draft Legally Binding Agreement on Forests in Europe (LBA)

Objectives and mechanisms: In June 2011, the Ministerial Conference on the Protection of Forests in Europe (→ Forest Europe) announced its decision to strike a Legally Binding Agreement on Forests in Europe by the end of 2013. The draft text is to commit the treaty's signatories to national and collaborative measures to implement sustainable forest management. The role of forests as carbon sinks would also be enhanced.

Relevance for sustainable land use: With the final treaty text still under negotiation, no assessment of impact is possible. NGOs like FERN (2011a) question the effectiveness of the deal, because the draft does not sufficiently refer to forest *protection* and excludes specific targets as well as deadlines for implementation. BirdLife International (2012) advocates for incorporating sustainability criteria for the production and consumption of forest biomass, a monitoring scheme and well-defined indicators, in line with the new EU Forest Strategy and the 2020 Biodiversity Strategy targets.

EU Forestry Strategy (1998)

Objectives and mechanisms: No common forest policy exists at EU level to date, but forest issues are integrated into various EU environmental, agricultural and energy policies (Winkel et al. 2009). Against this backdrop, the non-legally binding EU Forestry Strategy, adopted in 1998, represents the first significant attempt to create an EU-wide framework for forests. The Strategy commits EU member states to implement national forest programs (NFPs), in line with their national sustainable development strategies. NFPs are to address both the productive and non-productive functions of forests (rural development, biodiversity, recreation, social and cultural aspects). At EU level, Community action supports forest management above all through integrating forestry into the EU's rural development policy and funding (ca. 10% of the budget in 2000-6). Additional EU activities pertain to the protection against fires and air pollution, biodiversity conservation in the context of → "Natura 2000" areas; developing the use of biomass for energy purposes and considering measures for the adaptation of forests in the context of climate change mitigation and adaptation; as well as enhancing the competitiveness of the forest-based and related industries.

Relevance for sustainable land use: Forests and other wooded land occupy 35% of the EU's land area, or some 160 million hectares. A review of the implementation of the Forestry Strategy in 2005 revealed that there is a need to strengthen coherence between EU policies, as well as coordination between the European Commission and member states (European Council/ EP 2005). The underlying problem is that with forestry policy in the EU being a Member State competence, those Member States with strong forestry and timber sectors reject a higher integration of national forest policies. The review of the Forestry Strategy led to the additional adoption in 2006 of the EU Forest Action Plan for the period 2007-2011. The sustainable land use relevance of the EU Forestry Strategy appears to be limited.

EU Forest Action Plan (2006)

Objectives and mechanisms: A review of the implementation of the → EU Forestry Strategy (see above) led to the adoption in 2006 of the EU Forest Action Plan for the period 2007-2011.⁴⁶ The Action Plan has four main objectives: improving long-term competitiveness, improving and protecting the environment, contributing to the quality of life as well as fostering coordination and communication. It was implemented through a set of key actions, ranging from R&D, information sharing, vocational training, public procurement, to working towards a European Forest Monitoring System and a European Forest Fire Information System. These activities were funded jointly through existing Community instruments and the member states.

Relevance for sustainable land use: As was pointed out above, forests and other wooded land occupy 35% of the EU's land area, or some 160 million hectares. The mid-term evaluation of the EU Forest Action Plan of 2009 concluded that the FAP was “on track” (European Commission 2009), while critics regard it to be ineffective on most counts: the vagueness of the concept of multi-functionality, for example, would raise questions about how the potential conflicts between environmental, social and economic components are to be resolved (FERN 2011b; EFI et al. 2009). The report on implementation of the Action Plan (scheduled for 2012) has not been published to date. Altogether, the EU Forest Action Plan's seems to have disposed of only weak levers to increase the sustainability of land use in the EU.

EU Forest Law Enforcement, Governance and Trade (FLEGT) Action Plan (2003)

Objectives and mechanisms: The EU FLEGT Action Plan, adopted in 2003, was a reaction to the G8 Program on Forests and the regional Forest Law Enforcement, Governance (FLEG) Ministerial Conferences facilitated by the World Bank. It provides a number of measures to exclude illegal timber from markets, to improve the supply of legal timber and to increase the demand for responsible wood products. It places particular emphasis on governance reforms and capacity building, supported by actions aimed at developing multilateral cooperation and complementary demand-side measures designed to reduce the consumption of illegally harvested timber in the EU (and ultimately major consumer markets elsewhere in the world). A key element of the FLEGT Action Plan are trade accords with participating timber exporting countries, known as Voluntary Partnership Agreements (VPAs), to ensure that only legally harvested timber is imported to the EU by identifying, monitoring and licensing legally-produced timber.⁴⁷ VPA partner countries design their own systems. As a second element, the EU has created legislation to ban illegally-produced wood products from the EU market, known as the EU Timber Regulation (see below). The agreements also aim to promote better enforcement of forest law and an inclusive approach involving civil society and the private sector.

Relevance for sustainable land use: Taking into account that profits from illegal timber are estimated at around €150 billion per year (OECD 2001) and that the EU is one of the largest

⁴⁶ Initially envisaged as “EU Forest Action Plan *for sustainable forest management*” (own italics)

⁴⁷ A robust LAS consists of five key elements (EFI 2012): A clear definition of legal timber; a mechanism to control the timber supply chains (from harvesting to export); verification of compliance to the Legality Definition and controlled timber supply chains; licensing of legally produced timber and timber products for exports; and an independent audit of the LAS to ensure the system is fully implemented.

consumers of timber products, the FLEGT Action Plan bears a significant potential in promoting sustainable land use. The Plan represents the EU's most comprehensive and ambitious attempt to use the power of timber-consuming countries to reduce the extent of illegal logging. There are four key regions within the scope of the EU FLEGT Action Plan, which together contain nearly 60% of the world's forest and supply a large proportion of internationally traded timber: Central Africa, Russia, Tropical South America and Southeast Asia. The first formally concluded VPA was with Ghana. As of 2012, the Republic of Congo and Cameroon are in the ratification process and negotiations are still ongoing with Liberia, Gabon, Democratic Republic of the Congo, Central African Republic, Malaysia, Indonesia and Vietnam. However, Latin American countries have been skeptical of FLEGT, with Brazil even countering with an own regional initiative (ALFA, Aplicação da Legislação Florestal na Amazônia) (ODI s.a.). In late 2010, the European Commission and EU member states reviewed the implementation of the EU FLEGT Action Plan.⁴⁸

EU Timber Regulation (2010)

Objectives and mechanisms: The EU Timber Regulation was adopted in 2010 and is one of the results of the 2003 EU FLEGT Action Plan (see above). Its main objectives are to counter the trade in illegally harvested timber and timber products through three key obligations: it is prohibited to place on the EU market for the first time of illegally harvested timber and products derived from such timber; EU traders who place timber products on the EU market are required for the first time to exercise "due diligence"; traders have an obligation to keep records of their suppliers and customers. The Regulation covers a wide range of timber products and will come into effect in March 2013.

Relevance for sustainable land use: With the regulation coming into effect only in 2013, its impact is not yet measurable. Due to the high volume of wood imports into the EU (163 million m³ wood-based products in 2006 – corresponding to 38% of the EU's logging), the regulation could be of great quantitative land use relevance (WWF 2008). However, tracing wood imports back to their origin still meets with a number of challenges; DNA and other methods are currently developed but it is still rather easy to hide the origin of wood in international trade.

EU Green Paper 'On Forest Protection and Information in the EU: Preparing forests for climate change' (2010)

Objectives and mechanisms: With increasing challenges posed by climate change for many forests throughout Europe, the European Commission in 2010 adopted a Green Paper which sets out options for an EU approach to the protection of forests, the collection of information about forest resources and their condition (monitoring). The discussion it generates should guide Commission decisions on whether additional action is needed at the EU level to protect forests. The Green Paper can be seen as a compromise between the EU seeking for higher integration of national forest policies and member states opposing the idea of a "common EU policy on forests".

⁴⁸ Progress was being made with regard to the support of timber-producing countries, more responsible timber trade and public procurement policies; the interest of timber-producing countries in entering VPAs with the EU was growing and exceeded the capacity to respond to them all. On the downside, more harmonisation of development assistance among donors was needed (EFI 2010).

Relevance for sustainable land use: A green paper is a discussion document intended to stimulate debate and launch a process of consultation, leading to the adoption of a binding document the impact of which on sustainable land use is not yet calculable. Whilst the paper highlights some important issues such as the need for more harmonized, reliable and comprehensive information systems to assess forest resources and conditions, it fails to properly analyze the lack of coherence of EU and EU member states' policies that have an impact on forests (FERN 2010).

ASEAN Ministerial Meeting on Agriculture and Forestry (AMAF)

Objectives and mechanisms: The Association of Southeast Asian Nations (ASEAN) Ministerial Meeting on Agriculture and Forestry (AMAF) sets the forest policy framework for ASEAN member states. Priorities are identified in the 'Ministerial Understanding on ASEAN Cooperation in Food, Agriculture and Forestry' and the 'ASEAN Strategic Plan of Action for 2005-2010 on Forestry'. The priorities include SFM and the conservation of natural resources; strengthening ASEAN cooperation and joint approaches in addressing international and regional forestry issues; the promotion of intra- and extra-ASEAN trade in forest products and private sector participation; increasing productivity and the efficient utilisation of forest products; and capacity building and human resources development. The 'ASEAN Statement on Strengthening Forest Law Enforcement and Governance' (2007) addresses the combatting of illegal logging; the 'ASEAN Multi-Sectoral Framework on Climate Change: Agriculture and Forestry towards Food Security' (AFCC) (2009) tackles climate change and climate change response policies.

In the following, we will look more closely into the draft 'ASEAN Timber Legality Assurance Scheme'. The ASEAN Senior Officials on Forestry established in 2002 an ad-hoc Working Group on Pan-ASEAN Timber Certification. The group is preparing an ASEAN Timber Legality Assurance Scheme, which constitutes a generic approach to certification and a proposed chain-of-custody scheme. In 2007, a first set of agreed criteria and indicators have been established, to provide a reference framework for developing more detailed country-specific legality standards by 2015.

Relevance for sustainable land use: We will focus on the ASEAN Timber Legality Assurance Scheme. The ASEAN process appears to have strengthened awareness that illegal logging deserves political attention. The resulting national standard setting processes have enhanced cooperation between governments, although it is too early to assess their impact on forest governance. This will to a large extent depend on the manner in which these standards are implemented (Speechly 2012). ASEAN's approach is limited to preserving fair and equal conditions for member country enterprises through adoption of common criteria and indicators. Stakeholder involvement in defining legality and monitoring performance is not stipulated by the ASEAN guidelines.

Amazon Cooperation Treaty (1978)

Objectives and mechanisms: The Amazon Cooperation Treaty (ACT) was adopted in 1978 by Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru, Suriname, and Venezuela to promote the preservation of the Amazon Basin and regulate Amazonian development through international cooperation. In order to strengthen the implementation of the treaty, member countries formed The Amazon Cooperation Treaty Organization (ACTO) in 1995. The Contracting Parties agree to undertake joint actions to promote the harmonious development of their respective Amazonian territories to produce equitable and mutually beneficial results and also achieve the preservation of the environment (Art. 1). The general thrust of the treaty is developmental rather than

conservationist.⁴⁹ However, environmental obligations are partly integrated. Though there is no explicit mentioning of cooperation with regard to protecting or managing the Amazonian forests in the treaty, regional criteria and indicators (C&I) were developed for sustainable forest management (SFM) in the course of the ACT's Tarapoto Process (2001) and later harmonized with the ITTO's C&I. Also, the ACTO's Strategic Plan 2004-2012 pertains to forests as one issue among a number.

Relevance for sustainable land use: The treaty covers large territories in the Amazon Basin. Progress has been made in terms of the gradual joint definition of approaches and policies for the Amazon, including with regard to natural resource management, and of mobilizing a network of public and private institutions (Elías 2004).

Regional Convention for the management and conservation of the natural forest ecosystems and the development of forest plantations (Central American Forest Convention) (1993)

Objectives and mechanisms: The Convention was adopted by Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama in 1993 and entered into force in 1999. Its main focus is to promote within Central America national and regional strategies for sustainable forest management (SFM), including the recovery of deforested areas. The Convention reaffirms the sovereign right of the parties to use, manage and develop their forests in accordance with their own policies and regulations (Art. 1). Furthermore, participating countries agree to implement financial measures, including mechanisms to ensure the local investment of income generated by the forest resources, the promotion of financial arrangements for concerned local groups, and the establishment of mechanisms to prevent the illegal traffic of flora and fauna species (Art. 4). Finally, they agree to take measures to strengthen forestry management institutions and laws at the national level, including national Tropical Forestry Action Plans and mandatory environmental impact assessments (Art. 6).

Relevance for sustainable land use: Although the Convention's scope is limited to the Central American region, its importance is not to be underestimated considering the vast deposit of genetic wealth found in this region. Regarding implementation, responsibility lies within the Central American Commission on Environment and Development (Art. 7) as the Convention's main executive organ.

Yaoundé Declaration (1999)/ Central African Forest Commission (COMIFAC)

Objectives and mechanisms: The Yaoundé Declaration on the Conservation and Sustainable Use of Tropical Forests (1999) was the basis for establishing the Central African Forest Commission (COMIFAC) shortly after in 2000.⁵⁰ The commitments of the Yaoundé Declaration (Art. 1) include, among others, to: integrate the conservation and sustainable management of forests in national priorities, adopt harmonised national forestry policies and put in place certification systems,

⁴⁹ See the agreements to guarantee complete freedom of commercial navigation on the Amazon/ other international Amazonian rivers (Art. 3), to promote the economic and social development of Amazonian territories (Art. 11), to develop retail trade of products for local consumption among Amazonian border populations (Art. 12) and to increase the flow of tourists (Art. 13).

⁵⁰ In 2005, the COMIFAC was transformed into a legal entity through the treaty on the Conservation and Sustainable Management of Forest Ecosystems and To Establish the Central African Forests Commission.

identify and create new (including transborder) protected areas, develop an appropriate forestry taxation system, further involve business operators in the forest management and conservation, stop poaching and uncontrolled logging, and promote industrialisation in the forestry sector. COMIFAC was established to facilitate the implementation of these commitments, drawing especially on the COMIFAC Convergence Plan with its ten strategic axes⁵¹ and the Plan's Tri-annual Action Plan (2009-2011). COMIFAC has a biodiversity working group ('GTBAC') and a memorandum of understanding with the CBD.

Relevance for sustainable land use: With its ten Central African signatories,⁵² the COMIFAC and its provisions cover almost 204 million hectares of forests including the Congo Basin as one of the world's three largest rainforest areas. In qualitative terms, observers see progress with the introduction and implementation of a sustainable forest policy in the region, reflected for instance in an increasing orientation towards forest certification, improved forest reserve management, and the development of more effective resource use and poverty reduction approaches (GIZ s.a.). The area of certified production forests has reached 10% (ibid), and between 1999 and 2008, some 4.5 million hectares of forest have become protected (Usongo and Nagahuedi 2008). Still, governance and law enforcement capacities in the COMIFAC region are generally assessed to be low. With some of the countries being ridden by (past and ongoing, internal and external) conflicts, some by desertification, many of them with low marks on Transparency International's Corruption Perception Index, and many with widespread illegal logging activities, this initiative faces complex difficulties in terms of implementation on the ground.

South African Development Community (SADC) Protocol on Forestry (2002)

Objectives and mechanisms: The SADC Protocol on Forestry – not yet entered into force – is a regional policy framework to foster cooperation in forestry and provide a common vision and approach to the management of the region's forest resources. The then SADC Forestry Sector Technical Coordination Unit began work on the protocol in 1998 in collaboration with the World Conservation Union (IUCN). All but three SADC countries (Botswana, Mozambique and Namibia) signed the legally binding Protocol in October 2002, but ratification is yet to be completed. The SADC Protocol on Forestry is aimed at promoting SFM and trade in forest products, consistent with the Forest Principles adopted at the United Nations Conference on Environment and Development (UNCED). The main objectives of the SADC Protocol on Forestry are to: promote the development, conservation, sustainable management and utilisation of all types of forests and trees (Art. 3.1.a; promote trade in forest products throughout the Region in order to alleviate poverty and generate economic opportunities for the peoples of the Region (Art. 3.1.b); and achieve effective protection of the environment, and safeguard the interests of both the present and future generations (Art. 3.1.b). Measures and guiding principles are specified to achieve the

⁵¹ Namely, the harmonisation of forest and tax policies; knowledge on forest resources; ecosystem management and afforestation; the conservation of biological diversity; the sustainable valorisation of forest products; the development of alternative activities and poverty alleviation; capacity building, stakeholder participation, information and education; research and development; the development of financing mechanisms; and cooperation and partnerships.

⁵² Burundi, Cameroon, Chad, Central African Republic, Congo, Democratic Republic of Congo, Equatorial Guinea, Gabon, Rwanda, Sao Tome/Principe.

Protocol's objectives. The Protocol advocates the active participation of all stakeholders (SADC, 2002).

Relevance for sustainable land use: With 12 southern African signatories (Angola, Democratic Republic of the Congo, Lesotho, Malawi, Madagascar, Mauritius, Seychelles, South Africa, Swaziland, Tanzania, Zambia, Zimbabwe), the SADC Protocol on Forestry covers a good portion of African forests (largely)⁵³ outside the Congo basin rainforest (which is governed by → COMIFAC). The effectiveness and impact of the Protocol will depend on its future implementation once entered into force.

Hybrid and non-governmental policies

Forest Stewardship Council (FSC) (1993)

Objectives and mechanisms: The Forest Stewardship Council (FSC) is an international association made up of representatives from environmental and social groups, the timber trade, the forestry sector, forest owners, indigenous peoples' organizations and forest product certification organizations. Established in 1993, the FSC set a responsible forest management framework for stakeholders to develop sustainability standards based on the FSC's ten Principles & Criteria. Forest management standards are developed at the global, national and regional level, whereby membership interests are equally represented and organized in three chambers: environmental, social and economic. Each chamber has one third of the voting power in the General Assembly. Despite an emphasis on performance-based criteria, FSC principles allow countries to customize specific standards to local conditions. The objective of the FSC accreditation process is to enable existing independent certification bodies working in the area of forest management and chain of custody verification to certify according to FSC standards. In 2004, the FSC approved a new standard for ensuring the chain of custody is protected for manufactured products to prevent misuse of the FSC Logo.

As an umbrella organization, FSC does not undertake certification itself, but rather sets certification standards for numerous independent certifiers. Before they can market their wood as "FSC certified", harvesters of timber-producing lands must prove to auditors that they meet the set of standards for sustainable management. To ensure continued compliance with FSC requirements, the FSC Accreditation Program conducts regular surveillance audits involving both office and field visits to monitor performance of certification bodies. To show the impact of its certification process, FSC is developing a range of measures to track the environmental, social and economic benefits that stem from it. The system comprises 15 independent third party organizations who certify to FSC standards.

Relevance for sustainable land use: By October 2012, more than 164 million hectares of forest in 80 countries had been certified to FSC standards. Regionally, this area is distributed across Europe (71 mio ha), North America (67 mio ha), Latin America and the Caribbean (12 mio ha), Africa (7 mio ha), Asia (6 mio ha) and Oceania (2 mio ha) (FSC 2012). With regard to biomes, 52% of certified forests consists of boreal forests, 37% of temperate forests, and 11% of sub-/tropical forests. With

⁵³ Excepting the Democratic Republic of the Congo, which is the only SADC Protocol signatory which is also a COMIFAC member.

regard to forest types, 7% of the certified area are plantations, 28% semi-natural and mixed plantation and natural forest, and 64% natural forests. The FSC is one of the few certification schemes that has been readily used by developing countries. In studies comparing the criteria of the FSC with that of other schemes, the FSC performs relatively best for ecological health and social sustainable forest management criteria (Clark and Kozar 2011). This does not preclude criticism of features of the scheme (Auld, Gulbrandsen and McDermitt 2008; Greenpeace 2008). Among others, the FSC was criticized for certifying monocultural plantations making use of partial logging. Finally, despite their existence for more than a decade, little is known about how well the FSC and other forest certification systems empirically achieve their SFM goals, based on ecological or socioeconomic field data (Clark and Kozar 2011).

Program for the Endorsement of Forest Certification (PEFC) (1999/ 2003)

Objectives and mechanisms: The Program for the Endorsement of Forest Certification (PEFC) was originally created in 1999 as “Pan European Forest Certification” by the European forest products industry as an alternative to the Forest Stewardship Council (FSC) certification (see above). PEFC began as a European organization, but became a global umbrella organization in 2003, when it expanded to other continents such as Australia and South America. To better reflect its global scope, the name was changed to “Program for the Endorsement of Forest Certification”. It works by endorsing national forest certification systems developed through multi-stakeholder processes and tailored to local priorities and conditions. Today, PEFC includes 35 national certification systems among its membership, which is also open to international stakeholders such as civil society organizations, businesses, government entities and intergovernmental bodies. In contrast to the performance-oriented standards of FSC, PEFC offers a system-based standard, establishing a framework for the development and recognition of national or regional forest certification schemes. These programs are developed locally, according to internationally recognized requirements for SFM (however, usually using lower SFM requirements than within the FSC) and are certified by independent third parties. The PEFC Council is also working on an international Chain of Custody Standard with requirements for verification throughout the supply chain. No international environmental NGO supports the scheme at PEFC Council or national level (Sprang et al. 2006).

Relevance for sustainable land use: With about 30 endorsed national certification systems and 241 million hectares of certified forests in 2012 (PEFC 2012), PEFC is the world's largest forest certification system. Several hundred-thousand family- and community-owned forests have acquired PEFC certification. Regarding compliance, each national forest certification system undergoes third-party assessment against PEFC's sustainability benchmarks to ensure consistency with international requirements. In a meta-analysis of forest certification schemes, Clark and Kozar (2011) show that two Canadian PEFC schemes are more oriented towards maintaining forest productivity and thus the economic longevity of a firm, rather than addressing social or ecological issues. While PEFC contributes to raising the awareness for sustainable forestry, it also promotes activities that contribute to deforestation and misguide conservation efforts. For example, Sprang et al. (2006) highlight that logging in ancient, high conservation value forests and converting them partially into plantations is acceptable under PEFC-endorsed schemes. They conclude that ‘[s]ignificant impact [of the PEFC scheme] has not been documented’. An empirical analysis of such impacts is still outstanding (ibid).

Voluntary timber legality certification

Objectives and mechanisms: Since the 1990's, countering the illegal logging and subsequent trading of timber has been one of the core issues with regard to forest governance. A number of (business or NGO operated) schemes have emerged to certify timber legality through third parties, often set up to support FSC or PEFC certification. The certification is a voluntary procedure on the part of industry (as opposed to, for instance, a 'legality assurance system' in accordance with EU FLEGT-VPAs). Examples include:

- The 'Timber Legality & Traceability Verification' (TLTV) and TLTV-VLO standards by the auditing company SGS
- The 'Legal Harvest Verification' by the certification company SCS
- The 'OLB - Timber Origin and Legality' certificate by Eurocertifor
- The Rainforest Alliance legality verification standards

Relevance for sustainable land use: There is no information available on the quantities of timber being certified in the framework of voluntary legality schemes, and on the impacts of individual certification schemes.⁵⁴

Collaborative Partnership on Forests (2001)

Objectives and mechanisms: The Collaborative Partnership on Forests (CPF) is an informal, voluntary arrangement among fourteen international organizations⁵⁵ and secretariats with the mission of promoting sustainable management of all types of forests. It was established in April 2001 and is chaired by FAO and serviced by the UNFF Secretariat. The main objectives of the CPF are to support the UNFF and its member countries and to enhance cooperation and coordination on forest issues. Each member agency serves as a focal point for a particular forest-related issue and contributes expertise and resources to foster joint action around that issue. CPF members facilitate the work of UNFF by supporting the implementation of the proposals for action of the Intergovernmental Panel on Forests (IPF) and the Intergovernmental Forum on Forests (IFF).

Relevance for sustainable land use: The partnership's direct quantitative relevance for land use is hard to determine and probably minor, but it can point to a number of accomplishments. A task force of CPF members helps countries to comply with the reporting to treaties and international agreements on forests. Joint statements and policy papers have helped to inform the work of the UNFCCC, as well as the scientific bodies responsible for supporting international conventions on

⁵⁴ In qualitative respect, there is a difference between the verification of 'legal origin' (covering basic legal requirements for forestry, such as the right to harvest, approved planning authorisations, payments of applicable fees and taxes, chain of custody) and of 'legal compliance' (which additionally includes verification of all laws and regulations governing the management and harvesting of timber such as labour, social and environmental regulations and laws, as well as chain of custody) (TTF 2012).

⁵⁵ Center for International Forestry Research (CIFOR), Food and Agriculture Organization of the United Nations (FAO), International Tropical Timber Organization (ITTO), International Union of Forest Research Organizations (IUFRO), Secretariat of the Convention on Biological Diversity (CBD), Secretariat of the Global Environment Facility (GEF), Secretariat of the United Nations Convention to Combat Desertification (UNCCD), Secretariat of the United Nations Forum on Forests (UNFF), Secretariat of the United Nations Framework Convention on Climate Change (UNFCCC), United Nations Development Program (UNDP), United Nations Environment Program (UNEP), World Agroforestry Centre (ICRAF), World Bank, World Conservation Union (IUCN)

biological diversity, climate change and desertification. By bringing together important forest-related institutions to share information, coordinate responses and work collaboratively, the Partnership has already produced important outcomes, such as reduced duplication and stronger partnerships (CIFOR 2012).

2.1.3 Built up land

(Lead author: Dirk Arne Heyen; subsection on mining: Andreas Hermann)

Overview

In land use statistics, built-up and related land comprises residential, industrial and commercial land, pits and mines, as well as land used for transport and technical infrastructure. Currently, human settlements and infrastructure areas occupy an estimated 150 billion ha or 1.1% of the global land mass (excluding Antarctica) (FAO 2011). An additional 100 million ha of land is estimated to be required for residential, industrial and infrastructure purposes until 2050, with more than 90% of it in less developed countries. New infrastructure is a response to growing demand by population growth, economic growth, mobility needs etc. But infrastructure planning and implementation also influence future settlement and mobility patterns or energy systems. In any case: How we plan cities and regional infrastructure, and how we en-/discourage new demand for infrastructure or mitigate its effects is of major importance for land use. These issues, however, are hardly addressed by international policies; also the EU has very limited powers and the principle of subsidiarity means that primary responsibility for infrastructure, settlements and → land use planning in general will remain at local and national levels. The following chapter presents the few international policies that directly address infrastructure (energy and transport), settlements and mining. Other international policies which also affect built-up land are presented elsewhere in the text, like → investment policy, or → development and cohesion policy. These fields of infrastructure investment may actually represent a greater potential for influence.

Energy infrastructure

The only multilateral, intercontinental agreement that focuses on energy is the → Energy Charter Treaty – which is dealt with in the energy chapter since the development of new transmission infrastructure is not its main issue. At least, Model Agreements for cross-border pipelines and electricity projects have been developed under its umbrella.⁵⁶ The focus here shall be on the European level and the competences the EU has via its TEN policy. The European electricity transmission network consists of ca. 300,000 km of routes (ENTSO-E 2012). The grid operators have announced that 43,200 km of new routes are necessary – with renewable energy being the main driver, responsible for 80% of 100 identified bottlenecks (ibid.).

⁵⁶ The aim of the Model Agreements is to facilitate the development of new cross-border pipelines by identifying key areas of interest to all parties and providing a standard text as a starting point for bi-/multilateral negotiations.

Trans-European Energy Network (TEN-E) Policy⁵⁷

Objectives and mechanisms: For reasons of security of supply and the functioning of an internal energy market, the EU aims for the interconnection and interoperability, modernization and expansion of energy networks (and storage facilities) by its TEN-E policy. It also wants to improve access to energy networks for remote regions and thereby contributing to territorial cohesion (→ EU regional policy). Decision 1364/2006/EC ranks projects eligible for Community assistance in three categories (with ascending priority): *projects of common interest* (meeting the Decision's objectives and priorities); *priority projects* (having a significant impact on the functioning of the internal market, security of supply and/or use of renewable energy); and *projects of European interest* (cross-border priority projects). Among the priorities are tackling bottlenecks and missing links in electricity and gas networks, and facilitating the integration of renewable energy.

The special TEN-E budget is only € 20-25 million per year mainly intended for financing feasibility studies. But other EU instruments may also step in to part-finance investments, including → Cohesion Funds and → EIB loans. The European Recovery Plan also foresaw additional €5 billion of unspent money under the EU budget to TEN projects. Project proposals are evaluated by a Commission Committee against criteria set out in Art. 5 of the TEN Regulation, including environmental consequences. The criterion is defined in a call for proposals⁵⁸ as the “expected impact of the project on nature, emissions, noise, land use, etc. and in the measures to reduce or compensate any negative impacts”. It accounts for 15% of the result.

Relevance for sustainable land use: New TEN-E energy infrastructure projects like high voltage power lines or gas pipelines in Central Europe or from Turkey (NABUCCO) can obviously have a negative impact on land and biodiversity. While the requirements under the → EIA and the → Habitats Directives may prevent the worst, network corridors usually lead nevertheless to the clearing of wooded areas and the destruction of some habitats. The Commission (2010) notes that these impacts should be put in perspective with negative global climate impacts from insufficient infrastructure development. Under business-as-usual, a lack of transmission infrastructure would limit the possibilities to inject electricity from renewable sources into the grid.

In October 2011, the Commission proposed a regulation⁵⁹ for new TEN-E guidelines to identify and speed up the development of cross-border energy infrastructure projects (including CCS). The proposal includes a list of 12 TEN-E priority corridors and rules for selecting *projects of common interest* therein. Projects should be part of the latest available **Ten-Year Network Development Plan**.⁶⁰ Funding would partly come from the new Connecting Europe Facility. Controversially, the Commission proposed a three-year limit for the duration of member states' permit granting process, which was extended to 3 ½ years in legislative negotiations between the Council and

⁵⁷ Decision No 1364/2006/EC of the European Parliament and of the Council of 6 September 2006 laying down guidelines for trans-European energy networks and repealing Decision 96/391/EC and Decision No 1229/2003/EC

⁵⁸ Call TEN Energy 2012 – Call for proposals concerning projects of common interest in the field of trans-European energy networks; European Commission (DG Energy)

⁵⁹ COM(2011)658 - Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on guidelines for trans-European energy infrastructure and repealing Decision No 1364/2006/EC

⁶⁰ Following the Regulation (EC) 714/2009, the European Network of Transmission System Operators for Electricity (ENTSO-E) has to produce this non-binding plan every two years (the current plan was published in July 2012). It presents a forward-looking proposal for electricity transmission infrastructure investments across 34 European countries. The same has to be done for gas infrastructure by the network of gas transmission operators (ENTSO-G).

Parliament. The whole Commission proposal was largely welcomed by a network of grid operators and environmental NGOs (RGI 2012). Precautions should be taken, however, that the rules do not undermine environmental legislation and public participation.

Transport infrastructure

Global demand for transport activity (passenger and freight) is growing rapidly, and it is predicted to roughly double between 2005 and 2050 (IEA 2009). The global vehicle fleet is set to multiply by factor 3 or 4 in the next decades, with most of this growth taking place in developing countries. Obviously, this also increases infrastructure demands. In India and China, the road network grew already by 4 and 6% annually in the past decade. But also in the EU, motorway kilometers trebled between 1970 and 2000, and even recently 10 ha of land have been covered over by new roads every day (Commission 2001). Fossil fuels and climate change left aside, the greatest impact of transport is on land: both by the recent promotion of biofuels (→ RED) and the infrastructure: roads, railways, and airports. Their construction puts pressure on land and biodiversity through soil sealing, habitat fragmentation, degradation and disturbance.

The integration of environmental concerns into transport policy is crucial for sustainable development, as endorsed by the → Agenda 21 and → Johannesburg Plan of Implementation. Conflicting interests, development prospects, technology and behavior issues, however, make this much easier said than done. The two major policy issues are: a) the (dis-)encouragement of individual motorized transport (e.g. through fuel prices; see also → internalization of externalities) which has an influence on the demand for new road infrastructure; and b) land use planning which can positively or negatively influences the attractiveness of different modes of transport, proximity of human activities and the concrete environmental impacts of infrastructure. Both policy issues, however, are hardly dealt with at the international level. What do exist are some guidelines for sustainable transport (infrastructure) at the international level (mostly European), and regional programs for transnational infrastructure (especially the EU's TEN-T, see below).⁶¹

The direct effect of the non-binding, non-sanctionable declarations and guidelines to foster sustainability is assumed to be rather low. If at all, they may have some indirect, long-term effect on policy-makers through problem awareness and policy-learning. Given the regional scope of most infrastructure, it will mainly remain an issue of (sub-)national → land use planning. The development of international hard law is rather possible (though, still difficult) on the fossil fuel issue via → climate negotiations and emissions-tackling instruments. As far as the promotion of *transnational infrastructure* is concerned, it is important that bi- or plurilateral programs try to minimize negative impacts. An influence on the construction of infrastructure in foreign countries is also possible via funding and assistance within → development and cohesion policy.

⁶¹ Examples for regional agreements and programs – which cannot be further analyzed here – are: UNECE's European Agreements on Main International Traffic Arteries and Railway Lines; Trans-European network for motorways (TEM) and rail (TER); Masterplan for Central, Eastern and South-Eastern Europe; Euro-Asian Transport Link project; ASEAN Highway Network and Intergovernmental Agreement on the Trans-Asian Railway Network; Trans-African Highway network; Master Plan of the African Union of Railways.

WHO Charter on Transport, Environment and Health

The WHO Charter has been adopted at a 1999 Ministerial Conference with 52 European countries. It sets out principles, strategies and a plan of action that shall guide countries' transport and related policies. The Charter's focus is on health issues (air quality, noise, accidents) but land use is also considered. Among the actions envisaged are: integration of environment requirements in decision-making on transport, land use planning and infrastructure investment (A1); development of policies that reduce negative impacts (A7); adaption of land use policies and development plans to reduce need for motorized transport (B2); adoption of policies that internalize environmental externalities (D2); promotion of the progressive suppression of subsidies for polluting modes of transport (D4). These are, in principle, ambitious actions but of course they are commitments "only"; ignorance is not sanctionable. A steering group was created but later replaced by → PEP.

Transport Health and Environment Pan-European Program (PEP) + Amsterdam Declaration

In 2002, the PEP was established to consolidate and rationalize the work carried out by the WHO and the UN Economic Commission for Europe (UNECE). Integration of environment and health concerns into transport policy constitutes one priority. A new Steering Committee shall promote, monitor, coordinate and facilitate PEP's implementation. PEP, however, is only a work program and platform focused on cooperation. Some policy dimension has only the Amsterdam Declaration adopted at a ministerial conference in 2009. But it is only a few pages long and with regard to the role of environment and especially land use concerns rather a step backwards compared to the WHO Charter. Since adoption of the Declaration in 2009 the PEP website has not been updated.

OECD Guidelines towards Environmentally Sustainable Transport (EST)

The OECD Guidelines have been formulated to operationalize the Principles towards Sustainable Transportation and the Strategic Directions from the OECD Conference on Sustainable Transport (Vancouver 1996). Endorsed by the Environment Ministers of OECD member states in May 2001, the Guidelines shall assist governments at all levels in developing and implementing EST strategies. The text first features results from a project on scenarios, necessities and policy options in a backcasting manner, i.e. starting with a desirable future – transport that functions within nature's limits. A criterion on land use says: "Infrastructure is developed in such a way that local and regional objectives for air, water and eco-system and biodiversity protection are met. This will likely entail a smaller proportion of land devoted to transport infrastructure than previously." It is the only non-quantified indicator ("will require further research"). The text states that policy development has to be guided by the goal. The 10 final guidelines, however, are extremely basic in nature: develop a vision; assess long-term trends; define environmental objectives etc. There are no concrete policy recommendations either ("construct packages of measures and instruments for reaching the milestones and targets"). Incentives should be considered as much as price increases and penalties. Careful phasing of the application of instruments shall foster acceptability.

EU White Paper: Roadmap to a Single European Transport Area⁶²

After a White Paper in 2001, the European Commission adopted a new one in March 2011. The aim is to create a Single European Transport Area with a fully integrated transport network linking the different modes and allowing for a profound shift in transport patterns (more passengers and freight being carried jointly). First of all, the White Paper underlines the fundamental role of transport for citizens and the internal market, and that “curbing mobility is not an option”. At the same time, GHG emissions from European transport shall be cut by 60% from 1990 levels until 2050. The shift in transport patterns shall be, inter alia, achieved by full application of the polluter pays principle and elimination of tax distortions. A key role is also attributed to infrastructure, and in particular the rail network. By 2050, the majority of medium-distance passenger transport should be by rail (for this, the existing high-speed network should be tripled by 2030 already) and the majority of road freight should have gone to other modes including rail, too. Connection of air- and seaports to the rail network is also emphasized. Costs for the whole EU transport network are estimated at over €1.5 trillion until 2030 (€550 billion until 2020 for → TEN-T alone). Despite the prominent role for infrastructure, environmental or even land use issues are hardly considered by the White Paper. It only states that negative impacts on key natural assets like ecosystems and land shall be reduced. Land use *planning* is mentioned only with regard to urban mobility.

Trans-European Transport Network (TEN-T) Policy⁶³

Objectives and mechanisms: The TEN-T policy’s goal is to ensure cohesion, interconnection and interoperability of the European transport network (roads, railway, waterway), as well as access to it – in particular for a functioning internal market. A route network is defined on a dual layer approach, consisting of a *comprehensive network* as the basic layer and a *core network* defining the most important network parts to be completed by 2030. Given that national governments are sovereign in the field of infrastructure planning and implementation within their territories, the policy consists of elements of planning, coordination and funding. Projects of common interest can be co-financed (e.g. through co-financing studies or subsidizing loan interests) by a TEN-T budget, the → cohesion policy, or the → EIB. Except for cross-border projects, EU aid is limited to 10% of total costs. In October 2011, the European Commission presented a proposal for revised guidelines⁶⁴ which aims at focus spending (including over €30 billion from the new Connecting Europe Facility) on a smaller number of *core network* projects with real EU added value.

Relevance for sustainable land use: Given the size of the network and the fact that substantial parts remain to be built,⁶⁵ the potential impact on land use becomes clear. With TEN-T’s budget

⁶² COM(2011)144

⁶³ Regulation (EC) No 67/2010 of the European Parliament and of the Council of 30 November 2009 laying down general rules for the granting of Community financial aid in the field of trans-European networks; and Decision No 661/2010/EU of the European Parliament and of the Council of 7 July 2010 on Union guidelines for the development of the trans-European transport network.

⁶⁴ European Commission: Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on Union guidelines for the development of the trans-European transport network

⁶⁵ The network comprises 95 000 km of roads, 106 000 km of railway, 13 000 km of inland waterways, around 410 airports and 400 sea ports. Most of these links and nodes already exist. However, almost 20 000 km of the road links, over 20 000 km of railway links (particularly high-speed lines) and 600 km of inland waterway links remain to be built or substantially upgraded. €550 billion will be needed by 2020 to complete the network.

focus on rail projects,⁶⁶ environmentally less harmful transport is given preferential treatment. However, these infrastructure projects also pose a threat to protected land and many roads are co-funded by the EU structural funds. TEN-T regulations foresee that each new infrastructure program has to undergo a → SEA and each project has to be assessed individually by an → EIA. In this regard, routings bypassing Natura 2000 sites are prioritized. A European Commission (2003) impact assessment reported that for most projects the intersection with Natura 2000 would be less than 5% (much would depend, however, on exact alignment by member states' planning and construction work). A NGO study (RSPB et al. 2008) found that 379 sites protected by the → Birds Directive and 935 under the → Habitats Directive are likely to be affected by 21 Priority Projects analyzed, especially railway projects. NGOs demand much greater consideration of environmental impacts; project funding applications should be biodiversity- and climate-proofed.

Settlements

Globally, urban areas have a population share of above 50%, concentrate 80% of economic output and 60-80% of energy consumption but occupy less than 2 % of the earth's surface (UN Population Division 2010). However, a rapid urbanization dynamic is taking place and expected to continue (although at a slower pace). Only a century ago, the share of urban population stood at 13% but it is now predicted to reach 69% by 2050 (ibid.). Over 90% of urban growth is occurring in the developing world, adding an estimated 70 million new residents to urban areas each year; a result of population growth and economic pressures (rural migrants in search of jobs). In the next two decades, the urban population of the world's two poorest regions – South Asia and Sub-Saharan Africa – is expected to double (World Bank 2012). India's urban population, e.g., was 290 million in 2001 and is projected to reach 590 million by 2030. To accommodate this growth, India has to build 700-900 million m² of residential and commercial space per year (McKinsey 2010).

But human settlements also grow in developed countries, consuming space and land – less due to population increase, but rather due to an increasing demand for more single person households and / or bigger homes (with prices being lower at the periphery). This process of sub-urbanization or peripheralisation, together with the clustering of economic, service and leisure activities, leads to the increasing spatial separation of houses, workplaces, retail and other services, i.e. longer travel distances and car dependency. In contrast, compact (densely populated) cities, with mixed-use urban form (businesses and public services in or adjacent to residential areas), are less resource-, energy- and also land-consuming than other settlement pattern with similar economic output. However, there are also signs of re-urbanization in some regions.

Where land use policies to increase urban density or mixed use are unaccompanied by measures to make car travel more expensive, the effects have been limited (Wegener & Fürst 1999). But land use policies are essential as an accompanying strategy in the long run. However, this has been a regional policy domain; the international and also the European level are limited to declarations, strategies, guidelines and programs which try to strengthen sustainable development. Similar to the field of infrastructure, the impact of these “soft” international policies can be assumed to be

⁶⁶ At least 55% of the funding shall be allocated to railway projects and a maximum of 25% to roads. Of the 30 priority projects, 18 are (generally high-speed) railway projects, 3 are mixed rail-road projects, 3 are waterway projects. According to the Commission, the completion of the priority projects saves 6.3 million t/y of CO₂.

modest only. Together with concrete implementation programs (e.g., exchange of best practice, funding) they may have had some positive effect – but probably small compared to the dimension of the problem. A more hard law instrument, however, is difficult to imagine.

UN-HABITAT policies

Objectives and mechanisms: UN-HABITAT is the United Nations Human Settlements Program, mandated to promote socially and environmentally sustainable settlement by implementing (by means of several programs) the declarations presented in the following. The starting point has been the Habitat I conference in 1976 and the then adopted **Vancouver Declaration on Human Settlements** consisting of very general principles and ‘guidelines for action’. The current policy framework has been set by the Habitat II conference in Istanbul in 1996. The **Istanbul Declaration on Human Settlements** includes a call for extending adequate infrastructure and public services to rural areas in order to enhance their attractiveness and minimizing rural-to-urban migration; and a call for expanding the supply of affordable housing, inter alia by enhancing access to land.

The main conference output, however, was the **Habitat Agenda**. Adopted by 171 countries, it contains over 100 commitments and 600 recommendations. While it encourages wide access to land, it has also a whole section on its sustainable use. § 109 underlines the importance of urban planning and management, environmental impact assessments, and of policy integration. § 111 states: “... it is necessary to promote land use patterns that minimize transport demands, save energy and protect open and green spaces. Appropriate urban density and mixed land use guidelines are of prime importance for urban development.” In the ‘Actions’ subsection, the Habitat Agenda stipulates that governments at different levels should promote (often “where / as appropriate”), inter alia, legal frameworks for sustainable urban development; fiscal incentives for more rational use of land resources; improved land-management practices and capacities; policy integration; and enforcement of land management laws (§ 113-114).

Relevance for sustainable land use: The declarations adopted at the HABITAT II conference were an amelioration compared to the much less detailed principles in the Vancouver declaration. Still, international settlement law has no compliance mechanism; states have nothing to fear if ignoring UN-HABITAT. Even General Assembly Resolution S.25.2 notes “with concern that one of the basic obstacles to implementation of the Habitat Agenda is the discrepancy between the commitments made at Istanbul and the political will to fulfil them”. Of some, perhaps more practical relevance is the operational, often regional or local work of the UN-HABITAT administration: monitoring, awareness raising, (problem and policy) knowledge diffusion,⁶⁷ establishing partnerships, capacity building and funding programs – many of these (especially the funding) are undertaken together with partners, like UNEP in the Sustainable Cities Program; or the World Bank in the Cities Alliance and the Eco² Cities initiative. UN-HABITAT (2012) has set itself some implementation goals with quantified indicators, on which it has made good progress. But the goals were not very ambitious, and there is no indicator for city sprawl or space occupied by settlements. On a global land use scale, the impact of UN-HABITAT in quantitative terms has probably been quite limited.

⁶⁷ For example by the 2011 report “Innovative Land and Property Taxation”, presenting ways in which taxation policies, legal frameworks and approaches to sustainable urban development have been used around the world, and carrying ten policy lessons.

EU Policies

Objectives and mechanisms: In 1999, the European Commission adopted a communication titled “**Sustainable Urban Development in the European Union: A Framework for Action**”, with a set of policy objectives, including some related to land use. Apart from promoting biodiversity and green space within urban areas, it also wants to promote resource-efficient settlement patterns that minimize land take and urban sprawl. On actions, there is some focus on using → structural funds for flexible mixed use urban development; renewal and consolidation of the urban fabric with preference to redevelopment of brownfield land over greenfield development; attractiveness of urban centers; and the protection and improvement of open city spaces. Proposals for local and regional road improvements which would add to congestion problems could not be supported.

In 2006, the Commission adopted a **Thematic Strategy on the Urban Environment**,⁶⁸ again in the form of a communication, surprisingly not referring to the Framework for Action from 1999. Urban sprawl is one of the problems mentioned but not the focus. Generally, integrated approaches are emphasized as solutions. The decisive role in improving the urban environment is attributed to local authorities. European legislation had also been considered but was discarded due to the subsidiarity principle and diversity in local conditions. Instead, the strategy limits the EU role to stimulating the wider use of already existing tools and techniques for good urban development (giving guidance; supporting exchange of best practices and local staff training). In 2009, finally, the Commission adopted the **Action Plan on Urban Mobility**⁶⁹ which again only encourages and supports local action through existing EU programs and instruments. The focus among the environmental objectives lies with emission reductions; land use is not mentioned as a problem.

Relevance for sustainable land use: On the 1999 Framework for Action, the Expert Group on the Urban Environment (2001: 12) once wrote that the Commission has made progress to “embed the messages” into EU measures, but has been more successful concerning funding programs, less concerning legislation. The Thematic Strategy is fully dedicated to environmental issues, but features only action on procedural measures that are voluntary for local authorities. Of course, the strategy can encourage and facilitate integrated environmental planning. The Commission’s (2006) Impact Assessment, however, expects benefits rather in waste recycling and air quality than in land use. Some positive impact has surely resulted from EU programs like URBAN I+II, too. Of more relevance for encouraging or mitigating city sprawl on a European level are probably the EU’s → cohesion policy⁷⁰ (partly linked with specific urban development funding programs like JESSICA) or nature conservation policies like the → Habitats and → Birds Directives (or green funding programs like LIFE). There is currently no serious debate on whether the EU should adopt a hard law instrument setting goals or introducing direct measures on urban development.

⁶⁸ COMMUNICATION FROM THE COMMISSION; COM(2005) 718; published 11 January 2006

⁶⁹ COMMUNICATION FROM THE COMMISSION; COM(2009) 490; published 30 September 2009

⁷⁰ €21.1 billion has been earmarked for urban development between 2007 and 2013, representing 6.1% of the cohesion policy budget. Of this, €3.4 billion is targeted at the rehabilitation of industrial sites and contaminated land areas, €9.8 billion for urban and rural regeneration projects, and €7 billion for clean urban transport.

Mining

Overview

Mining, especially open-pit mining, has significant impacts on land-use and the environment (Warhurst 1994). Nevertheless, there is no binding policy on the international level that stipulates compulsory rules for states how to plan, assess or compensate land-use caused by mining. This is due to the fact that the question if and how states make use of their natural resources lies solely in their sovereignty. Nevertheless, on the regional level there are binding policies addressing sustainability aspects of mining, e.g. the “Wall Street Reform and Consumer Protection Act” („Dodd-Frank-Act“)⁷¹. Section 1502 of the Dodd-Frank-Act asks companies and their suppliers to report whether they import so called “conflict minerals” (i.e. columbite-tantalite (coltan), cassiterite, gold, wolframite or their derivatives) originating in the Democratic Republic of the Congo or respectively products containing these minerals. The Act aims inter alia to monitor and stop commercial activities involving conflict minerals that contribute to the activities of armed groups and human rights violations in the Democratic Republic of the Congo.

Last but not least it must be mentioned that on the international level the UN has issued non-binding guidelines for mining and sustainable development (Berlin Guidelines II 2002).

UN Resolution 1803 (1962): Sovereignty of the states over their natural resources

Objective and mechanism: The Resolution of Permanent Sovereignty of the states over natural resources was adopted by the United Nations Resolution 1803 in 1962.

Relevance for sustainable land use: The Resolution of Permanent Sovereignty of the states over natural resources mostly speaks in general terms, e.g. the right of peoples and nations to permanent sovereignty over their natural wealth and resources must be exercised in the interest of their national development and of the well-being of the people of the State concerned. Furthermore the exploration, development and disposition of such resources should be in conformity with the rules and conditions which the peoples and nations freely consider to be necessary or desirable with regard to the authorization, restriction or prohibition of such activities. These examples from the resolution show that the phrases are kept in a very general way. It is not a specific or detailed guidance for authorities.

Protocol on Environmental Protection of the Antarctic Treaty

Objective and mechanism: The Protocol on Environmental Protection of the Antarctic Treaty is a part of the Antarctic Treaty System. It deals with the comprehensive protection of the Antarctic environment and dependent and associated ecosystems. The treaty entered into force in 1998 and will be open for review in 2048.

⁷¹ Dodd-Frank Wall Street Reform and Consumer Protection Act (see: <http://www.sec.gov/about/laws/wallstreetreform-cpa.pdf> (as from 10.05.2013)).

The most important difference between the former Convention on the Regulation of Antarctic Mineral Resources Activities (CRAMRA) is codified in Article 7 of the Protocol on Environmental Protection of the Antarctic Treaty. Article 7 states that "Any activity relating to mineral resources, other than scientific research, shall be prohibited." This provision contrasts with the rejected Convention, which would have allowed mining under the control and taxation of an international managing body. Article 25(5) states that the Article 7 ban on mining may not be repealed unless a future treaty establishes a binding regulatory framework for such activity.

Relevance for sustainable land use: Also an exploitation of mineral resources on the territory of the Antarctic is yet not economically sound. In the future (the review date of 2048 indicates a new period) the search for mineral resources in the Antarctic will become more likely. Therefore the treaty is relevant for the sustainable exploitation of resources in the Antarctic. For land use the treaty is in a way unique as the sovereignty over territory and thus the resources in the Antarctic are claimed by several countries, like Australia, Chile, France etc. Moreover, the treaty forbids every activity related to mineral resources other than scientific research and thus avoids damages to the vulnerable ecosystem.

Johannesburg plan of implementation (JPOI) in the context of UN Division for sustainable development (DSD)

Objective and Mechanism: The JPOI is a non-binding document that was adopted parallel to the Johannesburg Declaration in consequence of the World Summit on Sustainable Development in 2002 in Johannesburg. The plan of implementation names mining as being important to the economic and social development of many countries and enhances actions at all levels.

Relevance for sustainable land use: The JPOI enhances the participation of stakeholders, including local and indigenous communities to play an active role in mining development throughout the life cycles of mining operations for rehabilitation purposes, in accordance with national regulations and taking into account significant transboundary impacts. Furthermore the JPOI fosters sustainable mining practices through the provision of financial, technical and capacity-building support to developing countries and countries with economies in transition for the mining and processing of minerals, including small-scale mining, and, where possible and appropriate, improve value-added processing, upgrade scientific and technological information and reclaim and rehabilitate degraded sites.

Berlin Guidelines II (2002):

The Berlin Guidelines II follow the first edition of Environmental Guidelines for Mining Operations published in 1994, which was an outcome to the 1991 Berlin Round Table on Mining and the Environment. The Berlin Guidelines II shall apply to all stages of a mining operation and address regulatory frameworks, environmental management, voluntary undertakings and community consultation. In the guidelines it is acknowledged that there are basically two ways to establish environmental standards in mining activities either by prescriptive general legislation or by non-prescriptive contractual agreements. While general rules provide absolute standards which are set by the relevant government departments and which must be met at all times, non-prescriptive legislation relies on the operator identifying the issues and making the management commitments to deal with them (Berlin Guidelines II 2002). Prescriptive legislation can be highly successful in

reducing pollution from certain industries, but in the mining sector there are both advantages and disadvantages in the use of such an approach (Berlin Guidelines II 2002). For example large mining operations lack the degree of standardization which is typical for other industrial sectors. Therefore in the mining sector the use of general environmental standards might lead to reduced efficiency due to under-protection at some sites and unnecessary over-protection at others (Berlin Guidelines II 2002).

2.2 Cross Cutting Policies – for specific environmental media/environmental goods

2.2.1 Climate

(Lead author: Franziska Wolff)

Overview

The following screening looks into international and regional climate policies to the extent that they are likely to have land use relevance. The main policies are the Kyoto Protocol with its binding emission reduction targets; Land Use, Land Use Change (LULUCF)⁷² projects within the Kyoto Protocol's Clean Development Mechanism (CDM) and Joint Implementation (JI); and in future, potentially, the REDD+ scheme.

These climate policy mechanisms unfold their land use relevance by incentivizing afforestation, reforestation, the reduction of deforestation and forest degradation, the introduction of selected emission-reducing agricultural management practices, and the production of biomass as a means to shift from fossil fuels to renewable energy sources. Gaps – i.e. land use relevant sectors/ areas not yet (strongly) part of into these policies – include (emissions related to) the agricultural sector and peatlands.⁷³

Impacts on sustainable land use encompass, on the more problematic side, increasing land use competition between agricultural productions for food/feed vs. bioenergy/biomaterial purposes with respective consequences for agricultural ecosystems (see → chapter agriculture and SCBD 2012). In the case of afforestation and reforestation, large-scale tree plantations are prone to causing negative impacts on biodiversity, the environment more widely (SCBD 2009) and livelihoods. On the more positive side, REDD+ is expected to reduce deforestation and forest degradation in a relevant magnitude (depending, however, on overall emission reduction targets and funding), ideally producing biodiversity and livelihood 'co-benefits'. However, like the other mechanisms REDD+ holds the danger of focusing too much on climate benefits and neglecting possible negative impacts on land use and ecosystem service provision, as respective safeguards (still under discussion) will depend on national implementation. Also, effectiveness will crucially

⁷² Note that in the IPCC 2006 inventory guidelines the two categories Agriculture and Land Use Change and Forestry have been merged to create one new sector: Agriculture, Forestry and Other Land Use (or AFOLU).

⁷³ Both aspects (agriculture, peatlands), however, have recently gained prominence on the agendas of the UNFCCC and FAO.

depend on the degree to which REDD+ implementation will take into account national drivers of deforestation and forest degradation.

As a conclusion, it should be considered how to mainstream the recognition of land use and biodiversity impacts into the existing climate policies and how to prevent negative side-effects on ecosystem services other than carbon sequestration/ climate regulation.

International governmental approaches

UNFCCC (1992) and the Kyoto Protocol (1997)

With regard to land use, two climate change mitigation options are particularly relevant and both are covered by the United Nations Framework Convention on Climate Change (UNFCCC) and its Kyoto Protocol (KP):

(a) reducing emissions by sources through the substitution of (non-renewable) fossil fuels with (renewable) biomass energy; and

(b) increasing the removals of GHGs from the atmosphere by means of 'sinks'⁷⁴ such as forests and oceans.

Objectives and mechanisms: The **UNFCCC**, which entered into force in 1994, establishes a framework for intergovernmental climate policies. While it does not contain commitments for reducing greenhouse gas (GHG) emissions, it obliges governments to collect and share information on GHG emissions and national policies. Parties are expected to launch national strategies for addressing GHG emissions and adapting to the expected impacts and to provide financial and technological support to developing countries. With regard to (a) the switch to biomass as an energy source, the UNFCCC contains no explicit commitment. In general, however, the switch to renewable energy use underwrites the Convention, and biomass energy from plants (above all forests) is by far the largest category of renewable energy use (Schlamadinger et al. 2001). With regard to (b) sinks, the Convention acknowledges the important role of sinks and treats them as equally important as the need to reduce GHG emissions.⁷⁵ Sinks as well as sources of greenhouse gases (CO₂, CH₄, N₂O) are affected by the management and conversion of land uses (e.g. forests, croplands and grazing lands).

The **Kyoto Protocol** to the UNFCCC, adopted in 1997 and entered into force in 2005, was designed to go beyond the framework provisions of the UNFCCC in securing binding commitments for the reduction of GHG emissions of altogether 37 industrialized countries and economies in transition,

⁷⁴ A "sink" according to Art. 1.8 UNFCCC 'means any process, activity or mechanism which removes a greenhouse gas, an aerosol or a precursor of a greenhouse gas from the atmosphere.'

⁷⁵ For instance, Art. 3.3 UNFCCC describes as one of the Convention's principles that the 'Parties should take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects. ... To achieve this, such policies and measures should ... cover all relevant sources, sinks and reservoirs of greenhouse gases ..., and comprise all economic sectors.' One of the resulting commitments of the Parties is to '[f]ormulate, implement, publish and regularly update ... programs containing measures to mitigate climate change by addressing anthropogenic emissions by sources and removals by sinks of ... greenhouse gases' (Art. 4.1(b) UNFCCC), and to 'promote and cooperate in the conservation and enhancement... of sinks and reservoirs of [GHG], including biomass, forests and oceans' (Art. 4.1(d) UNFCCC).

plus the European Community – jointly known as Annex I countries.⁷⁶ The Protocol builds on targets and timetables, the crucial targets being called “Quantified Emission Limitations or Reduction Commitments” (QELRCs) which are translated into “assigned amounts” of allowable GHG emissions. At the heart of the Protocol is the reduction of Annex I parties’ GHG emissions by an average of 5.2% against 1990 levels during the first commitment period.⁷⁷

To achieve their QELRCs, Annex I countries shall *reduce GHG emissions*, which they can do, among others, through (a) the substitution of fossil by regenerative energy sources such as biomass. In addition to reducing GHG emissions, industrialised countries shall (b) implement and/or further elaborate policies to *protect and enhance sinks and reservoirs* of greenhouse gases, promote sustainable forest management practices, afforestation and reforestation as well as sustainable forms of agriculture (Art. 2.1(a)(ii) and (iii), KP). These measures have been summarised as “land use, land use change and forestry” (LULUCF) activities, and more recently, with agriculture included, as “agriculture, forestry, and other land use” (AFOLU) activities. The inclusion of sinks into the scope of the Kyoto Protocol was a highly disputed issue which entered the negotiations at a rather late stage; in the opinion of many UNFCCC parties, the Protocol was not intended to deal with sinks, but with the reduction of fossil fuel emissions. Despite the recognition of sinks in the Kyoto Protocol – specified and operationalised by the Marrakesh Accords (2001)⁷⁸ and the Decisions 19/CP.9 (2003) and 15/CP.10 (2004) – their role was limited in the Protocol’s first commitment period from 2008-12. Avoiding deforestation in developing countries (through the CDM projects) was explicitly excluded from the Protocol’s scope but has become an issue under the post-Kyoto negotiations (see text on REDD+ below).

There are basically three mechanisms through which Annex I countries can presently meet their Kyoto targets with the help of biomass production/consumption and LULUCF activities:

- i. through domestic activities aimed at a) substituting fossil fuel use with biomass energy and at b) increasing biological carbon sequestration;
- ii. through purchasing certificates generated through a) biomass energy projects and b) forestry projects under two of the Kyoto Protocol’s flexible mechanisms, the Clean Development Mechanisms (CDM) and Joint Implementation (JI).

In addition, a third mechanism is in the making:

- iii. through purchasing certificates or contributing to an international fund wither of which will potentially be introduced for reducing emissions from deforestation and forest degradation (REDD+)

These three mechanisms are elaborated below, each followed by a discussion of their relevance for sustainable land use.

⁷⁶ As of October 2012, the Kyoto Protocol had 192 parties, including Annex I parties representing 63.7% of Annex I greenhouse gas emissions in 1990. The United States as major GHG emitter rejected ratification in 2001.

⁷⁷ With industrialized countries being considered the historical polluters of the atmosphere and following the UNFCCC’s principle of “common but differentiated” responsibilities there are no quantified reduction targets for Non-Annex I countries (i.e. developing countries).

⁷⁸ FCCC/CP/2001/13/Add.1 and FCCC/CP/2001/13/Add.2.

i. Biomass production/ consumption and LULUCF activities in Annex I parties

The mechanism: The first mechanism includes domestic activities within Annex I parties. Many industrialised countries have adopted policies to the effect that (a) fossil fuel use is substituted by the use of biomass produced domestically or abroad (see chapter → agriculture in this report on specific policies).

Annex I parties shall also use (b) the net changes in GHG emissions by sources and removals by sinks resulting from 'direct human-induced' land use change and forestry activities to meet their commitments. The respective activities are limited to afforestation (A), reforestation (R) and deforestation (D)⁷⁹ since 1990 and reporting of those activities is mandatory (Art. 3.3, KP). In addition, the parties may choose to include further activities, namely forest management (FM) (up to country-specific caps) and agricultural management – more specifically: cropland management (CM), grazing land management (GM) and revegetation (R) – activities carried out since 1990 (Art. 3.4, KP, and Marrakesh Accords). Parties had to decide on the inclusion of those activities by the end of 2006⁸⁰ and while reporting of the respective activities is optional, a LULUCF activity once elected under Art. 3.4 then has to be accounted for over the commitment period on all lands subject to the activity. Emissions and removals resulting from the respective LULUCF activities during the first commitment period are then accounted for in national inventories and either subtracted from (in the case of net increases of GHG) or added to (in the case of net removals of GHG) the parties' assigned amounts. In the latter case, that is, once an Annex I party achieves net removals through its LULUCF activities under Art. 3.3 and 3.4 KP it can issue additional emission allowances on the basis of these activities, so-called 'Removal Units' (RMUs). RMUs equal 1 metric ton of carbon dioxide equivalent and can be used to meet own reduction targets, or be traded with other Annex I countries.

Relevance for sustainable land use: On the relevance of (a) biomass policies for sustainable land use in Annex I countries, see chapter → agriculture in this report.

With regard to the relevance of (b) LULUCF activities for sustainable land use in Annex I countries, it can be assumed that the possibility to credit GHG removals against the Kyoto targets provides a certain incentive to increase such LULUCF activities likely to result in such GHG removals (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; revegetation 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: in 2009, net GHG removals from A/R activities amounted to 129 Mio t CO₂ eq and were balanced by net GHG emissions of 135 Mio t CO₂ eq resulting from deforestation (UNFCCC 2011: 11). The net total of 6 Mio t CO₂ eq emissions in 2009 compares favourably with the 2008 net total of 27 t CO₂ eq emissions. With regard to the LULUCF activities under Article 3.4 KP, which 25 Annex I parties elected to account

⁷⁹ Cf. the definition of afforestation, reforestation and deforestation in the Marrakesh Accords (FCCC/CP/2001/13/Add.1).

⁸⁰ Germany, among others, decided to apply Art. 3.4 and make use of forest management activities for its mitigation efforts in the first commitment period (cf. Liebig and Elsasser 2007).

for, net GHG removals amounted to 1.362 Mio t CO₂ eq in 2009, compared with 1.288 Mio t CO₂ eq in 2008 (ibid). However, it seems premature to attribute this development of intensifying sink activities solely to the KP.⁸¹

ii. Biomass energy and LULUCF activities in the context of the CDM and JI

The mechanism: The second mechanism for developed country parties to the Kyoto Protocol to meet their emission reduction targets with the help of land use relevant activities is the trading of carbon credits from biomass energy projects and LULUCF projects. This can be done through two of the Kyoto Protocol's 'flexible mechanisms' – the Clean Development Mechanism (CDM) and Joint Implementation (JI). Use of these mechanisms has to be supplemental to domestic action which again needs to make up a significant share of a party's effort to meet its commitment.⁸² Established by Articles 6 (JI) and 12 (CDM) of the Kyoto Protocol and elaborated in the subsequently negotiated Marrakesh Accords, both mechanisms provide Annex I parties with the opportunity to offset parts of their emission reduction obligations through investment – either by state or private entities – in emission reduction or sink projects in so-called host countries. These may either be other Annex I parties (JI) or non-Annex I parties, i.e. developing countries (CDM). The general principle is that 'project participants' – host party participants and private or public investors from Annex I countries – develop a biomass energy project⁸³ or a LULUCF project which then undergoes a more (CDM) or less (JI) elaborate project cycle. Once emission reductions or removals through the project are quantified and verified by auditors, internationally tradable emission allowances are issued that can be used to meet the investor country's emission targets: "Certified Emission Reductions" (CERs) in the case of the CDM and "Emission Reduction Units" (ERUs) in the case of JI, each equal to one metric tonne of carbon dioxide equivalent.

With regard to LULUCF projects, slightly different rules apply to the CDM and JI. In the CDM, only two types of LULUCF activities are eligible: afforestation and reforestation (A/R), not, however, forest management, forest conservation or avoided deforestation. A/R projects may only be carried out on specific lands, such as land not containing forest at the project's start. The scope of LULUCF projects under the CDM is limited not only in a qualitative way (to A/R activities), but also in a quantitative way: Annex I parties may use forestry credits to meet their Kyoto Protocol emission reduction targets only equivalent to 1% of their respective base year emissions, times five (for the number of years of the commitment period). In order to achieve climate and sustainable development benefits, there are a number of institutional safeguards in the CDM. These include the requirements to prove "additionality" of the project (Art. 12.5(c) and to account for leakage⁸⁴; the expiry of credits on pre-defined dates ("temporary Certified Emission Reductions" / tCERs, 'long-term Certified Emission Reductions' / ICERs) in order to address the risk that GHG

⁸¹ 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 year data (2008, 2009) available at present, conclusions from these data are not very reliable.

⁸² Decision 2/CMP.1, para. 1.

⁸³ biomass related projects according to the UNEP/Risoe's CDM Pipeline include: agricultural residues (rice husk, mustard crop, poultry litter, other kinds); bagasse power; biodiesel; biomass briquettes; charcoal; domestic manure; forest biomass; forest residues (sawmill waste, other); gasification of biomass; industrial waste; manure; palm oil solid waste; palm oil waste; stoves; switch from fossil fuels to piped biogas; and wastewater. It is noteworthy that nearly none of these projects have a particular relevance for land use.

⁸⁴ In forestry projects, leakage refers to an increase in GHG emissions which occurs outside the project's spatial boundaries and which is measurable and attributable to the project.

removals may be non-permanent; third-party verification to examine the net GHG removals through the project; stakeholder consultation requirements as well as social and environmental safeguards.

In the JI mechanism, biomass related projects follow the 'standard' JI procedure, either through a 'Track 1' verification procedure ('party verification') or a 'Track 2' process ('independent verification'), depending on the eligibility status of the involved parties. The rules for LULUCF projects under the JI differ in some instances, but are altogether less complex than under the CDM. All LULUCF activities under Art. 3.3 and 3.4 KP that enhance anthropogenic removals by sinks are eligible for JI projects, not only a-/reforestation projects like under the CDM. Projects generally need to conform to the definitions, accounting rules, modalities and guidelines under Article 3.3 and 3.4 KP. Among others, optional activities under Art. 3.4 need to be accounted for by the host country in its national inventory. In the JI, too, safeguards exist to deal with forestry-specific issues such as additionality and leakage. These safeguards differ slightly depending on whether a Track 1 or Track 2 process is applicable. Unlike under the CDM, credits resulting from JI LULUCF projects are not temporary.

Relevance for sustainable land use: On the sustainable land use relevance of (a) biomass related projects in the CDM and JI, it can be assumed that the possibility of generating tradable CERs (CDM) or ERUs (JI) via bioenergy projects incentivises land use activities that contribute to the generation of biomass in non-Annex I countries (CDM) or in Annex I countries (JI). By switching from carbon intensive fossil fuels to renewable biomass for energy production, greenhouse gas emissions can be reduced, yet land use intensity can potentially rise (e.g., in the case of oil palm, sugarcane and corn cultivation). There are currently 448 biomass energy projects registered under the CDM, which are expected to generate 116 Mio Certified Emission Reductions (CERs) until 2012 (UNEP Risoe 2012a), 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 (UNEP Risoe 2012b). 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".

With regard to (b) LULUCF projects within the CDM and JI, there are a couple of critical issues with regard to the sustainability of land use. In particular the possibility that A/R projects take the form of large-scale monoculture plantations – with all their known potential impacts regarding ground water and irrigation, chemicals use, evictions of settlers etc. – has raised concerns (Lecocq and Ambrosi 2007: 137). No international minimum standards exist as to what project impacts are acceptable from a sustainability perspective (e.g. introduction of genetically modified trees and invasive tree species in A/R projects). These impacts are subject to the agreement between the host party and the investor. Generally, LULUCF projects can increase the scarcity of arable land, resulting in more or less voluntary resettlements of the population. In quantitative terms, LULUCF projects only play a major role within both the CDM and JI. By October 2012, 40 A/R CDM projects were registered, with a potential to generate 12,4 Mio CERs and equalling 0.75% of all registered CDM activities (UNEP Risoe 2012a, CDM EB 2012). The low interest in forestry CDM projects is generally explained by the following factors: the complex rules governing A/R projects and their late agreement, both resulting from a controversial negotiation history; the transaction costs and risks for buyers related to the temporary nature of forestry credits; exclusion of tCERs and ICERs

from use within the EU Emissions Trading Scheme (ETS) which restricts market opportunities and private sector demand; and finally, local opposition to plantations and criticism from international NGOs (Scholz and Jung 2008). With regard to the JI, LULUCF projects are also a rare species: in October 2012, exactly two afforestation projects were registered. These are expected to generate 2,2 Mio RMUs till 2012, thus constituting 0,3% of the credits to be generated by all JI projects (UNEP Risoe 2012b).

iii. “Reducing Emissions from Deforestation and Forest Degradation in Developing Countries” (REDD+)

Objectives and mechanisms: The International Panel on Climate Change (IPCC) in its fourth Assessment Report (2007) estimated that during the 1990s land use changes, primarily deforestation, caused about 20% of anthropogenic global CO₂ emissions. Against this background, REDD+ is presently negotiated within the UNFCCC⁸⁵ as an instrument to promote mitigation actions in the forest sector. The basic idea is that tropical forest country parties to the FCCC 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 a ultimate step. Safeguards are to prevent negative effects in particular on indigenous and local communities and on biodiversity.

Relevance for sustainable land use: REDD+ will potentially influence land use practices in all developing countries that opt to participate in the scheme and that will qualify for funds (in a fund-based approach), and respectively for carbon credits (in a market-based approach). The potential quantitative relevance for land use is hence substantial.⁸⁶ 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, for instance, 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. 2010). For example, provided the current forest definition

⁸⁵ Decisions 1/CP.13; 2/CP.13; 4/CP.15; 1/CP.16; 1/CP.17

⁸⁶ The Coalition for Rainforest Nations (CfRN) that helped initiate the REDD+ negotiations presently comprises 41 nations: Argentina, Bangladesh, Belize, Central African Republic, Cameroon, Chile, Congo, Costa Rica, DR Congo, Dominica, Dominican Republic, Ecuador, El Salvador, Equatorial Guinea, Fiji, Gabon, Ghana, Guatemala, Guyana, Honduras, Indonesia, Kenya, Lesotho, Liberia, Madagascar, Malaysia, Nicaragua, Nigeria, Pakistan, Panama, Papua New Guinea, Paraguay, Samoa, Sierra Leone, Solomon Islands, Suriname, Thailand, Uruguay, Uganda, Vanuatu and Vietnam.

remains in place, activities “enhancing forest carbon stocks” can create incentives for a conversion of primary forests and degraded forests into commercial tree plantations. With REDD+ focussing 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”). Finally, there is no common understanding of the concept of “sustainable management of forests” and well-defined criteria and indicators are missing. Hence, concerns exist that related REDD+ activities will not adequately take biodiversity into account.

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., the costs for foregoing alternative uses of the forested land such as agriculture) can provide major barriers for both compliance and impact.

GEF Incentive Mechanism for Forests (since 1991)

Objectives and mechanisms: The Global Environment Facility (GEF) unites 182 countries in partnership with international institutions, non-governmental organizations and the private sector. Since its inception in 1991 under the auspices of the World Bank, the GEF has financed over 300 projects and programs focusing on forest conservation and management in developing countries. Through its pilot SFM (Sustainable Forest Management) program in funding cycle GEF-4 (2007–2010), the GEF took early action in the fields of REDD+ (Reducing Emissions from Deforestation and Forest Degradation in Developing Countries) and LULUCF (Land Use, Land use Change and Forestry) by providing resources for pilot projects focusing on cross-sectoral cooperation. In the current funding cycle (GEF-5), and in line with the UNFCCC’s Copenhagen Accord that calls for “...substantial finance to reduce emissions from deforestation and forest degradation...” the GEF will provide up to \$1 billion for the implementation of a SFM/REDD+ Program throughout the period 2010–2014. The GEF currently is the largest funder of SFM projects worldwide, totaling at over \$1.6 billion and leveraging \$5 billion from other sources.

Relevance for sustainable land use: By supporting forest conservation and SFM, the GEF mechanism is apt to contribute to sustainable land use as well as to climate change mitigation. However, the funding of (large-scale) plantations has caused critique as these tend to have negative effects on forest biodiversity and ecosystems as well as on the livelihoods of forest-dwellers.

BioCarbon Fund

Objectives and mechanisms: The BioCarbon Fund (BioCF), housed within the World Bank’s Carbon Finance Unit, is a public-private initiative mobilizing resources for projects that sequester or conserve carbon in forest and agroecosystems. BioCF is providing funds for both afforestation and reforestation projects (A/R) under the Clean Development Mechanism (CDM) and other land-based projects currently excluded from the CDM (e.g., Reducing Emissions from Deforestation and Forest Degradation-Plus/REDD+ and sustainable agricultural land management). It aims to deliver cost-effective emission reductions, while promoting biodiversity conservation and poverty alleviation. The Fund is composed of two tranches. The first tranche became operational in 2004

with total capital of \$53,8 million; because of the high level of interest in land-based carbon a second tranche, capitalized at \$38,1 million, was opened in 2007. Participants investing in the BioCF include six public entities and 12 private companies.

Relevance for sustainable land use: As of 2011, the BioCF had contracted 8,6 million emission reductions from 21 afforestation and reforestation CDM projects. These projects are located in 16 countries and five regions of the world. The BioCF resources are allocated to projects on degraded lands: half to projects with environmental restoration purposes, 25 % for fuel-wood and 21 % for timber. All of the projects are to directly benefit poor farmers.

Forest Carbon Partnership Facility (FCPF)

Objectives and mechanisms: In 2007, the World Bank launched its Forest Carbon Partnership Facility (FCPF) to act as a catalyst to promote public and private investment in REDD+ (→ Reducing Emissions from Deforestation and Forest Degradation, see above). The FCPF consists of two funds: the Readiness Fund and the Carbon Fund. The Readiness Fund supports countries in developing a national REDD+ strategy, while the Carbon Fund intends to facilitate the trading of forest carbon credits. In addition, the program aims to: ensure equitable benefit sharing and promote future large scale positive incentives for REDD; test ways within the REDD+ approach to conserve biodiversity and enhance livelihoods of local communities; and disseminate the knowledge gained through FCPF implementation.

Relevance for sustainable land use: The number of countries participating in the FCPF has expanded rapidly and in 2012 amounts to 37. Total funding available or pledged under the FCPF for the Readiness Fund is \$205,7 million, while \$146,8 million have been committed or pledged to the Carbon Fund (Dooley et al. 2011). The potential quantitative relevance for land use is therefore substantial. However, in qualitative terms, the FCPF has been notable for the lack of clarity over safeguards and their application. Despite repeated reworking of its social, environmental and due diligence guidelines over the past three years, the FCPF has yet to commit to any minimum standards for specific points in its readiness program, though vague commitments to apply safeguards to the “degree applicable” were made in late 2010 (Dooley et al. 2011).

Forest Investment Program (FIP)

Objectives and mechanisms: The Forest Investment Program (FIP) is a program of the Strategic Climate Fund (SCF) within the World Bank’s Climate Investment Funds (CIF). The FIP supports developing countries’ efforts to reduce deforestation and forest degradation (REDD) and promotes sustainable forest management that leads to emission reductions and the protection of carbon reservoirs. It achieves this by providing scaled-up financing to developing countries for readiness reforms and public and private investments, identified through national REDD+ readiness or equivalent strategies. While the FCPF (see above) provides grant funding for

readiness, the FIP provides larger-scale funds for the development and implementation of national forest investment strategies in selected pilot countries⁸⁷.

Relevance for sustainable land use: Regarding the potential qualitative relevance for land use, some groups, such as the Rainforest Foundation, have raised concerns about the sustainability of FIP activities, particularly in relation with industrial-scale logging of natural forests which are then used as plantations. Although the FIP's operational guidelines were revised to reference the UN Declaration on the Rights of Indigenous Peoples (UNDRIP), specific criteria to comply with UNDRIP have not been incorporated. Furthermore, recommendations by civil society observers that FIP guidelines should comply with relevant international environmental and human rights agreements were rejected.

REDD+ Partnership

Objectives and mechanisms: To fill the gap till REDD+ is adopted at UNFCCC level, the REDD+ Partnership was founded at a Climate and Forest Conference in Oslo.⁸⁸ The core objective of the Partnership is to provide a voluntary, non-legally binding framework for the interim REDD+ Partnership, in order to scale up REDD+ actions and finance, improve the effectiveness, efficiency, transparency and coordination of REDD+ initiatives, and to facilitate capacity enhancement as well as knowledge and technology transfer. The partnership will support and contribute to the UNFCCC process, and will promote transparency around existing financing initiatives. The World Bank and UN will provide secretariat services.

Relevance for sustainable land use: According to the REDD+ Partnership, reported bilateral funding arrangements now total US \$3.11 billion, while country to multilateral institution funding has reached US \$2.08 billion. The parties involved in the REDD + Partnership have agreed to increase the funding after 2012 provided that sufficient emission reductions have been achieved.

Regional governmental approaches

European Emissions Trading System (EU-ETS)

Objectives and mechanisms: The European Emissions Trading System (EU-ETS) is a cap-and-trade system set up in 2005. It operates within the 27 EU member states plus Iceland, Liechtenstein and Norway. The scheme covers CO₂ (and to some extent nitrous oxide) emissions from some 11,000 companies – power stations, combustion plants, oil refineries, iron and steel works, plants producing cement, glass, lime, bricks, ceramics, pulp, paper and board, as well as the aviation sector. In 2013, the petrochemicals, aluminum and ammonia sectors as well as additional greenhouse gases will be included into the third commitment period, starting 2013. Bioenergy

⁸⁷ Pilot countries include Burkina Faso, Ghana, Indonesia, Laos and Peru (with additional proposed FIP pilots in Brazil, Mexico and Democratic Republic of the Congo).

⁸⁸ REDD+ Partners are: Angola, Argentina, Australia, Belgium, Brazil, Burundi, Cambodia, Cameroon, Canada, Central African Republic, Chad, China, Colombia, Costa Rica, Democratic Republic of Congo, Denmark, Dominican Republic, Ecuador, Equatorial Guinea, Finland, France, Gabon, Germany, Ghana, Guyana, India, Indonesia, Italy, Japan, Kenya, Laos, Malaysia, Mali, Mexico, Nepal, the Netherlands, Nigeria, Norway, Panama, Papua New Guinea, Peru, Philippines, Republic of Congo, Rwanda, Sao Tomé and Príncipe, Singapore, Slovenia, South Africa, South Korea, Spain, Sweden, Switzerland, Thailand, Togo, Uganda, United Kingdom, United States and Vietnam.

under the ETS is now subject to compliance with the EU RED sustainability criteria. Currently, this covers liquid bioenergy and biofuels only, but with the ongoing discussion to extend the RED criteria to solid bioenergy, this could also require e.g. pellets and wood chips for co-firing to qualify.

Relevance for sustainable land use: The land use relevance of the EU-ETS is limited: firstly, the sectors covered only have a (comparatively) minor impact on land use. Secondly, as the EU-ETS excludes the use of certificates (I/t-CERs, RMUs) generated through LULUCF projects within the CDM and JI as means to offset emission reduction obligations, the scheme is restricted to the use of credits from biomass projects. As was pointed out above, there are currently 487 biomass (including biogas) energy projects registered under the CDM and JI (October 2012), expected to create emission reductions equivalent to 119,2 Mio CERs/ERUs. 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”.

Hybrid and non-governmental approaches

Standards for forest and agricultural carbon projects in the voluntary carbon market

Objectives and mechanisms: Beyond the carbon markets governed by the → Kyoto Protocol or regional and national emissions trading schemes that commit governments or companies to reduce GHG emissions, a ‘voluntary’ market exists which is regulated by voluntary private standards only. Like the Kyoto markets, the voluntary market is based on the trade of emissions reductions or removals generated in mitigation projects according to a baseline-and-credit mechanism, however, with no common body regulating the generation and exchange of the resulting Voluntary/Verified Emission Reductions (VER) credits and with no common rules on the quality of credits (Merger & Pistorius, 2011).

In the past years, a number of third party standards have emerged which govern the following aspects (ibid, drawing on Broekhoff 2007): (1) carbon accounting (additionality, baseline, leakage, quantification and accounting of GHG benefits, permanence, social and environmental performance); (2) monitoring, reporting and verification (MRV), including guidance, third-party validation and verifications, and accreditation of validating/verifying institutions; (3) registration and enforcement (preventing double counting, utilization of independent registries, guidance on ownership and liabilities of reversal of GHG benefits); and (4) social and environmental performance of the projects (beyond GHG emission reductions/ removals). Pure carbon standards focus on the first three types of activities, though not all of them are fully-fledged standards (such as the Verified Carbon Standard/ VCS, the VER+ and the Gold Standard); depending on the components they cover or leave out, they can be understood project design standards, offset standard screens (Voluntary Offset Standard/ VOS), offset protocols (ISO-14.065) or others (Kollmuss, Zink, & Polycarp, 2008). Pure social and environmental performance standards cover the fourth dimension only (e.g., the Social Carbon Standard, the Community & Biodiversity Standards/ CCBS). Holistic standards cover all four dimensions (e.g., the Carbon Fix Standard/ CFS, the Plan Vivo Standards), though no standard covers all aspects. Therefore, double certification is widespread.

Relevance for sustainable land use: In 2011, the volume of the voluntary forest carbon market was estimated to have been 18.3 million tons of CO₂-equivalents (MtCO₂e), equivalent to a market value of US\$ 185 million, its highest-ever value (Peters-Stanley, Hamilton, & Yin, 2012). In comparison, Afforestation/Reforestation (A/R) projects under the → Clean Development Mechanism (CDM) achieved a volume of 5.9 MtCO₂e and a value of US\$ 23 million (ibid).⁸⁹ The respective emission reductions or removals are generated within the following project types (ibid; The Katoomba Group, Ecosystem Marketplace, & Forest Trends, 2011):

- Afforestation and reforestation (A/R) projects are projects where trees are grown: afforestation (A) projects grow forests on land that has not been forested in recent history, while reforestation (R) projects re-grow forests in areas where forests have been previously;
- Improved forest management (IFM) projects include activities that will enhance carbon stocks on currently forested lands;
- REDD projects avoid GHG emissions by preserving existing forests threatened by activities that reduce the carbon storage of the forest;
- Sustainable Agricultural Land Use (SALM) projects include activities such as agroforestry, cover crops and improved tillage practices that will increase carbon stocks in agricultural landscapes.

Among these project types, A/R is presently dominant (14 MtCO₂e), followed by REDD (7.4 MtCO₂e), IFM (4.2 MtCO₂e) and SALM (0.04 MtCO₂e) (Peters-Stanley et al., 2012). In terms of effectiveness, the recent spread of voluntary standards is problematic in terms of market-transparency.

2.2.2 Biodiversity

(Lead author: Timo Kaphengst)

Overview

Land use and changes in land use in particular are the key driving factors for losses of terrestrial biodiversity. Consequently, policies aiming at halting further losses of biodiversity inevitably have to deal with land use in the context of a wide range of different ecosystems such as forests, grasslands, arable land, wetlands and coastal zones. There is also a plethora of policies directly or indirectly addressing the conservation and sustainable use of biodiversity, of which the UN Convention on Biological Diversity (CBD) is the most significant at the global level.

Within the following screening, particular emphasis has been placed on the general implementation structures of the CBD and the related Aichi Targets determining the current political agenda on international biodiversity protection. While being significant in terms of international governance on biodiversity and also for land use, it has to be noted that the CBD is first of all an international framework, whose effectiveness strongly depends on its national

⁸⁹ The large size of the voluntary as compared to the Kyoto market on forest carbon is a consequence of the fact that the EU Emissions Trading Scheme does not recognise forestry credits from the CDM.

implementation. Moreover, two protocols under the CBD, which have a rather indirect but potentially significant impact on land use (particularly in developing countries), are discussed: (1) The Nagoya Protocol on Access and Benefit Sharing (ABS) and (2) the Cartagena Protocol on Biosafety.

We left out other international conventions on biodiversity such as Ramsar, the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and the Convention on Migratory Species (CMS), although these might also have an effect on sustainable land use. Ramsar focuses on wetlands, whereas CITES and CMS do not have a clear link to land use itself but rather focus on specific species.

In contrast, the Seville Strategy and the international guidelines set by the UN Educational, Scientific and Cultural Organization (UNESCO) for the establishment of Man and Biosphere Reserves (MAB) have international importance for the management of protected areas and therefore on land use in general. Additionally, many other forms of sustainable land use are developed, tested and applied in biosphere reserves all over the world.

In terms of regional governmental approaches, the EU Habitats Directive and Birds Directive provide the basis for the largest network of protected areas worldwide (Natura 2000) encompassing the ecosystems mentioned above (e.g. forests, grasslands, arable land, wetlands and coastal zones) as well as marine areas. In recent years, the ecosystem service approach, highlighting the benefits humans obtain from ecosystems and the economic effects that the degradation of ecosystem services has on various sectors and human well-being, has gained enormous attention through the Millennium Ecosystem Assessment and the TEEB initiative. It can be expected that this will also result in a shift in protection strategies, which might subsequently change land use practices. Some of these new approaches, including green infrastructure, habitat banking and the no-net loss initiative, are briefly outlined in the section on the EU 2020 Biodiversity Strategy.

Mainly based on the analysis of the CBD but also regarding the implementation of Natura 2000 and other nature conservation policies/strategies, it can be concluded that biodiversity goals at the international level have mainly failed for two major reasons: Firstly, having concentrated on protected areas in the past, conservation strategies fall short on the integration of other sectors, for which land use practices in agriculture, forestry and settlement are of major concern. Secondly, lacking financial resources has limited effective implementation of strategies at all relevant levels. Therefore, two more recent measures, which were debated under the CBD deserve increasing attention concerning land use in the future: the “ecosystem approach” and the Green Development Initiative (GDI). The first could potentially serve as a conceptual framework for an integrated strategy for land use, which takes the ecosystems integrity and their services into account. The second is a new model to actively involve the private sector in investing in biodiversity and ecosystems.

International governmental approaches

UN Convention on Biological Diversity (CBD)

Objectives and mechanisms: The United Nations Convention on Biological Diversity (CBD), adopted in 1992, is one of three UN Rio Summit conventions. The conservation and sustainable use of

biological diversity and the sharing of benefits arising from the utilisation of genetic resources are at the core of the CBD, and thus the fight against the degradation of ecosystems. The CBD, which currently has 193 parties, is legally binding but contains a host of provisions that are qualified by clauses such as “subject to national legislation” or “as appropriate”. Biannually, the Conference of the Parties (COP) – i.e., the decision-making body of the CBD – meets and adopts policies on different thematic priorities.

The **Global Environment Facility (GEF)** is the financial mechanism of (among others) the CBD and provides financial support to developing countries to implement the objectives and programmes of the CBD. In view of the weak level of implementation of the Convention, a strategy for resource mobilisation was adopted by the COP in 2008 to assist Parties to set national targets, actions and timeframes, as well as to establish financial mechanisms, guided by a country specific resource mobilisation strategy for the effective implementation of the Convention⁹⁰.

Furthermore, a **Clearing-House Mechanism (CHM)** has been created to facilitate technical and scientific cooperation between Parties through the exchange of information and best practices. Two significant protocols of the CBD, the Nagoya and the Cartagena Protocol, are discussed in a separate section further below.

Under the CBD, Parties shall develop or adapt policies reflecting the measures set out in the Convention and integrate the conservation and sustainable use of biological diversity into sectoral and cross-sectoral policies (Art. 6 (a, b)). Among others, Parties are obliged to establish a system of protected areas (Art. 8(a)) and to adopt measures to avoid or minimize adverse impacts on biological diversity (Art. 10(b)). An important procedural requirement is that parties need to introduce procedures for an environmental impact assessment of projects and evaluations of programmes and policies (Art. 14.1). **National reports** are the main verification means for the obligations set out by the CBD. In these reports, Parties have to outline national measures taken to implement the Convention and the measures’ effectiveness and progress (Art. 26).

Over the years, the COP has endorsed seven **thematic programmes of work** that reflect the major biomes of the world and provide concrete guidance by describing principles, key issues, outputs and timetables. The most relevant programmes in terms of global land use pertain to the biodiversity of forests, dry and sub-humid lands biodiversity, protected areas, and agriculture.

The programme of work on forest biodiversity consists of three elements: (i) conservation, sustainable use, and benefit-sharing, (ii) an institutional and socio-economic enabling environment, (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”, also known as the “Forest Principles”, produced at the 1992 Rio Summit, governments built the basis for numerous forest-related processes at the international level (see also chapter → forestry). Increasingly, much of the programme is focusing on the creation and refinement of forest indicators that allow for the assessment of the status and trends of forest resources globally. Indicators help to specify the concept of “sustainable forest management” (SFM), which is widely used in international forest policy but poorly defined and therefore inconsistently applied. The UN programme on Reducing

⁹⁰ <http://www.cbd.int/financial/strategy/> last accessed March 2011

Emissions from Deforestation and forest Degradation (REDD+), formally negotiated under the UNFCCC (see chapter → climate), has also become an important issue under the CBD. At its ninth meeting (COP 9), the COP emphasised to ensure that REDD+ efforts do not run counter to the implementation of the objectives of the programme of work on forest biodiversity. The resulting provisions entered into the ongoing negotiations under the UNFCCC and, at the COP 16 (held in 2010 in Cancun), led to the introduction of “biodiversity safeguards”, which have to be considered in REDD+ projects.⁹¹

Dry and sub-humid lands, including arid and semi-arid regions, grasslands, savannahs, and Mediterranean landscapes, encompass approximately 47% of the Earth's terrestrial area. The programme of work on dry and sub-humid lands is divided into two parts that need to be implemented in parallel (decision V/23, annex I, paragraph 4): "assessments" and "targeted actions in response to identified needs". While the assessments mainly consists of knowledge-building and support activities, the targeted actions include the management of protected areas, responsible resource management and support for sustainable livelihoods. The programme of work closely cooperates with the UNCCD (see chapter → soil) and builds on capacity building, networks and case studies of successful management to achieve its targets.

Protected areas are a central element of the work in the thematic areas and cross-cutting issues addressed by the CBD. The Programme of Work on Protected Areas (PoWPA), adopted by the CBD in February 2004, can be seen as the “most comprehensive and specific protected area commitments ever made by the international community”⁹². Article 8 of the Convention contains specific references to protected areas encouraging Parties to, inter alia, establish a system of protected areas⁹³, to develop guidelines for the selection, establishment and management of protected areas and to cooperate in providing financial and other support for in-situ conservation, particularly to developing countries.

In addition, the Parties to the Convention have adopted the “**ecosystem approach**” as the CBD’s primary framework for action (Decision V/6, VII/11). The ecosystem approach, which is also a cross-cutting issue like protected areas, is a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way⁹⁴. 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.

In 2002, the Parties to the CBD committed themselves to significantly reducing the rate of biodiversity loss by 2010. Faced with failure in reaching this target, the recently agreed **Strategic Plan for Biodiversity 2011-2020**⁹⁵ takes a broader perspective on what is needed to preserve biodiversity and to use ecosystems more sustainably by focussing on food security, human health, local livelihoods, clean air and water etc. The resulting binding “**Aichi Biodiversity Targets**”⁹⁶ are mostly set for 2020 (partly for 2015), and they are accompanied by a vision for 2050. All strategic

⁹¹ for further information see: <http://www.cbd.int/forest/redd-plus/default.shtml> last accessed March 2012

⁹² see: <https://www.cbd.int/protected/overview/>

⁹³ see for example Natura 2000 for the European Union described further below in this section

⁹⁴ <http://www.cbd.int/ecosystem/description.shtml> last accessed March 2013

⁹⁵ further information can be found here: <https://www.cbd.int/sp/> last accessed March 2013

⁹⁶ named after the region of Aichi (Japan) of which Nagoya is the capital

goals guiding the Aichi Targets can be linked to land use more or less directly. However, Target 7 under “Strategic Goal B: Reduce the direct pressures on biodiversity and promote sustainable use” directly relates to areas currently used for agriculture, aquaculture and forestry and their management to ensure, that “[b]y 2020 [these areas] are managed sustainably, ensuring conservation of biodiversity”⁹⁷. In addition, Target 11 sets that by 2020 at least 17 per cent of land area should be under conservation. At the last COP in 2012 in Hyderabad, a representative from the CBD secretariat argued at the “Land Day” that sustainable land management could contribute 50% or more to the achievement of the Aichi Targets⁹⁸.

Around 2009, a new policy debate developed as a reaction to the broadly recognised lack of financing resources and the growing need to involve the private sector in funding biodiversity conservation and management. In this context, a “Green Development Mechanism” (GDM) was promoted, in linguistic analogy to the “Clean Development Mechanism” (CDM), under the UNFCCC. The debate has resulted in the establishment of a “**Green Development Initiative**” (GDI), which is currently in a pilot phase until 2014. It supports biodiversity-positive area management through registering and/or certifying biodiverse sites following the GDI standard (GDI 2013). The standard consists of two general objectives and a GDI area management system comprising a common set of transparent and accountable steps for managed areas. The aim is to attract financial support from private investors who are willing to demonstrate corporate commitment or react to requirements from domestic regulators, investors, and/or customers. Unlike the CDM, the GDI makes use of a voluntary (not a compliance) market and does not support international offsets. The initiative was supported by a number of international organizations including the UNEP, the CBD Secretariat, the OECD and IUCN.

Relevance for sustainable land use:

Biodiversity and its preservation (strategies) are strongly related to land use and land use change. The different thematic programmes of work, as well as recent developments and debates on the “ecosystem approach” or the Green Development Initiative, show the numerous potential leverages of the CBD for more sustainable land use (policies). It strongly depends on how different measures are designed and practically implemented on national, regional and local scales. For example, protected areas, a core element of the CBD and biodiversity preservation in general, could on the one hand contribute significantly to the sustainable use of land if the site management does not exclude sustainable land use practices and actors relying on them. On the other hand, protected areas could be seen as yet another competing factor in global land use, potentially reducing the available land for the numerous demands of a growing world population, specifically in rural communities.⁹⁹

While being significant in terms of international governance on biodiversity and also for land use, it has to be noted that the CBD is first of all an international framework, whose effectiveness strongly depends on its national implementation. The 193 parties of the CBD essentially cover all relevant regions in the world. After a period of poor implementation of the CBD goals at the

⁹⁷ see: <http://www.cbd.int/sp/targets>

⁹⁸ see: <http://www.unccd.int/en/programmes/Event-and-campaigns/Land-Day/Land%20day%206/Pages/Land-Day-6-report.aspx>

⁹⁹ For additional information regarding land use and growing populations see Fairhead et al (2012), specifically the discussion on “green grabbing”.

national level¹⁰⁰, 89 percent of the parties had finalized the strategies and plans by 2010 (SCBD 2010). It has to be noted, though, that a prominent non-party is the US, which signed the Convention but never ratified it. Moreover, the implementation of a plan or strategy obviously does not guarantee effective achievement of biodiversity goals. In 2009, for example, the EU acknowledged that the goal of “halting the loss of biodiversity” until 2010 had not been met on European territory. Assessments for the EU have concluded that a significant reason for falling short of this goal is that many of the drivers of biodiversity loss emanate from sectors beyond the control of conservation interventions – in Europe the most important sector is agriculture (see EEA 2010). Hence, it can be concluded that despite the numerous relationships to land use, biodiversity strategies – either by the CBD or by national strategies – generally fail to develop integrated and widely applicable approaches towards (more sustainable) land use.

Another main reason for a conceived gap between policy targets (by the CBD and others) and a continuous loss of global biodiversity is a broadly experienced shortage of financial resources. The progress report on the implementation of the Strategic Plan in 2010 highlighted that “most (87 per cent) Parties continue to report that limited capacity, including financial, human and technical issues, is a major obstacle to the implementation of one or more of the three goals of the Convention”(SCBD 2010).

It therefore remains to be seen, if the commitments made at the last Conference of the Parties in Hyderabad in 2012¹⁰¹ will prove to be effective in terms of financing biodiversity conservation in the upcoming years and if other financing instruments like the GDI, which try to engage the private sector more intensively, will become successful.

Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention of Biological Diversity

Objectives and mechanisms: The Nagoya Protocol on Access and Benefit-sharing (from here on referred to as NP) is an international agreement adopted by the 10th Conference of the Parties of the Convention on Biological Diversity in 2010. The NP sets out rules to strengthen the rights of developing countries with regard to the ownership of biological resources derived from their territories, and the rights of indigenous and local communities with regard to their knowledge associated with genetic resources. It builds on the third obligation of the CBD that aims to establish access and benefit sharing (ABS) or fair and equitable exchange arising out of the utilization of genetic resources.

The development of the NP arises from reoccurring incidents in recent history of ‘bio-piracy’, a term describing the situation whereby indigenous knowledge on biological resources is used by actors from science or industries without giving indigenous communities or individuals compensation, or recognition for their knowledge — sometimes even neglecting to ask permission to use such knowledge (IEEP et al. 2012). The NP establishes legal obligations for Parties that ensure developing countries and indigenous communities are compensated for the use of their

¹⁰⁰ e.g. little over half of all Parties had developed national biodiversity strategies and action plans by 2006 (source)

¹⁰¹ Using a baseline figure of the average annual national spending on biodiversity between 2006 and 2010, developed countries stated they would double biodiversity related international financial flows by 2015. At the same time, all Parties agreed to substantially increase domestic expenditures for biodiversity protection over the same period.

knowledge and genetic resources. The NP includes obligations with regards to access of biological resources; sharing of benefits arising from the utilization of such resources; access to traditional knowledge associated with such resources; and sharing of benefits arising from the utilization of biological knowledge. To date, 92 Parties have signed the Protocol, of which 7 have ratified it.

Relevance for sustainable land-use: The NP has indirect impacts on land-use worldwide, specifically because developing countries and the indigenous communities contain the world's greatest share of biodiversity (both wild and agricultural). Indigenous populations also often possess invaluable knowledge on how to use native genetic resources and are particularly vulnerable to external exploits. External actors, often from developed countries, interested in these genetic resources can include research institutes, universities and private companies operating in various sectors such as pharmaceuticals, cosmetics, agriculture, horticulture and biotechnologies.

The legal framework established by the NP helps prevent the exploitation of indigenous communities and developing countries by providing opportunities to establish ownership, opportunities for participation and benefits for the knowledge they possess and the use of their knowledge by others. The NP, therefore, is likely to bring about more responsible environmental stewardship, as well as the preservation of increasingly rare ancestral knowledge of native biological resources, land use practices and agricultural diversity. Through ABS rules, the NP contributes to the conservation of biological diversity through the sustainable and more equitable use of its components. In addition to the provided conservation value, the NP fosters the idea that biodiversity can significantly contribute to economic development if monitored and legally enforced through benefit sharing.

The Cartagena Protocol on Biosafety

Objectives and mechanisms: The Cartagena Protocol on Biosafety (CPB) was adopted in 2000 as a supplementary agreement to the Convention on Biological Diversity (CBD) and came into effect in 2003. The Protocol promotes biosafety by establishing rules and procedures for the safe transfer, handling and use of living modified organisms (LMO) resulting from modern biotechnology (CBD 2012). The development of the CPB stems from the concern, that although biotechnologies may have a significant capacity for progress, they can also be potentially dangerous to biodiversity, the environment and human health. The CPB receives widespread support from 159 countries and is legally binding for Parties, such as all EU member states, who ratify it. However, several major nations have not ratified it (Argentina, Chile, Canada) and several heavyweights in economic trade have not even signed the Protocol (Russia, US, Australia) (Genetic Rights Foundation 2013).

A central component of the Protocol is the 'advanced informed agreement' (AIA) that concerns the transboundary rules for LMOs. The AIA procedure requires exporters to seek consent from importing countries before the initial introduction of an LMO into the environment (e.g. seeds, fish for release, and microorganisms for bioremediation). To assist countries in their decision-making capacity, the CPB provides methodologies and guidance on developing risk assessments and tools to enable Parties to make an informed decision. By virtue of its existence, it also protects a Party's right to reject imports that are perceived to pose a threat to their environment, biodiversity or health. To effectively implement these procedures, the CPB also developed the Biosafety Clearing-House, which is an online web-platform designed as an informational support mechanism, that

collects and disseminates information on the scientific, technical, environmental and legal particularities of LMOs.

Relevance for sustainable land-use: The relevance of the CPB for land-use and specifically on biodiversity is direct and global in scope. The Protocol is based on the “precautionary principle” that understands the cost of inaction in a specific situation to be high enough to bring about preventative action as a presupposition to scientific certainty.¹⁰² In other words, the existence of the CPB as a legally binding instrument minimizes the potential risks that LMOs could impose on biodiversity and ecosystems around the world, but whose impact remains scientifically ambiguous and difficult to prove. One debate, for instance, surrounds the issue of genetic modification with its proponents arguing that it may lead to land-use efficiency in agriculture and its critics arguing that it may permanently devastate the biological diversity of the environment in an irreconcilable way ultimately leading to the loss of species and degradation/simplification of ecosystems (Mackenzie 2003). The Protocol, therefore, puts in place regulatory tools and instruments that give nations the ability to protect their territory from potentially damaging LMOs, or for instance, from GMOs by working as a regulatory mechanism in international trade. It is important to note, that the potential danger of LMOs on global biodiversity was the greatest concern and underlying mandate for developing the Protocol in the first place.

UNESCOs Seville Strategy and international guidelines for the establishment of Man and Biosphere Reserves

Objectives and mechanisms: The Man and the Biosphere (MAB) Programme, established by UNSECO in 1971, is an intergovernmental scientific programme aiming to set a scientific basis for the improvement of the relationships between people and their environment globally. Biosphere reserves are nominated by national governments and must meet a set of criteria and adhere to a set of conditions before being admitted into the World Network of Biosphere Reserves, created by the MAB programme in 1977. In addition to the UNESCO qualifications, every country can issue its own rules and regulations for biosphere reserves on their territory. The central component of the biosphere reserve approach is the link between the conservation of biodiversity and the development needs of local communities, as well as research. Biosphere reserves can therefore be seen as protected areas, where new and potentially optimal practices to manage nature and human activities are being tested and demonstrated. Hence, they serve as a significant tool for countries’ commitments to the → CBD and the 2002 World Summit on Sustainable Development in Johannesburg (see chapter → sustainability). Currently the World Network of Biosphere Reserves comprises 610 biosphere reserves in 117 countries, including 12 transboundary sites.

The Seville Strategy, adopted at a UNESCO General Conference 1995 in Seville, is the result of a wide range of experiences made in biosphere reserves since the concept of biosphere reserves originated from a task force of UNESCO’s Man and the Biosphere (MAB) Programme in 1974. Although the Strategy is a mere recommendation document, it has a strong guiding role for protection managers and national authorities dealing with the nomination and implementation of biosphere reserves through its three goals including:

¹⁰² The principle is widely used in international environmental law and recognized as the “Golden Rule for the environment,” (Kiss, A 1997).

- the use of biosphere reserves to conserve natural and cultural diversity;
- the utilization of biosphere reserves as models of land management and of approaches to sustainable development; and
- the use of biosphere reserves for research, monitoring, education and training (UNESCO 1996).

Relevance for sustainable land use: Not only because of their enormous land cover of more than 5.5 Million km²,¹⁰³ biosphere reserves are highly relevant for sustainable land use. Unlike many national parks, where human beings and land uses are excluded from the protected sites, biosphere reserves are designed to combine (sustainable) land use practices with aims for the protection of biodiversity and natural resources. It can therefore be stated, that biosphere reserves are the main “laboratory” for sustainable land use practices in the world, because no matter which temporal zone or biome the reserve is located in, the balance between human activities and well-being, as well as nature protection and ecosystem resilience, always has to be fathomed. This deliberation makes biosphere reserves a unique practical field to implement, test and research different sustainable land use practices such as the ecosystem-based approach of mitigation and adaptation to climate change, sustainable forest management (SFM) or extensive pasture practices with locally adapted livestock.

Regional governmental approaches

The Birds Directive, the Habitats Directive, and Natura 2000

Objectives and mechanisms: The Birds Directive is the European Union’s oldest piece of nature legislation, originally adopted in 1979 and readopted after numerous revisions in 2009. It implements the Council of Europe’s Convention on the Conservation of European Wildlife and Natural Habitats, otherwise known as the Bern Convention, of 1979. Growing threats to Europe’s wild bird populations from pollution, habitat loss and unsustainable practices drew attention to the need for international cooperation in order to effectively conserve wild birds, particularly migratory species. Recognizing that habitat loss and land degradation pose a serious danger to wild bird conservation objectives, the Directive also aims to provide sufficiently diverse habitats to maintain these populations and includes the designation of Special Protection Areas (SPAs) for migratory birds and species of particular interest listed in Annex I of the Directive.

The Habitats Directive was adopted in 1992 to complement the Birds Directive. It addresses the continuing deterioration of European natural habitats and the growing threats to wild species. The preservation of wild flora and fauna is sought via the maintenance or improvement of their habitats and ecosystems. Accordingly, habitats and species of ‘community interest’ (listed in Annexes I and II) are conserved via the designation of Special Areas of Conservation (SACs). When implementing the Habitats Directive, member states are required to register their SACs, incorporate the species protection provisions of the directive in their national legislation, provide protection for the area concerned, impose suitable management measures and monitor the

¹⁰³ For a comparison: The EU 27 has an overall area of roughly 4.3 Mio km², Australia encompasses about 7.6 Mio km²

quality of the SAC. Sites are designated over three stages, namely: (1) member states must draw up a list of sites hosting natural habitats and wild fauna and flora; (2) on the basis of the national lists and by agreement with the member states, the Commission will adopt a list of sites of Community importance; (3) no later than 6 years after the selection of a site, the relevant member state must designate it as a SAC.

The centrepiece of the Habitats Directive is the Natura 2000 ecological network, which presently consists of protected areas of both the Habitats Directive and the Birds Directive, forming the biggest network of its kind in the world. Member states are required to implement the law, regulations and administrative provisions necessary to comply with the Habitats Directive within two years of its notification. In the following steps, member states are asked to establish management plans (to the extent necessary) following discussions with landowners and managers. The Habitats Directive also requires active restoration of selected habitats, which also has to be outlined in the management plans. From the governance perspective, the Birds and Habitats Directives have a strong, binding character compared to other policies in this screening.

Both Directives have strong implications on a wide range of actors and sectors. In fact, all land users such as farmers and foresters as well as sectors such as cohesion, building and other infrastructures (such as energy) have to comply with their legal requirements when their activities seek to involve an area which is protected under the Directives or when species of European interest inhabit the area which is foreseen to be converted or use. In many cases, Environmental Impact Assessments (EIA) or Strategic Environmental Assessments (SEA) are conducted to evaluate the impact of an operation, which often lead to special requirements when the operation is implemented.

Relevance for sustainable land use: By protecting species and habitats of the EU, both Directives help to address land degradation and have a strong effect on European land use. Specifically, the Directives aim to protect designated areas from agricultural intensification and the resulting negative effects on soil biodiversity, fertility and organic matter content, contamination, erosion, compaction and sealing (Bowyer et al. 2009). Nature 2000 requires all EU member states designate areas to the network of protected areas. However the status, scale and scope of Natura 2000 sites differ strongly within the network and a large number of land uses, stakeholders and economic activities are either directly or indirectly affected by Natura 2000. Partially due to decision-making complicated by conflicting economic and conservation objectives, the implementation of the Directives is progressing more slowly than expected in all EU countries. Additionally, the correct and effective implementation of management measures for Natura 2000 sites poses a real challenge for all entities with interest in a site (Gantioler et al. 2010). In the future, it will therefore be crucial to guarantee adequate funding for establishing and carrying out these management activities in practice. It is also important to communicate that the network does not only incur costs, but that it also provides a number of benefits, including socio-economic ones, to a number of stakeholders (Gantioler et al. 2010).

EU 2020 Biodiversity Strategy

Objectives and mechanisms: In response to the global Aichi Targets adopted by the Parties of the Convention on Biological Diversity (see → CBD) at the 10th Conference of the Parties (CBD COP-10), held in Japan, the European Union adopted a new EU 2020 Biodiversity Strategy in May 2011

called “Our life insurance, our natural capital: an EU biodiversity strategy to 2020”. Among the six targets of the strategy, Target 2, which requires that “by 2020, ecosystems and their services are maintained and enhanced by establishing Green Infrastructure and restoring at least 15% of degraded ecosystems” is of particular interest for this screening, as it implies new approaches and mechanisms beyond the policies for biodiversity protection described in this chapter.

Firstly, recognising the need for a more inclusive approach to protect biodiversity, the Strategy requested an EU-wide strategy for **green infrastructure (GI)** be developed by the end of 2012. Reconnecting existing fragmented natural areas, maintaining healthy ecosystems on a wider landscape scale and restoring damaged habitats where possible are among the aims of the Strategy, while also contributing to sustainable development.

Secondly, the European Commission has announced a '**no net loss**' initiative by 2015 as part of a list of actions to reach Target 2 of the Strategy. The no net loss approach strongly coincides with biodiversity offsets such as **habitat banking**. The principle idea behind habitat banking is that impacts on habitats and ecosystems effected by anthropogenic use can be compensated for by protecting or restoring ecosystems in another location or by converting areas of previously intensive land use into more sustainable (less intensive) practices. The ‘banking’ refers to the possibility to conduct up-front habitat investments, for example in green infrastructure projects and the maintenance of ecosystem services by private entities in order to “hold a credit” for future endeavors, which have a negative impact on biodiversity. Besides the aim of involving private actors in the financing of biodiversity protection, such measures actively contribute to an overall no net loss approach of ecosystems on the EU level.

Relevance for sustainable land use: Incorporating the no net loss initiative as a key part of Target 2 of the EU Biodiversity Strategy could be seen as a paradigm shift in EU nature conservation policies. While nature conservation has widely been regarded as a public task, mechanisms like habitat banking seek to increasingly engage private entities in the financing of ecosystem restoration or maintenance. The actual effects can hardly be judged at the current state, as few examples for the practical application of habitat banking exist so far. The most known implementation within Europe is Germany’s “Impact Mitigation Regulation”, by which private and public land users can offset their impacts of construction activities on ecosystems by substitution or compensation measures. The regulation is controversial. Many conservationists argue that such mechanisms deviate from the mere avoidance of negative impacts and that ecosystems cannot not be easily replaced (at another location), inevitably leading to an overall decrease of ecosystem quality.

If such an approach becomes common practice throughout EU member states, effects on land use could be large. Furthermore, the implementation of green infrastructure could lead to new land use management approaches, which involve different sectors and stakeholders and have the potential to connect habitat protection more strongly with general land use. At the same time, the functional perspective on landscapes and ecosystems (through their services) could lead to a lower consideration of the inherent and cultural values of nature and nature conservation.

Hybrid and non-governmental approaches

The Economics of Ecosystems and Biodiversity (TEEB)

Objectives and mechanisms: The Economics of Ecosystems and Biodiversity (TEEB) is an international initiative hosted by UNEP to draw attention to the global economic benefits of biodiversity and to highlight the growing costs of biodiversity loss and ecosystem degradation. It brings together scientists, economists and policy-makers to enable practical actions towards more effective biodiversity protection. Built on an initiative of the German government, it was endorsed by G8+5 leaders at the 2007 Heiligendamm Summit. At latest, the TEEB initiative gained international attention at the tenth Conference of the Parties of the CBD in Japan in 2010, when the “Mainstreaming the Economics of Nature Synthesis Report” was officially released. Besides the Synthesis Report a series of reports for distinct end-users were published, providing targeted recommendations for economists, policy-makers, business and citizens. The core message of the reports is that further degradation of ecosystems and biodiversity loss will lead to enormous financial costs. TEEB therefore calls for immediate actions from policy-makers and a wide range of actors. Moreover, TEEB continued a process originally initiated by the 2005 Millennium Ecosystem Assessment (MA)¹⁰⁴ to streamline the various methodologies that have existed on the valuation of nature and ecosystem services into a common approach, which is now widely accepted. With this, TEEB has substantially improved the understanding of the economic consequences of ecosystem degradation worldwide, and has led to increased cost-benefit analysis on nature conservation. As a consequence of the TEEB process, an increasing number of nations worldwide are now conducting national TEEB studies, in order to value their ‘natural capital’ and to find new strategies to preserve ecosystem services in their countries.

Relevance for sustainable land use: As land use is strongly connected with ecosystem services, the TEEB initiative and the follow-up processes can potentially have a significant impact on future land use practices. Being confronted with short and long-term economic losses of e.g. further land degradation or resource depletion (which are also main reasons for biodiversity loss and diminishing ecosystem services), several actors, such as policy-makers, in addition to businesses, scientists and stakeholders from different sectors, might be increasingly alarmed to take action. The national TEEB studies, which can be interpreted as the first step of “implementing” TEEB, need to point towards some of the key issues of sustainable land use when they develop their strategies to preserve natural capital. This could result in the expansion of new policy initiatives for more sustainable land use practices to maintain, but also to restore, diminishing ecosystem services.

Besides the numerous benefits arising from the TEEB initiatives, critics draw the attention to the limitations in (economic) valuation of nature and biodiversity, mainly because of numerous unknowns with regard to how ecosystems function. This might lead to insecure and unbalanced decisions. The strong focus of TEEB on economic instruments, above all payments and markets for ecosystem services (PES, MES), unduly narrows the debate on policy strategies, shifting the policy logic from the ‘polluter pays’ principle to a ‘license to pollute’ ethic and often ignoring negative effects of such schemes in terms of effectiveness, legitimacy/acceptance and local benefits. Moreover, the mere economic perspective on ecosystems and their services could result in an

¹⁰⁴ for all reports, please see: <http://www.maweb.org/en/index.aspx>

underestimation of other values of ecosystems, which receive a general esteem from society but cannot be put in monetary terms. It also has to be noted that the TEEB approach, while having gained high prominence in the Western world and among respective governments, does by no means meet the notion held by peoples in other countries with other cultural backgrounds (e.g. of indigenous groups) (see for example Corbera et al. (2007), Kosoy and Corbera (2010) and Vatn (2010)).¹⁰⁵

2.2.3 Soil

(Lead author: Stephanie Wunder)

Overview

Sustainable land use is closely connected to the sustainable use of soils, essentially constituting the land and basic resources for sustainable land use. Therefore, the degradation of soil and land that takes place in large parts of the world – affecting 1.5 billion¹⁰⁶ people worldwide - is a relevant problem: According to the FAO, globally “moderate to severe soil degradation affects almost 2 000 million hectares of arable and grazing land¹⁰⁷” – an area larger than that of the United States and Mexico combined. “More than 55 percent of this damage is caused by water erosion and nearly 33 percent by wind erosion” (FAO 1995). Another 12 million hectares are lost annually due to desertification and drought alone – this is an area half the size of the United Kingdom – and enough land to produce 20 million tons of grain¹⁰⁸.

Soil degradation is also a worrying phenomenon in the EU¹⁰⁹: “Between 1990 and 2006, at least 275 hectares of soil per day were permanently lost through soil sealing – the covering of fertile land by impermeable material – amounting to 1,000 km² per year, or an area the size of Cyprus every ten years. Soil erosion by water is estimated to affect 1.3 million km² in Europe, an area equivalent to 2.5 times the size of France¹¹⁰.”

However, while different policies (for instance on water, waste, chemicals, industrial pollution prevention, nature protection, pesticides, agriculture etc.) on the international and EU level have an impact on soil protection, there are only few policies that explicitly target soil. Moreover, they do not, yet, have a considerable impact.

¹⁰⁵ Cf., for instance, the Bolivian position on REDD+.

¹⁰⁶ UNCCD website 2012: <http://www.unccd.int/en/programs/RioConventions/RioPlus20/Pages/default.aspx?HighlightID=131>, last access: October 17, 2012

¹⁰⁷ See also an UN Millenium Declaration (2000)

¹⁰⁸ UNCCD website 2012: <http://www.unccd.int/en/programs/RioConventions/RioPlus20/Pages/default.aspx>, last access: October 17, 2012

¹⁰⁹ In Africa and Asia about 60% of the area is affected by land degradation, while in Europe about 11% and in North America approximately 8% of the total area is considered degraded. (UNEP 2004)

¹¹⁰ European Commission 2012: Press release “Environment: Commission calls for a stronger response to soil degradation”, Reference: IP/12/128, February 13, 2012, <http://europa.eu/rapid/pressReleasesAction.do?reference=IP/12/128&format=HTML&aged=0&language=EN&guiLanguage=en>

The most important or potentially most important policies, i.e. the UN Convention to Combat Desertification (UNCCD) as well as the EU Soil Thematic Strategy (a framework of soil policies), are analyzed within this chapter. However until now, the efforts to combat desertification and land degradation under the UNCCD have not achieved measurable results. Moreover, given its focus on arid, semi-arid and sub-humid areas it has a limited focus (e.g. it does not address many parts of central and northern Europe, North America, South America).

The United Nations Environment Programme's (UNEP) activities for the protection of soils and development of soil policies have not been described here in further detail. However, they are important guidelines and activities for the promotion of the sustainable use of soils and land. The most important activities are/were:

- The World Soils Policy/World Soil Charter¹¹¹ of the 1980s,
- UNEPs assistance for developing countries to formulate their national soil policies
- UNEPs activities raising the profile of soil conservation as a major international environmental issue
- UNEPs global and regional assessments in order to gain fast and reliable data on the global status of human-induced soil degradation.

In Europe there has been only little progress for soil protection policies as for years no agreement could be reached regarding a Soil Framework Directive and negotiations have been stalled till today. However, soil protection has seen some recent attention and recognition on the international level, and even if these processes have not yet resulted in a visible impact, they are important to mention:

- The Rio+20 outcome¹¹² on desertification, land degradation and drought recognizes “the need for urgent action to reverse land degradation. In view of this, we will strive to achieve a land-degradation neutral world in the context of sustainable development.” It also reaffirms the role of the UNCCD to solve soil degradation and to “take coordinated action nationally, regionally and internationally, to monitor, globally, land degradation and restore degraded lands in arid, semi-arid and dry sub-humid areas.”
- The FAO Global Soil Partnership, launched in 2011. aims to support and facilitate joint efforts towards sustainable management of soil resources for food security and climate change adaptation and mitigation by improved global governance and standardization (see subchapter below).
- In the EU other policies increasingly start to include soil and land as an important issue, such as the 2012 “Guidelines on best practice to limit, mitigate or compensate soil sealing”

¹¹¹ The Soil Charter was adopted in 1981 and “established a set of principles for the optimum use of the world’s land resources, for the improvement of their productivity, and for their conservation for future generations. The Charter calls for a commitment on the part of governments, international organizations and land users in general to manage the land for long-term advantage rather than for short-term expediency. Special attention is called to the need for land use policies, which create the incentives for people to participate in soil conservation work taking into account both the technical and socio-economic elements of effective land use.” (UNEP 2004) (Principles and guidelines can be accessed at <http://www.fao.org/docrep/T0389E/T0389E0b.htm>)

¹¹² paragraphs 205-209 of the Outcome Document „The Future We Want“

and the 2011 Roadmap to a Resource Efficient Europe (see chapter on → resource efficiency), which proposed that, by 2020, EU policies should take account of their impacts on land use, with a view for achieving “no net land take” by 2050.

International governmental approaches

UN Convention to Combat Desertification (UNCCD)

Objectives and mechanisms: The United Nations Convention to Combat Desertification (UNCCD) aims to combat desertification and mitigate the effects of drought in countries experiencing serious drought and/or desertification, particularly in Africa. It focuses implementation through action programs, scientific and technical cooperation and supporting measures, including capacity building, education and public awareness.

Historically, it stems from the direct recommendation of Agenda 21, a product of the 1992 UN Conference on Environment and Development (UNCED) held in Rio de Janeiro, that entered into force in 1996. It is the first and only internationally legally binding framework set up to address the problem of desertification and land degradation. The UNCCD now has 194 country parties. According to the UNEP clustering of the UN conventions (UNEP 2001) it is the only land convention. However, given the sustainable development focus and the strong substantive linkages between climate change, desertification, drought and loss of biodiversity, UNCCD is very much associated with UNFCCC and CBD (UNEP 2001).

The UNCCD does not have a fully global scope but focuses on arid, semi-arid and dry sub-humid areas (i.e. areas affected or threatened by desertification). The 194 parties to the UNCCD are divided into two groups: affected country parties and developed country parties. All country parties have to develop National Action Programs: Affected country parties must describe relevant strategies and implementation of its action program(s). Whereas, developed countries must report on measures taken to support action programs (e.g. financial assistance or facilitating relevant knowledge/technology transfer).

The UNCCD does not have its own financing mechanism. However, the UNCCD’s Conference of the Parties (COP) is assisted by the Global Mechanism. The Global Mechanism is hosted by the International Fund for Agricultural Development (IFAD) and promotes the mobilisation of funds to developing parties and increases the effectiveness of existing financing mechanisms.

Relevance for sustainable land use: The UNCCD does not cover all land and soils globally but 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). However, the soil threats in large parts of northern Europe, central South America, North America and Asia are not in the scope of the Convention.

In terms of the measures that are supported by the UNCCD the national action programs are the heart of their implementation. National, sub-regional and regional programs outline practical measures to mitigate impacts in affected regions. For example the UNCCD promotes the application of dry-land farming systems and sustainable agricultural practices and irrigation programs for livestock, which are specified in detail in the National Action Programs according to national context-specific needs. The UNCCD also calls on affected countries to adapt traditional

methods of agriculture to reduce soil degradation and conserve water (especially in the northern Mediterranean) in addition to diversifying agricultural products.¹¹³

However, the action programs differ in their ability to facilitate the implementation of the UNCCD. The implementation depends on the level of detail of the measures to combat desertification, the proposed institutional framework, and the implementation/monitoring mechanisms perceived.

In addition to the limited scope, the UNCCD suffers a lack of impact and efforts to combat desertification that have thus far not achieved measurable results. As noted by the COP8 in 2007, “desertification trends show no signs of abatement and that there is a lack of strong achievements on the ground¹¹⁴” and progress in the implementation of the UNCCD was slow¹¹⁵. It was pointed out “that many affected parties do not give high priority to land degradation in their development plans, do not promote sufficiently the mobilisation of financial resources, and deplored a general neglect of rural policy, linked to lack of peasant participation” (Bowyer et al. 2009)¹¹⁶.

Although a large number of countries managed to develop national action programs, it was also noted that the countries have yet to carry out their programs. It was generally observed that the UNCCD lacked political and public attention (Bowyer et al. 2009, Kosmas et al. 2011).

In 2008, a 10-year strategic plan and framework was developed to strengthen implementation of the UNCCD between 2008 and 2018¹¹⁷. In 2009, COP 9 decided on a new “Performance Review and Assessment of Implementation System” (PRAIS)¹¹⁸ also intended to promote UNCCD implementation.

At COP11 in 2013 a midterm evaluation of The Strategy was presented. The overall finding is that there has been “some progress towards achieving the objectives contained in The Strategy, but less than what was hoped. Many improvements are needed if The Strategy is to be implemented successfully (...). With regard to impact, which is defined as the extent to which there has been progress towards achieving the overall objectives of the Convention that can be attributed to the implementation of The Strategy, progress or lack thereof has yet to be determined. The connection between the operational and strategic objectives needs to be more carefully defined for the remaining years of the implementation of The Strategy, in order to enable Parties to better assess the impact of the implementation of The Strategy.”¹¹⁹

Current activities of the UNCCD secretariat and the UNCCD parties include the question how land and soil can be integrated in the post Rio+20 process and the development of Sustainable Development Goals (see chapter → sustainability”). In this context, the UNCCD Secretariat

¹¹³ See: UNCCD Convention, Part III, Article 8

¹¹⁴ ICCD/COP(8)/16/Add.1 (2007). UNCCD Report of the Conference of the Parties on its eighth session, held in Madrid from 3 to 14 September 2007, Annex IV. ICCD/COP(8)/16.

¹¹⁵ ICCD/COP(8)/16/Add.I. (2007). UNCCD Report of the Conference of the Parties on its eighth session, held in Madrid from 3 to 14 September 2007. Addendum Part two: Action taken by the Conference of the Parties at its eight session. ICCD/COP(8)/16/Add.I. 23 October 2007.

¹¹⁶ See also Kosmas et al. 2011

¹¹⁷ ICCD/COP(8)/16/Add.1 2007: Decision 3/COP.8 (2007). UNCCD Report of the Conference of the Parties on its eighth session, held in Madrid from 3 to 14 September 2007, 3/COP.8. ICCD/COP(8)/16/Add.1.

¹¹⁸ Decisions 11/COP.9. 12/COP.9 and 13/COP.9

¹¹⁹ document ICCD/COP(11)/21 “Mid-term evaluation of the 10-year strategic plan and framework to enhance the implementation of the Convention (2008–2018)”, Report by the Intersessional Working Group during COP11 of the UNCCD, 8 July 2013

published a policy brief on a potential goal on “zero net land degradation” (UNCCD secretariat 2012). The outcome document of Rio+20 “The future we want” can be marked as a success for the UNCCD. In paragraph 206 the heads of State and Government “recognize the need for urgent action to reverse land degradation. In view of this we will strive to achieve a land degradation neutral world in the context of sustainable development”. Paragraph 207 explicitly links to the UNCCD and their efforts: “We reaffirm our resolve under the United Nations Convention to Combat Desertification (UNCCD) to take coordinated action nationally, regionally and internationally, to monitor, globally, land degradation and restore degraded lands in arid, semi-arid and dry sub humid areas. We resolve to support and strengthen the implementation of the UNCCD and its 10-Year Strategic Plan and Framework (2008-2018), including through mobilizing adequate, predictable and timely financial resources”.

Discussions also continue about the introduction of a new legal instrument such as a protocol to the UNCCD on Zero Net Land Degradation (see UNCCD Secretariat 2012, Weigelt et al 2012). According to the UNCCD Secretariat (2012) a legal instrument on Zero Net Land Degradation under the UNCCD “should be developed as a global policy and monitoring framework to focus efforts and empower the international community to act with the speed and scale required to address this crucial problem. Such a protocol could incorporate the setting of ZNLD targets by individual countries, for example as a percentage of arable land in their jurisdiction or regions within their jurisdiction.”

European governmental approaches

EU soil policy – EU Soil Thematic Strategy and proposed Soil Framework Directive

Objectives and mechanisms: At the EU level different policies such as agriculture, nature protection, urban development etc. have an impact of soil protection. However, given that these policies have other aims and other scopes of action and as the EU Commission had not considered these policies as sufficient to ensure an adequate level of protection for all soil in Europe¹²⁰, the Soil Thematic Strategy (COM(2006) 231) and a proposal for a Soil Framework Directive (COM(2006) 232) was adopted by the European Commission in September 2006 with the objective to protect soils across the EU.

The Strategy is the last of seven thematic strategies developed under the 6th Environmental Action Program¹²¹. It follows the 2002 Communication "Towards a Thematic Strategy for Soil Protection" (COM(2002) 179) and an extensive consultation process.

Implementation of Strategy is aimed primarily at the Member State level.

The objective of the Strategy is to protect the soil while using it sustainably, through the prevention of further degradation, the preservation of soil function and the restoration of degraded soils. It consists of four pillars: (1) integration of soil protection in other national and EU

¹²⁰ European Commission 2012 (http://ec.europa.eu/environment/soil/index_en.htm)

¹²¹ The other strategies cover air pollution, the marine environment, waste prevention and recycling, natural resources, the urban environment and pesticides. The Thematic Strategies take a broader, strategic approach. They build on the existing EU legal/regulatory framework and focus on an integrated approach and on implementation issues.

polices; (2) focus on increasing public awareness about the need to protect soil; (3) increased research related to soil protection; (4) framework legislation.

The Strategy consists of three associated policy documents:

1) The “Communication on the Thematic Strategy for Soil Protection” sets the frame. It explains why further action is needed to ensure a high level of soil protection, sets the overall objective of the Strategy and explains what kind of measures must be taken. It establishes a ten-year work program for the European Commission¹²².

2) The “Communication outlining results of an Impact Assessment”¹²³ provides a cost-benefit analysis in support for a framework directive and

3) The proposal for a EU Soil Framework Directive¹²⁴ sets out the common principles for protecting soils across the EU. Within this common framework, the EU member states will be in a position to decide how best to protect soil and how use it in a sustainable way on their own territory. It provides for measures to identify problems, prevent soil degradation and remediate polluted or degraded soil.

The proposed framework directive has however not been adopted. Since 2007 the directive has been blocked in the European Council by Germany, the UK, Austria, the Netherlands and France, based on the principle of subsidiarity and fear of increased bureaucracy costs¹²⁵. Negotiations were held 2007 to 2010, but no political agreement could be reached.

Having failed to reach agreement in Council, in light of the desire of many member states to have a framework directive for soil, and convinced that common grounds could be found, a “special task force” of members from the “European Common Forum on Contaminated Land” (Common Forum)¹²⁶ was established in July 2010 during the Belgian Presidency. The developed task force discussed the reasons for not being able to reach agreement in Council and proposed amendments and changes to the draft Framework Directive. The amendments were approved by the Common Forum in autumn 2011.

The version of the Common Forum might be important if negotiations around the Framework Directive start again. This might be the case because after the change of the presidency in France to François Holland (who highlighted an ambitious EU environmental policies program during the election campaign) and after a potential governmental change in Germany after the elections in autumn 2013 there might be a changed dynamic in the so far blocking minority.

Relevance for sustainable land use: Although ambitious in its goals, the EU Soil Thematic Strategy seems to remain limited in impact. Five years after the adoption of the Soil Thematic Strategy, on

¹²² European Commission 2012: Policy report on the implementation of the Strategy and ongoing activities (COM(2012) 46) See <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2012:0046:FIN:EN:PDF> and http://ec.europa.eu/environment/soil/three_en.htm

¹²³ Impact Assessment SEC (2006) 620 of the Thematic Strategy for Soil protection

¹²⁴ Soil Framework Directive COM 2006/232 establishing a framework for the protection of soil and amending Directive 2004/35/EC

¹²⁵ ENDS Europe DAILY 2454, 20/12/07. "Big three" block council deal on soil protection.

¹²⁶ The task force included persons from different Member States, including some from the blocking minority.

13 February 2012 the European Commission published a policy report on the implementation of the Strategy and ongoing activities (COM(2012) 46). The report underlines a further need for action as “erosion, soil sealing and acidification have all increased in the past decade, and the trend is likely to continue”. According to the policy report, there is still no systematic monitoring and protection of soil quality across Europe. “This means that existing actions are not sufficient to ensure an adequate level of protection for all soil in Europe¹²⁷.”

The lack of impact might in part also be due to the lack of a Soil Framework Directive. With its objectives and requirements related to the identification of risks and contamination, prevention of soil degradation and contamination, as well as remediation of impacted areas, it could have helped in prevention of soil degradation and restoration of degraded soils, therefore increasing the area of usable land. With a potential change in the political dynamic in the European Council about a Soil Framework Directive chances increase that a Soil Framework Directive might be adopted. However, eventual impacts on soil protection by the framework directive will depend on a new uptake of discussion around the Directive and the final requirements.

Hybrid and non-governmental approaches

Global Soil Partnership (GSP)

Objectives and mechanisms: The Global Soil Partnership (GSP) was launched in 2011. It has been developed on the basis of the recommendation of FAOs High-Level External Committee (HLEC) on the Millennium Development Goals to the Director-General (2009) and the discussions and conclusions from the 22nd Committee on Agriculture (COAG) in 2010. Its vision is to improve global governance of the limited soil resources of the planet. To achieve this it aims to develop capacities, create awareness and facilitate exchange of knowledge and technologies among stakeholders for sustainable management of soil resources at all levels. Through “improved global governance and standardization”, the Partnership will also “develop global governance guidelines aiming to improve soil protection and sustainable soil productivity” (GSP 2011).

Relevance for sustainable land use: If and how the GSP affects the global use of soil has yet to be seen as there are currently no measurable direct impacts. The added value of the GSP is that it can “develop synergies and cost savings among the various existing networks and programs” and aims to “assure that the partnership receives the necessary support and endorsement by all major players and stakeholders” (GSP 2011).

¹²⁷ European Commission 2012: COM 2012 (46) final “The implementation of the soil thematic Strategy and ongoing activities” (<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52012DC0046:EN:NOT>)

2.2.4 Water

(Lead author: Johanna von der Weppen)

Overview

Water is used by humans for many different purposes and crosses regional and international borders. International water policy thus started over a decade ago, when countries laid down the rules for navigational uses of international rivers and water bodies. Under the aegis of the United Nations universal instruments for freshwater resource management and protection has been driven by the increased number of human uses and the lack of international rules for shared water bodies (Boisson de Chazournes 2009).

The International Law Association (ILA), a non-governmental association of legal experts and the International Law Commission (ILC) have repeatedly drafted rules and codified principles in order to clarify the situation of international water management, including the following:

- The 1923 Convention Relating to the Development of Hydraulic Power Affecting More than One State,
- The 1966 Rules on the Uses of the Water of International Rivers ('Helsinki Rules'), which deal with navigational and non-navigational uses of rivers.
- The 1997 Convention on the Law of the Non-Navigational Uses of International Watercourses, which covers all other uses than navigation ('UN Watercourses Convention')
- The 2004 Berlin Rules of Water Resources,
- The 2008 Law of Transboundary Aquifers, applicable to transboundary aquifers.

The most influential of these policies are the Helsinki Rules and the UN Watercourses Convention. The Helsinki Rules established the principle of equality of all riparian states in the use of the shared water resources and the equitable and reasonable utilization. The UN Watercourses Convention, despite the fact that it incorporates many of the Helsinki Rules, sparked discussion over the guiding principles as it gives priority to the obligation not to cause harm over the equitable and reasonable utilization (Article 7)¹²⁸. The UN Watercourses Convention is considered the only treaty governing shared freshwater resources of universal applicability.

Both instruments however only have an advising character, as they did not enter into force due to a lack of signatories. While they act as a basis for many regional policies, which rely heavily on the guiding principles and rules, they remain theoretical and are therefore not considered in the assessment below. For example EU water policy in the form of the Water Framework Directive as well as international river basins such as the Danube and the Rhine, have based their cooperation

¹²⁸ Article 7 deals with the obligation not to cause significant harm, over which there was heated debate in the Working Group. A compromise was found reformulating Article 7 which requires the state that causes significant harm to take measures to eliminate or mitigate such harm "having due regard to Articles 5 and 6", which deal with the principles of equitable and reasonable utilization.

on these rules. The World community has thus not yet succeeded in agreeing on a universally applicable treaty to regulate the uses and protection of shared water resources.

The policies described in more detail below take similar approaches as the rules laid out in the Helsinki Rules and UN Watercourses Convention, in that they provide a legal framework and allow signatories to adopt these rules into their national policies, while considering the whole river basin including other riparian states. Despite their somewhat limited regional scope, they currently show best practice of water governance and thus reflect the consideration given to land use.

International governmental approaches

UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes

Objectives and mechanisms: The Convention on the Protection and Use of Transboundary Watercourses and International Lakes aims to protect and ensure the quantity, quality and sustainable use of transboundary water resources by facilitating and promoting cooperation. The Convention entered into force in 1996 and has been ratified by 36 UNECE countries and the European Community. The Convention obliges Parties to prevent, control and reduce water pollution from point and non-point sources and sets out provisions such as monitoring, warning and alarm systems, mutual assistance, exchange of and public access to information. The principles and provisions of the Convention were used as a basis for bilateral and multilateral agreements between countries, such as the Danube River Protection Convention in 1994, which focuses on a subregional context. In 1999 the Convention adopted the Protocol on Water and Health, which focuses on drinking water and sanitation. Since 2003 the Convention can be acceded to by any United Nations Member State (also non-European countries), which expanded the Convention's status from a regional to a global legal framework for transboundary water cooperation (UNECE 2012).

The Convention's institutional framework is composed of the Meeting of the Parties (MOP), subsidiary bodies, working groups and task forces and a permanent secretariat, which assist Parties in the implementation of the Convention and the development of legally binding protocols.

The UNECE's Convention's implementation is ongoing in many signatory countries and the Convention's bodies support the adherence to the rules and the accession of new signatories, as well as providing guidance on upcoming issues. It is thus a relevant and growing political instrument.

Relevance for sustainable land use: Although the Convention does not explicitly mention land use, it indirectly addresses many aspects of land use in terms of modification of natural environment and the products and benefits obtained from use of the land. The Convention takes a holistic approach, based on the understanding that water resources are an integral part in ecosystems, human society and the economy. It is committed to integrated water resource management, which takes into account the various sectors that impact water resources. The Convention strengthens measures to protect and ensure the ecologically sustainable use of waters and the conservation and protection of ecosystems. It recommends the use of tools and concepts such as environmental impact assessment, the precautionary principle and the concept of intergenerational equity. The Convention requires the control and reduction of pollution into

water, the application of best environmental practices to reduce inputs from agriculture and other diffuse sources and measures to reduce soil erosion, degradation, salinization and desertification.

Specifically, the Convention addressed the issues of forests, flood management, and ecosystem services. It established recommendations to provide guidance on the use of payments for ecosystem services to implement IWRM through the protection, restoration and sustainable use of water-related ecosystems (i.e. forests, wetlands, grasslands, and agricultural land). It recommends the use of water-related ecosystem services, such as plod prevention, control and mitigation, regulating runoff and water supply, withholding sediments, stabilizing river banks and shorelines, improving water infiltration and water storage in the soil as well as cultural services, such as recreation, aesthetics and spiritual benefits (UNECE (2007)).

Regional governmental approaches

EU Water Framework Directive (WFD)

Objectives and mechanisms: The EU Water Framework Directive¹²⁹ was adopted on 23 October 2000. The WFD is the legislation that holistically covers EU water policy. It is based on four main pillars (COM 2010a), aiming to:

- Achieve ‘good status’ of all EU waters, including surface and groundwater, by 2015
- Setting up a water-management system based on natural river basin districts
- Building a framework for integrated water management, covering all water issues
- Actively involving interested parties and consulting the public

The main requirement of the WFD is to establish relevant planning and management mechanisms at River Basin District scale. This includes the designation of River Basin Authorities and the preparation of River Basin Management Plans as well as Programs of Measures. To complement the WFD concerning floods, the Floods Directive (2007/60/EC)¹³⁰ was adopted. By 2010 the river basin management plan including a Program of Measures was finalized and assessment of the management plans for some member states has started. Despite the fact that the WFD has made significant progress on a policy level, it is becoming clear that the ambitious goal of achieving a ‘good status’ will, in many cases, not be met. The WFD continues to pursue its objectives, by assessing the vulnerability of EU waters in the Blueprint to Safeguard Europe’s waters (COM 2010b). Once the first objectives are met, a second river basin management plan and a flood risk management plan will continue the work until 2021, to ultimately be extended to 2027.

Relevance for sustainable land use: The Water Framework Directive (2000) was a major innovation for water and land use management in the EU, as it introduced the principle of integrated river

¹²⁹ Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy, Official Journal of the European Union, L 327, 22.12.2000, p. 1–73

¹³⁰ Directive 2007/60/EC of the European Parliament and of the Council of 23 October 2007 on the assessment and management of flood risks (Text with EEA relevance) OJ L 288, 6.11.2007, p. 27–34

basin management, incorporating both the idea of spatial fit between ecosystems and social systems and a requirement to integrate water management across scales and sectors.

The WFD objectives relevant for land use change are river basin management and the combined approach to pollution prevention. These two aspects broaden the spatial dimensions of water management and require to take the role of land use in causing water stress and achieving the WFD objectives into consideration. The inclusion of hydro-morphological parameters for 'good' water status directly affects many development control decisions. According to Article 4(7) of the WFD, certain criteria must be applied when determining whether or not new developments or modifications, which affect water status, should be permitted. These criteria include taking all practical mitigation measures; demonstrating overriding public interest or equivalent; and confirming that there are no technically viable, environmentally better options that are not disproportionately costly (Moss 2004). The WFD also aims to achieve the objectives for EU protected areas and to contribute to mitigating the effects of floods and droughts, which require the implementing authorities to look at all sectors in the river basin including energy, agriculture urban planning and risk management in order to achieve the objectives set out by the WFD (Brooke 2006).

With the Blueprint to safeguard Europe's Waters the European Commission identifies amongst others gaps in the coherence and coordination with other policies. While cooperation has improved with the energy sector on hydromorphological issues and with agriculture through Cross-Compliance, the common implementation in practice varies strongly between member states. This is partly due to the subsidiarity principle and the fact that transposition in the different member states show differing levels of ambition.

2.3 Integrated Policies (addressing different sectors/ environmental media/ policies)

2.3.1 Sustainability

(Lead author: Timo Kaphengst)

Overview

Sustainability policies and initiatives have to incorporate a wide range of environmental and social issues. While the scope of aspects for general sustainability is even wider than for sustainable land use both issues have in common, that an integrated approach is needed to cover all relevant sectors and stakeholders, to balance economic developments with environmental and social requirements and to provide a well-balanced mix of measures with different effects. This chapter is a combination of policies mainly designed for governments and respective authorities, of which the CSD and the EU Sustainable Development Strategy (SDS) were chosen, and of attempts to increase the sustainability performance of corporations and other organisations. In addition, the Environmental Impact Assessment (EIA) and Strategic Environmental Assessment (SEA) regulation of the EU was outlined as an important example of how sustainability of impacts as actually measured and monitored, not exclusively for but also in relation to land use (see chapter → spatial and land use planning).

Although land use was identified as being highly relevant for numerous aspects addressed in the governmental strategies, it is rarely explicitly mentioned. Also in standards for environmental management systems for corporations land use does not play a direct role, but might be affected through changes in corporates' awareness and performance on environmental issues. Consequently, the role sustainability governance has in relation to land use can be described as a broad attempt to change consumption and production patterns as well as behaviour of various actors, which might be reflected in land use (practices), if the actors reached are stemming from the relevant sectors or behavioural changes result in decreasing pressure on land resources. However, the current processes on multilateral level (especially the outcomes of Rio +20) show, that attempts towards a global sustainable land use are currently far from being seriously discussed. However, in preparation of the Rio +20 conference, the UNCCD Secretariat proposed a "zero net land degradation goal" under a new framework for internationally agreed sustainable development goals (SDGs), which could be an interesting approach to be further investigated in the future.

An impact of non-governmental approaches on sustainable development, for example through Corporate Social responsibility initiatives, is hard to estimate. So far, standards and guidelines like ISO 26000 and the Global Reporting Initiative (GRI) did not lead to significant improvements in corporate behaviour in terms of land use specifically. However, they might increase the awareness among corporate actors on land use related concerns. In this context, it has to be noted, that apart from international CSR initiatives, governments do not have a lot of measures at hand, to directly influence corporate behaviour and to jointly create strategies to reach sustainability targets.

International governmental approaches

The "Rio Policies" on Sustainable Development

Objectives and mechanisms: In December 1992, the United Nations Commission on Sustainable Development (CSD) was established by the UN General Assembly to ensure effective follow-up of United Nations Conference on Environment and Development (UNCED), also known as the Earth Summit. The Commission is responsible for reviewing progress in the implementation of Agenda 21 and the Rio Declaration on Environment and Development; as well as providing policy guidance to follow up the Johannesburg Plan of Implementation (JPOI) at the local, national, regional and international levels. In 2012, 20 years after the Earth Summit, the Rio+20 conference renewed the discussion on global sustainability under changed economic conditions and challenges. Two particular topics, the "green economy" and an international institutional framework for sustainability were the key topics on the agenda.

The "**Rio Declaration**" adopted by the United Nations Conference on Environment and Development consists of 27 principles, which provided the overall framework for the establishment of international agreements, which "respect the interests of all and protect the integrity of the global environmental and developmental system". The Rio Declaration built on the previous Declaration of the United Nations Conference on the Human Environment, which was adopted in Stockholm in 1972. Among others, the Declaration calls for eradicating poverty as an indispensable requirement for sustainable development, for a global partnership to conserve, protect and restore the health and integrity of the Earth's ecosystem, for effective environmental legislation to be enacted by states and for the precautionary principle to be widely applied by

States according to their capabilities. Based on these principles a wide range of international agreements were adopted during and after the Rio Conference. The three “Rio Conventions”, which directly derived from the 1992 Earth Summit are the ones on Biodiversity (→CBD), Climate Change (→UNFCCC) and Desertification (→UNCCD).

A subsequent **World Summit on Sustainable Development (WSSD)** was held in 2002 in Johannesburg (South Africa) mainly with the aim of examining the progress made on the outcomes of the 1992 Earth Summit in Rio and to reinvigorate the world’s peoples towards sustainable development. The Summit adopted a 54 page agreement divided into 11 sections, the **Johannesburg Declaration on Sustainable Development (2002)**. Due to its rather general nature, land use plays no explicit role in the Declaration. However, the **Implementation Plan of Johannesburg (2002)** takes up all designated aspects of sustainable land use from the Agenda 21 and specified new objectives and actions.

The **Agenda 21** is a comprehensive plan of action to be taken globally, nationally and locally by organizations of the United Nations System, Governments, and major groups in every area in which human impacts on the environment and was also adopted during the Rio Conference in 1992. Land use is addressed in the Agenda 21 in various ways. Among other things, the Agenda 21 calls for an integrated approach to planning and management of land resources (Chapter 10, Agenda 21), which deals with the cross-sectoral aspects of decision-making for the sustainable use and development of natural resources, including soils, minerals, water and biota that land comprises. The decisions promotes an holistic approach on ecosystem management in order to meet the priority challenges combating deforestation, desertification and drought, sustainable mountain development, the conservation of biological diversity, promoting sustainable agriculture and rural development and sustainable human settlement development. Such an approach should take into consideration the livelihood opportunities of people living in poverty in rural areas.

The **UN Commission on Sustainable Development (CSD)** conducts regular reviews on the status of implementation of sustainability goals and on new proposed policy measures, also in various land use relevant clusters such as land, agriculture, rural development, forests, biodiversity, desertification, human settlements and mining.

Of particular relevance is the CSD decision 8/3 (2000) for integrated planning and management of land resources. In working sessions prior to the decision the CSD identified a broad range of cross-sectoral issues that have to considered in such an integrated approach, such as the creation of productive employment, the eradication of poverty, responses to pressures on the land caused by poverty, unsustainable consumption and production, population growth and changing demographic patterns. Moreover, the clarification and security of land rights, possibly involving land-tenure and ownership reforms, is seen as central to the solution of such problems. In this context, the Commission urged governments to develop national and/or local land use planning systems that contain a statement of objectives and a detailed timetable for implementation spread over a period of years.

In paragraph 10 of the decision, governments are encouraged to develop adequate land administration systems supporting sustainable land tenure on the basis of land cadastres, land management, land valuation, land planning and monitoring and supervision of land use, where appropriate.

The **Rio +20 conference** released an outcome document, which was widely seen as a direct response to the demands of the developing and emerging nations gathered in the Group of 77 (G-77), focusing on development and fighting poverty through economic growth. Hence, many political analysts interpreted the outcome as a power shift in international policies, with the EU and other industrialized countries losing their influence on multilateral processes and emerging economies such as Brazil, India and China as well as developing countries gaining power in political decisions. It also showed that many states reject any intervention in their national development priorities and models (Beisheim et al. 2012). Content wise, the document was broadly perceived as not going far enough and being too vague given the huge sustainability challenges ahead of the world community. This also refers to the universal sustainable development goals (SDGs), which were proposed by Columbia, Guatemala and Peru during Rio+20 process. The purpose of SDGs is to address the broad challenges of poverty eradication, environmental protection and sustainable consumption and production, thereby addressing the shortcomings and challenges of the UN's Millennium Development Goals (MDGs), which expire by the end of 2015.

In this context, the UNCCD Secretariat published a policy brief on a potential goal on “zero net land degradation” (UNCCD Secretariat 2012). The central idea of such a goal is to agree on multilateral level, that the overall land degradation is halted by avoiding degradation, where possible and to restore land where degradation cannot be avoided (off-setting).

The agreed language in the Rio+20 outcome document “The future we want” can be an indicator that land will be of importance in the definition of the SDGs, as in paragraph 206 the heads of State and Government “recognize the need for urgent action to reverse land degradation. In view of this we will strive to achieve a land degradation neutral world in the context of sustainable development”.

Relevance for sustainable land use: Although land use is specifically addressed in the Agenda 21 and was repeatedly taken up in CSD processes and decisions, it is one topic among many others. A recent report from the United Nations Secretary-General’s High-level Panel on Global Sustainability criticize the effectiveness of the CSD in achieving the sustainability goals set out on the Earth Summit in Rio de Janeiro in 1992.

More specifically it stated that the Commission failed to play the integrative role it was designed for and look across the sustainable development agenda. Even more important, the report points out that the Commission has suffered from not being organically connected to mechanisms of implementation, within the United Nations system and beyond. Therefore, the Panel recommends among others to replace the CSD by a “global sustainable development council” as a subsidiary organ of the General Assembly to improve the integration of the three dimensions of sustainable development, address emerging issues and review sustainability progress, with meetings held on a regular basis throughout the year.

The reactions from experts and NGOs on the Rio +20 conference supported the increasing skepticism on multilateral policy processes. Already the 2002 conference in Johannesburg failed to produce an action plan for the implementation of sustainability policies that specified effective incentives and instruments (Beisheim et al. 2012). Given the increased confidence of developing countries in such processes, who see economic growth and industrial development as their priority, it will be increasingly difficult to hold up the goal of environmental protection in

international sustainability policy, which also diminish the potential, these processes have for a more sustainable land use. However, the follow-up process on SDGs in the context of the UN MDGs might foster a discussion between developing and developed countries on how to align development with environmental issues more strongly. A beneficial outcome out of this process could be a set of concrete goals, targets, and indicators as well as best practice examples how to implement SDGs on national and other levels. It remains to be seen, if and how the discussion about a land specific goal on “zero net land degradation” will continue.

Regional governmental approaches

European Union Sustainable Development Strategy (SDS)

Objectives and mechanisms: The European Union Sustainable Development Strategy (SDS) encompasses all sustainable policies of the EU and complements the Lisbon strategy. In 1997, sustainable development was for the first time explicitly mentioned as one of the EU’s main objectives in the Treaty of Amsterdam. In line with this development and in preparation for the UN World Summit on Sustainable Development in 2002, the Commission drafted the first version of the SDS (Gothenburg strategy) in 2001, which was revised in 2006 (Renewed SDS). The SDS presents the major trends in European environment and social development, establishes basic principles for sustainable EU policy and outlines general actions needed in regard to achieve them. It calls for national strategies authored by the member states for more specific actions. The instruments the SDS proposes are mainly of financial nature or refer to (often already existing) programs, action plans and institutions such as Natura 2000, UN programs or the Millennium Development Goals. An implementing and monitoring process at EU and national level is proposed in the document.

In general, the strategy is an example of an integrated, cross-sectoral approach that calls for the mainstreaming of environmental issues into all areas and levels of policy making. Land use is not explicitly mentioned but might be relevant in a number of fields. The section on demographic changes is the only part in which the strategy explicitly mentions effects on land use. Here, the growth of population is seen as having a negative impact on land use, therefore, short and long term action is needed. In the climate section (objective 1) land use is implicitly covered through the promotion of renewable energies. According to the SDS, a change in unsustainable production and consumption patterns is needed (objective 3); examples are a rise in organic farming and increased education and consumer awareness. Such changes in production and consumption patterns could highly affect agricultural land use. One of the sections that possibly has the greatest impact on land use discusses the “conservation and management of natural resources” (objective 4). The main objectives that could impact on land use are using resources more efficiently, halting biodiversity loss, saving forests, more programs for rural development and promoting organic farming.

The SDS is implemented and reviewed on EU and on national level. The monitoring of implementation is done by means of indicators and a report on the implementation on EU and national level is provided every 2 years. At the end of the document, the strategy suggests a number of existing EU financing mechanisms such cohesion fund, rural development fund, Life+ and the Research and Technological Development (RTD), which can be use for the implementation

of the strategy. Furthermore, other financial tools for the member states are suggested, such as taxation, internalization of external effects, phasing out harmful subsidies, awareness rising or increasing the effectiveness of funds.

Relevance for sustainable land use: The EU SDS touches upon a number of issues relevant for land use but does not have an own section on this topic. Even the section on “conservation and management of natural resources” does not cover sustainable land use explicitly. Due to the vagueness of the document, the impacts on land use are difficult to estimate. Apart from implementing already existing programs and policies and some financial tools, there is little information on how implementation on EU level will take place. Thus, the actual effect on land use will highly depend on the national SDS of the EU member states, their foci, tools and approaches. However, “the processes at the national level differ widely” (Bruchmeier and Tovey 2008), why the impacts on land use are also very different. In general, the SDS functions as an umbrella document that encompasses many important programs, action plans and general instruments on EU level.

The 6th and 7th EU Environmental Action Programme (EAP)

Objectives and mechanisms: The 6th Environmental Action Programme (6th EAP) was adopted on 22 July 2002. It set out a (non-binding) framework for environmental policy making during 2002-2012 according to four key issue areas: climate change, nature and biodiversity, environment and health, natural resources and waste. The 6th EAP includes priorities for the environmental dimension of the EU SDS, which in turn was meant to complete the economic and social objectives of the Lisbon Strategy with an environmental dimension. Thus, although the 6th EAP and the EUSDS have different perspectives and serve different functions, they are complementary. Currently (January 2013) a new proposal for a 7th EAP is discussed. According to current proposals (January 2013) the 7th EAP is likely to put a stronger focus on land and soil.

Relevance for Sustainable Land Use:

Specific issues related to land and soil protection are in the associated thematic strategy on soil, as discussed in the → soil chapter. The 2011 review of the 6th EAP revealed “on balance the 6th EAP was helpful in that it provided an overarching framework for environment policy. The large majority of actions set out in the Programme have been or are in the process of being completed” (COM (2011)). However, the report finds that “all these new initiatives will complement existing environmental legislation, which has been consolidated over the past few years and covers almost all areas of environment, with the exception of soil”(COM (2011)).

Proposals for the 7th EAP show that land and soil will have a stronger focus on land. In April 2012, the European Parliament adopted a resolution (2011/2194(INI)) on the review of the 6th Environment Action Programme and the setting of priorities for the 7th Environment Action Programme (EAP) – A better environment for a better life.” (EP 2011). Within that resolution the European Parliament states “that the 7th EAP needs to address the impacts of European policies outside the EU, and asks the Commission, therefore, to take forward the issue of reducing the EU's land footprint in third countries, in particular by addressing indirect land use change due to biofuels and biomass for energy, and to include the objective that no land of high environmental value will be converted to new uses in order to produce crops for the EU” (EP 2011).

Hybrid and non-governmental approaches

International standards for environmental management systems (ISO 140001 and EMAS)

Objectives and mechanisms: ISO 14001, is an internationally recognized standard for environmental management, developed in 1996 by the International Organization of Standardization. ISO 14001 is becoming the dominant **international** standard for assessing environmental management processes in public and private organizations including government institutions, NGOs, MNCs and domestic corporations. Many firms are registering their EMS with the Eco-Management and Audit scheme (EMAS) an EU standard created in 1993 by the European Commission, which became global in 2011.

ISO 14001 and EMAS are similar in so far as they represent a new approach to incorporate environmental care in corporate activities. Rather than setting material objectives or targeted results, they focus on specific organizational measures (i.e. setting up structures and managerial processes) to avoid pollution and damage to the environment and to improve environmental performance of an organization. Some of the guidance frameworks focus on waste management for reduced costs, savings in consumption of energy and materials, lower distributional costs, and improved corporate image (Jackson 1997). They also require organizations to carry out internal checks and external audits by independent auditors. EMAS, in addition, requires companies to publish an environmental impact review to the public.

While ISO 140001 is a mere private standard, EMAS has gained a legal status through the EU EMAS Regulation. The requirements set out by the Regulation are binding for all organizations that (voluntarily) register with EMAS. Originally started as an EU standard, EMAS was made globally applicable in 2011 resulting in an increasing number of registered organizations from 2,140 in 1997 to 4,659 in 2011.

Relevance for sustainable land use: Many of the world's most known and large MNCs have certified their EMS systems under the ISO 14000 standards including for instance Ford Motors, Royal Dutch Shell, General Motors, Toyota, Bristol-Myers Squibb, among a plethora of others.

Growth of both ISO 14001 and EMAS is spectacular. Currently 155 countries have companies that actively make use of the standard with the most in China, Japan, Spain, Italy, UK, Korea, Romania, Germany and Sweden representing a great diversity. The ISO 14000 experienced 12% growth in 2010, 64% of which occurred in Central and South America, 16 % in Europe and 11 % in the Far East.

The impact on land use is only indirect but it can be significant if corporations or organizations conduct activities, which either impact land use or resource extraction directly or do consume products from land use. The standards and the environmental management system of a corporation first of all raise their awareness on regulations with which they were previously unfamiliar but with which they should have been complying (Block 2001). Especially in countries, where legal requirements on land use are not entirely clear or rarely enforced, this could lead to a higher compliance level. Moreover, the mere establishment of an environmental management system in a corporation or organization could lead to a significant reduction of resource use, when the cost benefits of more efficient practices have been noticed and adjusted.

However, it also has to be kept in mind that both ISO 140001 and EMAS have been criticized for making it possible for companies to create an public image of environmental responsibility when

in fact the certification does not directly reflect a company's environmental performance (Rondinelli and Vastag 2000).

International standards on Corporate Social Responsibility (CSR)

Objectives and mechanisms: The **ISO 26000 Social Responsibility guidance tool** is an internationally acknowledged standard that was developed over six years through a multi-stakeholder process conducted by the International Organization for Standardization (ISO). Hundreds of organizations from more than 90 countries were involved in this process (Rüdiger and Wridtmann 2012). As a guidance instrument, ISO 26000 helps organizations to understand, analyze and address issues of social responsibility. The standard has seven core subjects of social responsibility: organizational governance, human rights, labour practices, the environment, fair operating practices, consumer issues, community involvement and development.

ISO 26000 is designed for all kinds of organizations worldwide and does not propose a specific management system (Schmiedeknecht 2008). It is therefore not certifiable like other ISO standards such as ISO 14001. While ISO 26000 is criticized for being too broad to bring about tangible changes in business practice, its advocates argue that it is a groundbreaking achievement in public policy governance and multi-stakeholder norm setting.

Another potentially relevant initiative in the context of CSR could be the **Global Reporting Initiative (GRI)**, which develops and disseminates guidelines on sustainability reporting and is arguably the most widely used and referenced CSR instrument. The GRI reporting framework enables organisations to measure and report on their economic, environmental, social and governance policies and performance using agreed indicators. Among the various indicators companies could report on are also "core and additional performance indicators on biodiversity" (see GRI 2007). Organisations from diverse sectors, including private and public, use the GRI framework. With its headquarters in Amsterdam, the Netherlands, it operates through several satellite offices around the world and includes over 600 organizational stakeholders and some 30,000 people that represent different sectors and constituencies.

Relevance for sustainable land use: The impact of ISO 26000 on land is, if at all, indirect. However, ISO 26000 represents a first step towards establishing a discourse of accepted modes of behavior and norms in corporate social responsibility of which the environment is considered a core issue. ISO 26000 establishes environment responsibility alongside principles of human rights and anti-corruption. Invariably, organizations will be increasingly made aware of their environmental responsibility and indirectly pressured to consider the environment in their corporate responsibility strategy. Moreover, ISO 26000 is listed as a best-selling standard on the ISO website, indicating that organizations acknowledge the importance of a CSR image. For organizations that are involved in activities that either use land resources or impact on land use, the environmental component of ISO 26000 could bring about changes in the way the land is used, particularly when the cost-benefit analysis of their activities suggests more environmentally efficient options.

While ISO 26000 may appear too voluntary and vague to have an actual effect on sustainable land use, there exists a consensus by international academics and policy makers that norms do shape behavior and indirectly change. The power of norms driven by the ISO 26000 and the debate about CSR could therefore bring about changes in behaviour, which can be compared with the effect human rights had on organizations and nations around the world that have neither the history or desire to adopt them as an ethical obligation.

Since its foundation in 2000, the Global Reporting Initiative has created a new momentum in improving financial and non-financial reporting of companies worldwide. Despite being voluntary, the GRI could be in principle the right forum to establish measurable indicators for companies to report on their impact on land use and/or ecosystems. The indicator set on biodiversity could be the right starting point.

2.3.2 Resource policies

(Lead author: Stephanie Wunder)

Overview

In the last years the international governance framework for resource policies and particularly policies to increase resource efficiency has been very dynamic. Resources include a multitude of biotic (timber, fish, agricultural products and all other types of biomass) and abiotic resources (minerals, metals and fossil fuels), as well as environmental media and the ecosystem services linked to them (land, water, air, soil, biodiversity¹³¹). Hence resource policy is strongly interlinked with most sectoral/environmental media policies.

On the international level, sustainable resource use was promoted particularly through Agenda 21, enacted at the UN Conference on Environment and Development in Rio de Janeiro in 1992 and later during the World Summit on Sustainable Development in Johannesburg in 2002 (→ chapter sustainability). An important player for the policy-science interface in the international policy arena is the International Resource Panel (IRP), hosted by UNEP. The IRP also works on sustainable and resource efficient land use. It was established in 2007 “to provide independent ... scientific assessment on the sustainable use of natural resources and the environmental impacts of resource use The information contained in the International Resource Panel’s reports are intended to be policy relevant and support policy framing, policy and programme planning, and enable evaluation and monitoring of policy effectiveness.” (IRP 2013)

On the EU level improving resource efficiency has become a key element of EU policy. The main policies are the Europe 2020 Strategy (COM (2010) 2020) as the EU’s main strategy for generating smart, sustainable and inclusive growth. It calls for shifting the EU towards a resource-efficient and low-carbon economy. To achieve progress, it puts forward seven flagship initiatives, inter alia the Flagship Initiative “A Resource Efficient Europe” (COM (2011) 21). The Flagship Initiative sets out the framework for resource efficiency policies, aiming to reduce resource use while supporting economic performance. The flagship initiative called for a roadmap “to define medium and long term objectives and means needed for achieving them”. The most recently adopted “Roadmap to a Resource Efficient Europe” (COM (2011) 571 final) sets the longer-term vision, strategy and actions for 2050. It also takes into account progress made on the 2005 “Thematic Strategy on the

¹³¹ Definition in line with the EU Thematic Strategy on the sustainable use of natural resources and the Roadmap for a resource-efficient Europe. However, the understanding and definition of key terms varies within different national and international policy documents.

Sustainable Use of Natural Resources” (COM (2005) 670 final) and the EU's strategy on sustainable development. With regard to sustainable land use it proposes that by 2020 EU policies should take account of their impacts on land use, with a view for achieving “no net land take” by 2050.

In order to achieve this, the EU Commission intends to put forward a Communication on land use in 2014. This intention is described in the Roadmap and has been repeated by Janez Potočnik, European Commissioner for the Environment, in many occasions. According to Potočnik, the Communication will take into account the targets and milestones contained in the Resource Efficiency Roadmap, the 7th EU Environment Action Programme (EAP) and the Rio+20 follow-up. It would aim to promote the development of the scientific knowledge-base on biotic material, land-use effects and trends, and spatial planning, including impacts at global level and effects on trading partners, raise awareness and highlight best practices in the member states. He also said that the Communication will ensure that the development of policy in the domain of land use will emphasise an EU “coherent and sustainable approach to land use¹³².”

Given the particular relevance for land use issues and the relevance of the policy making process ahead, the “Roadmap to a Resource Efficient Europe” is described below in further detail.

Regional governmental approaches

Roadmap for a Resource Efficient Europe

Objectives and mechanisms: The Roadmap to a Resource Efficient Europe (COM (2011) 571) outlines how the EU can transform Europe's economy into a sustainable one by 2050. It proposes ways to increase resource productivity and decouple economic growth from resource use and its environmental impact. It provides a framework in which future actions and policies can be designed and implemented coherently. Eventually, it sets out a vision for the structural and technological change needed up to 2050, with milestones to be reached by 2020. These milestones illustrate what will be needed to put Europe on a path to resource efficient and sustainable growth (European Commission 2011a).

Relevance for sustainable land use: The roadmaps vision is that “[b]y 2050 ... all resources are sustainably managed, from raw materials to energy, water, air, land and soil.” The Roadmap proposes a new pathway to action on resource efficiency with a process involving all key stakeholders, who will discuss and agree on indicators and targets by the end of 2013. In order to launch this process, the following levels of indicators are provisionally formulated:

1. A provisional lead indicator - "Resource Productivity".

¹³² 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: “EU must 'transform' agriculture sector”, says Potočnik, 8th March 2013, The Parliament, March 8th, 2013, <http://www.theparliament.com/latest-news/article/newsarticle/eu-must-transform-agriculture-sector-says-potocnik/#.UUMMxGeyKHs>

2. A series of complementary indicators (“dashboard” indicators) on key natural resources such as water, land, materials and carbon, that will take account of the EU’s global consumption of these resources.
3. Thematic indicators¹³³ will be used to monitor progress towards existing targets in other sectors, as detailed in the Staff Working Paper accompanying the Roadmap (SEC (2011) 1067 final, part I and part II) (European Commission 2011b).

As for the resources, “land and soils” it sets the milestone: “By 2020, EU policies take into account their direct and indirect impact on land use in the EU and globally, and the rate of land take is on track with an aim to achieve no net land take by 2050; soil erosion is reduced, and the soil organic matter increased, with remedial work on contaminated sites well underway.” The roadmap also lays out which steps the EU Commission will take towards this milestone. The list includes among others:

- “Further develop the scientific knowledge-base on biotic material, land-use effects and trends, and spatial planning, including impacts at global level and effects on trading partners, and highlight best practices in the member states, leading to a Communication on land use (in 2014)”.
- “Address the indirect land use change resulting notably from the renewable energy policy (continuous)”.

2.3.3 Spatial and Land Use Planning (including SEA and EIA)

(Lead author: Andreas Hermann)

Overview

The concept of spatial planning has been used as a generic term to describe the ensemble of territorial governance arrangements that seek to shape patterns of spatial development (Nadin and Stead 2008). Although, there are different competing spatial planning models in Europe, most are aimed at removing regional imbalances and to reconcile the competing objectives of economic competitiveness, social cohesion and environmental sustainability.

So far, the EU has taken the form of voluntary co-operation between member states. Generally speaking, the strategic territorial planning of the Member State is not the responsibility of the European Community. Spatial planning and land use are considered “internal affairs” of the member states (see also MEDACTION 2004f). Hence, there is no central, strategic and coordinating framework that would provide the basis for integrated instruments or comprehensive measures. Each Member State is called upon to present its own national strategic reference (Faludi 2006).

¹³³ For land use and soil, the EU Commission proposes indicators and milestones for “Reducing the anthropogenic pressure on ecosystems from land take” and proposes the indicator “Average annual land take on the basis of the EEA Core Set Indicator 14” “Land take”. Milestone: Annual land take (i.e. the increase of artificial land) does not exceed 800 km² per year at the EU level by 2020.” The Commission Staff Working Paper also contains indicators and milestones for “Soil erosion”, “Maintaining soil organic matter levels” and “Identifying and remediating contaminated sites” (SEC(2011) 1067 final, part II).

Environmental assessment describes a procedure that ensures that environmental implications of decisions are taken into account before relevant decisions are made. To ensure that plans, programs and projects likely to have significant effects on the environment are made subject to an environmental assessment, prior to their approval or authorization. There is no comparable instrument to the EIA Directive on the international level.

Although SEA and EIA Directive codify the idea of environmental assessment there is a number of differences in consideration of their structure and mechanism. The SEA identifies the best options at an early planning stage for certain public plans and programs. Compared to the SEA the EIA refers to the private or public projects that are coming through at a later stage. So it becomes clear that the two directives deal with different questions and stand side by side in an independent way. Furthermore, the objectives of the SEA directive are expressed in terms of sustainable development, whereas the aims of the EIA are environmental. The SEA requires an assessment of reasonable alternatives and has an explicit provision concerning the use of information from other sources. In addition the SEA directive includes requirements on monitoring and quality control. Finally, the SEA Directive does not have a list of plans and programs similar to the EIA Directive.

European Spatial Development Perspective (ESDP)

Objectives and Mechanism: The European Spatial Development Perspective (ESDP) was approved by the Informal Council of Ministers responsible for Spatial Planning of the EU May 1999. It is a legally non-binding document forming a policy framework with 60 policy options for all tiers of administration with planning responsibility. The strategic aim of the ESDP is to achieve a balanced and sustainable spatial development of the territory of the EU (Art. 3 ESDP). The document codifies some key ideas. First of all an integrated approach is required. That means spatial policies should not just look at specific sectors of the development activity. Furthermore the spatial development should be considered under a wider view of the development. Another aspect is that strategic aspects have to be considered, so interlinked actions should be done to achieve a balanced and sustainable territorial development. Finally, the main responsibility lies with the developed regions and territories to implement the development principals.

The ESDP lists three policy guidelines for the spatial development of the EU (Part A, Art. 19 ESDP, p.11). First, the ESDP describes the development of a balanced and polycentric urban system and a new urban-rural relationship as an important point. Second, parity of access to infrastructure and knowledge has to be secured. Furthermore sustainable development, prudent management and protection of nature and cultural heritage are listened as policy guidelines.

Relevance for sustainable land use: The ESDP has influenced spatial planning policy in European regions and member states, and placed the coordination of EU sectoral policies on the political agenda. ESDP is based on an analysis of these. It forms a policy framework with 60 policy options for administrations with a planning responsibility. Among them there are a number which are key to achieving a balanced and sustainable spatial development policy. An example of this is the conservation and development of biodiversity by establishing a European ecological network. Considering these facts it becomes clear the ESDP is a framework of increased significance for European spatial planning.

Environmental Impact Assessment Directive (EIA)

Objectives and mechanisms: Today the Directive 11/92/EU of the European Parliament and of the Council codifies the former EIA directive 85/337/EEC and its three amendments.¹³⁴ The EIA was created for private and public projects, with an environmental reference such as motorways, airports or factories. The Directive obliges the developers of certain types of projects to identify, describe and assess according to Art. 3 EIA direct and indirect significant effects of a project on factors like population, human health, and biodiversity, soil, water, air and climate change prior to their authorisation. In the latest amendment to the EIA it is proposed to introduce the factor “land”. The aim is to consider and limit impact on land, particularly land take, and soil, including on organic matter, erosion, compaction and sealing, including through appropriate land use plans and policies at national, regional and local levels.¹³⁵ The EIA mechanism is based on the distinction of two different stages. In a “screening procedure” the potential effects on the environment are screened. The screening procedure differentiates between two types of projects listed in Annexes I and II. A mandatory screening has to be done for projects that are listed in Annex I. These projects are considered as having significant effects on the environment and require an EIA. If the concerned project is listed Annex II of the Directive it is at the discretion of the member states to decide whether an EIA is needed for these projects. If the national authorities decide that an EIA is needed, Annex III of the Directive has to be regarded. Annex III specifies a number of criteria that the national authorities must take into account in case they agree that an environmental assessment should be done. After the screening procedure a second stage starts which is described as “scoping procedure”. Here it is important to evaluate which aspects are important and crucial to decide at which point the concerned project has to be considered as a potential influence for the environment.

Strategic Environmental Assessment (SEA)

Objectives and mechanisms: The SEA directive 2001/42/EC was adopted in 2001 by the European Parliament and the Council. Generally speaking, the SEA is a process-oriented approach and a supporting action that encourages sustainable management and land protection of the Members States within their territory. The following plans and programs on national, regional as well as on local level in a Member State have to undergo an SEA: overarching strategies and programs, regional plans, transport infrastructure plans, land use plans, landscape plans, urban development plans, river basin management plans, management plans for agriculture and forestry and plans affecting areas under the Habitat and Birds Directive. It requires public plans and programs that might have a significant effect on the environment such as land use, transport, energy, waste, and agriculture to undergo an environmental assessment before they are adopted. The procedure of the SEA directive Plans and programs must be prepared or adopted by any authority (at national, regional or local level) and be required by legislative, regulatory or administrative provisions. An environmental report has to be prepared for each plan and program in the following policy fields: agriculture, forestry, fisheries, energy, industry, transport, waste/water management,

¹³⁴ Directive 97/11/EC; 2003/35/EC; 2009/31/EC.

¹³⁵ Proposal for a Directive of the European Parliament and of the Council amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment, 26.10.2012, COM(2012) 628 final.

telecommunications, tourism, town and country planning or land use and which set the framework for future development consent of projects listed in the EIA Directive or have been determined to require an assessment under the Habitats Directive. For other plans or programs a screening procedure has to be done, if there are significant environmental effects. Annex II of the Directive points out the criteria for the screening procedure that needs to be analyzed.

Relevance of SEA and EIC for sustainable land use

Basically there are two ideas forming the structure of the SEA and the EIA-Directive. First of all it did become clear in the history of environmental protection that an effective protection of the environment is only guaranteed when environmental aspects are considered before the project or program is adopted. A program or project with a relevant environmental influence has to be considered before it is installed. The aim of both Directives is to ensure that projects and programs have likely no negative effects on the environment. EIA and SEA are related in so far as in most cases a SEA is conducted before a corresponding EIA. So information on the environmental impact of a plan can be important for the decision in the early stage of an SEA and furthermore this information can be used in an EIA at a later stage. Moreover the second key feature of the two directives is to ensure a consultation with the public and to improve transparency.

The EIA directive follows the listing approach which means that particular projects and programs that indicate a significant environmental effect that needs to be checked by a screening are listed in Annex I and Annex II of the Directive 2011/92/EU e.g. land consuming projects are for example long-distance railway traffic and of airports runways as well as the construction of motorways and express roads and the construction of a new road of four or more lanes. Therefore the EIA has a significant quantitative and qualitative impact on sustainable land use.

In the SEA Directive as well as in the EIA directive the issue of land use is highlighted as a particular importance. It is explicitly mentioned in the beginning of the directive as one of the main scopes of the codified text. The SEA is focused on foreseeable negative impacts of land use change that can be reduced or even prevented by considering reasonable alternatives. The SEA asks at a very early stage what the link between the projects is on the one hand and its environmental influence on the other hand. Taking into account the broad range of projects covered by SEA, e.g. over-arching plans and programmes and land use plans the SEA has a high qualitative and quantitative impact on sustainable land use. The Commission¹³⁶ stresses the contribution of the SEA to an improved organization and structure of the whole planning procedure in the member states, regarding this as a positive element. Moreover, the formal requirements of consultation with environmental authorities and the public have led to increased transparency in the planning procedures. Finally, the SEA Directive contributes to the systematic and structured consideration of environmental concerns in planning processes and better integration of environmental considerations.

2.4 Cross cutting policies (non-sectoral)

¹³⁶ See: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2009:0378:FIN:DE:PDF>.

2.4.1 Energy

(Lead author: Dirk Arne Heyen; parts on bioenergy: Stephanie Wunder)

Overview

Humankind consumes energy for electricity, mobility, and heating and it consumes ever more of it. Primary energy demand in non-OECD countries is expected to grow by about 80% from 2008 until 2035 (while staying more or less the same in OECD countries) (IEA 2010). For energy “production”, land is needed by the access to and extraction of resources, and the location sites for power plants. In the past, the main energy sources have been coal, oil as well as traditional biomass use, and to a lesser extent nuclear and hydro power. During the last years and due to national political objectives and support programs,¹³⁷ the growth of investment in renewable energies has been rapid (between 2004 and 2010: 36% annually) in OECD and non-OECD countries, although from a low base (UNEP 2011: 210). While renewables typically have lower greenhouse GHG emissions compared to fossil fuels, they also tend to be more land-intensive (Andrews et al. 2011). The highest land intensity per energy produced has bioenergy production. However, the land use efficiency per hectare depends on the kind of crop used, the climatic region, the level of input etc. as shown in recent EEA and GEF reports (Elbersen et al. 2012; Franke et al. 2012).

Broad declarations such as the → Rio Declaration or some G8 declarations address energy issues, e.g. security of supply and energy access, and also encourage governments to increase the share of renewable energy, in parallel to energy efficiency. But apart from → climate policies which influence energy production, there are few multilateral governance approaches that deal with energy production directly and in detail. The following section presents the Energy Charter Treaty and some international guidelines, initiatives and programs on bioenergy and hydropower. (On the extraction of energy resources, see also the → mining chapter.) At the EU level, the many declarations (like “20/20/2020”) and non-binding communications on energy (like the Energy Roadmap 2050) are not further analyzed here. The focus shall lie on the Renewable Energy and Fuel Quality Directives. The EU emissions trading scheme is dealt with in the → climate chapter.

Given that bioenergy has the largest quantitative impact on land use, its sustainable management should be political priority within the domain of energy and climate policy. This is probably already the case regarding problem awareness (and development of international guidelines or standards) but not yet with regard to problem solution. Another important issue which awaits international action from a land use perspective is the increasing exploitation of “unconventional oil sources” such as oil shale and tar sands, e.g. in Australia and Canada.

¹³⁷ In 2011, there were national policy targets in around 100 countries (REN21 2011). A large number of these targets concern renewables’ shares of electricity production, and generally fall in the range of 10-30% within the next one or two decade(s). More than half of the national targets have been set by developing countries.

International governmental approaches

Energy Charter (Treaty)

Objectives and mechanisms: Based on the Energy Charter of 1991 in form of a declaration, the Energy Charter Treaty was signed in December 1994, entering into force and becoming a legally binding agreement in 1998. It is the only multilateral agreement that deals with inter-governmental cooperation in the energy sector along the whole value chain (from exploration to end-use). To date the Treaty has been signed by 51 mainly Eurasian states.¹³⁸ It promotes open energy markets and wants to strengthen the rule of law within this sector. On the one hand, the Treaty confirms national sovereignty over energy resources: a country is free to decide how, to what extent, and in which areas its resources are made available for exploration and development, and also the extent to which its energy sector is opened to foreign investments. But once an investment is made in line with national legislation, the Treaty protects investors against discriminatory treatment (in the → WTO sense) or expropriation. Apart from state-to-state dispute settlement, it also foresees investor-state arbitration (e.g. via the → ICSID). Art. 7 contains provisions to ensure reliable cross-border energy transit flows, including an obligation to provide national treatment for energy in transit. Finally, a **Protocol on Energy Efficiency and Related Environmental Aspects (PEEREA)**, which also entered into force in 1998, requires states to set policy aims for improving energy efficiency and reducing negative environmental impacts. The emphasis, however, is not on legal obligations but rather on providing a basis for policy learning.

Relevance for sustainable land use: The Treaty does not prescribe or encourage any specific – more or less environmentally harmful or land-consuming – energy source. Nor does it force countries to open up for investment, though Art. 7 can be understood as a soft obligation to favor the construction of new transit facilities (Konoplyanik & Wälde 2006) which would have an impact on land use (for investment liberalization effects see also the → investment chapter.) A greater environmental effect is probably given by constrains, once an investor has been let in, to adopt stricter environmental regulation affecting an investment made. Dispute settlement panels have some discretion on drawing the line between legitimate regulation and compensable expropriation or “regulatory takings” with an impact equivalent to expropriation. The requirement for “fair and equitable treatment” (Art. 10) might also be interpreted as to include choice of the least restrictive means. Case law under the Energy Charter Treaty had limited relevance for environmental and especially land use issues so far. Energy company Vattenfall took action against Germany over restrictions placed on a coal-based power plant near Hamburg, with the two sides settling. Current legal challenges include Vattenfall vs. Germany on the phasing-out of nuclear energy, and a group of foreign investors vs. Spain over its retroactive cuts in solar energy tariffs.

¹³⁸ Nearly all European states (and the EU as a whole), Russia, states in Central Asia, Japan and Australia. Other states including the US and China have observer status; and some of them have also signed the 1991 Charter (including the US) which has now 60 signatory countries (Morocco becoming the latest in September 2012).

Regional governmental approaches

EU Renewable Energy Directive

Objectives and mechanisms: 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 (wind, solar, geothermal, hydro power and bioenergy) 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.

The promotion of renewable energy in the EU follows several objectives, including the reduction of greenhouse gas emissions, security and diversification of energy supply, environmental protection, regional development and social and economic cohesion.

Relevance for sustainable land use: Renewable energies can have a direct impact on land use through the installation of their facilities and the necessary power distribution infrastructure. By promoting decentralized energy production, the Directive also requires an appropriate grid extension – with implications for land use, too (→ *TEN-E*). The text does not feature any sustainability criteria for sources other than bioenergy.

In terms of sustainable land use bioenergy plays a particular role within the Renewable Energy Directive because

- a) only biofuels have a specific goal (10% transport fuels) which leads to a politically driven increase in biofuel production on an international level and
- b) the expansion of biofuels results in an increase of biomass production from arable land and forests, leading either to an intensification of land use or to additional demand for land.

The increasing pressure on land caused by an accelerated demand for biomass even can cause deforestation in developing countries where environmental legislation is lacking or poorly enforced. Moreover, if food production is substantially replaced by the cultivation of energy crops, it leads to competition for land, which can result in local food shortages and increasing food prices.

While preventing the negative impacts of power distribution infrastructure is not the subject of the RED, environmental impacts of biofuel production play a particular role via the formulation of sustainability requirements in articles 17-21. The directive requires that all biofuel products counting towards the target must reduce GHG emissions. Moreover, the biomass 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 on land with high carbon stocks.

These sustainability provisions (the criteria as well as compliance mechanisms such as certification schemes) have however been criticized by NGOs and scientific institutions for not being effective. A major issue is that indirect land use changes are not (yet) taken into account, when assessing the

sustainability of biofuels. ILUC occurs, when biomass production replaces other land usages to other areas, which can lead to deforestation and conversion of grass- and cropland.¹³⁹

To improve sustainability, the European Commission proposed stricter rules for biofuels in October 2012. The proposal aims to cap the use of biofuels from food-based feedstocks at 5% by 2020, and increased the use of advanced biofuels from non-edible feedstocks such as wastes, algae, straw etc. Regarding indirect land use changes (ILUC), the proposal introduced a reporting requirement.

In addition to the sustainability requirements mentioned above, the 10% renewable transport fuel target foresees that 2nd generation biofuels (derived from lignocellulosic feedstocks, e.g from short rotation coppice or residues) become commercially available, and electric vehicles and trains add to the target as well.

However, while the RED imposes sustainability requirements for biofuels, the use of solid and gaseous biomass sources in electricity, heating and cooling do not (yet) have to fulfil these requirements. This is why a parallel European renewable policy debate outside the RED is currently discussing the extension of sustainability criteria for these sources.

Fuel Quality Directive¹⁴⁰

Objectives and mechanisms: The 2009 amendment of the Directive introduced a requirement on fuel suppliers to reduce GHG intensity of energy supplied for road transport by 6% until 2020. It also set sustainability criteria (mirrored in RED) that put a minimum threshold on the emissions savings from biofuels based on a lifecycle analysis methodology described in the Directive (GHG emission savings from the use of biofuels and bioliquids shall be at least 35%), and define categories of high biodiversity and high carbon land that must not be converted for biofuels production.

Relevance for sustainable land use: The Directive unfolds its significance for environmental matters not only through its provisions on biofuels (see the text on RED). In October 2011, the European Commission proposed detailed implementing rules that foresee “default values” reflecting the higher carbon intensity of unconventional fuel sources (feedstocks) such as coal-to-liquid, shale and tar-sand oil. Although addressing production-related energy consumption and emissions rather than the significant impact on land(scapes) from such resource use, the proposed rules could have a general environment-protecting effect by discouraging their use, or at least be a political signal. But the Commission plans are heavily opposed in particular by Canada which threatens to challenge them as unfair discrimination on → WTO grounds. As some EU states have also showed reluctance, a decision has been postponed until 2013 (CBC 2012).

¹³⁹ A 2010 IFPRI Study which includes global direct and indirect land use change, concludes that going beyond a 5.6% share of biofuels in transport fuel in the EU could cause significant environmental harm globally

¹⁴⁰ DIRECTIVE 2009/30/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 23 April 2009 amending Directive 98/70/EC as regards the specification of petrol, diesel and gas-oil and introducing a mechanism to monitor and reduce greenhouse gas emissions and amending Council Directive 1999/32/EC as regards the specification of fuel used by inland waterway vessels and repealing Directive 93/12/EEC

Hydropower policies

Around 800,000 water dams are said to exist worldwide, from which 45,000 are large ones (WCD 2000). The majority of them exists in developing countries; approximately 22,000 in China only. Dams, typically barriers constructed across a stream channel to impound water, are used for water supply, irrigation and electricity generation. Hydropower produces 16% of global electricity (Worldwatch Institute 2012). Five countries – China, Brazil, the US, Canada, and Russia – account for approximately half of the installed capacity. The IPCC report speaks of 75% still undeveloped technical (not necessarily economically feasible) hydropower generation potential worldwide (Kumar et al. 2011). While water dams can contribute to economic development, they usually have also negative, often irreversible, effects on ecosystems including (on land use grounds) loss of habitat through flooding (upstream), riverbank erosion (downstream). Dimensions of lost land become clear by resettlement numbers: reservoirs have led to the displacement of 40-80 million people (WCD 2000: 16). Approval of projects is a national (regional) matter and many countries actively support new dams, but some global guidelines exist which might influence investors, authorities, or (Western) funding institutions.

World Commission on Dams (WCD) Guidelines

Objectives and mechanisms: The WCD was set up in 1998 by the World Bank and the World Conservation Union (IUCN), following criticism from NGOs on World Bank funding for dams. The task of 12 commission members, representing a broad range of stakeholders, was to conduct an independent review of the development effectiveness of large dams and to develop internationally acceptable standards for dam planning, construction and operation. The final report (WCD 2000) defines seven strategic priorities and has translated these into a set of corresponding criteria and 26 guidelines for the planning and project cycles. Generally, social and environmental aspects shall be given the same significance as technical, economic and financial factors. Several guidelines deal with (investor-independent) appraisal of environmental impacts on the basis of strategic, project-level, life cycle and environmental flow assessments. The latter, for example, includes development of data, models and analytical tools that can be used in scenario creation on biophysical responses. The “no development” scenario should always be included. Specific proposals are made for governments, export credit agencies and development banks, as well as the private and NGO sectors.

Relevance for sustainable land use: While criticized by the operator-dominated association IHA (see next paragraph), NGOs have generally welcomed the Report and called upon the World Bank and others to adopt the WCD recommendations, assuming that implementation across the board would greatly improve the environmental performance of dams (WWF 2012). The World Bank (2001) has welcomed the Report and said that it “will use it as a valuable reference to inform its decision-making process”, disseminate it with its borrowers and support their strategic planning process and option evaluation. The guidelines are also used by the → European Investment Bank. EU member states have decided that carbon credits from large dams can only be used if projects comply with the WCD framework, and several governments have organized dialogue processes to integrate WCD recommendations in national policy (International Rivers 2008). But in 2005, the WWF found little policy changes, weaknesses with regard to impact assessments, and indications

for a general lack of application in key dam building countries (WWF 2005). Thus, practical implementation has to be improved.

International Hydropower Association (IHA)'s Sustainability Guidelines and Protocol

When the WCD guidelines were published, the IHA (2001) – an industry-dominated association formed in 1995 – criticized them for downplaying positive development effects and setting unrealistically high assessment demands which should not become national law. In 2004, the WCD published its own set of Sustainability Guidelines, and two years later a Sustainability Assessment Protocol to enable developers to assess the performance of their dam projects against the Guidelines. These documents were heavily criticized, in turn, by NGOs for vague language and an “inherently pro-dam bias” (International Rivers 2008). A new Protocol was published after a multi-stakeholder process from 2008 to 2010 with banks, governments, and NGOs (Oxfam, The Nature Conservancy, WWF). Despite improvement, it has also been criticized by some NGOs such as International Rivers (2011) which still promote the WCD Guidelines.

Hybrid and non-governmental approaches

Sustainable bioenergy policies and standards

An important driver of global bioenergy production and demand is the European Union, with the → Renewable Energy Directive as the main policy including requirements of the sustainability of bioenergy production. As for other countries national regulations on biomass production and/or use of bioenergy are important in the US and Brazil, to mention only two large players. However, national approaches will not be tackled within the international governance screening, but may be part of one of national case study analyses.

On the other hand, there are many international initiatives that aim to improve the sustainability of biofuels by the definition of sustainability standards like the various certification schemes (RSB, ISCC – International Sustainability Carbon Certification, RSB – Roundtable for Sustainable Biofuels), ISO standard sustainable bioenergy. The requirements included in these standards often also address land use. However, these voluntary standards still play a niche role on the market and the particular opportunities and challenges for sustainable bioenergy standards are comparable to the general challenges and opportunities sustainability standards face (see → chapter on agriculture → Private standards and certification systems).

A standard setting process that is not meant for certification of economic operators, but for bioenergy policies on the national level is the Global Bioenergy Partnership (GBEP). In 2011 the work on sustainable bioenergy led to an agreement on voluntary indicators for sustainable bioenergy (GBEP 2011).

2.4.2 Trade

(Lead author: Dirk Arne Heyen)

Overview

This chapter deals with the international trade regime and the impact it has on land use. While global commodity production has increased by a factor of 6 between 1950 and 1999, global trade of these products increased in the same period by a factor of 20 (WTO 2000). Low prices and new technologies in the fields of transport and communication have been important factors for this development but the decisive factor has been political will (Döppe et al. 2002). The frame of international negotiations and decisions was the General Agreement on Tariffs and Trade (GATT), concluded in 1947. In several negotiations rounds in the following decades, non-tariff trade barriers were replaced by tariffs (“tarification”) and these were lowered for ever more sectors, in average from 40% in 1947 to less than 5% (ibid.: 28). The last concluded negotiation round (“Uruguay round”; 1986-1994) lowered developed countries’ average non-agricultural tariffs from 6.3 to 3.8%. In case of developing countries, maximum tariffs had usually been set to leave some flexibility – coverage by these ceilings increased from 21% to 73% of non-agricultural products.

Since GATT and later WTO (World Trade Organization) agreements are highly interrelated and form one trade regime that liberalizes trade and, at the same time, set rules for its restrictions, they are analyzed together here on their land use relevance (apart from TRIPS, TRIMS and GATS – the last two being analyzed in the → investment chapter). Regional agreements like NAFTA (see there, too, for a short text), MERCOSUR or ASEAN and many more bilateral trade agreements (which cannot be further analyzed here) have contributed to, and often accelerated, the process of trade liberalization, and will further do so.¹⁴¹ Despite some special provisions (e.g., on the promotion of family farming in the case of MERCOSUR) their effects will be similar (differing rather on the extent) to those described below for the global WTO regime.

While for its supporters free trade lead to economic growth and prosperity, critics see it as a cause of poverty, hunger and environmental degradation in developing countries. In fact, the relationship of trade, development and environment is pretty complex as shown in this chapter. In general, trade liberalization tends to amplify environmental problems where externalities of economic development are insufficiently internalized and where governance structures are weak. As far as land use is concerned, the overall impact of trade liberalization is also problematic since it sets incentives and pressures (e.g. through market expansion and economic growth, but also increased competition) for additional land conversion and resource extraction. Trade also enables developed countries to virtually occupy foreign land for their own consumption. The average EU citizen (in 2004) needed 2.53 ha (twice the global average) of “land with global-average biological productivity”, with 31% of this land being outside the EU (Steen-Olsen et al. 2012).

¹⁴¹ In the ASEAN Free Trade Area (AFTA), for example, tariffs on most regional products have been reduced to 0-5%. A single market with zero duties is foreseen to start in 2015 as the ASEAN Economic Community (AEC). US agricultural trade with NAFTA partners has grown twice as fast as trade with the rest of the world.

The WTO free trade regime – objectives and mechanisms

With conclusion of the Uruguay round, an agreement established the **World Trade Organization (WTO)** to replace the previous GATT Secretariat and serve as a single institutional framework for global free trade. The first paragraph of the WTO Agreement's Preamble includes, for the first time in the context of the regime, reference to sustainable development and to the need to protect and preserve the environment. The focus, however, lies elsewhere. The basic functions of the WTO are: a) oversee implementing and administering WTO agreements; b) provide a forum for negotiations; and c) provide a dispute settlement mechanism. WTO Agreements are binding for all – currently 157 (August 2012) – Members.¹⁴² Decisions and rules are the outcome of negotiations among member governments. The Agreement foresees votes where consensus cannot be reached, but the practice of consensus dominates. Steinberg (2002), however, argues that trading rounds have tended to close through power-based bargaining in favor of Europe and the US. A country which wants to join the WTO has to accept all its agreements in place. The application process is unique to each country with terms of accession depending on the country's economic development and current trade law.

The main compliance mechanism for all WTO agreements is a procedure laid down in the Dispute Settlement Understanding (DSU). The WTO does not act on its own volition; governments have to bring complaints. When a WTO Member believes that another is violating trade rules, the two parties follow a defined set of procedures. If consultations are not successful, a WTO panel hears the case and makes a recommendation. If a party appeals, the Appellate Body (AB) takes over as a second instance. The final decision is taken by the Dispute Settlement Body (DSB) which is, in fact, a session of the General Council of government representatives. The recommendation of the former instance is adopted unless there is a reverse consensus. The DSB may direct the losing Member to bring its laws into conformity within a "reasonable period of time". If the losing party fails to do so, there is no "punishment" or restitution but the DSB can authorize the complainant to take retaliatory measures to induce action from the losing party. The system is not fully balanced in reality, since developed countries have better access to legal support, and the effectiveness of retaliatory measures depend on the state's economic power (Brack 2005). In most cases, however, DSB decisions are voluntarily implemented in time. The WTO's dispute settlement procedure contributes much to the impression that trade law is the most powerful branch in international law today (ibid.; Mann 2000: 224f.).

General Agreement on Tariffs and Trade (GATT)

The GATT, originally signed in 1947, is still in effect, subject to modifications of 1994. According to its preamble, its purpose is the "substantial reduction of tariffs and other trade barriers and the elimination of preferences, on a reciprocal and mutually advantageous basis". Excluding agriculture, Art. XI generally prohibits quantitative restrictions like quotas and import or export licenses, since volume-based measures are seen as more trade-distorting than price-based measures such as tariffs and taxes. For the latter, the WTO core principles of non-discrimination apply; simply put:

¹⁴² Some non-sovereign entities of member states are included as separate members. Membership precondition is not having full sovereignty but being a customs territory with full autonomy in external commercial relations.

- The *most-favored nation principle* (Art. I) requires that if special treatment is given to the goods and services of one country, they must be given to all WTO members (However, preferential tariffs are exceptionally allowed for GSP schemes (see below) and for regional trade agreements.)
- The *principle of national treatment* (Art. III) says that goods and services of other countries have to be treated in the same way as domestic ones. This refers to “like products”, interpreted as products with similar physical characteristics and/or with similar quality performing similar functions in a similar way. It means that discrimination just based on different process and production methods (PPMs) is in principle not allowed unless they affect the final product.

Environmentally-related exceptions to Art. III are possible when a discriminating policy fulfills the requirements of **Article XX**: i.e. falls under sub-paragraphs (b) or (g) and does not contravene the *chapeau* (does not discriminate between countries and is the least trade-restrictive option to achieve the policy’s objectives). While paragraph (b) requires that the measure is “necessary” to protect the environment; paragraph (g) requires only that it “relates to” (later interpreted at “primarily aimed at”) the conservation of exhaustible natural resources.

Agreement on Technical Barriers to Trade (TBT Agreement)

The TBT Agreement covers the preparation, substance and application of product and product-related standards, in principle allowed by GATT. It requires technical regulations and standards to not create unnecessary obstacles to trade; i.e. to be not more trade-restrictive than necessary for achieving legitimate objectives (an illustrative list also mentions the protection of human, animal or plant health and the environment). Labelling schemes based on product characteristics are also covered. Governments must define and apply standards in a non-discriminatory way as set out by the GATT principles mentioned above. The use or development of internationally harmonized standards is encouraged. On procedural grounds, the agreement requires notification before and transparency in developing national rules.

Agreement on Sanitary and Phytosanitary Measures (SPS Agreement)

The SPS Agreement specifies the TBT Agreement with regard to sanitary (human and animal health) and phytosanitary (plant health) measures. It generally allows governments to set product standards “necessary” to protect humans, animals and plants within their territory from hazards associated with the movement of plants, animals and foodstuffs in international trade (e.g. diseases and disease-causing organisms). It requires that standards are based on scientific evidence, that a risk assessment is undertaken, that similar risk levels are not treated differently without good cause, and that a measure is not more trade-restrictive than necessary. Governments are encouraged to set internationally harmonized standards and base their SPS requirements on them. Special provision is made for temporary measures when current scientific information is insufficient, making the SPS one of few WTO Agreements to reflect (though not sufficiently, according to many critics) the principle of precaution. In general, the burden of proof in a dispute mainly lies with the enacting country (UNEP 2005: 60). On procedural grounds, notification and transparency in developing the rules are required.

Agreement on subsidies and countervailing measures (SCM Agreement)

The SCM Agreement provides a frame for defining, reporting and disciplining subsidies that create trade distortions. It identifies three categories of subsidies, depending on their effect on trade

(with those subsidies aimed at promoting exports or displacing imports seen as the worst), and provides for different types of remedy for each category: (a) prohibited subsidies are subject to an accelerated dispute settlement procedure and a Member must withdraw them without delay; (b) actionable subsidies can in principle be granted or maintained, but may be challenged in a dispute settlement or subject to countervailing measures (for a maximum of five years) if they cause adverse effects to the interests of other Members; (c) non-actionable subsidies (including those which promote adaptation to new environmental requirements) are not subject to countervailing action or dispute settlement.

Generalized System of Preferences (GSP)

The GSP, mainly achieved by the United Nations Conference on Trade and Development (UNCTAD), is a formal system for exemption from the more general rules of the WTO, namely the most favored nation principle (MFN), for development reasons. An enabling clause was introduced to GATT in 1979 in order to allow such schemes which lower – in a non-reciprocal manner – tariffs for goods coming from developing countries, especially least developed countries (LDCs), without also lowering tariffs for other developed countries (“tariff preferences”). Criticism arose because most GSP schemes have excluded and still exclude many “sensitive” products from free access, often products that have been of particular export interest to developing countries like textiles or agricultural products.

The European Community was the first to implement such a GSP scheme in 1971. The ACP (African, Caribbean and Pacific) countries, mostly former European colonies, have long enjoyed even better EU market access under the Lomé Convention. Following increasing criticism for WTO incompatibility, the successive **Cotonou Agreement** foresaw the replacement by reciprocal **Economic Partnership Agreements (EPA)** that would also open ACP countries’ markets for exports. While least developed countries (LDCs) can still take advantage of the EU’s **"Everything But Arms" scheme** granting duty-free and quota-free access to imports of all products, non-LDCs (half of ACP countries) have to switch to the less favorable GSP scheme or to an EPA (foreseen for 2008 but negotiations have been much delayed, with mostly interim agreements being in place). While the EU underlines that EPAs will grant ACP countries transition periods of 15-25 years, permanent protection of 20% of products, and development support, others heavily criticize the massive market opening, reduction of developing countries’ export restrictions (e.g. of unprocessed raw materials) and the general focus on trade rather than development (Hall 2008).

Relevance for sustainable land use of the WTO free trade regime

With regard to the complex relationship between trade, development and the environment, there has been conceptual and empirical (but often rather case-specific) work, with remaining data gaps and methodological difficulties preventing clear generalizable causal links and quantification (IUCN 2004). “Depending on the sector, the country, the markets and prevailing policies, trade and trade liberalization may be good or bad for the environment and development”, or both at once (UNEP & iisd 2005: 45). Based on an OECD classification, UNEP distinguishes five types of trade impacts (ibid: 45 ff). The first three are simple but of limited quantitative relevance for land use:

- **Direct effects** caused by the trade itself, i.e. by the transport of those 10 billion tons traded around the globe annually (Dittrich et al 2012: 23). On land use grounds (leaving GHG emissions and air pollution apart), the installation of infrastructure is the greatest direct effect. But because trade is only one driver among others, the effect is hard to quantify.

- **Product effects**, i.e. effects related to the diffusion of goods which can be environmentally more or less harmful. Free trade of agrochemicals (such as fertilizers or pesticides) has a negative qualitative impact on land. The same applies if trade and higher demand (e.g., for biofuels) leads to monocultures. (On both aspects, see also the box on agriculture below.)
- **Technology effects**, i.e. transfer of environmentally friendly or harmful technologies (ways of production). These can be better on resource and energy efficiency and pollution levels. Recycling technologies can reduce landfill; communication technologies reduce the need to travel, thereby (in a limited way) the need for infrastructure. But unsustainable patterns of farming or forest management and relevant machines also spread more easily. Together with monocultures, this can lead to soil degradation, thereby to further land conversion.

Of greater quantitative importance for land use are indirect (economic) changes, trade brings about. The **structural (specialization) effect** points to changes in the composition of a country's economy due to trade liberalization. The economic rationale behind this idea is the concept of "comparative advantage". Free trade encourages countries to specialize in producing those goods which they have in abundance or produce relatively more efficient, to trade for those they do not. Such a regional specialization is not automatically bad from a global environmental perspective, since some regions can produce certain goods with less energy and material input than others (Döppe et al. 2002: 20). Nevertheless, this would mean accelerated harvesting of resources and/or increased pollution in some regions. While empirical evidence is limited for the claim that dirty manufacturing industries heavily migrate to developing countries and that these become a "pollution heaven" (see chapter on → investment) there is no doubt that – given "cheap", weakly protected resources – many developing countries specialize on resource extensive exports within the primary sector (UNEP 1999).¹⁴³ Muradian and Martinez-Alier (2001) show this by using the example of Latin America's exports, mainly coming from the mining, agriculture and forest sectors. Exports from the last sector have increased by a factor of 30. This trend and the expansion of agricultural land (see box) has obviously implications for land use and biodiversity. According to Lenzen et al. (2012), 30% of distinction threats to species are driven by international trade.

These effects are furthermore accompanied by an encompassing **scale (growth) effect**. Other things being equal, open economies tend to grow significantly faster than closed ones (WTO 1999: 48). By the spread of better technologies, competition pressures for innovation, specialization (see above) and economies of scale, trade can make economic activities more efficient. In theory, this benefits the environment since a product can be produced with less (natural) resources. In practice, however, this is mostly compensated by expanded production (rebound effect). Economic development (growth) is actually put forward as a major argument in favor of trade liberalization. The increase in personal income can also drive the demand for green products as well as stricter environmental policies. But the Environmental Kuznets Curve, implying that environmental degradation decreases at a certain income level, has only been validated, if at all, for certain indicators like air pollution (ibid.). With additional wealth comes the opportunity to consume at levels and in ways that are worse for the environment. Together with additional demand from trading partners, economic growth can easily result in higher levels of resource

¹⁴³ Tariff escalation, which means that developed countries place higher tariffs on processed goods than on raw materials, contributes to lock poor countries into a reliance on few primary commodity exports (Brack 2005: 5).

extraction, waste production and the conversion of land into agricultural or built-up area. That growing wealth does not lead to less land conversion is shown, for example, by Germany where built-up land has increased in the last two decades by 75-130 ha per day (BReg 2012: 70). While stressing that trade is not the direct cause of environmental degradation, even the WTO (1999) acknowledges that trade can exacerbate negative (growth) effects in case of market and policy failures (esp. lack of → internalization of externalities, and weak policies).

Focus: Agriculture

Within the context of trade (policy), it is worth to take an extra look on agriculture, because of its particular relevance for land use, because there is a separate WTO agreement for agriculture which prevails against other WTO provisions (GATT, SCM) in case of conflict, and because trade distortions remain extensive compared to other sectors. Apart from market access limitations, subsidies and other kind of farmer support have heavily been and are still applied, especially by developed countries, leading to intensive domestic production and cheap imports to developing countries. Both aspects have implications on land use.

Agreement on Agriculture (AoA)

The Agreement on Agriculture, controversially negotiated during the Uruguay Round, was a step to bring agriculture increasingly under GATT disciplines by calling for a) better market access through a switch from non-tariff measures to tariffs (“tarification”) while also progressively reducing these tariffs, b) limiting domestic support programs, and export subsidies (c). The AoA actually foresees:

- minimum tariff line reduction by 15% and average tariff reductions by 36% for developed, and minimum reductions by 10% and average reduction by 24% for developing countries;
- based on a classification of domestic support programs into an Amber box (subsidies directly linked to production levels and assumed to be most trade-distorting), a Blue box (less distorting payments coupled with production limitations), and a Green box (income support not related to production; seen as minimally distorting), the reduction of Amber box subsidies by 20%,
- reduction of export subsidies by at least 36% by budgetary value, or of the volume of subsidized exports by 21% for developed countries (24% or 10% for developing countries, respectively).

The commitments were to be phased in over six years for developed and ten years for developing countries. A Committee on Agriculture was established to oversee the implementation of the AoA.

The AoA could have been an instrument to reduce developed countries’ subsidies, i.e. limiting the incentive for overproduction and pressure on their land (→ CAP). Although the WTO did produce anti-subsidy rulings based on the AoA and SCM Agreement (e.g. against US export credits for cotton; DS 267), the years following the entry into force ironically saw a rise of subsidies. Europe and the US still spend about 380\$ billion a year on support programs for domestic agriculture. This has been possible by delaying compliance with WTO

rulings and because developed countries, in particular the EU, shifted money from the Amber Box to subsidies like direct payment schemes falling into the Blue or Green Box – a trend likely to continue. The ICTSD (2009) has shown that Green box subsidies – for which no limit exists and which were, until 2003, particularly protected by Art. 13 AoA (“Peace Clause”) against countervailing action under the SCM Agreement – also distort competition and trade, with the consequences described below. The AoA has therefore been heavily criticized by civil society for reducing trade protection of developing countries and their farmers, while, at the same time, allowing the developed countries (which have been reluctant to really open their markets)¹⁴⁴ to continue paying their farmers massive subsidies which developing countries cannot afford.

Relevance for sustainable land use: The interactions between agricultural trade (10% of global agricultural production is actually traded; UNEP & iisd 2005: 79), trade policy and sustainability including land use are once again complex. In theory, there could be a positive specialization effect in that production of agricultural goods takes place where production is less land-, energy-, water- and/or fertilizer-intensive. What have been shown empirically, however, are rather negative environmental (and social)¹⁴⁵ effects, especially in developing countries (e.g. Döppe et al 2002): first and foremost, the expansion of farmland (scale effect) which can be attributed to – apart from population (and perhaps economic) growth – market expansion (new export opportunities) and increasing competition pressures. Given open markets and the continued dumping of products from the north, local farmers in developing countries often face difficulties to compete with imported products. Small farmers are sometimes ruined, have to leave their land and move to cities. While this rural-urban migration can have a positive land use effect through abandonment of land and potential ecosystem recovery (Grau & Aide 2008), other and especially bigger farmers react by an expansion of their cultivated area (sometimes to marginal lands). A UNEP (2005) study on rice, for example, reports environmental damage and land use change – clearing of forests and wetlands – due to trade liberalization in a diverse set of countries (Colombia, Viet Nam, several African countries). In case of corn production it has been shown that cultivated area in Mexico increased despite a clear rise in imports of subsidized corn from the US (Nadal 2000). Thus, pressure on land has actually occurred in both countries.

Apart from cultivating new land, developing country farmers reacted to trade opportunities and pressures in two other ways: a) intensification, with reduction or elimination of fallow periods, and increased use of agrochemicals (technology & product effects), as well as a change from mixed crop production and crop rotation to monocultures (specialization effect) with crops often destined for rich markets, sometimes not traditionally grown there and even ill-suited for local conditions. The studies on rice and Mexican corn, for example, also point to the loss of traditional rice and corn types (“genetic erosion”), and show that all

¹⁴⁴ In OECD countries, the average agricultural tariff is 12 times the rate for industrial products (Brack 2005: 10). The tariffication process has been partly used to set tariffs at an extraordinarily high level, so that market access initially became worse. Already low tariffs were reduced by 100% to keep tariffs on sensitive products high.

¹⁴⁵ While free trade can surely create market opportunities, developing country farmers have seldom been able to capture much of the benefit of overseas sales (UNEP & iisd 2005). Even more problematic is that export focus, dependence on food imports and price volatility in global markets is threatening food security and livelihoods.

effects can take place at once. Intensification and monocropping lead to decreased soil fertility and soil degradation (technology & product effect) and both can further increase the pressure for converting new land.¹⁴⁶ Foley et al. (2011) estimate that agricultural activity (not only trade-induced) has already led to clearance or radical transforming of 70% of global prehistoric grasslands, 50% of savannas, 45% of temperate deciduous forests and 25% of tropical forests. Today, agriculture is mainly expanding in the tropics and replacing forests; making agriculture the main cause of deforestation (estimated 5-10 million ha are cleared annually for agriculture) and thereby contributing to loss of biodiversity. In Malaysia, which exports palm oil, rubber and cocoa, 139 species are said to be threatened by trade (Lenzen et al. 2012).

A specific ecological and moral problem is the massive and one-sided virtual import of land (“occupied” for consumption) in the South by developed and emerging countries – of which free trade is a prerequisite (and free investment an additional driver; → “land grabbing”). According to the WWF (2012), the EU “occupies” more than 30 million ha globally, thereof 20 million ha in South America. Two issues particularly deserve mentioning: production of biofuels and of animal feed. Only for EU meat consumption, already 15 million ha of land outside the EU is used for soya production (often GMO), mainly in Brazil and Argentina. In these two countries, around 1/3 of their soya production area is cultivated for the EU. While this brings huge economic opportunities, it also means occupying land that is not available to domestic food supply and/or converting rain forest. A similar problem arises with biofuel demand for European tanks. It is estimated that the EU needs 20-30 million ha of land for its 10% biofuel goal (→ RED), with the majority coming from outside (Eickhout et al. 2008).

One could add a sixth effect, not mentioned by UNEP but often discussed in the context of trade and environment: **the effect on environmental policy**. There is a broad debate in politics and civil society as well as academia on the effects of free trade and foreign investment on national regulation (for an overview see Esty & Geradin 1998). Negative regulatory effects may occur when environmental regulation is undermined by global competition. According to the race-to-the-bottom hypothesis, countries lower their environmental (and/or social) standards in order to attract investment or to make existing industries and their products more competitive in the global market. Empirical evidence for such a race, however, is rather limited for environmental regulation and of anecdotal nature only. In some cases, a “race-to-the-top” (Vogel 1997) of regulatory standards has been shown, but this effect is limited to product standards, usually for technical goods but potentially also (phyto)sanitary standards. For production-method standards, however, a “chilling effect” is likely: governments are reluctant to strengthen their (e.g. land use management) rules (WTO 1999). Besides competitiveness concerns, WTO law may also have negative regulatory effects by making environmental regulations illegal. Especially after the tuna-dolphin case (GATT case DS21) it was feared that environmental concerns and laws would “be sacrificed on the altar of free trade” (ibid.: 10) due to challenges of other countries. While the

¹⁴⁶ However, in kind of a trade-off, without intensification land loss would be probably even higher. While global agricultural output has grown by 250-300% the last 50 years, cultivated area grew “only” by 12% (FAO 2011).

number of challenges of environmental policies has remained quite low, WTO law might (if only psychologically) prevent the introduction of strong national policies in the first place.

A particularly controversial topic is the WTO compatibility of governmental standards and even labels (mandatory more than voluntary) based on process and production methods (PPMs). (Private labeling initiatives like the → FSC or → certification schemes in the field of agriculture are not affected.) The GATT, TBT and SPS Agreements generally allow only product (and product-related PPM) standards.¹⁴⁷ In the context of land use, the prohibition to discriminate between like products (as agricultural and timber products normally are) on the basis of non-product-related PPMs (including land management) is of particular relevance. Some argue that organic farming is product-related (i.e. less pesticides) and can therefore be privileged but this position is not common sense. To implement pure PPM standards, they have to be justifiable under GATT Art. XX (which can also be applied to agricultural goods despite the AoA's tariffication principle). The main question is whether environmental degradation, e.g. through unsustainable land use, outside a country's territory is a legitimate (WTO compatible) national policy goal. This is a controversial question which still awaits legal clarification through WTO case law.¹⁴⁸ Best to address foreign land use would probably to link it with the mitigation of climate change as a transnational problem (Reichert & Reichardt 2011). In any case, to generate a WTO-compatible regulation, extensive consultation, equal treatment with domestic products, and flexibility concerning ways to comply are definitely necessary. The greatest challenge would be to find an accepted method to calculate emissions due to land use change, and to apply rules on the level of producers, not countries of origin (ibid.). The → FLEGT Action Plan could be seen as a probably WTO-compatible example.

A solution repeatedly encouraged by the WTO and its agreements is the international harmonization of environmental rules. However, there is also a tension between WTO trade law and multilateral environmental agreements (MEAs) with a potential **effect on international environmental policy**: the compatibility of trade sanction mechanisms, e.g. license or permit requirements, in some MEAs (like the → Tropical Timber Agreement, or CITES) with WTO law, especially GATT Art. XI. National rules or decisions could be challenged at the WTO if both parties are WTO Members. To date, these types of MEA provisions have not been formally challenged and there is nothing in international law to state that the WTO agreements override MEAs (neither vice versa). But again there might be a "shadow effect": governments fear WTO incompatibility and refrain from introducing such measures in the first place. The threat of a conflict with WTO rules has also been raised in many recent MEA negotiations, generally by those opposed to its effective enforceability (Stoll 2003). The lack of legal clarity, the potential of parallel dispute settlement procedures, and the uncertainty about their outcome have led many to call for some

¹⁴⁷ There is a debate on whether standards based on PPMs not related to the final product are addressed by the TBT Agreement, too. The text is open to interpretation. But considering the negotiation history of the agreement where there was no consensus to include such standards, most experts conclude that they are not covered (see Dröge 2001).

¹⁴⁸ The *shrimp-turtle case* (WTO case DS 58) made progress, from an environmental perspective, in defining "exhaustible natural resources" (the legitimate conservation goal of Art. XXg) broadly, including living and non-living, renewable and non-renewable resources. While the article was also traditionally interpreted as to rule out policies aimed at protecting the environment outside a country's borders, the situation is less clear after the Appellate Body (AB) ruling in this case: a trade-restricting US policy aimed at the protection of turtles was found to fulfill the requirement of a "sufficient nexus" since turtles are a migratory species and a global resource. The AB has not, however, set up a general definition of what constitutes a sufficient nexus.

kind of resolution (see Stoll 2003 for some suggestions). The mandate of the Doha round also envisages negotiations on the issue but the mandate is rather limited.

While some call for the abolition of the whole WTO regime, which is quite unrealistic, there are also numerous **reform proposals**, not only to make it more just (with regard to developing countries) but also more green. Some of the following suggestions have been part of the Doha negotiations that started in 2001 but have not found a successful end yet, mainly due to disagreement on agriculture:

- giving greater flexibility for developing countries to introduce mechanisms (allowed by a new Development Box) for protection and support of small farmers, to designate some products (based on the criteria of food security, livelihood security and rural development) for which they could uphold tariffs; or by allowing them to impose safeguard duties in the event of an abnormal surge in imports or the entry of unusually cheap imports; meanwhile, putting them under less pressure in bilateral and inter-regional negotiations on market opening and abolition of export restrictions (especially ACP countries in EPA negotiations);
- increasing disciplines on developed countries' subsidies by fully forbidding export subsidies and requiring cuts also in the Blue and Green Box, only allowing subsidies promoting "green agriculture" (including less over-production);¹⁴⁹ meanwhile encouraging developing countries to challenge or countervail subsidies under the SCM Agreement;
- strengthening of organic farming, sustainable forest management or other environmentally friendly PPMs by abandoning WTO obstacles for standards giving preferential treatment to such products, discriminating "eco-dumped" products, and clarifying that product labeling based on PPMs is WTO compatible; as well as making access to fair trade and eco-label certification easier for small producers in developing countries (e.g. by group certification);
- clarifying the relationship between WTO agreements and MEA trade provisions; generally better integration of trade, development and environmental policies; more serious use of ex-ante assessments of new trade agreements (US Guidelines for Environmental Review of Trade Agreements; more rigorous: EU's SIA methodology), and their ongoing monitoring.

Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement)

Objectives and mechanisms: The TRIPS Agreement is another WTO agreement resulting from the Uruguay Round but deals rather indirectly with trade (barrier) issues. It provides a common set of rules, i.e. minimum standards, for the protection and enforcement of private intellectual property (IP) rights in WTO member states, ranging from copyright in media to medicine. TRIPS contains an exception whereby states are not obliged to grant patents where the prevention of commercial exploitation within their territory "is necessary to protect", *inter alia*, "human, animal or plant life or health or to avoid serious prejudice to the environment" (Art. 27.2). Also, states may exclude plants and animals as well as essentially biological processes from patentability (Art. 27.3). But then they must provide for the protection of plant varieties and genetic resources (which are

¹⁴⁹ So far, the Green Box rules allow payments via explicitly environmental schemes, but payments are limited to additional costs or compensation of reduced income due to participation in the scheme.

keenly sought after by a range of commercial interests) by an effective *sui generis* system (a system specially designed for a certain type of IP) or by a combination of such a system with patents. TRIPS applies to all WTO member states. Developing countries, however, were allowed extra time to implement the changes to their national laws (the transitions period expired in 2005; for least developed countries it was extended to 2013).

Relevance for sustainable land use: While the WTO emphasizes the positive role TRIPS can play in facilitating access to and transfer of environmentally-sound technologies and products, there are a series of important environmental (and social) concerns. By making the seed a genuine product and strengthening breeders' rights, TRIPS leads to a development that could be called a "privatization of biodiversity". At the same time, contribution to biodiversity (through knowledge and practices) by local farmers is not recognized – in contrast and conflict with the → CBD, especially the → Nagoya Protocol. Further implications result as farmers switch from traditional varieties to new high-yield strains developed by professional breeders (see, e.g., UNEP & iids 2005). On social grounds, patenting of seed threatens the ancient practice of seed-saving and exchanging among farmers, and increases their dependence on few MNCs since a farmer has not the right to grow design-seeds from the last harvest. On environmental grounds, patents and standardization of seeds can lead to adoption of (potentially GMO) monoculture, displacing local varieties. Together with other factors, this contributes not only to a loss of biodiversity but also to ecologically unstable land use, with soil exploitation and degradation leading to pressure on land.

2.4.3 Investment

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Overview

Among forms of cross-border capital flows, foreign direct investment (FDI) is the one that is often perceived as having the closest link to the environment since FDI often flows into facilities such as power stations, mines and plants (Andrew 2002: 379), and in land like recent trends have shown (see Anseeuw et al. 2012). The average FDI growth has been 12.5% a year in the 2nd half of the 20th century, roughly twice as fast as growth in world merchandise trade and five times faster than in world GDP (WTO 1998). This tremendous growth in FDI has been underpinned by the removal of regulatory investment barriers ("investment liberalization") in OECD countries¹⁵⁰ in the 1950s and 60s, and especially since the mid-1980s also in developing countries (WTO 1999: 35). In contrast to trade, this development has taken place despite the lack of a global framework (like GATT). Investment liberalization was rather pushed for by international financial institutions (IMF, World Bank) and is mostly governed by bilateral (BITs, Bilateral Investment Treaties) and regional agreements. In recent years, there has been a sharp decrease of FDIs with the financial crisis starting in 2008. In 2011, global FDI flows exceeded the pre-crisis average in 2011, reaching \$1.5 trillion despite turmoil in the global economy (UNCTAD 2012). The main drivers of the recent trend are higher profits of TNCs and the relatively high economic growth in developing countries.

¹⁵⁰ Apart from European Community law, the **OECD Code on Liberalization of Capital Movements** from 1961 has required members to liberalize investment in a broad range of areas (although many reservations were made).

Two WTO agreements – GATS and TRIMS (presented below) – contain disciplines on investment, but neither is particularly extensive in their implications. Efforts by the OECD for a Multilateral Agreement on Investment failed¹⁵¹ (non-binding OECD Guidelines are presented below). Though investment was part of the Doha Declaration, negotiations on this issue – including the development of a WTO Investment Agreement – stopped at the 2003 Ministerial Conference in Cancun. Short-term prospects for such a treaty are slim. Most developing countries, with the support of civil society, oppose further disciplines on national investment regulations. While potential economic benefits of FDI are widely acknowledged, also UNCTAD (2002) concludes that “the need for developing countries to preserve sufficient policy space to pursue their development objectives also has to be recognized”.

With regard to the environment, there is a widespread concern that investment flows go to less regulated (mainly developing) countries, leading to additional environmental pollution, resource extraction or land use there, and that states engage in regulatory competition. In order to attract investment, a state could for example adopt lax environmental laws, and other states, finding themselves in a competitive disadvantage, will do the same (“race to the bottom”). Empirical evidence is rather limited for manufacturing industries migrating to developing countries due to lower environmental standards (for a literature overview, see WTO 1999). Costs for compliance with environmental regulation are mostly not a decisive factor in location decisions – apart from some heavily polluting or energy intensive industries. Of higher concern on land use grounds, however, are sectors related to resource extraction and the increased opportunities to exploit forests and other land with regard to timber production, agricultural products or mining activities. Higher flows of investment (and → trade) are likely to exacerbate the extraction of weakly regulated resources (for a critique, see Hall 2008, e.g.; see also → land tenure). On policy grounds, empirical evidence for a race-to-the-bottom, i.e. the lowering of already existing environmental standards, is low (Esty & Geradin 1998; Radaelli 2004). A likely (difficult to measure) effect, however, is “regulatory chill”: states refrain from adopting new, stricter regulations or from seriously implementing existing regulations (ibid.).

Against the backdrop of increasing concerns about unsustainable investment practices the UNCTAD (2010) has proposed a new policy framework for sustainable investments. It builds on a set of principles and “places inclusive growth and sustainable development at the heart of efforts to attract and benefit from investment” (UNCTAD 2010). This framework could provide a good basis for upcoming investment agreements and possibly also for renegotiating existing ones.

Agreement on Trade Related Investment Measures (TRIMS Agreement)

The TRIMS Agreement, an outcome of the Uruguay Round 1994 and administered by the WTO (see the → trade chapter for further information), aimed at the imposition of → GATT disciplines on national trade-related investment rules, i.e. demands that states put on foreign investors as a condition of operation (often as a part of an industrial policy that tries to promote domestic interests) and distort trade (importing, exporting). While the old GATT did already do so in theory,

¹⁵¹ The Multilateral Agreement on Investment (MAI) was a draft agreement negotiated between members of the Organisation for Economic Co-operation and Development (OECD) in 1995–1998, but then opposed by France.

the TRIMS Agreement prohibits more clearly now any measure that is inconsistent with Articles III or XI of GATT 1994: discriminates against foreigners or foreign products (i.e. violates the “national treatment” principle – most bilateral agreements only guarantee most-favored-nation treatment) or represents a quantity restriction. It provides an illustrative list that mentions, *inter alia*, local content requirements (demanding particular levels of local procurement), trade balancing requirements (limiting a company’s imports or setting export targets) and domestic sales requirements (export restrictions). By that, not all kinds of investment-limiting rules are covered. The agreement demands notification of all non-conforming rules and their elimination within two years for developed, five years for developing and seven years for least-developed countries. Developing countries are permitted to retain rules that meet the conditions of GATT Article XVIII, allowing specified derogation from GATT provisions by virtue of the economic development needs of developing countries.

TRIMS enables international companies to operate more easily within foreign markets by limiting the host country’s policy options to take greater advantage of the investment or limit resource use. It thereby contributes to the development and potential impacts described in the introductory section.

General Agreement on Trade in Services (GATS)

GATS is another WTO agreement that entered into force in January 1995 as a result of the Uruguay Round. While GATT and TRIMS focus on goods, GATS was created to extend the GATT regime to the service sector. There is no precise definition of services but an informal classification list exists, based on the UN Central Product Classification scheme, setting out 12 service sectors and 155 sub-sectors. In any case, GATS covers all modes of service delivery, including provision through a “commercial presence” established in a foreign territory (mode 3) which is closely related to FDI. The agreement is a framework for horizontal or sector-specific commitments by WTO member states to free up investment barriers like regulations, approval procedures and licenses. Commitments apply only to sectors where states have explicitly agreed to open their markets to foreign providers. They are free to choose them but commitments are not to be wound back once entered into force. Similar to GATT, Article II codifies the unconditional most-favored-nation treatment principle but GATS does not enshrine the national treatment principle, which is a matter for negotiated commitments. GATS contains in Article XIV a general exceptions clause which is modeled on Article XX of GATT.

GATS unfolds its relevance for land use probably less through the infrastructure needed for some transnational services, but rather through the service delivery mode 3, commercial presence, and the investment linked to it. Of course, in many service sectors, the impact on land use will still be quite limited, at least in quantitative terms – for example in health, education and communication services or transport (delivery). And in a sector like construction, land use relevant expansion is more related to the expansion of construction activity in general, than service liberalization as such. In still other sectors, such liberalization can aggravate environmental problems – for example, land taking, habitat fragmentation and soil erosion in the field of tourism. Of most relevance for land use is probably a liberalization of energy and mining services (including consulting on these issues) since it could lead to additional exploration and drilling opportunities which would (could) not have been exploited by a host country itself. Positive effects, however,

can also arrive from the liberalization of environmental services, e.g., sanitation, waste disposal, and perhaps even nature and landscape protection services. Finally, liberalization can have an effect through the goods on which services are based. An example would be the food (retail) sector that has a major impact on product choice (Andrews 2002).

North American Free Trade Agreement (NAFTA)

Regional or bilateral trade agreements do often not only facilitate cross-border movement of goods and services but also – “all in once” – investment and the protection of intellectual property rights. NAFTA, a free trade agreement between Canada, Mexico, and the United States coming into force in January 1994, is one example. Rather exceptionally, NAFTA takes a negative list approach: exceptions and reservations to liberalization had to be specified; failure to list these within time spans entails automatic liberalization. What makes NAFTA an extreme case (and why it is dealt with here instead of the trade chapter) are the foreign investor rights and state-investor relations. While Article 1114 states that a government should not attract investors by relaxing health or environmental standards, Chapter 11 allows firms or individuals to initiate arbitration proceedings and sue a NAFTA member state for compensation in case of expropriation or measures tantamount to expropriation.

While research suggests that NAFTA has not lead to a race-to-the-bottom in national environmental policy (Fredriksson & Millimet 2002), others argue, that under NAFTA national environmental regulations are suspect by definition and must prove they are not cleverly disguised barriers to trade if they are to be enforced (see FPIF 1999)¹⁵². As a result, NAFTA may have discouraged more vigorous laws and limited the scope of sub-national authorities to implement protective decisions or judgments. There have been a number of disputes where investors have challenged measures in areas such as waste management, pollution regulation and also land use. Infamous for a broad interpretation of the expropriation clause became the case in 2000 of *Metalcald vs. Mexico*,¹⁵³ where the tribunal defined expropriation to include a “covert or incidental interference with the use of property” which is an almost limitless legal notion and what could have a substantial constraining impact on new environmental (including land use) regulations. Other tribunal decisions, however, have used more limited definitions.

Following the NAFTA example, investor-state arbitration provisions have been added to several bilateral trade and/or investment treaties. However, new language in the US-Chile or US-Singapore FTAs, for example, limits the scope of investor protection and makes it more difficult for firms to claim that environmental or health measures are “tantamount to expropriation”.

¹⁵² http://www.fpif.org/reports/nafta_and_environment

¹⁵³ Mexico had to pay compensation after a local authority (after declaring the area a “Natural Area”) did not give a permit for the operation of a landfill site which federal agencies had already accepted. According to the Panel decision, Mexico’s conduct violated Article 1105 ensuring fairness, equity and transparency of investment rules for foreign investors, and was deemed to be “a measure tantamount to expropriation” under Article 1110.

Convention on the Settlement of Investment Disputes between States and Nationals of Other States (the ICSID Convention)

The ICSID Convention was initialised by the World Bank in 1965 to establish the International Centre for Settlement of Investment Disputes (ICSID), a legal institution acting as an arbitration for conciliation in investment disputes between national and private entities. In 2006, 143 countries have ratified the Convention to become Contracting States. The Convention gives companies the right to sue countries in terms of their investment policies, which has led to several so-called investor–State dispute settlements (ISDS) ever since with a rapid increase in the last two decades. The reasons for such increase are manifold and include the growing number of International Investment Agreements (IIAs) outside the WTO, the increasing awareness among investors and their legal counsel to challenge national jurisdiction for their own benefits, and the significant rise of Foreign Direct Investments (FDI) flows in recent years. Companies have been shown to be less reluctant than states in challenging foreign environmental regulations. The rise of ISDS can also be interpreted as the “investors’ responses to governments’ reassertion of their role in regulating and steering the economy.” (UNCTAD 2012: 120). Indeed, state costs for disputes against companies (especially when they lose them) as well as the concern that investment treaties may be benefitting foreign investors to the detriment of (other) public goals has led to increasing criticism and awareness about the consequences of ISDS (see Bernasconi-Osterwalder et al. 2012). In many cases, governments were enforced by ISDS to change their legislation in favour of foreign private companies.

These concerns also refer to FDI in land or industries depending on the availability of land (such as for biofuels, mining or timber industries). As a response to the increasing engagement of transnational companies in land investments and its negative impacts on land ownerships and resource exploitation, several countries (especially in Latin America) have imposed new regulatory mechanisms. For example, Argentina adopted a law, which limits ownership by foreigners (both individuals and companies) to 15 per cent of productive rural land, a restriction that is compounded by a limit of 30 per cent for foreigners of the same nationality. In addition, no single foreign person or firm may own more than 1,000 hectares of land in certain core productive districts (see UNCTAD 2012: 114). Another examples is the The Democratic Republic of the Congo, which adopted a law allowing land to be held only by Congolese citizens or by companies that are majority-owned by Congolese nationals (Ibd.). Such cases show the enormous relevance of FDI on land ownership and land use, as states even take the risk of diminishing FDI in their countries, which is generally seen as beneficial for the national economy, in order to regain control over their own land resources.

Voluntary initiatives for responsible international investment

As a reaction to the concerns and impacts discussed the previous sections, several initiatives have been emerged in the recent years, all aiming for more responsible investment practices and for companies complying with certain (sustainability) standards. One of major relevance are the **IFC Performance standards on Social and Environmental Sustainability**. The International Finance Corporation (IFC), the financing executive institution of the World Bank, is the largest global development institution focused exclusively on the private sector in developing countries. Since its foundation in 1956, the IFC invested \$12.2 billion in 518 projects, of which \$4.9 billion went to the poorest countries eligible to borrow from the World Bank’s International Development Association. The Performance Standards embedded in a Sustainability Framework, which,

originally adopted in 2006, has recently been updated following an 18-month consultation process with stakeholders around the world. The 2012 version of the standards is directed towards clients, providing guidance on how to identify risks and impacts, and are designed to help avoid, mitigate, and manage risks and impacts as a way of doing business in a sustainable way, including stakeholder engagement and disclosure obligations of the client in relation to project-level activities. The eight standards address some crucial points of investments with many overlaps to land use. Most importantly, Performance Standard 5 relates to “Land Acquisition and Involuntary Resettlement”, while Standard 6 deals with “Biodiversity Conservation and Sustainable Management of Living Natural Resources”. NGO’s such as Amnesty International (2010) criticize the missing connection of the overall policy and the standards to human rights. Bearing previous critique against the World Bank projects in developing countries in mind, it remains to be seen how serious the IFC oversees the investing entities in terms of meeting their standards and to which extent they control their compliance.

In another initiative UNEP and the Global Compact, an UN initiative for businesses that are committed to aligning their operations and strategies with ten universally accepted principles in the areas of human rights, labour, environment and anti-corruption, agreed on six **Principles for responsible investments (PRI)**. In general, investor institutions commit themselves on a voluntary basis to pursue the integration of environmental, social, and corporate governance (ESG) issues in their investment portfolios, decision-making and ownership practices. They are supported by the PRI secretariat, which helps the investors to sharing best practice, facilitating collaboration and managing a variety of work streams. As the PRI remain on the principle status there is no direct link to land use. In April 2012 over 1000 investment institutions have become signatories such as the Munich Re, the BP Pension Fund or the Zurich Insurance Group.

Embedded in Declaration and Decisions on International Investment and Multinational Enterprises, the **OECD** released an amended version of its **Guidelines for Multinational Enterprises**. In these guidelines, OECD states formulate recommendations for multinational enterprises operating in or from adhering countries. They consist of non-binding principles and standards for responsible business conduct in a global context. Unlike the other two examples governments (of OECD countries) have committed to promoting these guidelines based on a multilateral agreement. National Contact Points (NCPs), agencies established by adhering governments, serve as the implementation mechanism of Guidelines. Similar to the PRI Secretariat they assist enterprises and their stakeholders to take appropriate measures for complying with the Guidelines requirements. The updated version, which also entails a new human rights chapter drawing on the **UN Guiding Principles on Business and Human Rights endorsed in 2011**¹⁵⁴, was adopted by the 42 adhering governments on 25 May 2011 at the OECD’s 50th Anniversary Ministerial Meeting.

Against the backdrop of upcoming challenges in investment policies, namely to find the right balance between regulation for more sustainable investments and sufficient openness, UNCTAD (2010) sees a new generation of investment policies emerging in the future. Such “New

¹⁵⁴ For further information see: <http://www.business-humanrights.org/SpecialRepPortal/Home/Protect-Respect-Remedy-Framework/GuidingPrinciples>

generation” investment policies would place inclusive growth and sustainable development at the heart of efforts to attract and benefit from investment. The aim would be to systematically integrate sustainable development and operationalize it in concrete measures and mechanisms at the national and international levels. In UNCTAD (2010), core principles for investment policymaking for sustainable development are listed, which can not only serve as guidance tool for international investment treaties but could also - if gaining international attention - have an effect on land use according to the relationships indentified in this chapter. Among the ten principles are “policy coherence between national and international level”, a country’s “right to regulate” and determine the conditions, under which investments take place, and the promotion and facilitation of “corporate governance and responsibilities”.

2.4.4 Land Tenure

Overview

Since the food crisis in 2007/08, land tenure has gained increasing awareness in international policies. There is substantial evidence that access to land for the rural poor is essential for food security and economic development in developing countries (Gerstetter et al. 2011). However, as it has been shown in many cases from Africa, East Asia and Latin America, an erratic boost in international investments in land has led to serious violations of human rights and sunstantial environmental impacts. This phenomenon of “land grabbing” has significantly contributed to both an academic and political discussion on the importance of land and the natural resources associated with different kinds of land use (e.g. water, non-timber products etc).

The most recent and probably most comprehensive report on land grabbing was published by the Land Matrix Partnership in 2012. It states that, in the last ten years, as many as 203 million ha of land have been sold, leased, licensed, or are under negotiation (Anseeuw et al. 2012). Most of these have taken place since 2008 and have involved international investors (Oxfam 2011). According to the Land Matrix Partnership, 57 percent of all land affected by deals considered as land grabbing will be cultivated with energy crops that are to be exported to industrialized countries (Anseeuw et al. 2012). Other reasons for the boost in land investments include stronger dependencies on food imports in emerging economies such as India or oil-exporting countries such as Saudi Arabia as well as mere financial speculation with land due its expected increase in demand. The growing interest in land encounters the broad understanding that land in developing countries is still abundant and easy to obtain. Indeed do national governments such as in Ethiopia, Kenya, Cambodia and others encourage foreign land investments and offer large areas to all kinds of investors from industrialised countries. However, in many cases these contracts are likely to include land that is used or claimed by local communities (Cotula et al. 2011). Since communal land is often not registered and its ownership is determined more by tradition than by law, it is difficult to determine who has the right to sell it. The key problem is that national policies to regulate land deals have not kept up with the pace of land acquisition, are poorly-enforced, or do not even exist (Kaphengst et al. 2012).

As a response to the broadly recognised gap in land governance and law enforcement in many countries, which were affected by land-grabbing, different international initiatives established standards and frameworks on responsible investments in land. One was the development of

Principles for Responsible Agricultural Investment that Respects Rights, Livelihoods and Resources (PRAI) in by the World Bank, the International Fund for Agricultural Development (IFAD), the United Nations Conference on Trade and Development (UNCTAD) and the Food and Agriculture Organisation (FAO). The aim of applying the PRAI is to reduce the negative externalities of current agricultural investments (not only land investments) and raise the likelihood of positive effects. NGOs and other actors have criticised the principles for being too vague and lacking reference to human rights or any legally binding instruments (Gerstetter et al. 2011).

Indeed, the seven RAI principles are quite general and do not contain any prescriptive elements. They should be seen as a guiding document, which will have to be further specified according to certain regional and economic conditions. Thus, they can help governments in the development of laws and policies or can be used as a reference for impact assessments, negotiation of business contracts and corporate social responsibility initiatives. The RAI Principles are currently tested in the field, mainly in Africa and South-East Asia, by involving different governmental actors, investors and small-holders. The aim of this testing phase is to understand the main issues of agricultural investments on the ground and to test the feasibility of the PRAI and translate the principles into actions for investors, governments, donors and international agencies. A report compiled by UNCTAD highlighting the experiences with the field testing is expected in fall 2013.

With a stronger focus on land rights and transfers another initiative launched by the FAO under the roof of the Committee on World Food Security (CFS) has been accomplished and became an interesting example of global governance demonstrating how a broad consortium of relevant actors could effectively respond to an alarming global issue. After a consultation and negotiation phase the CFS endorsed in 2012 the Voluntary Guidelines on Responsible Governance of Tenure of Land, Fisheries and Forests (see below) in “only” 4 years time. The remarkable issue about “the Guidelines” is that they were agreed among a broad global partnership of international, regional and national organizations of different types. Moreover, although voluntary, they entail clear provisions on responsible land tenure practices, which can serve as an internationally agreed benchmark for any legally binding measures on land tenure at national and international level.

The Committee on World Food Security (CFS) was set up in 1974 as an intergovernmental body to serve as a forum for review and follow up of food security policies. In 2009 the Committee underwent a substantial reform process. The final reform document provides for peasant organizations and other CSOs to be full participants in policy debates, for the first time in the UN system. It defines the CFS as “the foremost inclusive international and intergovernmental platform” for food security, unequivocally based in the UN system, with a mission based on defending the right to food (see McKoen 2011). Moreover, it recognises the principle of “subsidiarity” and emphasises the need to establish strong linkages between the CFS and inclusive policy forums at regional and country levels. Thus, the CFS could potentially serve as an example for a new form of global governance as a possible alternative to multilateral governmental agreements. The opportunities and challenges of the CFS deriving from its new institutional setting seem worth to be explored further, also in the context of sustainable land use.¹⁵⁵

¹⁵⁵ As a good starting point can serve the publication from Nora McKoen for the Böll foundation, see McKoen (2011)

International governmental approaches

Voluntary Guidelines on Responsible Governance of Tenure of Land, Fisheries and Forests

Objectives and mechanisms: In November 2008, as a response to the controversial expansion of large-scale land acquisitions worldwide, the FAO launched an initiative under the roof of the Committee on World Food Security (CFS) to adopt the “Voluntary Guidelines for Responsible Governance in Land and Natural Resource Tenure”. The Guidelines are meant to set out principles and internationally accepted standards for responsible land tenure practices. The Guidelines themselves are voluntary and legally non-binding but they include references to legally binding instruments also at international level, thereby providing a framework that states can use when developing their own strategies, policies, legislation, programs and activities.

The process of developing the guidelines brought together a wide spectrum of actors and stakeholders including representatives of 96 member countries of the CFS along with civil society organizations, UN agencies and other international organizations, farmers associations, and private sector representatives. The Guidelines have been successfully finalized on Friday 9 March 2012 and were endorsed by the Committee on World Food Security on 11 May 2012.

Relevance for sustainable land use: With land tenure, the Guidelines address an important issue of global land use. Especially in developing countries, where land ownership is not regulated or registered leading to weak governance of land use in general and uncontrolled exploitation of natural resources. In fact, rules of tenure determine who can use what resources of the land for how long, and under what conditions.

Although voluntary, the Guidelines can potentially have a strong effect on national land use policies and legislation. Driven by ongoing dispute on the harmful impacts of „land grabbing“ to rural communities, governments mostly in the developing countries might be enforced to implement the guidelines provisions in national jurisdiction, which can have a great added value especially in countries, where such legal basis was absent so far. Moreover, the Voluntary Guidelines could become the reference point for all United Nations Organisations and Development Banks in their policy and technical assistance programmes (ActionAid 2012).

2.4.5 Development & Cohesion Policy

(Lead author: Lucy Smith; on EU cohesion policy: Dirk Arne Heyen)

Overview

International development efforts that aim to substantially improve the lives of the poor by scaling up poor peoples’ access to resources, namely food, land, water, education and health has important implications for the trajectory of land use worldwide, in particular because pro-poor agricultural growth is becoming the dominant development strategy of poverty alleviation efforts. International development involves a variety of approaches including micro-finance, health and sanitation efforts, among others, but most relevant to this study is the growing prominence of agriculture, which is viewed as the stepping stone to achieving other development aims and global hunger which is listed as the first and foremost goal of the MDGs.

Focusing on poverty alleviation through agricultural development brings to the fore many important issues that will change the way land is used. Important debates regarding biotechnologies and organics, plantation/commodity crops for export versus small holder production for sustenance, local food supply chains and strong regional economies instead of reliance on the international market—these development debates have important implications for the way land will be used in the future, particularly in developing countries.

Development initiatives are numerous and exist at many different scales, however, for this exercise policies were chosen that had the greatest impact on land use globally. The MDGs represents the international approach to development, while the Paris Declaration marks a fundamental methodological shift in way development aid is used and delivered. The L'Aquila Pledge along with the Action Plan on Food Price Volatility are both specific to food security which is regarded as the most dire human development issue of the 21st century.

A specific case also dealt with here is the EU cohesion policy which addresses European regions that are, of course, in less need than most developing countries but lagging behind within Europe.

International governmental approaches

The Millennium Development Goals (MDGs)

Objectives and mechanisms: The Millennium Development Goals have become the overarching development framework for the international community. The MDGs were published by the G8 in 2000 and outline 8 time-bound goals on human development including, poverty and hunger, education, gender equality, environmental sustainability and global cooperation for development to be achieved between 2000-2015. The MDGs are based on numerous agreements developed at UN Conferences during the 1990s. The goals are voluntary commitments and have been adopted by all major donor countries and developing countries (121 UN member states and major development agencies).

In the 2010 Millennium Development Goals Report, the UN concluded that earlier advances towards reaching the MDGs had been significantly slowed down by the financial crisis in 2008 and 2009. As a result, number of people living in extreme poverty and hunger is steadily on the rise despite the MDG targets (FAO 2010, UN 2010). The World Bank estimates that those living in extreme poverty of less than \$1.25 a day increased by 50 million in 2009.

Relevance for sustainable land use: Some MDGs are more relevant to land use than others, however, the scope of the MDGs as an umbrella framework propelling a number of global development factors will influence land use worldwide.

The MDGs put pressure on governments and organizations to achieve the food/land/water/energy needs of the poor as well as the growing population, which will scale up the resources needed by humans and put pressure on ecosystems and land. The overall goal of halving the number of poor is directly related to future land use as 70 percent of the world's poor live in rural areas and derive a livelihood from small-scale subsistence agriculture. Programs through international lending institutions, UN Family organizations, NGOs and governments to address poverty and specifically the rural poor will change the dynamics of land use on a global scale.

Improving and expanding agricultural productivity to combat hunger, meet subsistence needs and achieve sustainable growth has and will continue to expand the amount of land under cultivation, increase the intensification of production and improve input efficiency (Lee and Zepeda 2001). Interventions associated with MDG targets in food security call agriculture worldwide through financial support programs, technology transfer, and scaled-up input availability to the poorest increases the potential for contamination of ecosystems by chemical inputs—in particular, for developing countries where legislation on proper use, application and disposal is inadequate leading to public health risks for humans and the environments in which they live (WHO/UNICEF 2010). Using nitrogen fertilizer is considered an effective tool for increasing yields and fertilizer and consumption is expected to double by 2020 with especially rapid growth in Africa and South Asia as a result of increased focus on agricultural production by the international community and national governments. The World Resources Institute also notes increasing pesticide use in developing countries (Alavanja 2009). Currently, the WHO identifies nitrate contamination as the most common contaminate in water sources in individual country reports.

Reducing the number of people without basic sanitation or access to safe drinking water is Target 10 of MDG7 on ensuring environmental sustainability. The WHO and Unicef report estimate that 2.5 billion people or 40% of the World's population do not have safe toilets and that needs are most significant in Sub-Saharan Africa and Southern Asia. Investing in affordable and sustainable solutions to sanitation that include training and new technologies of latrine design, pit emptying, sludge treatment and the disposal or reuse of waste brings safer livelihood situations to populations and reduces harmful environmental impacts (WHO/UNICEF 2010).

Paris Declaration on Aid Effectiveness

Objectives and mechanisms: The 2005 Paris Declaration on Aid Effectiveness is an agreement by OECD member states to change the modalities of development aid in order to give recipient states more sovereignty over the external financial support they received. There are over 100 signatories of the Paris Declaration including donor and developing governments, multilateral donor agencies, regional development banks and international agencies. The Paris Declaration set out to address long-standing problems with aid that had become apparent over the past half century. In particular, the Declaration came to terms with a general consensus that the conditional loans of the structural adjustment era had in fact been detrimental to socio-economic growth in many low income countries and had been prescriptions from the developed world's donor institutions and nations. The Paris Declaration therefore set out to give recipient countries the decision-making power on 'how', 'when' and 'for what means' financial aid is spent.

The Paris Declaration outlines several stipulations for implementation (including 56 Partnership Commitments and 13 Indicators of Progress with specific targets. Surveys of progress were carried out in 2006, 2008, and 2011 in developing countries. The Paris Declaration was followed up by the Accra Agenda for Action in 2008 aiming to further scale up the effectiveness and delivery of aid. The 2011 Survey on Monitoring the Paris Declaration found that only 1 of the 13 targets had been met but that "considerable progress" had been made on the remaining 12 targets. While there is consensus in the international community that achieving the principles of the Paris Declaration are important for improving development, such changes are slow and often require deep governmental reforms that go beyond managing aid (OECD 2011).

Relevance for sustainable land use: Recipient ownership over development aid has sparked a new level of investment by governments in agricultural and rural development, particularly in Africa and South America and some Asian countries. Increased investment in agriculture by recipient countries can be seen as central to achieving food security and equitable socio-economic development (Hazell and von Braun 2006).

New sovereignty in development aid resulting from the Paris Declarations has come at the same time that many developing countries have made agriculture a central pillar of their economic growth strategies. The Maputo Declaration convened by African heads of state set target commitments of 10 percent of GDP invested in agriculture. The impact that increased government funds and regulation will have on rural land in developing countries will vary depending on the country in question but will be significant given the level of global aid flows that were set to double from 10 to 20 billion USD between 2009-2012 with the L'Aquila pledge

Trends show that as countries invest in their respective agrarian economies and rural areas, more land will come under production. In Brazil, for instance, President Lula's steadfast commitments to agriculture and food production have led the country to more prosperity but not without effect on the Amazon. For this reason, it can also be predicted. Increased investment in agriculture also involves improved and expanded infrastructure especially in developing countries, which will change rural landscapes making them more accessible, developed and productive, which might automatically lead to more land resources needed e.g. for transport infrastructure and storage facilities.

Ultimately, as developing countries have more control and authority over funds they receive for development, it will increasingly depend on individual country governments how investment in agriculture or elsewhere takes place, leading to both unpredictable and potentially diverse scenarios.

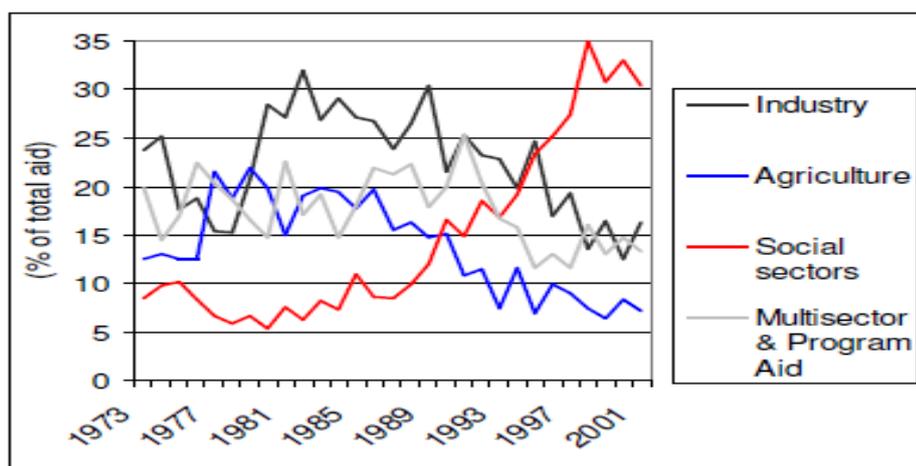


Figure 1. Changing composition of foreign aid: all countries, 1973-2001. Source: Aid data is from the OECD DAC data base. Industry refers to all nonagricultural expenditures. Social sectors refers to expenditures on education, health, population, women, the environment, governance and NGOs (Bezemer and Headey 2007).

L'Aquila Food Security Initiative

Objectives and mechanisms: The L'Aquila Food Security Initiative was enacted at the 2009 G8 Summit in Italy and is an international financial pledge to address hunger worldwide through agricultural investment (Smale et al. 2009). L'Aquila aims to address the long-term underinvestment in agriculture by doubling development aid to agriculture from 10 billion to 20 billion USD in three years from 2009-2012. The L'Aquila pledge responds to the 2008 food security crisis that pushed the total number of hungry people in the world to 1 billion. The donors include 27 countries and 14 international agencies including FAO and CGIAR.

Disbursement of aid is aligned with the principles established by the Paris Declaration on recipient ownership of funds. Donors are both institutions and governments, and emphasis is on injecting financial support to regional and country-level agricultural programs such as Comprehensive Africa Agriculture Development Program (CAADP).

An independent evaluation carried out by ActionAid in 2012 found that aid to agriculture by L'Aquila donors increased overall aid investments in agriculture by 60 percent in the first year (ActionAid 2012). The G8 Accountability Report in 2011 indicated that 22% of funds had been distributed and that 26% of additional funds were "firmly on track to be disbursed" (G8 2011).

Relevance for sustainable land use: The impact of L'Aquila on sustainable land use globally is significant because it substantially increases worldwide investments and aid to the agrarian sector of developing countries where the greatest quantity of under or undeveloped land exists. Given that the main objective of the pledge is to increase agricultural output in food insecure countries and that the consortium of donors includes private and public institutions, the impact could be comparably high and its impact on sustainable land management variable.

L'Aquila explicitly aims to improve the production of smallholders through access to inputs (availability and use of new fertilizers and seeds). Such efforts are not necessarily negative for land use as agricultural productivity on small plots of land can increase which might in turn alleviate further expansion of agricultural land under production. Improved small-scale food production in developing countries is likely to reduce the reliance of low-income countries on food imports. Such a transition not only decreases countries' vulnerability to commodity price shocks and food insecurity (L'Aquila objective), but also reduces the overall dependence and demand of developing countries on food imports of commodity crops from the US and Europe (NG and Aksoy 2008). Interestingly, 71% of developing countries that had previously procured the majority of food for domestic consumption from local and regional markets, had become net food importers by 1995 (NG and Aksoy 2008).

It is important to note that the L'Aquila Initiative is closely aligned with CGIAR and Africa's Green Revolution, which means that biotechnological innovations including hybrid and GMO seeds are being integrated into aid programs, whose effects on land and the environment are highly controversial.

Action Plan on Food Price Volatility and Agriculture

Objectives and mechanisms: In June 2011 the G20 Financial Ministers developed the Action Plan on Food Price Volatility and Agriculture that consists of commitments by G20 members to stabilize food prices and increase agricultural production. The Action Plan responds directly to the food price spikes in 2008 that caused riots to break out in 24 countries. Analysis from the food crisis

indicated that national protectionism, export restrictions and hoarding exacerbated global food supply shortages and prevented available food from being effectively distributed to the most insecure. The overall aim of the Action Plan, therefore, is to regulate excessive speculation in food commodities (soya, maize, wheat, rice), to prevent speculative bubbles, and increase transparency of physical stocks (FAO 2011).

The main achievement thus far has been the launch of AMIS, Agriculture Market Information System, a French initiative started in 2011 to “promote early discussion among decision-level officials about abnormal international market conditions.”¹⁵⁶ The database improves market transparency, reduces uncertainty and provides a more even playing field for poor countries through the dissemination of quality food market information on wheat, maize, rice and soya.

Relevance for sustainable land use: The Action Plan is a fairly new initiative and its impact on land use will be rather indirect. The Action Plan will help developing countries build their market analysis capacities and increase their access to information, which in turn will determine how land is used from the level of the smallholder up to that of the government. Improved knowledge about commodity markets will also influence which crops are grown, how much is grown, and what they are used for, either food or fuel, for instance. Improved information on accurate food stocks could transition the food security debate from a question of scarcity and the need for increased production, to an issue of access, distribution and nutrition.

The Action Plan does emphasize “technology transfer” and particularly North-South and South-South cooperation, notably through Agricultural Research Foundations such as CGIAR, the International Rice Research Institute (IIRI), the Global Rice Partnership (GRiSP) and the International Research Initiative for Wheat Improvement (IRIWI), which indicates a focus on hybrid seed technologies, GMOs, contract farming which may be beneficial or damaging to the sustainability of land use.

EU Regional (Cohesion) Policy

Objectives and mechanisms: The EU’s regional policy aims to reduce the economic, social and territorial (in terms of connectedness) disparities between Europe’s regions. Its three official objectives (categories) are: 1) Convergence, 2) Regional Competitiveness and Employment and 3) Territorial Cooperation. The first objective addresses the “poor regions” whose per capita GDP is less than 75% of the EU average, i.e. the Central and East European countries, and some regions in Southern Europe, East Germany, and the UK. More than 80% of regional policy funding is dedicated to them. The second objective addresses all other regions. The policy works mainly through three funds: the European Fund for Regional Development, the Cohesion Fund, and (less relevant here) the European Social Fund. For the multiannual budget period 2007-13, €347 billion (1/3 of the total EU budget) is available through them (€49 billion a year). Apart from the budget, their legal bases and framework are Art. 174-178 TFEU, and – adapted for each budget cycle – Strategic Guidelines,¹⁵⁷ Regulations for each of the funds and a common Regulation¹⁵⁸ with a focus

¹⁵⁶ Available online: <http://www.amis-outlook.org/home/en/>

¹⁵⁷ Council decision of 6 October 2006 on Community Strategic Guidelines on Cohesion (2006/702/EC)

on programming, management and evaluation. Each member state develops its National Strategic Reference Framework (NSRF) setting out national priorities. Finally, Operational Programs for each region within the member state are drawn up. These OPs, just like the NSRF, have to be approved by the Commission. All programs are co-financed by the member states, bringing available money to €700 billion. Application for funding is made through public authorities managing an OP which evaluate projects and decide on funding.

The European Fund for Regional Development (ERDF)¹⁵⁹ has the biggest budget (201 billion in 2007-2013) and the broadest scope, serving all three objectives and thereby all regions (special attention is given to geographically disadvantaged areas). Among its “thematic priorities” are: stimulating innovation and entrepreneurship in all sectors; renewable energies and → TEN-E; transport; tourism; sustainable urban development; and investment in the environment (inter alia, water and waste management; prevention of desertification; rehabilitation of the physical environment including contaminated land; promotion of biodiversity and nature protection, including investment in NATURA 2000 sites). The Cohesion Fund (CF)¹⁶⁰ has a multiannual budget of 70 billion and only serves the Convergence objective. It finances activities especially with regard to the → TEN-T; but also to renewable energy, transport and the environment.

The *Strategic Guidelines* set only partially clear, non-contradictory priorities and guidelines for action. Concerning energy, they put an emphasis on electricity grids and gas transmission. On transport, they state that benefits of investment shall be maximized and that special attention paid to the connectivity of landlocked, insular or outermost territories to the TEN-T. Environmental implications should be taken into account and the principle of sustainability “respected to the greatest possible extent”. Concerning urban development, emphasis is given to measures that, inter alia, seek to avoid suburbanization and urban sprawl by redeveloping brownfield sites, for example. Land use planning is also promoted.

Relevance for sustainable land use: On environmental issues, progress has been made over the last decades both concerning mainstreaming and explicitly green priorities and projects. As seen above, there are quite a lot of environmental topics eligible for EU funding. The Commission (2011; 2012) emphasizes that 1/3 of the budget are directly (investment in natural capital) or indirectly (e.g., greening energy, transport) benefiting the environment: for example, €4.8 billion are invested in renewable energy; €3.4 billion in the rehabilitation of industrial sites and contaminated land areas. Other criticize that this is still far too little and priority is given to “old” infrastructure – at least in national strategies and programs. Although the Commission Guidelines emphasize railway, 11% of the total budget is invested in the construction of motorways and less than 6% on public transport systems. The possibility to get funding for investment in nature conservation is hardly used with 2.7 billion – compared to 40 billion going to roads, sometimes with devastating effects on biodiversity: a motorway was funded in Spain that goes almost 40 km through a Natura 2000 site (Hjerp et al 2011). On mainstreaming, the 1993 revision of the funds regulations introduced sustainable development as a compulsory element for national strategies

¹⁵⁸ Council Regulation (EC) No 1083/2006 of 11 July 2006 laying down general provisions on the European Regional Development Fund, the European Social Fund and the Cohesion Fund

¹⁵⁹ Regulation (EC) No 1080/2006 of the European Parliament and of the Council of 5 July 2006 on the European Regional Development Fund and repealing Regulation (EC) No 1783/1999

¹⁶⁰ Council Regulation (EC) No 1084/2006 of 11 July 2006 establishing a Cohesion Fund

and the 2006 revision made a → SEA necessary for the OPs. At project level, → EIAs have to be undertaken when significant environmental impacts are likely. But sustainable development is an ambiguous term and assessments were found to be often carried out improperly (ibid.). And the EU undertakes no serious control of environmental effects.

There is an ongoing debate on greening cohesion policy. Actors like NGOs, think tanks and the Greens in the European Parliament have made different proposals – both on the policy and the project level (for a wide range of proposals: ibid.). The fund regulations and the Strategic Guidelines could have a higher alignment with environmental objectives and new EU strategies like “Europe 2020” and its resource efficiency flagship Initiative. Increasing the share of and earmarking funding for green topics, as well as eliminating certain categories like motorways are also options. National programs would have to better reflect these priorities, and their making would need better transparency, participation and control. At project level, better EIAs and clear sustainability criteria could strengthen mainstreaming. In 2011, the European Commission (2011) invited member states to invest more into sustainable growth, and *better* e.g. through integrating sustainability throughout a project’s life-cycle. In its legislative reform package of October 2011 for Cohesion Policy 2014-2020, the Commission has proposed a clear link with the Europe 2020 strategy and better indicator-based evaluation of. It has also proposed minimum thresholds in the ERDF (20% for developed and transition regions; 6% for less developed) to be allocated to a “low-carbon economy” priority (with focus on renewable energy and energy efficiency). NGOs see the proposals as a step in the right direction but still insufficient given that this would represent only 5.1% of total Cohesion funds and no earmarking would take place for biodiversity and natural resources (WWF 2012).

European Investment Bank (EIB)

The EIB is the EU’s lending institution, already established by the Treaty of Rome in 1958. It is a publicly owned bank (owners are the EU member states) with a total subscribed capital of EUR 232 billion. It shall support the EU goals, especially sustainable growth and job creation, by providing long-term lending in order to mobilize funding from the private and public sector. In 2011, EIB lent EUR 61 billion in various loan products, bringing total outstanding loans to EUR 395 billion. Nearly 90% of these were with EU member states. Within the EU, the EIB has 6 EU priority objectives for its lending activity, inter alia cohesion & convergence (supporting the → Regional Policy), environmental sustainability, energy, and the trans-European networks (→ TEN-T; → TEN-E). The EIB is also active in around 150 non-EU countries. Here, it works to implement the financial pillar of the EU's external policies: private sector development, infrastructure, security of energy supply, sustainability.

In February 2009, the EIB Board of Directors approved a new *EIB Statement of Environmental and Social Principles and Standards* which outlines the standards that the Bank requires of the projects it finances and the responsibilities of various parties. (A Handbook translates the Statement into the operational practices followed by EIB staff). In many paragraphs, it only requires that projects have to comply with EU legal requirements, e.g. on → biodiversity. For projects in non-EU regions, the Bank requires that projects comply with national legislation, including international conventions ratified by the country. Where EU standards are more stringent than national ones, EU standards “are required, if practical and feasible”. The EIB uses further guidelines such as from the → World Commission on Dams, and “supports” the → Extractive Industry Transparency Initiative. All projects are required to undergo a Bank environmental assessment, not only where

an EIA is formally required. The promoter must demonstrate that a range of alternatives and their environmental impacts has been analyzed. It is also required to apply the mitigation hierarchy: 1) avoid; 2) minimize; 3) mitigate; 4) offset.

Despite the existence of sustainability guidelines for many years, NGOs criticize the financial support for numerous environmentally damaging projects, e.g. motorways, bridges, dams, power plants and mines and generally a bias in EIB investment towards roads (CEE & FoE 2008). In many cases, projects have collided with the NATURA 2000 network and protection policies. Environmental assessments were poorly performed and alternatives poorly examined. For example, the D8 motorway connecting Prague with Dresden has two sections in environmentally valuable sites. It received financial support from EIB and EU despite several breaches of law (ibid.). Another criticism concerns the practice of EIB to disburse large “global loans” to private banks which then passes them on in smaller tranches. An environmental assessment by the EIB would be usually limited to the capacity of the intermediary; with appraisal and approval of concrete projects left to them (Tricarico et al. 2010). NGOs urge better planning, assessments (particularly of sub-projects under a global loan) and higher transparency.

European Bank for Reconstruction and Development (EBRD)

The EBRD, owned by 63 countries plus the European Union and the EIB, was founded in 1991 to promote the transition to open, market-based economies and private, entrepreneurial initiative in 29 formerly communist countries from central Europe to central Asia (spending on the Baltic and central European countries shall expire in 2015). EBRD provides financing for projects mainly by the private sector, both new ventures and investments in existing companies, that would not solely be funded by commercial banks. It also works with publicly owned companies to improve municipal services.

In 2008, the EBRD developed its current *Environmental and Social Policy* which is similar to the EIB Statement. It underlines that projects have to meet national and, if applicable, EU environmental standards. Projects undergo environmental appraisals “to help the EBRD decide if an activity should be financed and, if so, the way in which environmental issues should be incorporated in project financing, planning and implementation”. The Bank states that it supports a precautionary approach to the assessment of environmental impacts and it demands application of the mitigation hierarchy. Evaluation is carried out by its Evaluation Department, which is said to be independent of Bank operations. Finally, clients have to adapt an Environmental and Social Action Plan which takes the appraisal’s findings into account and foresees mitigation and performance improvement measures.

Similar to the EIB, the EBRD has been criticized for financially supporting environmentally damaging projects like motorways, airports and oil/gas transportation (e.g. NABUCCO pipeline). There are also many loans going into mining activities, including a copper mine in Mongolia and a huge gold mine in Kyrgyzstan, which arouse criticism. CEE (2012), for example, criticizes that assessment of projects in biodiversity-sensitive areas is not adequate, inter alia, due to over-reliance on information from the investor it finances. The Bank’s draft Mining Strategy has also come under criticism in summer 2012 for not adequately considering EU environmental principles, objectives and strategies.

2.4.6 Corruption / Transparency

(Lead author: Lucy Smith)

Overview

The policies chosen in this section represent overarching global governance mechanisms including the UN Convention Against Bribery of Foreign Officials, an OECD Anti Government Convention, a multi-stakeholder sectoral Extractive Industries Transparency Initiative, the Open Governance Partnership and a principle known as Free Prior Informed Consent. It also includes a non-governmental approach called the International Land Coalition (ILC). The policies and projects are chosen based on their effectiveness, realistic application, global scope and relevance to land in issues of corruption in areas of governance, international business, resource exploitation, and human rights. In addition to the policies selected, there exist many NGO-led transparency initiatives that work with governments and international organizations to develop globally applicable policies. The role of Transparency International, for instance, appears throughout the policy screening both as an evaluator in anti-corruption measures and a facilitator in their development, however, given the scope of this exercise some relevant NGO approaches were not included.

This policy screening found that corruption in land use is increasingly recognized as an important pressure on land and natural resources. International initiatives developed in the past decade to combat illegal activities, corruption and lack of transparency indicate a consensus that these issues have a deleterious impact to both human and environmental development, and particularly for biodiversity and sustainable land use. The more recent discussion on land grabbing showing severe lack of transparency in land deals worldwide has not only resulted in increasing awareness among policy makers but also in stronger efforts to shed light on how land is actually distributed in the different countries and how land ownership has changed due to the increasing land demand. In the context of his G8 presidency starting in January 2013, the UK Prime Minister David Cameron has put transparency as a key issue on the G8 agenda. He even suggested to G8 leaders to develop new ideas like a “global land transparency partnership”.¹⁶¹

To a certain degree, such a land transparency partnership has already been established by the International Land Coalition, which, despite not being a genuine governance mechanism, can play an important role in future international land policy. Consisting of different information platforms and initiatives on land-related issues, the ILC can provide significant background information on land tenure, land rights and how they are adhered to in different countries, governance and deals, which many anti-corruption or transparency policies can benefit from. Moreover, by providing information in comprehensive and elaborated way, the ILC can support non-governmental activities (e.g. from civil society) against land-grabbing and unfair land distribution, which seem crucial in countries, where land policies are ineffective and government accountability is weak.

¹⁶¹ see D. Cameron’s letter to G8 leaders from the 2 January 2013: <https://www.gov.uk/government/news/prime-ministers-letter-to-g8-leaders>

International governmental approaches

United Nations Convention Against Corruption

Objectives and mechanisms: In 2003 the United Nations General Assembly developed the first legally binding anti-corruption instrument implemented at the global level. The UNCAC was entered into force in 2005 and currently has 154 states as signatories. The objective of the Convention is to implement a number of anti-corruption measures in national laws, institutions and practice. The anti-corruption measures focus primarily on prevention, criminalization, international cooperation and asset recovery.

The focus of the UNCAC is to effectively address new issues of corruption that earlier international instruments do not address, such as trading in official influence, general abuses of power, and various acts of corruption in the private sector. Of particular importance is the UNCAC's inclusion of the chapter on the "recovery of assets," whereby countries that fall "victim" to stolen assets can launch a recovery investigation. Importantly, the "victim" country must have the cooperation of authorities, usually in a Mutual Legal Assistance request, in the jurisdictions where the assets reside to seize the assets. The inclusion of asset recovery is considered a landmark decision and a crucial issue for developing countries to recover stolen assets. While the process of asset recovery is complicated and determined by a variety of external and domestic country factors (i.e. lack of a stable domestic regime with legal capacity to issue and carry out requests), there is a clear momentum towards the recovery of corrupt and stolen assets that constitutes a formidable deterrent and corrective measure to corruption in developing countries.

Relevance for sustainable land use: It is increasingly acknowledged that weak governance and corruption intensifies the impact of pressures on land use (TI 2011a). Corruption can lead to the intensification of land use in various ways that often have short-term capital gain and long term damaging environmental impacts, for instance, the exploitation of natural resources, large scale land acquisitions, or dam building, among others. A report by TI found that corruption in the land sector varies from small-scale bribes and fraud to systemic government abuse of power (TI 2011a). A subsequent report on Global corruption and climate change warned that big land buyers target countries where land rights are less likely to be recognized or enforced in legislation, particularly in biofuel production where countries with weak governance are targeted for biofuel investment (TI 2011b).

The implementation of the UNCAC and the asset recovery process provides "victim" countries with the ability to take legal action against stolen assets setting an international standard for good governance. The "asset recovery" chapter is particularly important for developing countries where high-level corruption has resulted in the exploitation and plunder of national wealth and resources. For instance, in 2005 the Nigeria state was able to use the UNCAC to recover USD 1.2 billion stolen by the former president Sani Abacha. Abacha had amassed wealth from crude oil exploration and industrial logging that left a wake of serious environmental problems, including crude-oil spillage, gas flaring, deplorable waste management, deforestation, and soil degradation that have turned most regions of Nigeria, including the crude oil producing areas, into war zones as populations compete over scarce resources and land (Oyeniyi 2010).

The Extractive Industries Transparency Initiative

Objectives and mechanisms: In 2002, diverse actors including governments, private companies, civil society organizations and investors met at the World Summit on Sustainable Development in Johannesburg and developed the Extractive Industries Transparency Initiative (EITI). The primary objective of the Initiative was to develop a standard to increase transparency and accountability in resource rich countries that otherwise tend to under-perform economically, suffer from poor governance, and high incidence of conflict.

EITI developed a standard that requires companies to publish payments made to governments in exchange for oil, gas and minerals, and in return, for governments to disclose what they received from companies. An independent administrator reviews the accounts, and publishes them in an EITI report that is made public, allowing people to see what has been paid and if money appears to be missing. If countries are found in offense of EITI, they are suspended and no longer enjoy the status of approval by the standard, which is widely acknowledged by both private and public sectors as well as by governments.

More than 20 resource rich countries are compliant with EITI implementation, including Azerbaijan, the Central African Republic, Kyrgyz Republic, Liberia, Mali, Mauritania, Mongolia, Niger, Nigeria, Norway, Peru Timor-Leste and Yemen (suspended). 21 additional countries are “candidate” countries, and are in the process of the 2.5 year validation process.

Relevance for sustainable land use: The EITI allows members of society to hold governments and companies accountable for the extraction of natural resources by making the payments of companies to governments visible and transparency in revenues of host governments. When the exploitation of natural resources is undertaken in a transparent and accountable way, it is less likely that the project will ignore environmental considerations or harmful degradation

Developing countries or countries with weak governance are particularly vulnerable to exploitation and corruption, both by domestic leaders and foreign enterprises. The EITI holds both private companies and governments accountable, providing civil society actors and communities with the information and evidence to take legal action. In Liberia, a case won impositions of UN Security Council Sanctions on Liberia’s timber exports, a UN travel ban and asset freeze on corrupt government officials and business partners of former President Charles Taylor.

The Open Government Partnership (OGP)

Objective and Mechanism: The Open Government Partnership is a multilateral initiative of governments and civil society organizations started in September 2011. Open governance is defined through measures such as increasing public sector responsiveness to citizens, countering corruption, promoting economic efficiencies, harnessing new technologies and improving the delivery of services. The OGP was developed through a collaboration of governments, civil society leaders and private sector representatives. The steering committee is the de-facto governance mechanism made up of 17 members (see footnote for complete list).¹⁶²

¹⁶² The governmental partners in the OGP include: Brazil, Indonesia, Mexico, Norway, Philippines, South Africa, United Kingdom, United States. The nine leading civil society partners in the OGP are: Africa Center for Open Governance (Kenya); Instituto de Estudos Socioeconomicos (Brazil); Instituto Mexicana para la Competitividad (Mexico);

In order to be a member of the OGP, governments have to pass a certain threshold of openness. Governments that do not meet the “minimum standards of government openness” prior to their application are not admitted. After two years, the OGP has received 79 government applications, of which 58 became members. The members must develop a detailed action plan to improve openness with the participation of civil society members. The Action Plan is then evaluated by the Steering Committee and other OGP members before implementation commences.

The action plan is the main component of the OGP, and each year a government’s progress is evaluated through an independent audit as well as a self-administered assessment, which is then reviewed by the Steering Committee. The independent assessment is carried out by a local organization working on transparency on the ground in the member state. The self and independent assessments function as a soft enforcement mechanism that provide a comparison for the quality and accuracy of reporting, and also chart progress. The assessments are published on the OGP website and thereby function as a platform for communication and information sharing between citizens and governments.

Relevance to Land Use: As a global initiative to improve government transparency and openness, the OGP could contribute to improvements related to land-governance by increasing the information that is made available to citizens and pushing for citizen participation in decisions about land. Improved levels of citizen participation, fiscal transparency, anti-corruption measures, and the harnessing of technology can potentially contribute to accountable and sustainable decision-making related to land-use. However, it remains difficult to specify and quantify what this impact will be. In part, the OGP’s impact on land-governance will depend on how successful it becomes as an initiative on government openness generally.

The OGP is a recent initiative but has received strong support from governments. Its broad membership gives it a distinctly international scope, and credibility is earned through its selective membership process and the fact that it maintains a high level of active participation through annual reporting.

A lack of transparency in land-governance correlates closely with many modern development issues and trends, including land grabs, food insecurity, environmental crime (e.g. trafficking and trade in wildlife, chemical pollution, unsustainable exploitation of resources), and socio-economic inequality, among many others. Introducing self-assessments by governments and bolstering international pressure on governments to make decision-making more transparent can have a significant effect on accountability and good governance.

OECD Anti-Bribery Convention

Objectives and mechanisms: In 1997 the OECD enacted the Convention on Combating Bribery of Foreign Public Officials in International Business Transactions. The Convention is designed to reduce corruption in developing countries and shift more responsibility to signatory member

International Budget Partnership (international); MKSS (India); National Security Archives (US); Revenue Watch Institute (international); Transparency and Accountability Initiative (international) and Twaweza (Tanzania).

states to impose strict legal enforcement on their companies that undertake business abroad in developing countries. The Convention is the first of its kind, and focuses on the “supply side” of bribery transactions (OECD 2011). Currently there are 34 OECD members and five non-OECD members that include Argentina, Brazil, Bulgaria, Russia and South Africa, who ratified signed the Convention.

The Convention consists of a combination of self and peer review mechanisms organized in three phases. The current and final stage, has appointed two countries to act as lead examiners to peer review signatory member states. Transparency International (TI) undertook an extensive evaluation of the Convention’s implementation in 2012, measuring compliance by the number of cases i.e. criminal prosecutions, civil actions judicial investigations completed or underway in the legal system of the signatory state. TI found initial progress on enforcement after the Convention was implemented in 1997, however it noted a lack of progress since 2010 with only 7 member states having active enforcement, 9 moderate, and 21 with little or no improvement since the signing of the Convention ten years ago (Heimann, Dell and McCarthy 2011).

Relevance for sustainable land use: Political corruption occurs when individuals abuse public office for financial or private gain. Corruption of government officials who manage valuable natural resources such as timber, oil and precious minerals will inevitably play a significant role in determining the speed and extent of resource exploitation and thus land use in their country. As a result, corruption directly threatens nature conservation and leads to the exploitation of forests, wildlife, fisheries and other land related resources. Corruption also reduces the effectiveness of protected land and conservation programs. Corruption is endemic and exists in all countries but it is particularly widespread in developing countries mainly because government officials are often poorly paid, political institutions are weak, checks and balance systems among different government agencies are poor and widespread nepotism and political patronage occur. Moreover, developing countries rely heavily on the exploitation of resources for economic growth. Considering the aggregate land-mass of developing countries worldwide and those currently in a state of conflict – a factor that exacerbates corruption – the Convention could be significant in terms of managing the future viability of the world’s most biodiverse areas and land use worldwide.

Importantly there are two kinds of corruption: Non-collusive corruption occurs when a bribe is made to undertake a legal activity, for example, the bribe pays for the legal logging permit and an overhead fee to the individual. As a result, the overall price of the natural resource is increased for the private sector. Collusive corruption occurs when the government official and the briber defraud the government, with for instance, turning a blind eye to logging outside authorized areas, the overlooking of tax evasion, or export of resources without permits. When the government is defrauded, natural resources become especially vulnerable to over-exploitation (Smith et al. 2003). Collusive corruption occurs most often during destabilizing transitions in government or during conflict (Sizer and Plouvier 2000). Given that the last two decades have seen unprecedented number of conflicts around the world, in South-eastern Europe, sub-Saharan Africa, Asia and the Middle East, the situation of potential corruption and future land use becomes particularly alarming (Laurance 2004).

While paying bribes may seem like a developing country problem, Transparency International notes that the problem is global, as offenses occur in countries with a significant share of world trade meaning that some of the biggest and most developed economies experience higher

numbers of cases. Transparency International identified positive development in the past year from major economies of signatory countries: the United States having 275 cases, an increase of 17 since last year; Germany 176, an increase of 41 since last year, Switzerland 52 with an increase of 17, Italy 32 increasing 14 from the previous year, and the UK with 23 increasing six from 2010 (Heimann and Dell 2012).

Free, Prior Informed Consent (FPIC)

Objectives and mechanisms: The purpose of FPIC is to give decision-making power and leverage to indigenous communities over decisions taken by corporations and governments that affect their land and thus their livelihoods. Under the conditions of FPIC, communities exercise their right to negotiate the terms of externally imposed policies, programs and activities that occur on their community land by either giving or withholding consent (UNPFFI 2005). Rather than simply approve or oppose certain deals, the FPIC is meant to facilitate more equitable negotiations and over the long term to ensure that companies and governments approach communities with project plans that they will accept and support because they can visualize their role and future benefit (Salim 2003).

The FPIC remains a principle, however its inclusion in the 2008 United Nations Declaration on the Rights of Indigenous People (UNDRIP) transforms FPIC from a voluntary principle to a legal instrument made enforceable through its inclusion in international law. FPIC is stipulated in six different Articles of the Convention. UNDRIP stipulates that FPIC be exercised in multiple situations, including relocation and storage of toxic materials, among others. Several other International Conventions recognize indigenous peoples' participatory right to decisions regarding their land including the International Labour Organization's Convention No. 169, the Convention on Biodiversity, and the UN Framework Convention on Climate Change. The principle is also mentioned in the MDG discourse and in particular with the climate change negotiations as a potential mechanism for Reducing Emissions from Deforestation and Forest Degradation (REDD+). In a watershed decision in 2011 the International Finance Corporation (IFC), a corporate entity decided to amend its guidelines under IFC's Policy and Performance Standards on Social and Environmental Sustainability to require FPIC when development projects affect indigenous peoples (Baker 2012).

Relevance for sustainable land use: FPIC in relation to development projects, resource extraction and other investments within the territory of indigenous peoples is highly important for future global land use because Indigenous People's land is often more biodiverse and undeveloped and also the most vulnerable to external corporate or government interests. Indigenous lands are hotspots for highly desirable resources, including timber, mineral resources and their undeveloped nature, which also makes them sought after for property development, tourism and agriculture. Moreover, indigenous lands are vulnerable because formal land ownership and land rights are not legally or effectively protected particularly in developing countries. Principles such as FPIC become legal instruments and enforceable when they are used as components or stipulations of international legislation, as FPIC developed its enforcement mechanism through UNDRIP. It is a known fact that indigenous communities attachment to land culturally and traditionally rests on values of respect, reciprocity and sustainable development. If indigenous communities are able to participate in decision making they are likely to engender decisions that maintain these values to a certain extent while also distributing the benefits of any development project in a way that is

socio-economically equitable thereby increasing environmental stewardship and more widespread economic development.

Hybrid and non-governmental approaches

The International Land Coalition (ILC)

Objectives and Mechanism: The International Land Coalition (ILC) was founded in 2003 but existed previously as the Popular Coalition to Eradicate Hunger and Poverty, which was developed in 1995. The ILC aims to facilitate information flows, stimulate research and increase transparency on land-use worldwide in order to collaborate more effectively with available information on land use and governance and to promote rural populations' access to land and resources associated with it. The ILC undertakes work mainly through capacity building, knowledge sharing and advocacy. The ILC is currently a coalition of 50 governments and 116 organizations from civil society, farmers organizations, United Nation Agencies, NGOs and research institutes. Its Secretariat is hosted by the International Fund for Agricultural Development (IFAD) in Rome Italy, with regional platforms operating in Africa, Asia and Latin America.

The ILC acts as an umbrella organization for a multitude of subsidiary projects that track, gather and aggregate information and data related to land-use and governance. Among the ILC's projects are the **Land Reporting Initiative**, the **Commercial Pressures on Land Project (CPL Project)**, the **Land Portal**, the **Land Observatory** and the **Land Matrix**. The projects are all related and interdependent but approach land-use and governance from different perspectives and have different objectives, users and audiences:

The **CPL Initiative** started in 2008 and gathers and disseminates research and analysis conducting qualitative research on drivers for investment interests in land (agro-fuels, food price hikes, increase in food, diet changes, Carbon Trading (e.g. REDD)).

The **Land Portal** is a decentralized participatory tool for aggregating and sharing information related to land governance. Its objective is to facilitate informatory flows and networks among land concerned individuals and organizations.

The **Land Matrix** is an online public database that permits all users to contribute and improve data on land deals. It uses interactive maps and info-graphics to visualize and analyze trends in land acquisitions by gathering as much information as possible on the type of investment, produce, size, year, investor company, location etc. Unlike the CPL this is a tool showing quantitative not qualitative data.

The **Land Observatory** is the sister project to the Land Matrix and currently in a pilot phase being tested in five countries. Its objective is to gather open government data, crowd source and to help customize local observatories making large scale land acquisitions more transparent and accessible.

The **Land Reporting Initiative** is primarily concerned with land rights issues of poor rural populations and aims to increase transparency on this issue.

Relevance for Sustainable Land Use: The ILC and its supplementary projects are highly relevant to global land use, particularly because information on land deals and access to land by rural communities are often not straightforward or transparent. Moreover, the information available on

the internet about land is extensive but usually fragmented and difficult to access and organize. By serving as an access point for gathering and synthesizing data on land, the ILC makes data more easily available to the public. As the database grows, the ILC and its subsidiary projects become more capable of verifying global trends and pin-pointing localized ones. These initiatives do not only raise awareness for land issues, but also provide for a better information basis for various kinds of land governance.

A lack of transparency on themes such as land tenure, property and ownership leads to inherent insecurity for rural communities and others most vulnerable. Access to information resulting in higher transparency is a crucial step towards citizen participation in and thus informed decision-making.

2.5 Cross Cutting issues with a lack of (effective) policies

2.5.1 Dietary change

(lead author: Stephanie Wunder)

The livestock sector is by far the single largest anthropogenic use of land. The total area occupied by grazing is equivalent to 26 percent of the ice-free terrestrial surface of the planet. In addition, the total area dedicated to feed crop production amounts to 33 percent of arable land worldwide. In all, livestock production accounts for 70 percent of all agricultural land and 30 percent of the terrestrial surface of the planet (FAO 2006). According to more recent calculations by PBL (2011) livestock raised for meat, and especially beef, even uses 80% of global agricultural land.

Consumption trends of meat and animal products are increasing. Increasing populations and incomes, along with changing food preferences, are rapidly increasing demand for livestock products which has led to a steady global increase in meat consumption since the 1950s. Between 1950 and 2000, the world's population nearly tripled from 2.7 to 6.7 billion people, while meat production increased fivefold from 45 to 233 million tons per year. The FAO predicts that the production of meat will double within the next decades, reaching 465 million tons in 2050 (FAO 2006). Consumption of meat, but also dairy products, is particularly high in Western countries, however many developing countries experiencing economic growth are simultaneously generating more people that can afford and prefer eating meat .

These levels of consumption (of both meat and dairy products) have dramatic impacts on the sustainability of land use:

1. The environmental impacts (particularly on water, biodiversity, climate change and soil) of feed production and livestock production are in general comparable to those of the agricultural sector (see chapter on → agriculture). The expansion of livestock production is also a key factor in deforestation, especially in Latin America where deforestation is occurring at an exceptional rate with 70 percent of previous forested land in the Amazon now converted to pastures, and feed crops (FAO 2006). As there is now a global shortage of grassland, practically the only way more livestock and feed can be produced is by destroying natural forest (World Watch 2009). Moreover, about 20 percent of the world's pastures and

rangelands, with 73 percent of rangelands in dry areas, have been degraded to some extent, mostly through overgrazing, compaction and erosion created by livestock action (FAO 2006).

2. The quantification of the environmental impact of different dietary protein choices show enormous disadvantages of meat compared to vegetarian alternatives.

- In the evaluation of processed protein food based on soybeans and meat protein, Reijnders and Soret (2003) analyzed a variety of environmental impacts (such as water, fossil fuel and phosphate requirements, copper emissions etc.) associated with primary production and processing and found a factor 44:1000 to the disadvantage of meat. With regard to land requirements the study found that on average, 10 g of vegetable protein are needed to generate 1 g of animal protein (Pimentel 1982, cited in Reijnders and Soret 2003), i.e. a conversion efficiency of 10%. However, there are differences between different types of meat production. For broiler production, the protein conversion efficiency is about 18%, for pork about 9%, and for beef about 6%¹⁶³ (Pimentel 1982, cited in Reijnders and Soret 2003). This translates to differences in land requirements. Compared with soybean production, land requirements are roughly 6 to 17 times larger for meat protein production (Pimentel 1982, cited in Reijnders and Soret 2003).
- Other studies focus on a comparison of weight per product such as Wakarmiya (2011), who compared different products and their land impact. According to Wakarmiya 0.4 m² are needed to produce 1 kg of vegetables (including potatoes) compared to 30 m² to produce 1 kg of meat.
- Other studies compared calories of different products such as Bringezu and Schütz (2009) (see table below).

Table: Land use requirements of food according to Bringezu and Schütz 2009, page 139, cited in SRU 2012

Food product	Land requirement (m ² /MJ)
Beef	2.09
Pork	0.79
Cow milk	0.72
Eggs	0.60
Poultry	0.54
Vegetables (open land)	0.34
Bread	0.19
Apples	0.16
Crop/ cereals	0.12
Potatoes	0.11

¹⁶³ The efficiency also varies according to how livestock is fed. According to calculations by Lester brown grain-fed beef is one of the least efficient forms of animal protein, taking roughly 7 pounds of grain to produce a 1 pound gain in live weight. Efficiency increases when combining protein-rich soybean meal with grain.

Given the fact that, on average, meat consumption in high-income countries is above what is considered a healthy level¹⁶⁴, a transition towards more healthy, less meat-intensive diets would be an effective way of reducing demand for land. However, changing diets is a highly polarizing issue and it is still unclear which role governmental (and nongovernmental policies) can play within that transition. So far there are few approaches known, such as the Belgian “Veggie Days” (see national case study of the Ghent Veggie Day in this report), “Meatless Mondays” in the US and green public procurement initiatives in many parts of the world (changing the food in canteens, schools etc.).

Denmark has made a rather short-term experiment (lasting roughly a year between 2011 and 2012) with a fat tax, which taxed food products containing more than 2.3 percent saturated fat – mainly dairy products and meat. Also, Hungary introduced a ‘people’s health products tax’, otherwise known as the ‘crisps tax’, which came into effect on 1 September 2011. However foods with high sugar content, such as sugary drinks and snacks (e.g. crisps and chocolates), became more expensive instead of meat in the Hungarian case.

2.5.2 Food losses and food waste

(lead author: Stephanie Wunder)

The reduction of food waste has a huge potential to reduce pressures on (agricultural) land use and resource input (see eg. PBL 2011, Noleppa and Witzke 2012). According to FAO (2011) data about one-third of all food production world-wide is lost or wasted in the food production and consumption systems.

Of the estimated total 89 Mt EU food waste, households produce the largest fraction (42 % of the total), representing 179 kg per capita, with evidence showing that over 60% of it may be avoidable. Significant industrial (39%), wholesale/retail (5%) and food service sector (14%) food waste also occurs (BIOIS 2012).

This inevitably also means that huge amounts of land and other resources used in food production are used in vain.

Food loss or waste occurs throughout the supply chain, from initial agricultural production down to final household consumption. In medium- and high-income countries food is more often wasted at the consumption stage. Significant losses also occur early in the food supply chains in the industrialized regions. In low-income countries food losses and waste are mainly connected to financial, managerial and technical limitations in harvesting techniques, storage and cooling facilities in difficult climatic conditions, infrastructure, packaging and marketing systems. They mostly occur during the early and middle stages of the food supply chain; much less food is wasted

¹⁶⁴ For instance, people in Germany eat on average 88 kg of meat per year and 137 kg of dairy products, which is more than a third of annual 700 kg food consumption (BMELV 2011 in von Witzke et al 2011) and more than twice the recommended maximum from a health perspective by organizations such as the World Cancer Research Fund, Deutsche Gesellschaft für Ernährung and others (von Witzke et al 2011).

at the consumer level. Overall, on a per-capita basis¹⁶⁵, much more food is wasted in the industrialized world than in developing countries.

Calculations about the amount of (agricultural) land that can be saved by reducing food waste differ due to different methodologies, a lack of data and a range of uncertainties, but all show a great potential for more efficient and less wasteful practices. For example PBL (2011) estimates that approx. 5 Mio km² can be saved if food waste reduction measures would be implemented (compared to 4 million km² that can be achieved through additional yield increase and more than 15 million km² that can be achieved through diet changes towards less meat).

For Germany Noleppa and Witzke (2012) have calculated the following:

- 1,2 Mio hectare can be gained if avoidable food waste in Germany could be cut by half.
- Total reduction of food waste in Germany can save 2,4 mio hectare.
- In the latter case the land footprint of a German can be reduced by 10% (from 2900 m² to 2600 m²).

Currently there are only few policy initiatives on international level that address food losses and food waste.

On a UN level, a global campaign “Think. Eat. Save. Reduce Your Footprint” aims to cut food waste and was launched in 2012 by the UN Environment Programme (UNEP), the Food and Agriculture Organization (FAO) and partners. The campaign is in support of the SaveFood Initiative to reduce food loss and waste – run by the FAO and trade fair organizer Messe Düsseldorf –and the UN Secretary General's Zero Hunger Initiatives. It specifically targets food wasted by consumers, retailers and the hospitality industry. The Think.Eat.Save website is meant to be a portal to showcase ideas, to provide a one-stop shop for news and resources, and to mobilize civil society to take action. The campaign harnesses the expertise of organizations and national governments, who have gained experience targeting and changing wasteful practices.

On EU level, food waste is a topic within the “Roadmap to a resource-efficient Europe” (European Commission 2011) which identified food as a key sector where resource efficiency could be improved. It announced that it will further assess how best to limit food waste throughout the food supply chain and that it will seek incentives to halve the disposal of edible food waste in the EU by 2020.

Moreover, the European Commission is analyzing in cooperation with stakeholders, experts and member states how to reduce food waste. For example, the Working Group on Food Waste in the context of the Advisory Group on the Food Chain, Animal & Plant Health discusses good practices, obstacles and options for EU actions to reduce food waste. In parallel, the European Commission is disseminating information and is compiling good practices on food waste reduction initiatives.

However, on national level there are more policies and initiatives which may influence international policies in the future to a larger extent, as many food waste issues have an international dimension (long vs short supply chains, food labeling, trade regulations, e.g.

¹⁶⁵ The FAO (2011) estimates that the per capita food waste by consumers in Europe and North-America is 95-115 kg/year, while this figure in Sub-Saharan Africa and South/Southeast Asia is only 6-11 kg/year.

donation of surplus food to food banks, date labelling, feed, short food supply chains, bio-energy, etc. Examples include the UK Waste & Resources Action Programme (WRAP)¹⁶⁶, the German initiative against food waste “Zu gut für die Tonne”¹⁶⁷ or the UK Initiative „feeding 5000”¹⁶⁸.

2.5.3 Global population growth

(lead author: Stephanie Wunder)

Population dynamics

According to the 2010 Revision of the official United Nations population estimates and projections, the world population is projected to reach 7 billion in late 2011, surpass 9 billion people by 2050 and exceed 10 billion in 2100. Most of the additional 3 billion people from now to 2100 will enlarge the population of developing countries. In contrast, the population of the more developed regions is expected to change minimally (UNDESA 2011).

However, there is a broad range of uncertainty with population projections because of unknown future fertility and mortality trends in different parts of the world (Lutz and Samir 2010). Population dynamics will also strongly depend on what actions that are taken and when. As “every decade of delay in reaching replacement level fertility leads to an exponentially higher increase in world population by 2050” and would “reach a stable world population at a much higher quantity”, the United Nations Population Fund calls for policies to be implemented and measures taken today (UNFPA 2012).

Relevance for land use

An increase in population – particularly in developing countries that are already home to the largest share of people who live in extreme poverty and suffer food insecurity and will also have the highest rates of population growth – can have an enormous impact on land use. First, there will be increased pressure on land to feed the growing number of people: According to the FAO an overall increase in agricultural output of about 70 percent will be needed to feed a world population of 9 billion. Second, people will also require clothing, sanitation and infrastructure; they will also demand health care and education, which will increase pressures on all natural resources, including land – unless decisive policy changes and more sustainable development pathways are taken (UNFPA 2012). Housing will also play a big role and living in urban areas (where most of the population growth will occur) can provide opportunities for reduced pressure on land (given a tendency to build upwards, instead of outwards) and other resources (since people in cities tend to consume less energy per capita than in rural areas). It also is easier and

¹⁶⁶ See the programs website: www.wrap.org.uk

¹⁶⁷ See the campaigns website <https://www.zugut fuer die tonne.de>

¹⁶⁸ See the initiatives website <http://www.feeding5k.org>. For more examples from Europe see the EU Commissions Website http://ec.europa.eu/food/food/sustainability/gp_food_redistribution_en.htm

cheaper to provide essential infrastructures and services there. Urban living also has the potential to reduce soil sealing per person, because apartments can be built on top of each other and space for roads can be kept relatively small, since distances can be kept short (UNFPA 2012).

International policy perspective

On the international level, the world's largest international source of funding for population and reproductive health programs is the United Nations Population Fund (UNFPA). In 1994, together with the UN Department for Economic and Social Information and Policy Analysis, the UNFPA organized the International Conference on Population and Development (ICPD). It was the largest intergovernmental conference on population and development ever held, with 11,000 registered participants, from governments, UN specialized agencies and organizations, intergovernmental organizations, non-governmental organizations and the media. At the ICPD, held in Cairo, 179 countries adopted a forward-looking, 20-year Programme of Action (PoA) that built on the success of the population, maternal health and family planning programmes from the previous decades while addressing, with a new perspective, the need of the early years of the twenty-first century. The PoA sets out to:

- provide universal access to family planning and sexual and reproductive health services and reproductive rights;
- deliver gender equality, empowerment of women and equal access to education for girls;
- address the individual, social and economic impact of urbanization and migration; and
- support sustainable development and address environmental issues associated with population changes.

The PoA is recognized in many international agreements, including the Rio+20 outcome paper “The Future We Want” from 2012, which calls for the full and effective implementation of the ICPD. Full and effective implementations includes “commitments leading to sexual and reproductive health and the promotion and protection of all human rights in this context”, as well as an emphasized “need for the provision of universal access to reproductive health, including family planning and sexual health, and the integration of reproductive health in national strategies and programmes”.

Within the more detailed UNFPA/DESA¹⁶⁹ input to the Rio+20 outcome document (UNFPA/DESA 2011) the UNFPA emphasize that “policy matters”. According to UNFPA/DESA, population dynamics can be addressed through effective human rights-based policies that ensure:

- Universal access to reproductive health, including family planning
- Empowerment of women and young people
- Investments in education, especially for adolescent girls
- Development strategies are informed by population data and projections

¹⁶⁹ United Nations Department of Economic and Social Affairs

Within the process “The ICPD Beyond 2014”, the ICPD is currently reviewed. The Review will identify progress and achievements towards the goals set out in Action Programme of 1994. The UNFPA intends that “[e]vidence of what has worked and where challenges remain will be collected from governments, civil society organizations and partners using the ICPD Global Survey, civil society consultations and a series of thematic conferences” (UNFPA 2013).

The importance of education and the particular role of girls and women are also underlined in many research studies. For example research by Lutz and Samir (2010) concludes:

- “education differentials are so pervasive that education may well be called the single most important observable source of population heterogeneity after age and sex ...”;
- that “for all populations that are still in the process of demographic transition, more educated women have lower fertility”; and
- that “[b]ecause of the strong association between female education and fertility, future changes in the composition of the female population by educational attainment make a big difference.”

Similarly, research by Professor Cohen of the Rockefeller University in New York concludes that:

- “putting girls in developing countries through secondary school is one of the single most important factors that causes them to have fewer babies in later life ”;
- the aforementioned action has the potential to “cut the expected growth in the human population by as much as three billion by 2050”; and
- “[e]ducation promotes a shift from the quantity of children in favour of the quality of children. This transition reduces the future number of people using environmental resources and enhances the capacity of individuals and societies to cope with environmental change.” (Connor 2008)

National Policy efforts

Despite efforts on the international level, family planning policies have been almost exclusively shaped on the national level.

Governmental and private programs/policies that aim to address a reduction in fertility and birth rates can be studied in some countries, particularly in developing countries where overpopulation has been a major issue. In starting these programs economic, political, and health considerations were typically intertwined. While family planning programs have major differences in their strategies and governance background, a World Bank (2007) study that has analysed 38 national cases concludes “while the short-run results were mixed, over the long run most programs have been relatively successful.” The analysis concludes that culture and traditional pro-natalist values did not prove to be insuperable barriers to program achievements, although socioeconomic modernization was nearly as important as the programs themselves. However, religious conservatism, especially by the Catholic Church, slowed policy development in Latin America and Francophone Africa. Yet in other Latin American countries such as Colombia, programs thrived despite the church’s position. Elsewhere, Muslim opposition to sterilization (e.g. in Indonesia) and to family planning in general (e.g. early on in Iran and Morocco) was unhelpful, but other Muslim countries, such as Malaysia and Tunisia, have been in the forefront of forward-looking policy

(World Bank 2007). With regards to the lessons learned and future perspectives the authors conclude that:

- “national programs require close tailoring to each set of local conditions and to the inevitable shifts they will undergo” as no single family planning approach worked everywhere. Hence, no one best pathway to policy adoption exists; and
- “the mechanism by which adoption of family planning policies occurred was not critical: authoritarian, consensual, and informal (NGO-based) efforts all succeeded or, on occasion, failed. Public support by national leaders helped legitimize family planning, but could not guarantee its success, and withholding such support in some cases was a useful interim strategy.” (World Bank 2007)

2.5.4 Gender equality

(lead author: Stephanie Wunder)

When elaborating on land use governance and its impacts on sustainable or unsustainable management of land, the incorporation of a gender perspective plays a crucial role, particularly given the differences between man and women with regard to access to land and land use management, not only but particularly in developing countries.

In developing countries, on average 43% of the agricultural labour force is made up of women, varying between 20% in Latin America to 50 % in Eastern Asia and parts of Africa (FAO 2013a). However, this share underestimates the number of women who are involved in land management but are officially part of the agricultural labour force, for instance because they are not paid or do not define their activities as work (ibid.). Even if the working situation of women is different in all countries the FAO states that in all developing regions, women have far less opportunities or rights to own, rent or manage land. Available data from developing countries shows this disproportion: only 10 to 20% of land owner are female (FAO 2013b, FAO 2013c). They also have less access to technology, education, information and financial services and the land areas they manage are in general smaller and of poorer quality (FAO 2013b, FAO 2013c). They face wage discrimination in rural labor markets; are more likely to be in part-time, seasonal and/or low-paying jobs when engaged in rural wage employment; and often work without remuneration on family farms.

This disproportional disadvantage or “gender gap” reduces women’s productivity and diminishes their contributions to the agriculture sector, and not only affects their wellbeing and that of their families (FAO 2012). It also imposes a high cost on the economy through productivity losses since women typically achieve lower yields than men do (FAO 2011). The reasons why women still achieve lower yields are however due to the situation that women work in: The vast majority of literature confirms that women are just as efficient as men and would achieve the same yields if they had equal access to productive resources and services (FAO 2011).

As demonstrated in FAO (2011) closing the gender gap in agriculture would produce significant gains for society by increasing agricultural productivity, reducing poverty and hunger and promoting economic growth. Enabling women to access productive resources to the same extent as men would increase yields on their farms by 20 – 30 percent. This could raise total agricultural output in developing countries by 2.5–4 percent, which could in turn reduce the number of hungry people in the world by 12–17 percent.

In addition to increases in production and income, closing the gender gap in agriculture would generate broader social and economic benefits by strengthening women's direct access to, and control over, resources and incomes and achieving the MDGs (OECD 2008): For example, when women control additional income, they spend more of it than men do on food, health, clothing and education for their children.

These socio-economic effects impact the environment as increased economic development can decrease pressure on the environment in a number of ways. Population pressure poses a big problem on the environment as it leads for instance to resource exploitation and soil erosion. Men and women who do not own land often depend on common property resources such as wood or food, which are often overexploited and threaten the environment and food security of the region (FAO 2013a). Economic growth and the resulting fertility reduction as well as land ownership rights for women could therefore have positive effects on the environment. Furthermore, ownership of land increases the probability that land managers manage resources sustainably as they know that they depend on the land and benefit from environmentally friendly behavior (FAO 2013b). In addition, women could have effects on more sustainable and diverse farming. Women tend to have a good knowledge of local crop species, show a greater environmental awareness, are more sensible towards environmental risks and are more critical towards technological solutions to environmental problems and show a higher engagement to preserve the environment. will to preserve the environment and a (Preisendörfer 1998, Waldmann 1992, Niva et al. 1997, Devries 1997, Kuckartz 2000 in Schultz et. al., 2001).

In addition to the disadvantageous situation of women in agriculture described above, women are also underrepresented in political decision making concerning land use and agriculture. In general it has to be mentioned, that women around the world are underrepresented in the political realm. On global average, only 18% of parliamentarians are female, with regional differences (Inter-Parliamentary Union 2013). The representation of women in land use specific political bodies is not well documented, which results in the question, in how far there is even a possibility of including female specific interests in politics of land use. UNEP argues that there is a very limited access of women in environmental decision making (UNEP/DAW 2005, UNEP/UN Habitat 2010). Due to a lack of adequate data, the FAO pleads for more research to generate reliable data of women's role in agriculture, rural development and agricultural decision making. Otherwise, women's interests and needs will stay unknown to agricultural planners and policy makers and access to decision making will not improve (Augustin, E. et. al. 2012).

Many programs have already been established to empower women in rural areas and in agriculture, to develop more knowledge about gender-specific needs and policies and to generate more data on women's role, interests and need in agriculture. The Agenda 21, which was developed during the Rio Conference in 1992, is an important document that accounts for the importance and specific roles of women in sustainable development. Women are recognized as one of the nine major groups to achieve sustainable development next to for instance local authorities, NGOs or indigenous people. Furthermore, a chapter was included in the Agenda 21 about the needed "global action for Women towards sustainable and equitable development". Organs such as the 2005 UN Conference on Women, the International Union for Conservation of Nature, or the UNEP have also adopted policies that aim at empowering women in regards to environment and rural development. In this respect the UN Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) that came into force in 1981 is the mayor

convention in empowering rural women. According to the FAO, “CEDAW is the foremost international instrument protecting the rights of women and the only legally binding international human rights treaty that gives specific attention to rural women.” The convention aims to strengthen the right of rural women in the participation of development planning and of access to health care, social security programs, education and training, to financial services and technology. Furthermore, it aims to empower them in stressing their rights to organize themselves in groups and cooperatives and the right to enjoy adequate living conditions, particularly in relation to housing, sanitation, electricity and water, transport and communications. It needs to be said though, that the impacts that the convention had to strengthen the right of rural women are not well studied.

However, in recent years, the combined food, climate and financial crises have led to a renewed attention to the roles women play in producing food and in agricultural production (FAO 2012). The FAO (2012) therefore published a policy document to provide FAO with a framework to guide its efforts to achieve gender equality.

2.5.5 Public goods and the internalization of externalities

Many problems of unsustainable land-use are related to the existence of external costs. This is typically the case where land and land-related resource use problems have the structure of public goods (cf. Baumol and Oates 1975; Tietenberg and Lewis 2009). This means that firstly, people cannot be excluded from the use of resources (non-excludability), so that an incentive exists to overuse the respective resources. Secondly, people do not rival for the use of the resources because its consumption by some does not reduce the amount available for others (non-rivalry). As a consequence, there is little incentive to provide the respective public goods via markets and in the absence of dedicated non-market institutions (Ostrom 1990), common goods are at risk of being underprovided. Public goods provided through (sustainable) land use practices range from the conservation of biodiversity and the development of cultural landscapes, to the provision of regulating, provisioning, supporting and cultural ecosystem services (MA 2005) and of overall ecosystem resilience.

In order to warrant the provisioning of common goods, external costs can be internalized both through economic mechanisms as well as by regulatory measures. In various land-use related policy fields, attempts have been made at international, regional or national levels to provide public goods by internalizing external costs. At international level a regulatory mechanism for internalizing expected external costs is the moratorium on genetically modified trees under the → Convention on Biological Diversity (CBD). Economic mechanisms for internalization at international level include the regimes for access to genetic resources and benefit-sharing resulting from their utilization as governed by the CBD and the → International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA), forestry projects under the → Kyoto Protocol’s flexible instruments and in the voluntary markets, as well as the emerging → REDD+ scheme that compensates efforts by developing countries to reduce emissions from deforestation and forest degradation. At regional level, the EU’s → Common Agricultural Policy (CAP) attempts to internalize environmental externalities both through compensation payments e.g. for biodiversity-friendly practices (agri-environmental schemes) and through regulatory measures such as limits on the use of pesticides.

2.5.6 Environmental liability

Lead author: Andreas Herrmann

Overview

This paragraph analyzes if and how far international and European liability regimes in public law protect the soil as a legal interest by linking the liability to the state of the soil or to any behaviour that damages the soil and thus promotes sustainable land use. In international law there is no general binding instrument regulating environmental liability but sectoral environmental liability regulations exist for many areas. The Environmental law Directive 2004/35/EC does in principle foresee compensation for damages to the soil and the biodiversity in the EU. However, the liability for damages to the soil has little or no relevance for the sustainable protection of the land as the liability does only cover a limited number of industrial projects and soil functions are not protected as such.

International governmental approaches

International Environmental Liability Regulations

Objectives and mechanisms: The basic idea of environmental liability law is to impose the costs on the polluter for restoring damages to the environment. Thus polluting actions should be prevented. A further aim of the liability law is to impose the costs of environmental damages on several polluters in order to restore damages. Consequently, liability law intends to internalize the external costs of damages to the environment and thus aims to regulate economic activities. However, as a substantial deficit environmental liability law does only compensate damages on the protected interest of third parties; damages to the environment as such (environmental damages) are not or only fragmentarily compensated for in the international environmental liability law.¹⁷⁰

There is no general binding instrument regulating environmental liability in international law. However, sectoral environmental liability regulations in international law exist for many areas, such as the protection of the marine environment, water protection or oil spills. At the moment the existing international liability regimes address:

- nuclear power (Paris Convention of 29 July 1960 on Third Party Liability in the Field of Nuclear Energy and the Brussels Supplementary Convention of 31 January 1963; Vienna Convention of 21 May 1963 on Civil Liability for Nuclear Damage):
- oil pollution damages (International Convention of 27 November 1992 on Civil Liability for Oil Pollution Damage; International Convention of 27 November 1992 on the Establishment of an International Fund for Compensation for Oil Pollution Damage) as well as for the

¹⁷⁰ Leifer, C., Der Richtlinienentwurf zur Umwelthaftung: Internationaler Kontext, Entstehung und öffentlich-rechtliche Dimension, Natur und Recht, 2003, S. 398.

- transport of dangerous goods (International Convention of 3 May 1996 on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea; Convention of 10 October 1989 on Civil Liability for Damage Caused during Carriage of Dangerous Goods by Road, Rail and Inland Navigation Vessels).

The main intention of the afore-mentioned regulations is to enable activities having a potential risk (i.e. limiting the liability for these activities) as well as to secure that environmental damage will be compensated for.

Relevance for sustainable land use: The afore-mentioned liability regulations on the level of the international law have only little relevance for the protection of the soil. The main reason is that the liability is limited to protected interest of third parties and the exemption of environmental damages as such. Moreover, the limited liability for environmental damages that does not fully compensate possible environmental damage does hinder an effective impact on activities that endanger the environment and the soil in particular.

Regional governmental approaches

EU Environmental Liability Directive

Objectives and mechanisms: On the level of the European law the Environmental liability Directive 2004/35/EC¹⁷¹ is the central piece of public law regulating environmental damages. The Directive regulates measures to avoid environmental damages and sets uniform standards for the remedying of environmental damages.

According to the definition of the Directive „environmental damage“ covers damage to the land, the water and to protected species and natural habitats. Land damage is defined as

„[...] any land contamination that creates a significant risk of human health being adversely affected as a result of the direct or indirect introduction, in, on or under land, of substances, preparations, organisms or micro-organisms; (Art. 2 Nr.1 lit. c)“

As a consequence according to the Directive environmental land damage is only compensated for, if that creates a significant risk for human health.¹⁷²

Furthermore the Directive regulates damage to protected species and natural habitats defined as

„[...] any damage that has significant adverse effects on reaching or maintaining the favourable conservation status of such habitats or species. The significance of such effects is to be assessed with reference to the baseline condition, taking account of the criteria set out in Annex I;“ (Art. 2 Nr. 1 lit. a)

The liability covers all species and habitats listed in Annexes I, II and IV of the FFH-Directive and Annex I of the birds Directive. The compensation for the damage is based on the condition at the

¹⁷¹ Directive 2004/35/CE of the European Parliament and of the Council of 21 April 2004 on environmental liability with regard to the prevention and remedying of environmental damage, OJ L 143, 30.4.2004, p. 56.

¹⁷² Matthes, F. Bart, R. et. al., Regulierung und CO₂-Abscheidung und –Ablagerung (CCS)- Der Entwurf für das Kohlendioxid-Speichergesetz (KspG), S. 25.

time of the damage of the natural resources and services that would have existed had the environmental damage not occurred (baseline condition).

According to Art. 3 para 1 Directive 2004/35/EC environmental damage is only compensated for, if it is caused by any of the occupational activities listed in Annex III of the directive. Those activities in Annex III cover for example the operation of installations subject to permit in pursuance of Council Directive 96/61/EC or waste management operations, including the collection, transport, recovery and disposal of waste and hazardous waste or the manufacture, use, storage, processing, filling, release into the environment and onsite transport of dangerous substances or any deliberate release into the environment, transport and placing on the market of genetically modified organisms as defined by Directive 2001/18/EC.

Nevertheless, Directive 2004/35/EC does basically not regulate any conditions to proof the causal link between an activity and the environmental damage. The only regulation in that respect can be found in Art. 4 para 5 Directive 2004/35/EC: In case of a damage caused by pollution of a diffuse character, environmental damage or the imminent threat of such damage is only compensated for where it is possible to establish a causal link between the damage and the activities of individual operators.

Relevance for sustainable land use: On the level of the European law the Environmental law Directive 2004/35/EC does indeed foresees compensation for damages to the soil and the biodiversity. However, the liability for damages to the soil has little or no relevance for the sustainable protection of the land. For example the liability is only restricted to specific industrial activities but does not cover farming practices that lead to long-term damages like soil erosion or loss of species, e.g. caused by the use of pesticides, fertilizers and biocides not following the usage-instructions or even related to proper usage. Moreover the soil functions are not protected as such, but only land contamination that creates a significant risk of human health being adversely affected is compensated for. Therefore the Directive 2004/35/EC does not play a significant for the protection of the soil.¹⁷³ Finally, the conditions regarding the proof of causality have not been addressed in the Directive and thus weakening the possibility to claim compensation in case of complex causality.

3 National case studies

3.1 Introduction

In addition to the governance screening in part 2, which mostly focussed on the international and multilateral level, the national case studies aim to provide some more detailed and specified insights to 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 regional specific

¹⁷³ Zur fehlenden Bedeutung des USchadG für den Bodenschutz näher Brinktrine, Der Bodenschutz im Umweltschadengesetz, ZUR 2007, S. 337 (346).

land use challenges (such as deforestation in Brazil or land grabbing in Kenya) and discuss the impacts of national policies, mechanisms or strategies responding to these challenges. Accordingly, not a comprehensive screening of all land related policies in a selected country was the aim of the studies, but a distinct analysis of a particular land issue, from which also international land governance could learn. As a result, all 10 case studies have their own results and conclusions, which are briefly summarised at the end of the chapter.

3.2 Selection of case studies

The case studies were selected along the following aspects:

- Best or good practice for land use governance (also potentially “worst cases” in order to provide insights how mistakes can be avoided)
- Relevance and transferability to the global level
- Information and data availability (no empirical analysis could be conducted in this study)

Moreover, the national case studies should comprise a somewhat representative coverage of continents, policy sectors and land related actors. To some extent, findings about the degree of land use change in the last 20 years (examined in workpackage 1 of the project) were also taken into account. In this respect, countries with a large land surface and a high level land use change (such as Brazil and Argentina) gained particular attention.

Last but not least, the national case studies should 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.

3.3 General overview

The following table gives an overview of the selected case studies and the issues stressed in the analyses. In all, four countries in Latin America and two examples from Africa, Asia (and Australia) and Europe, respectively, were identified. The majority of case studies in Latin America is derived from the fact, that not only interesting policy approaches (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.

Country	Title	Main issue
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 soil a collective right on land use
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
Kenya	Pastoralism and land governance in Kenya	National land governance and its effects on land grabbing and land use dynamics in the Tana River area
Niger/Burkina Faso	Recultivating the desert in Niger and Burkina Faso	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 in Australia	Legal status of mining agreements and potential for their global application to foster environmental standards in mining
Germany	The landscape planning system in Germany	Structures and transferability of the German landscape planning system, focus on measure to reduce “land take”
Belgium	Belgium/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.

3.4 Latin America

3.4.1 Brazil: Policies for reducing deforestation – ambitious, though not always coherent

Brazil is among the five most forest-rich countries globally and its rainforest counts among the most biologically diverse regions of the world. Deforestation in Brazil, and in particular in the Amazon, became a global issue in the 1980s. During the 1990s, Brazil was the country with the highest annual net loss in the world, with a forest loss of 2.9 mio ha/yr from 1990-2000, or -0,51%. This worsened to 3.1 mio ha/year in 2000-2005 (-0,57%). However, as of 2005, the countries' rate of deforestation declined to -0,42% per year (2005-2010), or 2.2 mio ha/yr (FAO, 2010a). In 2011 and 2012, figures dropped again, leading to a record low of deforestation in the Amazon in more than twenty years.¹⁷⁴

This case study summarizes existing literature accounting for this effort. Remarkably, this turnaround goes hand in hand with a domestic economic growth period and even survived the severe drought in 2010 (Hecht, 2011, p. 1) – both factors typically fuelling clearing. In addition to this, Brazil lends itself for a national case study since among tropical countries successfully fighting deforestation it is the greatest one in term of area and the politically most influential one.

Deforestation in Brazil

Deforestation in Brazil is concentrated in specific regions and above all along great roads ('arc of deforestation'). Its main (and partly intertwined)¹⁷⁵ drivers include agricultural expansion (cattle ranching, soybean cultivation), infrastructure development and selective logging (Wertz-Kanounnikoff, Kongphan-Apirak & Wunder, 2008, p. 7). The underlying causes of Brazilian deforestation encompass public policies (credits, roads, resettlement), the international demand for soybeans, national – and recently global – beef demand, as well as institutional factors (weak law enforcement in frontier zones, weak property rights) (ibid).

The dynamics of deforestation have been spurred by land use regulations and tenure insecurities. The fundamental problem is that 'the absence of land titles and widespread illegal occupation of public lands makes it difficult to identify the individuals responsible for deforestation. At the same time, this land tenure situation also makes it difficult for landholders to enter into long-term contracts to commit themselves to reduce deforestation (...)' (May & Millikan, 2010, p. ix). The Brazilian Amazon is divided between private lands (24%; owned by individuals and organizations) and public lands (76%, which include protected areas (40.3%), land reform settlements and some 30% of forests under dispute) (Rica et al., 2011). Multiple claims to the same property still exist, and especially the Arch of deforestation is marked by tenure insecurity and illegal land grabbing (ibid). A major concrete driver of deforestation is the necessity of demonstrating the "productive"

¹⁷⁴ <http://www.guardian.co.uk/environment/2012/nov/28/amazon-deforestation-record-low>

¹⁷⁵ E.g., the clearing of forests for cattle ranching also creates profits from timber harvest; and soaring land prices (driven by the profitable soy industry) encourage ranchers to sell their properties in order to acquire new forest land on the frontier (Nepstad et al., 2009, p. 4).

use of land (e.g. cattle ranching) as a precondition for acquiring a formal land title (Nepstad et al., 2009, p. 4; cf. Hecht, 2011). While the Brazilian law recognises the ‘original rights’ of indigenous peoples to ‘traditionally occupied’ lands, confers them permanent possession of these lands (following a formal process of demarcation), and grants them exclusive use rights to natural resources, these are still being compromised by the economic activities of settlers, mining and logging companies (May & Millikan, 2010, pp. 26–27).

Policies to curb deforestation in Brazil

While Brazil has made efforts to counter deforestation earlier, the recent approaches have been significantly more successful. The success can be explained to some extent by a temporary decline in soy and cattle prices in 2005/2006 (Nepstad et al., 2009, p. 4), but to a substantial extent by a complex patchwork of policies and institutional developments, which we will describe below.

The probably greatest recent impulse originated in *climate politics*: During the 2009 UNFCCC negotiations, Brazil committed itself at to reducing greenhouse gas emissions by between 36.1% to 38.9% by 2020 (compared to emissions in 1990), including through reducing deforestation, based on its newly adopted National Climate Change Plan (PNMC). This commitment was codified in Brazil’s National Climate Change Law (Law 12 187/2009). Two action plans under this policy aim at reducing deforestation in the Amazon by 80% by 2020 and in the Cerrado (a tropical savanna in central Brazil) by 40%.¹⁷⁶

In the *intersection of climate and forest policies*, a range of policies and measures has been developed in the past decade: In 2003, the „Action Plan for the Prevention and Control of Deforestation in the Amazon Region” (PPCDAM) was initiated. However, its effectiveness is said to be hampered by its centralized structure and lacking coordination with policies pertaining to agribusiness, mining, transportation and energy infrastructure (May & Millikan, 2010, p. iii). The PPCDAM is accompanied by the plans for reducing deforestation of several states which have gained greater autonomy within the newly decentralised federalist structure for regional environmental governance. A number of voluntary forest carbon projects are being implemented in Brazil, including three A/R project under the UNFCCC’s Clean Development Mechanism (CDM).¹⁷⁷ As of 2007, a number of pilot activities for reducing deforestation and forest degradation (REDD) have been implemented in various Amazonian states (May & Millikan, 2010, pp. 52–53). In 2008, the Amazon Fund was created, based on voluntary contributions intended to be linked to verifiable emission reductions. An example is the US\$1 billion donation from Norway (for the period till 2015). The Fund’s contributions are channeled towards the prevention, monitoring and control of deforestation and promotion of conservation and sustainable use (Rica et al., 2011). For instance, land owners receive transition funds for investment and a compensation of their opportunity costs for not clearing their lots (Martins et al., 2009).¹⁷⁸ In

¹⁷⁶ Within the UNFCCC, these reduction targets are declared as a Nationally Appropriate Mitigation Actions (NAMAs).

¹⁷⁷ <http://cdm.unfccc.int/Projects/projsearch.html>

¹⁷⁸ Specifically, this includes as priority areas the management of public forests and protected areas; environmental monitoring, control and enforcement; sustainable forest management; (other) economic activities based on the sustainable use of forests; ecological-economic zoning, territorial management and land tenure regularization; conservation and sustainable use of biodiversity; and, rehabilitation of degraded lands (ibid).

2011, the National Climate Fund (based on tax revenues from oil exploration activities) was created to additionally finance forest protection projects. The Public Forest Management Law of 2006 (Law 11 284/2006) introduced long-term competitive concession of public forestlands predominantly destined for commercial timber extraction, provided for independent certification of forest management, created the Brazilian Forest Service and strengthened community-managed forests (May & Millikan, 2010, p. 15).

Land use regulations and tenure rights have been reformed to some extent, too, or are enforced more effectively. Since 1999, the federal land agency INCRA has carried out various revisions of land registers in order to clarify legitimate lands claims and reduce fraudulent appropriation of public lands as well as the accompanying social conflicts (May & Millikan, 2010, p. 28). While in 2008 still only 4% of private properties in the Amazon had titles validated by INCRA and 32% were supposedly private lands without validation (Barreto et al., 2008), it has become easier to identify illegal landholders. This was based both on the official land registry and on independent ones, such as the “Cadastro de Compromisso Socioambiental” (i.e., the 'Registry of Socio-Environmental Responsibility', Nepstad et al., 2009, p. 21). In the 2000s, the legal recognition of indigenous lands has progressed, including through a Supreme Court ruling in 2008/2009 safeguarding the territorial integrity of the 17.000 km² Raposa Serra do Sol reserve which included the eviction of a group of non-indigenous farmers and set a legal precedent.¹⁷⁹ A further land use regulation intended to reduce deforestation is the requirement for landholders in the Amazon to maintain a share of their properties in forest cover, the so-called ‘legal forest reserve’. This minimum forest cover was raised from 50% to 80% in 1996. These 80% became law in 2001, a measure hotly contested by many Amazon landholders, most notably from the cattle and agriculture sectors.¹⁸⁰ A further measure was a change in the conditions for gaining access to rural credit for agricultural and ranching activities in the Amazon: since 2008, the legitimacy of land claims and compliance with environmental legislation needs to be proven.¹⁸¹ However, lacking monitoring is still impeding the effectiveness of this measure (May & Millikan, 2010, p. 12).

A significant influence on the decline in deforestation is furthermore attributed to measures *strengthening forest law enforcement*. These in turn are based on improved *assessment and monitoring* of deforestation. Methods include satellite-based monitoring with different components,¹⁸² including monitoring of selective logging as well as of forest cover almost in real-time (every 15 days). Further enforcement activities include a federal campaign to identify and imprison illegal operators in the Amazon and the intensification of efforts combating deforestation in municipalities identified as ‘hotspots’ of forest clearing (through registering properties, publicizing illegal holdings, cancelling lines of credit for illegal landholders, and pressuring buyers of Amazon products) (Nepstad et al., 2009, p. 3). Throughout the ‘Arc of Deforestation’, the police and army have been mobilised to carry out control operations (May & Millikan, 2010). The “Environmental Crimes” law of 1998 provided courts with greater powers. This reduced the build-

¹⁷⁹ <http://news.bbc.co.uk/2/hi/americas/7774895.stm>

¹⁸⁰ 50% forest cover are allowed within zones of agricultural consolidation or if landholders have compensated their forest shortfall, e.g. by implementing land-use zoning plans (Nepstad et al., 2009: 21).

¹⁸¹ Resolution 3545 des National Monetary Council

¹⁸² such as “DETER” (Near Real Time Deforestation Detection), “DETEX” (Forest Exploitation Detection System) and “PRODES” (Annual Deforestation Rate Assessment).

up of court cases that previously led to many processes on illegal occupation of land and illegal deforestation from ending without penalization (Nepstad et al., 2009, p. 22).

Another factor contributing to decreased deforestation is the expansion of *protected areas* (PAs). Since 2005, the network of PAs in the Amazon grew from 1.26 to 1.82 million square km. Among the different types of reserves, those prevail that enable the sustainable management of natural resources, both in national forests and on indigenous lands.¹⁸³ Since 2005, PAs have increasingly been established in zones of frontier expansion rather than in the remote areas targeted earlier which were much less threatened by illegal land speculation, logging and deforestation (Nepstad et al., 2009, p. 3; 22). Presently, however, the government struggles to provide the capacity to effectively implement the PAs. In addition, with land tenure disputes frequently remaining unresolved and forest economies having limited capability of providing for the livelihoods of reserve residents, reserves continue to be under pressure from both outside interests bent on exploiting their forest resources and from the land use and extractive activities of residents (ibid).

In the agricultural marketplace, several effective measures have been introduced too: in the wake of a Greenpeace campaign, the Soy processing and trading industry in 2006 announced a moratorium on buying soybeans grown on newly deforested land. The soy moratorium was extended to 2013 and is held to be effective: only 0.4% of soybeans are estimated to be grown on land recently cleared.¹⁸⁴ A similar beef moratorium was launched in 2009. At the international level, various industry and multi-stakeholder initiatives have emerged such as the “Roundtable for Sustainable Palm Oil” and the “Roundtable for Responsible Soy”, the “Roundtable for Sustainable Biofuels” and the “Better Sugar Cane Initiative” aiming at developing environmental certification systems. In the case of the two first-mentioned initiatives, products grown on recently cleared lands are excluded from certification (Nepstad et al., 2009, p. 5).

Conclusions

Supported (at least temporarily) by market trends, Brazil has managed to alter the nation’s system of norms and incentives in favour of slowing down deforestation. How successful the reforms will be in the medium or long run is difficult to determine, especially with a view to future price developments of agricultural commodities. Also, the reforms are by no means uncontested within Brazil, and while they were adopted, a number of policies are in place that have (de facto or potentially) countervailing effects. These range from the persistence of rural credit programmes stimulating deforestation (especially for cattle ranching) via large-scale infrastructure projects (hydroelectric dams, transportation corridors etc.) to attempts to undermine the Brazilian Forest code and other environmental legislation (May & Millikan, 2010, pp. 10–13). The latter include, among others, an initiative (Law 11 952/2009) aiming to regularize the land claims of small to medium squatters who occupied public lands in the Amazon region in ‘good faith’, thus *post hoc* legitimizing forest clearances. For the recent successes of countering deforestation in Brazil to continue, it is crucial to remove such perverse incentives.

¹⁸³ Protected Areas, which make up 40.3% of the land in the Amazon, encompass indigenous lands (21.7%), sustainable use areas (10.8%) and exclusively protected areas (7.8%) (Rica et al., 2011).

¹⁸⁴ <http://www.dw.de/brazil-to-take-soy-lead-with-respect-for-rainforest/a-16547231>

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3.4.2 Mother Earth Law: A solution for deforestation in Bolivia?

Bolivia, one of the poorest and most loosely-regulated Amazon countries, has substantial rainforest cover in its lowland areas: the Bolivian Amazon covers approximately 59.6 million hectares and roughly two-thirds of this area is forested. About half of Bolivia's forest cover consists of primary forest, which is the most biodiverse and carbon-dense form of forest. Up until the early 1990s, the country had a low deforestation rate of about 0.2% annually, due to several factors including the extreme poverty of the country (the government could not afford to offer subsidies to forest developers or construct infrastructure). Furthermore, without any access to the sea the country has to cope with weaknesses in their export markets (Mongabay 2006).

However during the 1990s, Bolivia's deforestation rate more than doubled to 270,400 hectares per year and gradually increased ever since. To put these numbers in perspective: in only two decades (1990-2010), Bolivia lost 8.9% of its forest cover and ranks in the top ten of countries with the highest deforestation rate per capita (FAO 2010). The government granted some 20 million hectares to timber companies, while large swaths of forest were cleared for soybean and coca cultivation. Other drivers for deforestation include oil and gas development, subsistence agriculture, “fuelwood”-collection and land-clearing for cattle pasture (Mongabay 2006).

During the past two decades, the government of Bolivia has reformed national laws and developed programmes to promote sustainable forest management. The most important laws which influence land management are:

- The Land Law (No. 1715; revised in 1996), which includes the development of land use plans at department and municipal levels, with the intention of promoting sustainable land and forest management and preventing deforestation in lands unsuitable for agriculture. It introduced a process of land regularization (“saneamiento”) aimed at

granting land titles based on the verification of the social and economic function of the land (“Función Económica Social”) (Müller et al. 2013);

- The Forest Law and its corresponding legislation, along with specific regulations for undertaking sustainable forest management, introduced land use plans at the property level (Plan de Ordenamiento Predial, POP) aimed at defining suitable areas for agricultural production based on the agro-ecological conditions of the land. Any landholding with a size larger than 50 ha is required to obtain an approved POP in order to secure permits for clear cutting (Müller et al. 2013);
- The Environmental Law, which aims to protect and conserve the environment and natural resources; and
- The Mother Earth Law, which aims to protect the environment and promote the sustainable use of resources and ecosystems, especially forests.

The above mentioned Land Law and Forest Law have had relatively poor outcomes in practice due to both design shortcomings and implementation failures, which in turn contributed to the persistence of insecure land tenure and in some cases misrepresentation of the laws to justify inappropriate forest clearing instead of regulating agricultural expansion (Conservation International 2013). Due to weak enforcement capacities, more than 80% of deforestation took place without landholders fulfilling legal requirements (Müller et al. 2013).

This case study is more closely looking at the two recently implemented laws, the so-called „Mother Earth Law“ and the subsequently passed „Ley 337“, examining its strengths and weaknesses and giving an estimate of the law’s chances of halting the positive trend in deforestation and thus bringing Bolivia on a path to sustainable land- and forest management.

The Mother Earth Law¹⁸⁵ - the first of its kind worldwide - aims to encourage a major shift in attitudes towards conservation and to reduce pollution and exploitation of natural resources, especially forests. It is part of a complete restructuring of the Bolivian legal system following a change of constitution in 2009 and has been heavily influenced by a resurgent indigenous Andean spiritual world view which places the environment and the earth deity known as the „Pachamama“ at the center of all life (Vidal 2011). The law envisages a range of new rights established for nature including the right to life; the right to water and clean air; the right to repair livelihoods affected by human activities and the right to be free of pollution. Humans are considered equal to all other entities. “Mother Earth” is defined in Art. 3 of the law as: “The living and dynamic system formed by the indivisible community of all life systems and living things whom are interdependent, interrelated and which complement each other sharing a common destiny.” In detail: Art. 9 section 5 states the duty of public or private natural juridical persons to: “ensure the sustainable use and exploitation of Mother Earth’s components”.

While it is not yet clear how the somewhat abstract law will be interpreted by the courts and what actual protection the new rights will give to ecosystems, the Bolivian government, under president Evo Morales, is expected to establish a ministry of mother earth¹⁸⁶ and giving communities new

¹⁸⁵ See: http://f.cl.ly/items/212y0r1R0W2k2F1M021G/Mother_Earth_Law.pdf (as from 10.05.2013).

¹⁸⁶ So far such a ministry has not been established (as from 10.05.2013).

legal powers to monitor and control polluting industries, thus making industries more transparent (Vidal 2011). Article 10 of the law mentions the position of the “Ombudsman of Mother Earth”, whose role is to watch over the applicability, promotion and diffusion of, and compliance with the rights of Mother Earth established in this law.

Regulatory aspects of “Mother Earth” with regard to deforestation

In Art. 3 “Mother Earth” is considered to be sacred, as per the cosmologies of the nations of rural indigenous peoples, implying that the harmonious survival of ecosystems is more important than the exploitation of the Earth for quick enrichment of the minority. However „sacred“ may be a word that could be criticized for its religious connotations (Filgueria 2011). The Bolivian law will cause fundamental changes to the legal status of the Earth. It will grant the Earth legal personality and thus collective rights of public interest (Art. 5). Giving the Earth legal personality means that, through its representatives (“all Bolivians” in Art. 6), it can be brought in front of court to defend its rights. This could theoretically put an end to much of the legal standing issues that environmentalists come across when trying to stand in and defend nature from overexploitation and damage. To say that the Earth is of public interest is also a major shift. There are many EU and UK laws, which allow the public interest to trump over environmental concerns; the public interest not being normally defined as the well-being of the Earth community or the Earth, but determined largely by economic standards (Filgueria 2011).

However, with the mining and gas industries contributing a significant portion of Bolivia’s GDP, the state will need to be careful to balance the rights of nature with the regulation of industries. Conflicts of interests already occurred in 2011, when the Morales government got into a dispute over a road project that environmentalists saw as contradictory to the Mother Earth Law, as it would speed up resource extraction (Mark 2012). “There must be coherence between what we do and what we say,” Pablo Solon, one of the most high profile rights of nature advocates, wrote in a September 2011 letter to Morales.

Ley 337 as a subsequent law for land use regulation

Shortly after the Law of the Rights of Mother Earth went into effect, the Bolivian government approved Ley 337 in January 2013¹⁸⁷, which seeks to regulate land use in the Bolivian Amazon where deforestation for industrial agricultural production is still ongoing. The law requires landowners who illegally deforested land prior to 2011 to either reforest or establish “productive agriculture” on the land and pay reduced fines for past transgressions. The established fines per hectare are \$10 to \$60 per ha. The stated goal is to boost Bolivia's low agricultural productivity, which lags behind the rest of Latin America, and has exacerbated deforestation and been blamed for the need for occasional food imports (Mongabay 2013).

According to Bolivian government projections, the area of agricultural production in Santa Cruz Department alone will increase from 1.1 million hectares to 1.7 million ha by 2018. The measure thus aims to encourage expansion in already deforested areas and follow-up use of the land,

¹⁸⁷ See: <http://www.difusionjuridica.com.bo/leyes/ley337-13.pdf>

rather than driving new forest conversion, although it doesn't establish criteria for prioritizing areas according to best use (Mongabay 2013).

However, the effectiveness of the law is still far from certain. Administrative structures are virtually non-existent in parts of the Bolivian Amazon and therefore laws are only selectively enforced: for example a prohibition on genetically modified (GMO) soy is widely ignored and corruption is rampant. Bolivia lacks the advanced deforestation monitoring system used in neighboring Brazil to support efforts to crack down on illegal forest clearing. Its environmental police force is also understaffed and underfunded (Mongabay 2013). Further, by reducing fines for past illegal deforestation, the state is effectively forgoing potential revenue that could have been paid for law enforcement. The law isn't particularly strict about preventing farms from clearing more land because it sets a precedent of pardoning illegal land-clearing with small fines: The established fines per hectare are relatively low (\$10 to \$60 per ha) considering the profitability of the agricultural and livestock production in the region. A large majority of producers is likely to pay, formalize and produce. In the view of one conservationist, Ley 337 can be viewed as the industrial agriculture lobby's response to the Mother Earth Law, which sets a high bar for environmental protection (Mead 2013). Agribusiness is now a powerful lobby in Bolivia and in fact pushed for the new law.

Conclusions

The Law of the rights of Mother Earth constitutes a major shift in attitudes towards conservation and is groundbreaking in that it grants the Earth legal personality for the first time. Whereas in most legal cultures the land does belong to a natural or legal person, which is empowered to use it within legal frameworks, the Mother Earth law grants the Bolivian soil the status of a collective right of public interest exercised by Bolivians. It is not clear at this stage how the somewhat abstract legislation would become effective. It is also questionable how the Bolivian courts will interpret the law in specific cases.

Ley 337 implies environmental risks if not carefully implemented. It would be an incentive to future deforestation, as it can create the expectation of future pardons to illegal deforestation, especially if resources are used to promote productive use of illegally deforested land. Yet the base idea is a good one: Rather than continue to clear forests, countries need to look towards making the land that's already been cleared more productive. The old slash-and-burn model is detrimental to conservation and also very inefficient with regards to agricultural production. Better management and enforcement would facilitate both increased food production and reduction in deforestation (cf. Müller 2013). However, if the Ley 337 has the aim to deter people from further deforestation and guide a better management of cleared land, the fines must reflect the financial power of likely offenders and the enforcement of the Ley must be improved. In any case, a rather abstract regulation like the Mother Earth Law and the punishment of offenders according to the Ley 337 will not solve the reasons for further deforestation alone.

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3.4.3 Argentina: Beef production decline, soy expansion and their interrelationship

Argentina has been chosen as a case study not only because it is a huge country (eight times bigger than Germany) and an important political and economic player, but also because it has experienced profound land use changes, in particular the advance of agricultural land towards marginal land and forests, as well as a process of rural migration and increasing concentration in land ownership (for details, see AP1.1, 1.4 or Sbarra & Hilbert 2011). While this is also true for other selected countries like Brazil, Argentina is special with regard to two factors. One is the important role of domestic beef production and consumption – highly relevant on greenhouse gas emissions and land use grounds. In the last years, however, land used for cattle has considerably diminished. At the same time, soy growing has considerably increased. This case study actually analyses the developments and policies of the beef and soy sectors in the last decade.

Secondly, it is Argentina's interventionist policy under the two Kirchner administrations which seems of interest in terms of land use governance.¹⁸⁸ It is characterized by an artificial devaluation of the *peso* in order to make domestic products more competitive. At the same time, lucrative export products (especially soy) are taxed to obtain a share from the gains of international trade and to use it for improving domestic consumers' purchasing power and thus encouraging new

¹⁸⁸ Nestor Kirchner was President from May 2003 until December 2007; his wife Christina Fernández de Kirchner succeeded him by winning the general elections in October 2007. Four years later she has been re-elected.

demand (see, e.g. Gallo 2012). In order to tame inflation, price controls on key goods (e.g. beef) have been introduced. The restrictions of trade and foreign investment (also in land)¹⁸⁹ have Argentina left at odds with many trade partners including the EU, US and China. While often it is itself “taken to the WTO”, Argentina also accuses others for distortion of trade – including import restrictions on Argentine beef and biodiesel.¹⁹⁰

Beef production and export restrictions

Argentina is one of the world's largest producers and consumers of beef. However, following several years of government intervention, droughts and herd liquidation, production and consumption have considerably decreased. An Argentinean now consumes, on average, 55kg per year which is still ten kilo more than in the US, but ten kilo less than as it was in 2000 (Bonsall 2012). In terms of the total number of cattle, this has fallen between 2005 and 2010 from 57 million to 48 million. The amount of beef produced has seen a decrease from 3 to 2.5 million tons (ibid.). Exports, which reached a record high in 2005 with over 600,000 tons, have particularly fallen since then to around 100,000 in the first ten months of 2012 (Meat Trade News Daily 2012). This development has a lot to do with politics.

Around 2005, inflation in general, but beef prices in particular became a key concern to the government in Argentina, where 4.5% of the average household income is spent on beef. Driven by an improved domestic purchasing power and a strong external demand, the average retail price of four popular beef cuts rose 13% in 2004 and a further 29% in 2005 (Rossi & Kagatsume 2009: 122). In order to stabilize prices in the domestic market, the Kirchner Administration(s) reacted by different forms of export restrictions.¹⁹¹ In March 2006, a rule fully suspended beef exports for six months, except for the EU-privileged “Hilton beef quota”, although this was later progressively relaxed to quantitative limits. In addition to the ban, the export tax (custom duty) rose from 5 to 15% for certain processed beef products. In the following years – also under President Christina Kirchner – government intervened further by setting caps, a complete ban after another price peak in 2010 (Gashe 2010), a rule that ranchers must sell 80% of their meat to local markets, as well as export taxing and price controls.

Instead of lower prices, the main result of government policy (together with draughts) has been a considerable decrease in cattle production since 2007 (when it had reached historic levels). Given limitations on profit-making, many cattle farmers decided to liquidate their livestock. The decrease

¹⁸⁹ A new law from 2012 defines soil as a non-renewable strategic resource, crucial for sovereignty, and limits foreign land ownership at 15% of national territory. Foreigners cannot buy more than 1000 ha in fertile areas.

¹⁹⁰ Argentina is challenging a US import ban (for sanitary reasons) on beef at the WTO. It is also challenging last year’s decision by Spain, which had been the largest market (over 50%) for Argentine biodiesel exports, to prohibit the importation of biodiesel from outside the EU. The decision is seen as a reaction from Spain to the re-nationalization of the main Argentine oil company, where Spanish company Repsol owned a majority.

¹⁹¹ WTO disciplines on export restrictions are not as clearly defined as those on imports. While price mechanisms are not prohibited at all, quantitative restrictions are in principle not allowed by GATT Art. XI, but exceptions in the agreement make the rule difficult to interpret and enforce. §2(a) makes an exception for restrictions that are “temporarily applied to prevent or relieve critical shortages of foodstuffs or other products essential to the exporting contracting party”. No definitions exist for “temporary,” “critical” or “shortage”. There has not been any successful challenge to restrictions by a foodstuff exporter (Mitra & Josling 2009). A further basis for imposing restraints is the “general exceptions” provision in Art. XX, although aimed at non-agricultural goods.

in beef supply drove prices actually rather upwards again.¹⁹² Although Argentine consumption of chicken has considerably increased in turn (Bonsall 2012), the (unintended) decrease in beef production could initially be regarded as a good thing from an ecological, at least greenhouse gas emissions perspective. The limited amount of exports and their higher prices might have had also a moderate price and consumption effect in other countries, e.g. in Russia where one third of imports came from Argentina, at least in the short term until other producer countries step in.

What has to be mentioned, however, is the considerable change of production methods in Argentina. The last ten years have seen the continuing decline of traditional cattle ranching and the growth of a feedlot system (now 40% of domestic production) where much more animals are raised on less land and where the change from grass to corn-fed can fatten animals more rapidly to slaughtering weight (Bonsall 2012). The switch to a feedlot system has been subsidized by government in hope again to lower domestic prices by increasing (stabilizing) supply (Richardson 2009). Thus, we experience an intensification and an extensification at the same time: an extensification by fewer cattle and less land used for them, and an intensification of the remaining livestock with negative consequences especially on soil.

Moreover, those who gave up cattle ranching did not necessarily leave their land but often plowed their pastures and switched to the intensive planting of more lucrative (better exportable) crops – in particular soybeans (Peck 2010; Sbarra & Hilbert 2011; see also next section).

Soybean cultivation and biofuel policy

An enormous development has taken place with the cultivation of soybeans. While they have not historically been grown (or consumed) there, Argentina saw an “explosion in soybean cultivation” (Reuters 2012) over the past two decades. It is now one of the world's major producers, its No. 3 soybean exporter and its top supplier of derivatives like soy oil and soy meal (ibid.).

A major reason for this boom has been global as well as domestic support and demand for biodiesel that is completely based on soy in Argentina. Since the late 1990s, several policy instruments have been introduced in Argentina to support liquid biofuels (see, e.g., Sbarra & Hilbert 2011). In 2001, tax exemptions were given for 10 years. In May 2006, Parliament approved a law which set the basis for a whole regulatory and promotion regime for the production and consumption of biofuels. Together with regulations, it sets out production criteria to receive tax exemptions over 15 years (only granted for production for the domestic market). It also defines a 5% blending requirement for bioethanol in petrol from 2010 on, and (raised in 2010) a 7% biodiesel requirement for diesel.¹⁹³ In 2010, Argentina’s installed capacity for soy biodiesel was 24

¹⁹² To the same prediction in a more theoretical manner came Rossie and Kagatsume (2009: 128): “restricting exports is a simple and direct way to immediately reduce consumer prices by allocating additional quantities of beef to the domestic market. However, export restrictions may entail subsequent inflationary consequences since they reduce producer income, thereby inhibiting beef production. Conversely, policy simulations revealed that when no restrictions are applied higher prices encourage producers to expand their herds. Then, given enough time to complete the biological cycle of the cattle, supply increases enough to satisfy both domestic and foreign demand and to simultaneously boost exports and bring down consumer prices”.

¹⁹³ In April 2012, the Argentine government announced that the biodiesel mandate mix would be increased by 0.5% per month to reach 10% in October. However, according to USDA (2012) information the government has not officially implemented the envisaged increase and there are doubts whether it will eventually do so.

times the capacity of 2006 (ibid.). Another law from 2006 proposed an 8% share of renewable energy sources in national electricity production within 10 years. There are no specific sustainability criteria and no provisions on advanced bioenergy (USDA 2012).

This development has had significant consequences on land use and the environment. Sbarra and Hilbert (2011) mention two main ways of territorial expansion for soy production: firstly, replacing the cultivation of other crops etc. or of cattle farming (see above); secondly, expanding the agricultural frontiers towards marginal land (made economically possible by technological improvements) or at the expense of forests. Referring to other (Spanish) studies, they note that agricultural area has gained 10 million ha in the last twenty years from other land uses, in which 2 million ha had been native forest. Soy is now cultivated on more than half of agricultural land. Its production (often GM varieties) contributes to the degradation and erosion of the soil, water contamination and the loss of the country's rich biodiversity. The question of how much a 2007 law on forest protection could prevent the worst is beyond the scope of this case study.

Some final remarks on soy production shall be made with regard to trade policy. In contrast to beef, soybeans had, for a long time, no domestic market, so until 2006 up to 99% of soy products had been exported (Richardson 2009: 237). Given today's domestic demand for biodiesel the share of exports is lower, but given great cultivation capacities Argentine exports of soy products are still significant. Their "natural" competitiveness on the international market is further strengthened by government's strategy of currency devaluation. At the same, the Kirchner Administration has considerably raised export taxes on soybeans (to 35%), soy oil and meal (32%) in 2007, so they became an important government income base (ibid.). While biodiesel as a domestically processed product enjoyed lower tax rates, the government announced in August 2012 to increase the rate also to 32% – maybe because it now prefers companies to export soy oil rather than biodiesel (USDA 2012) or in order to, like in the case of beef, reduce exports and make domestic biodiesel cheaper (Market Research 2012).

Conclusions

The case study has shown how export restrictions can lead (unintentionally here) to reduced production – in this case of cattle farming. Given its enormous emissions-causing and land-using production beforehand, this could be seen at first sight as a positive development from a sustainable land use perspective. The case study has also shown, however, that less cattle farming does not necessarily lead to an abandonment of land or an extensification of its use. Instead, the result has been intensification of remaining production and a change towards another, more attractive agricultural use. Given Argentina's and foreign biofuel policy, this new use has mainly been intensive mono-cultivation of soy beans. On a more general level, this shows that restricting (intentionally or not; by trade or another policy) one use of land can lead, without an adequate protection policy or overall strategy, to the expansion of another, less sustainable use.

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3.4.1 Cuba: Necessity the Mother of Invention?

Since the Soviet bloc fell in 1989 Cuba has functioned primarily as a self-dependent economy and remains, for the most part, completely cut off from world economic markets. Cuba's political and economic isolation post-1989 necessitated self sufficiency in food production which was achieved through non-intensive organic agriculture. Over the past two decades, Cuba has the highest food production performance in Latin America and the Caribbean and experienced an annual growth rate of 4.2 percent between 1996 to 2005, during a period where the regional average was 0 percent (Altieri 2011).

Cuba is a populous island in the Caribbean, one hundred and fifty kilometers South of the US coast. It is a communist country, with a military dictatorship. Fidel Castro has maintained power for nearly 45 years, only recently succeeded by his brother Raúl Castro. The country is extremely poor and there is a consolidated elite around Castro. However, the government is committed to social equity earning the country high marks in quality of life indicators including nutrition, education and life expectancy, complimented further with a disproportionate number of doctors and scientific professionals.¹⁹⁴

The system that existed before

Before 1989 Cuba was experiencing the ramifications of the Cold War and was deeply integrated into the socialist bloc's 'division of labour', providing raw materials, namely sugar and sugar derivatives to communist allies in exchange for oil. Crop production was sustained by imports of petroleum, which was sold to Cuba from the Soviet Union at below market prices, effectively subsidizing the Cuban economy (Rosset 1994). Cheap fuel imports in exchange for sugar exports brought about a farming system dependent on inputs of fertilizers, pesticides and machinery. The Cuban agricultural system was characterized by soviet-style state farms planted with monoculture sugarcane. In order to maximize the amount of land under production, the population was concentrated in urban areas in all Cuban provinces (Companioni et al 2001).

In sugar output, the farming system was highly productive, yet it was solely dependent on a single commodity crop for export. Industrial monoculture farming of sugarcane also led to widespread deforestation, water pollution, soil degradation and loss of biodiversity leaving some land so eroded it was abandoned and fallow (Maal-Bared 2006; Funes 2007). Under such a system of production, food and household needs were met through imports. Such a system would prove highly vulnerable to international markets (Rosset and Benjamin 1995).

Organic Agriculture Takes Hold

When the socialist bloc collapsed in 1989 Cuban imports and exports ceased to exist and the country entered a severe economic crisis. Cuba's dependence on a single crop for export and its limited trade relations with a few countries meant that imports for basic food commodities, on which the country had depended for 80% of the populations consumption, resulted in a severe

¹⁹⁴ Cuba has a 99.8% literacy rate, an infant death rate lower than some developed countries, an average life expectancy at birth of 78 years.

food crisis overnight (Warwick 2001). The “special period” started in 1989 bringing on a sudden and intense lack of food, fuel, fertilizer, chemicals and other industrial and agricultural inputs. From 1989 and continuing for five years, the population suffered from acute hunger due to sustained shortages in the food-rationing system. A nutritional study conducted in adults in 1993 found that 27% of Cuban adults had lost more than 10% of their body weight in the previous 12 months, an average loss of 5-10kg with 43% experiencing severe caloric restrictions (Molina-Esquivel et al 1998).

Out of desperation to maintain political independence and feed the population, the Cuban government rolled out decentralized agricultural policies that redistributed land from state-owned plantations to individuals and cooperatives and shifted the country from export oriented, chemical intensive monoculture to organic agriculture for domestic food consumption. The Cuban government made it a priority to get as much land as possible under cultivation. The Ministry of Agriculture dismantled all “inefficient State companies” and provided support to create 2,600 new small urban and suburban farms (Altieri et al 1999). An estimated 3 million hectares of unused state land was distributed among individuals and cooperatives (Altieri et al 1999). According to the Cuban National Statistics Office, this redistribution of land changed land ownership in Cuba dramatically. In 1989, 82% of the total area (73% of agricultural land) belonged to 365 state owned companies and in 2000 farming cooperatives of various types occupied 43% of the total area (61.3% of agriculture) (Diaz 2005). Urban populations were encouraged to grow food in every potential space including abandoned land lots, balconies, group gardens and patios.

At the onset, Cuba faced two challenges. Firstly the majority of the people at that time did not have experience farming since they had been living in urban areas and because sugarcane production had been highly mechanized without the use of widespread human labour. Secondly, most of the land was degraded from intensive production and natural climatic conditions of sandy soil without much topsoil or nutrients complicated growing.

In order to tackle these problems of inadequate knowledge and farming experience and poor environmental conditions, the national government rolled out extensive support spreading information and instructions on the one hand and natural growing stimulants or inputs on the other using existing agriculture institutions. The Cuban Organic Farming Association (ACAO) (Asociación Cubana de Agricultura Orgánica) and the National Association of Small Farmers ANAP (Asociación Nacional de Agricultores Pequeños) for instance, received interest free loans from the government to boost small-scale food production by poor farmers (Sinclair and Thompson 2007). ANAP came to have some 300,000 members for whom it provided extension services and represented in negotiations with the Cuban government on prices of agriculture products and credits (Sinclair and Thompson 2008). Some institutions focused on providing technical support, with for instance, the *Local Agriculture Innovation Programme* of the National Institute for Agricultural Scientists (INCA) taking advantage of Cuba’s inordinate number of scientists and engineers. Still today, Cuba accounts for just 2% of the Latin American population but 11% of its scientists (Altieri, Funes-Monzote and Peterson 2011). In turn, the Agroecological Farmer to Farmer Movement (Movimiento Agroecológico Campesino a Campesino, MACAC) of the National Association of Small Farmers (Asociación Nacional de Agricultores Pequeños, ANAP), focused on promoting communication and comradere by encouraging farmers to share resources and knowledge based on traditional Cuban farming methods (Rosset et al 2011). The term for farmer-to-farmer knowledge spreading has since been identified in academic circles as “peasant

pedagogy.” Thus Cuba created a system of dissemination whereby agronomists, land planners, biologists and well-regarded farmers with indigenous knowledge were allocated throughout the country providing extension services, training, and biological inputs. Indigenous knowledge was considered sacred and integrated into modern agronomic research.

To tackle the second challenge of regenerating degraded land, the Ministry of Agriculture MINAGRI set up Casa de Seimillas, which were seed houses collecting and providing diverse seed from around Cuba. These “houses” provided various biological inputs ranging from natural fertilizer to biological forms of pest management in the form of worms, insects and microorganisms. The facilities for seed houses, crop protection institutes, and knowledge centres were widespread with locations throughout the country to ensure that each was closely in touch with specific local conditions. By 2000 there were 220 crop protection institutes providing cheap and plentiful insects and microorganisms to boost soil fertility and fight plant and insect pests (Fernando 2002).

Urban Farming

With approximately three quarters of the population living in urban areas, agricultural production in and around cities was central to achieving food security. In 1994, MINAGRI’s Urban Agriculture Department made it a priority to distribute land to those individuals willing to farm (Altieri et al. The Urban Agriculture Department worked with provincial offices, or ‘Poder Popular’ to change city laws so land could be redistributed. Between 1989 and 1999 privately held land increased 257% (Febles-Gonzales et al 2011). Even privately owned land was susceptible to reclamation if it was unused for more than six months (Altieri et al 1999).

One method of urban farming was the *organoponicos* which consist of little gardens made on raised beds that are filled with nutrient rich compost. These raised bed containers were distributed in concrete or infertile lots, to balconies, patios and rooftops providing opportunities for intense vegetable production in urban settings of poor soil and asphalt. Between 1996 and 2003 the number of organoponicos grew from 1,614 covering about 250 hectares with an average yield potential of 16 kg of fresh produce per square meter (Altieri et al 1999). There were also *intensive gardens* that used existing soil and popular gardens that were operated by public garden clubs, of which there are approximately 400 registered with MINAGRI in Havana alone. There were also *enterprise factory gardens* strategically located near factories and businesses and used to feed workers and their families. Hundreds of abandoned and vacant lots that previously had been filled with debris underwent a transformation towards productive food plots and gardens.

Urban agriculture continues to be the backbone of food production for the country with urban farms supplying approximately 40-60% of all fresh vegetables consumed in the two biggest cities Havana and Villa Clara (Koont 2009).

Is the organic agriculture movement legitimate?

As the country has experienced increasing wealth over the last decade, substantial funds have been invested in biotechnological research through Cuba’s centre for Genetic Engineering and Biotechnology (CIGB). Despite the success of Cuba’s ecological agricultural movement that flourished during economic hardship, consecutive years of economic growth have generated

interest in modern farming techniques and biotechnology, including genetically modified crops (Altieri and Funes-Monzote 2012). Many of these initiatives are related to bi-lateral aid and development initiatives with Latin American partners. For instance, the “Bienvenida la soya” is a project supported by Brazilian credits and technologies. Ninety percent of the equipment is imported from Brazil and includes, large tractors, direct seeding machines and equipment for crop rotation. The project has planted over 15,000 hectares of soybean grown in rotation with Cuban transgenic maize FR-Bt1. It aims to reach 40,500 hectares in 2013 and requires an intensive pivot irrigation system (Alteri and Funes-Monzote 2012).

While the political future of Cuba remains unpredictable, the ensuing destabilization of the Castro Regime could bring about further integration of the Cuban economy with that of the world, thus influencing the country’s self sufficiency. Several studies comparing the two systems of agricultural production, intense industrial production on the one hand and organic self sufficiency on the other are ongoing. An interesting study compared the resilience of ecological and industrial agriculture during and after natural disasters in Cuba. Forty days after hurricane Ike, researchers conducting studies in Holguin and Las Tunas found that diversified ecological farms exhibited losses of 50 percent compared to 90 and 100 percent in farms growing monocultures. Agro-ecological farms also showed a faster productive recovery with ecological farms recovering productive potential of 80 to 90 percent in forty days compared to monocultures, which were completely destroyed (Altieri and Funes-Monzote 2012).

Conclusions

Cuba’s approach to food production provides important insights to communities that are not getting enough food or the right sort of food and are thus suffering from nutritional deficiencies. The Cuban case study also has important implications for countries that are low-income, facing challenges of climate change, and in lack of arable or productive land. Perhaps the most poignant fact about the Cuban case study, is that the country transformed from a situation that characterizes many nations currently—having invested to some degree in an industrialized agricultural system that is highly dependent on petroleum inputs, environmentally exhaustive, and that prioritizes monocultures for export over diverse fruits and legume products for domestic consumption.

Currently there are one billion food insecure people, the vast majority live in developing countries as subsistence farmers with limited economic support or opportunity. As the Cuban case study showed, approaches to organic farming were resilient and productive in difficult climatic and economic conditions. Most importantly the system of ecological farming depended on the widespread appreciation and use of traditional farming techniques which not only enhanced soil fertility and dealt with pests and weeds, but that empowered people with indigenous knowledge. Livelihood incomes were improved as families could supplement their earnings with self-produced food allowing household income to be spent on other necessities. Crop diversity was strong and grown for consumption, primarily fruits and legumes providing a healthy diet, devoid of food miles or chemical residues.

The size and persistence of food insecurity worldwide begs to question the dominant paradigm of agricultural production that promotes input intensive commodity crops, traded and transported over long distances for international markets. In particular, food price hikes and the resulting food

crisis have pushed the UN in particular, to reconsider small farmers and the importance of organic food production for local and regional consumption (de Schutter 2011). The Cuban case study offers an alternative approach to improve national food security in resource and revenue poor countries. The ecological farming approach is important to consider in light of emerging environmental issues of desertification, water insecurity, soil degradation and limited arable land. It is equally important in relation to economic issues in a time period of economic uncertainty and stagnated growth and social issues of food security and rural poverty.

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3.5 Africa

3.5.1 Pastoralism and land governance in Kenya

Kenya is one of the poorest countries in the world, ranked 145th out of 186 countries in the Human Development Index in 2012 (UNDP 2013). Approximately 10 million people suffer from chronic food insecurity and around two million people rely on food assistance at any given time. Around a third of the entire population is regarded as undernourished.¹⁹⁵ The vast majority of the population, 71%, relies on agriculture and/or livestock production for their livelihoods and thereby represents a common example for African countries. However, land rights and distribution are highly uneven. Despite that women make up 50.5% of the population, less than 5% have land titles. Small-holder farmers occupy just 6% of Kenya's landmass, yet account for 70% of national crop production (FIAN 2010). The vast majority of Kenya's land is semi-arid desert and hot temperatures and drought make it inhospitable for settled cultivation, but it is used seasonally by nomadic pastoralists with cattle that make up 20% of the population. Pastoralism in Kenya is responsible for roughly 50% of the national livestock production and contributes 10% of the annual GDP (Oxfam 2008).

Pastoralism under threat

A conflict in Kenya has arisen whereby the government driven privatization of land – both by Kenyan agrarian settlers and by foreign companies – is making the pastoralist way of life unviable. The government strategy is anchored in macro-economic principles and views agricultural production by small-scale farmers and the sale of large pieces of land to foreign investors as key elements of the country's economic development. However, this will inevitably lead to the eventual decline and disappearance of nomadic pastoralists who depend on freedom of movement and customary land law. Despite that the government is moving towards crop agriculture, development groups such as USAID and FAO programs have identified pastoralists' cattle raising as an economic and productive use of Kenya's drylands and as a potential answer to averting future food crises (see USAID 2013).

¹⁹⁵ For more information see: <http://www.countrystat.org/home.aspx?c=KEN&p=ke>

Land Privatization- Two Tiers

The pastoralist lifestyle has been under threat since the Colonial era when the then government was able to appropriate under-utilized land through the Crown Lands Ordinance of 1902 leading to a trend in the 1940s and 50s whereby large tracts of pastoral grazing land were excised to form National Parks and Reserves from which pastoralist communities were denied access. Since the Colonial era the government of Kenya has continued to move towards the privatization of land first through patronage networks of corrupt executives and more recently through formal policies with the 2009 New Land Policy, the 2010 Constitution and the “Vision 2030”.

Privatization is occurring on two scales, first the promotion of crop production by Kenyans operating on small scale farms in fertile areas and the second being industrial commodity crop agriculture, mainly promoted through large scale land acquisitions by both domestic and foreign corporations. The Policy agenda for “Vision 2030” does embrace the large-scale sale of Kenyan land to foreign investors as key to economic growth and development (KHRC 2010). In contrast, the 2009 New Land Policy (NLP) and the renewed Constitution in 2010 prioritize the decentralization of land ownership through privatization to individuals, with a distinct aim to correct the “historical injustices” that have made land-use and ownership the most controversial issue in the country for the past century (KHRC 2010). The 2009 New Land Policy’s agenda distinctly prioritizes individual property ownership over customary land tenure systems (FIAN 2010), and aims to re-dress long-standing issues such as inadequate participation by communities in government and management of land and natural resources, gross disparities in land ownership and the exclusion of women.

According to the NLP, all land acquisitions must be made public and land bought by foreign investors must comply with environmental standards as well as prioritize local citizens. Finally, the NLP reduced land leases from 999 years as they were in Colonial times to 99 years. Despite these measures, two recent plans for land-use in the Tana Delta—the land agreement between Qatar and Kenya for 40,000 hectares and plans of two Kenyan companies to build a massive sugar plantation—both illustrate that despite the policy provisions, the common practice runs contrary.

The Tana River District

Tana River District is located on the Eastern coast of Kenya and is one of seven districts with a population of 200,000 people. There are several indigenous ethnic groups living in the region but the two main ones are the Pokomo (Bantu/farmers) and the Orma and Wardei (Cushitic/pastoralists). The Bantu have settled on the shores of the Tana River farming crops on small plots of land while the Orma and Wardei occupy the hinterland, a dry and arid desert that can only support nomadic cattle rearing for parts of the year. During the long dry season (7 months of the year), approximately 2,000 Orma and Wardei pastoralists bring some 350,000 cattle down to the Tanu River Delta to graze on the fertile land and only return to the arid hinterland when the rainy season begins (Kay 2012). Conflicts between the pastoralists and settlers are increasingly common as the fertile delta is essential to both the settled agrarian life of the Pokomo and the nomadic one of the Orma and Wardei.

While national policies such as the Constitution and the NLP emphasize transparency and public participation in land deals, several ventures that threaten both pastoral and settled Kenyan life have been planned for the Delta region. In a private deal between two heads of state, the Kenya

traded 40,000 hectares of land to Qatar to grow food for export in exchange for a USD 2.5 Billion loan which would tentatively be used to build a second deep water port. The 2008 deal stirred up a lot of controversy as it occurred in 2008 the same time at which Kenya experienced massive food security crisis from price hikes on international markets and extreme drought and failed harvests (FAO/IFAD/IIED 2009). As of 2013, the deal remains in the planning stage.

A second venture between Mumias Sugar Company Ltd, the largest sugar company in Kenya, and the state-run Tana Athi River Development Authority (TARDA) sees 20,000 hectares of the Delta planted with monoculture sugarcane (for table sugar and agrofuels). TARDA was also allocated 40,000 hectares for maize and rice although they failed to produce any food in the first two years (FIAN 2010). In a bilateral agreement with Canada, the Bedford plan will grow *Jatropha curcus*, a biofuel crop on 10,000 ha of land as part of a “pilot project”. A UK based company called G4 Industries Limited had also planned to grow oil seed crops on 28,000 hectares, but have withdrawn their proposal because of environmental complications (RSPB 2013).

The Tana delta is a complex and sensitive wetland ecosystem and extensive monoculture crops will change the landscape dramatically, yet Kenya’s National Environment Management Authority (NEMA) has approved these projects which amount to an area of over 110,000 ha to become intensively and industrially farmed for food and biofuel products (RSPB 2013).

For the settlers and pastoralists, these land grabs pose serious threats. Most of the land in the Tana Delta is trust land and the settled agricultural communities operating on the shorelines do not have formal rights despite that they have been using it for centuries—neither do the pastoralists. In fact, agrarian settlements are called “squatters” by state authorities. As a result, the Tana Delta remains especially vulnerable to “land grabs” to which the Kenyan government is complicit despite the political principles it outlined in its NLP and Constitution.

Making the most of semi-arid land in relation to food security

Keeping in mind that hunger and malnutrition have spread rampantly across the Horn of Africa in the last decade, a study by the International Livestock Research Institute (ILRI) (2011) on Kenya’s response to the 2008/2009 drought argues that development investment aimed at increasing the mobility of livestock herders is the most economic and productive use of Kenya’s semi-arid dry lands that constitute 80% of the country’s land mass. An ecologist, Jan de Leeuw at ILRI explains:

“Drylands in the Horn of Africa are too large to ignore. With only 20% of Kenya’s land suitable for arable crop production, and with an expanding population, the country cannot continue ignoring these dry areas without hurting people’s food production and livelihoods. Some of the worst impacts of drought can be avoided if the region’s dryland livestock systems are well regulated.” (ILRI 2011)

Thus, instead of pushing for the agricultural development of the remaining 14% of arable land, development could also focus on fostering a supportive system for cattle rearing pastoralists. Pastoralists interviewed in the 2011 ILRI study explained that a major obstacle to their lifestyle was a lack of freedom to move their herds, caused by poor infrastructure (roads, markets and slaughter facilities), land conflicts and demographic pressures between nomadic and settled peoples. For instance, one recurring problem is de-stocking which occurs during droughts when people are forced to sell off their animals when they can no longer feed and water them, or the

animals simply die of starvation and dehydration before reaching markets (ILRI 2011). When this happens, herders lose their entire wealth and potentially end up moving to urban areas for precarious work. A functional livestock market that had political support could organise disaster relief support during droughts and by organizing on-sight slaughter paying herders for the fresh meat. Since droughts coincide with famine this could perhaps limit food aid imports and improve local economies.

Conclusion

This case study shows the enormous weaknesses current land governance is facing in many developing countries. While good intentions towards improving land ownership for farmers could be observed in the Kenyan New Land Policy, it lacks a clear backing with legitimate tenure rights (and its enforcement) and a link to the insurance of human rights (including the right for food) . It seems that changing land titles and promoting further privatization of land has created confusion and further solidification of uneven land distribution rather than providing more secure land access to pastoralists, who are the majority of land users in semi-arid areas in Kenya.

A better alignment of land policy reforms to tenure rights would also avoid the most severe impacts from land acquisitions. While the Kenyan strategy to focus on large-scale investments in agriculture for further economic development is debatable in itself, it definitely contradicts a policy, which sees its priority to ensure food security for the majority of people, including indigenous peoples.

Kenya is therefore a good example, where the consideration of the Voluntary Guidelines on the Responsible Governance of Tenure into national legislation could substantially improve the situation for local communities and land users and, by doing so, can improve food security. Responsible governance, as it is outlined by the Voluntary guidelines, ensures that policies and rules result in equitable and secure access to land, fisheries and forests, which is far from being realized in Kenya so far.

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3.5.2 Recultivating the desert in Niger and Burkina Faso

Sahelian farmers in Niger and Burkina Faso have developed a unique approach food production with agro-forestry to better manage soil and water deficiencies. Using ancient techniques to regenerate land, farmers are able to grow food and trees in one of the world's most inhospitable climates—the Sahara desert.

The regeneration of desert started in the 1970s and was brought about by a handful of determined farmers. In Niger, planting trees has improved 5 million hectares of land and increased crop productivity with 500,000 additional tons of food per year produced from agro-forestry. In Burkina Faso, farmers using a combination of agroforestry, water, and soil management practices have successfully regenerated 200-300 thousand hectares producing up to 80,000 tons of additional food for the region per year and supporting some 500,000 people (Reij, Tappan and Smale 2009).

Living in the Sahel: A history of drought

In the dusty and dry Sahel, history and time is recorded in relation to the most intense droughts and famines. In the 1960s and 1970s, droughts were successive and led to a famine that killed close to one million people (Agnew & Chapell 1999). It has been observed that during times of drought and human desperation, populations cut down trees in attempt to garner any extra income (Ramaswamy & Sanders 1992). As a result, deforestation has taken place continually but more intensely during years of drought. Recognition of this trend led some farmers in the 1970s to begin re-planting trees in areas where they had been felled. As a result, tree cover has steadily increased, particularly since the 1990s thereby bringing about one of the few examples of a region or country experiencing the expanse of tree cover and population growth simultaneously (Eklundh & Olsson 2003).

Despite these re-greening efforts the region remains inhospitable for intensive farming, and rainwater shortages are frequent. Desertification is a constant threat to the populations of Burkina Faso and Niger, which are predominately rural and made up of subsistent farmers on small plots of land. A severe drought in 2010 followed by limited rainfall in 2011, killed tens of thousands of people and drove large human migrations of environmental refugees to neighboring Kenya and

Ethiopia (World Bank 2012). Agro-forestry is a promising opportunity to improve rural Sahelian's cultivation of food and maintain a unique culture of desert livelihoods.

Greening Takes Hold: Techniques for desert farming

Using a combination of several ancient techniques for farming in dry and arid climates, farmers are successfully growing trees and crops in the desert on formally barren and crusted soils. One technique implemented in the 1980s and still used today, is called *cordons pierreux* and involves laying stones in long lines on the soil surface. The placement of stones in the soil prevents water run-off and helps water infiltrate the soil. This technique has helped farmers plan water use around limited water resources. In the 1980s, the British development NGO, Oxfam provided important funding for the implementation of stone contour bunds. The technology cost 6\$ and could be taught to farmers with no reading or writing skills in one to two days (Reij, Tappan & Smale 2009).

Another technique used was called *zai*, which are holes one foot deep in the ground that are dug in high succession during the dry season. The holes or *zai*, hold water and concentrate nutrients thereby preventing run-off. The manure attracts termites that burrow, eat, and excrete organic matter improving water infiltration and retention and enhancing the organic matter. The pits helped farmers raise productivity from fallow land, thus from zero production to 300-400 kg per hectare in a year with low rainfall and as much as 1,500 in a year of good rainfall (Reij, Tappan & Smale 2009).

In addition to these two techniques was an agricultural approach called Farmer Managed Natural Regeneration (FMNR), which was a low-cost, sustainable land restoration technique introduced by an Australian missionary working in Burkina Faso named Tony Rinaud. FMNR is an approach that plants and harvests trees and food crops in an integrated manner. Planting trees improves the cultivation of food crops by improving water filtration and soil quality. Leaves, bark and branches also provide farming families with additional products that can boost their income. Despite being a foreigner, Mr. Rinaud had a genuine following from his missionary work and provided the initial support to families willing to adopt the FMNR approach. For instance, in years of poor harvest he provided food to struggling families so they would not seek the short-term benefits of harvesting their trees.

FMNR starts with a barren piece of land and carefully cultivates remaining tree roots below the surface. Interestingly, some land that appears to be desert actually has sub-surface roots of living trees. In a first step of FMNR, the farmer selects tree species that he or she desires to grow based on personal interest and objective. By harvesting different species of trees, a farmer can for instance harvest trees primarily for medicinal qualities whose products can be sold, or harvest fast growing trees with branches that can be sold for firewood—or both. Importantly, farming trees depends on the maintenance of the tree itself, thus not chopping it down completely, but instead using it for its various provisions over the long term and benefiting from the soil and water filtration qualities. In the Sahel where high temperatures and direct sunlight often kill plants, trees are an important source of shade and improved water sequestration. Trees also help secure top soil from blowing away during dry spells and high wind (Reij, Tappan & Smale 2009).

FMNR, therefore, provided farmers with food, fodder for animals, and extra income from the sale of branches and medicinal products from the bark, sap and leaves. On-farm fodder also meant that farmers could keep animals on the farm for longer parts of the year, which in turn allowed

them to more effectively fertilize their fields using animal manure. Without artificial inputs, loans, or contracts, farmers were independent and could operate their own production of diverse tree and crop species depending on their interests and objectives.

Cultivating different tree species alongside diverse food crops led to multiple benefits. Different trees yielded different resources, with some producing tamarind, manila, raisinier, and custard apple. The trees provided invaluable medicinal products whose properties and use had been developed over centuries by locals. There were shea seeds used as a skin moisturizer, neem leaves an effective mosquito repellent, manila bark for malaria rheumatism and neem oil for acne and contraception, tamarind for jaundice, boils and hemorrhages. Farmers were able to use these products in their households and sell and trade them in local and regional markets providing an important source of extra income. For rural populations in particular, extra income is crucial for economic viability. When food production is only enough for self-subsistence, other household goods must be purchased from earned income, for which trees offer multiple possibilities.

Agro-forestry also had an important impact on gender equality. Women in Sub-Saharan Africa spend on average two and half hours a day searching for firewood. Not only is on-farm productivity limited by their absence, but often girls cannot afford the time for education. Thus, simply having more access to firewood increased the amount of time women and children had to farm crops and undertake other activities. Since the trees also provided important extra income women who were culturally responsible for the harvest and sale of products such as bark, branches and medicine specifically benefitted from being able to sell these items. As a result, women practicing agro-forestry were found to have a stronger economic position and were better able to feed their families from a diverse diet (Atampugre 1993).

Successful implementation through individual action

It is important to note that these techniques were promoted by a select number of individuals that helped disseminate their widespread use in parts of Burkina Faso and Niger. The FMNR approach for instance was propelled forward by Tony Rinaud who taught communities how to grow trees and food crops simultaneously. He also provided support in the form of food aid during times of extreme scarcity to prevent farmers from cutting down their trees and obliterating the possibility of harvests in the seasons and years to come.

In the case of Zai, individuals were also instrumental. Yacouba Sawadogo from Burkina Faso began organizing workshops and trainings in 1984 with other farmers in the region promoting planting pits or zai.¹⁹⁶ His work planting trees over the course of two decades resulted in his personal rehabilitation of 14 hectares. His work attracted the attention of other individuals locally and in 1992 a farmer named Oussen Zorome began a “zai school.” The zai school held training classes for farmers and set up land rehabilitation on nearby roads heading towards the capital city in Burkina Faso, Ouagadougou that facilitated transport to market. The success of the roadside pits was recognized by the Ministry of Agriculture which then offered to provide financial support for the

¹⁹⁶ Wikipedia page of Yacouba Sawadogo: http://en.wikipedia.org/wiki/Yacouba_Sawadogo

program to be disseminated to 20 schools around the country. The Zai Schools now has some 1,000 graduates from across the country.

Conclusions

The foremost lesson from this case study is the importance of entrepreneurial individuals that work closely with local people in a participatory way. In the case of Burkina Faso, these individuals were central to spreading ideas and convincing other farmers to take a risk, try a new technique and go against convention. It goes to show that with direct support and guidance, such risk taking at the level of a small farmer is much more likely to yield successful outcomes. From a policy perspective, it is important to acknowledge the value of specific individuals and the programs they initiate. One way to help promote such networks, would be to align national agricultural development projects with local developments already underway. Ensuring that farmers maintain and have access to land is important here. Moreover, agro forestry presents itself as the most sustainable and productive use of semi-desert land. It manages the climatic conditions of rain variability and helps prevent desertification. Ensuring that agro-forestry and other techniques that maintain the productivity of desert areas, requires careful land and water governance. The large-scale land acquisitions currently underway illustrative of large-scale production projects that are often ill-suited to local circumstances, cultures and realities.

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3.6 Asia

3.6.1 India: Afforestation and reforestation

India's forest cover is relatively low with an estimated 68 million hectares, or 23% of the country's area. The per capita availability of forest land in India is one of the lowest in the world, with only 0.08 ha, against an average of 0.5 ha for developing countries and 0.64 ha for the world.

Nonetheless, India is one of the few countries worldwide in which a net-growth of forest cover can be observed: Between 1990 and 2000 India's forested area gained 0.22% annually, between 2000 and 2010 the rate increased to 0.46% (FAO, 2010). However, in qualitative terms, the dense forest in almost all the major states has been reduced. Only 22.9% of total forest cover is classified as primary forest (found mostly in hilly tracts), which is the most biodiverse and carbon-dense form of forest.

This case study summarizes existing literature in order to explain India's net-growth in forest cover in recent years, looking above all at national policies which contributed to this development. In closing, the potentially negative socio-ecological impacts of secondary forests – in particular plantations – are critically examined.

Deforestation and reforestation in India

We will set out by briefly accounting for the main drivers of deforestation and reforestation in India in the past decades. These are transfers of forest lands to other land uses such as infrastructure projects, coal and iron mining, or industrial requirements. Other factors include the expansion of cities and towns and the encroachment on forest lands for agriculture and grazing. India is the world's largest consumer of fuelwood. The country's consumption of fuelwood is about five times higher than what can be sustainably removed from forests, however a large percentage of this fuelwood is grown and managed outside forests (FAO 2002).

The state takeover of forests for commercial timber exploitation during the colonial period, the resulting alienation of local community rights, and the overexploitation of forest products from limited areas accessible to the community were key factors in the large-scale formation of secondary forests, which account for 45,8% of the forest area (Bhat et al., 2001). Plantations currently account for 15% (10 Mio ha) of forested land, and of these 13% predominantly consist of non-native species (FAO, 2010).

Policies and governance mechanisms to stimulate afforestation and reforestation

Forest policies: An early effort to stimulate afforestation and reforestation was made with the "Social Forestry Programme" in 1980. The program originated from the 1976 report of the National Commission of Agriculture, which recommended growing trees on lands accessible to village people in order to reduce the pressures on forests brought about by mounting rural demands for fuel, grazing and other forest products. This was to be achieved by encouraging the growing of trees by farmers on their land, and by block plantings on various categories of public land (Arnold 1990). Although it is one of the largest afforestation programmes in the world, it has not fully met its objectives (Bhat et al., 2001). This is explained by the fact that it favored market-oriented farmers rather than helping the rural poor to meet their subsistence biomass needs. As a consequence, the natural forests continued to be disturbed by the collection of fuelwood (ibid).

Starting in 1980 with the "Forest Conservation Act", deforestation for infrastructure projects had to be compensated with afforestation on another site (the same extent in the case of non-forested area and double the extent in case of planting on degraded forest sites) (Ravindranath, Chaturvedi, & Murthy, 2008). Following a 2008 Bill, a "Compensatory Afforestation Fund" was created to receive the money collected as compensation for the diverted forest land. The money is

to be used for the development, maintenance and protection of forests and wildlife, and the “Green India” programme.¹⁹⁷

An important policy was introduced in 1988, which acted as the foundation of subsequent resolutions: The “National Forest Policy” requires that forests are not to be commercially exploited for industries, but are to conserve soil and environment, and meet the subsistence requirements of local people (Saxena, 1997). This new forest policy is radically different from the two previous forest policies dating of 1952 and 1976, in that it gives higher priority to environmental stability than to earning revenue. The focus has shifted from commerce and investment to ecology and satisfying minimum needs of the people, providing fuelwood and fodder, and strengthening the tribal-forest linkages. The stated goal is to bring one third of the country as well as two thirds of mountainous regions under „Forest and Tree cover“ (FTC), in order to ensure the enhanced availability of ecosystem services. It also discourages monocultures and favors mixed forests. In order to fulfill the goals, the responsible Planning Commission, in the Tenth Five Year Plan document, has set monitorable targets. As the FAO notes, the FTC goals are considered extraordinary because they mean adding another 31.5 million hectares and in particular because “most of the proposed increase has to come from outside the area officially recorded as forest, where competing demands to use the land for expansion of farms and infrastructure are already high” (FAO, 2010b, p. 40). However, the 1988 goals were reconfirmed by the “National Environment Policy” (2006) and a range of reforms and programmes have been initiated in various sectors to implement it. These include involving local government (village Panchayat)¹⁹⁸ in afforestation, making tree planting a priority under the National Rural Employment Guarantee Programme (see below), and putting in place a “Green India” Mission in the national climate policy (see below).

With the new National Forest Policy in place, India has been implementing a large “Joint Forest Management” (JFM) programme since 1990. As of 2003, 17.22 Mio ha of forests were being managed through 84,642 JFM committees in 27 states (Ravindranath, 2004). The areas concerned are usually degraded or even deforested areas. The implementation of the resolution enabled the Forest Departments to involve people in the management of forests in a meaningful way. Even before 1990, some circulars from the Indian government had referred to “participation”. However, this was understood as getting people to agree to and go along with a project which had already been designed for them. The policy document asserts that local communities should be motivated to identify themselves with the development and protection of the forests from which they derive benefits. Thus, the policy envisages a process of joint management of forests by the state governments (which have nominal responsibility) and local communities, which share both the responsibility for managing the resource and the benefits that emerge from this management. A 2004 study (Ravindranath, 2004) surveyed JFM committees (JFMCs) in six states: 29% of the committees responded that the overall performance and impact of JFMCs was good, 49% rated it as moderate, while the remaining 22% could not definitely say or did not perceive any change compared to pre-JFM times (Ravindranath, 2004). The institutionalization of JFM across the country has been uneven (Government of India, 2006: 22). The extent to which forest was

¹⁹⁷ <http://www.prsindia.org/billtrack/the-compensatory-afforestation-fund-bill-2008-111/>

¹⁹⁸ Panchayati Raj Act, 1992, and Panchayat (Extension to the Scheduled Areas) Act, 1996.

regenerated due to people's participation in JFM or due to afforestation by governments is unclear (ibid: 18).

The "National Afforestation Programme" (NAP), implemented by the Ministry of Environment and Forests in 2002, aims to support and accelerate the ongoing process of devolving forest protection, management and development functions to decentralized institutions of Joint Forest Management Committee (JFMC) at the village level, and Forest Development Agency (FDA) at the forest division level. The NAP replaces four earlier afforestation schemes that were governed centrally at federal level. The overall objective of the scheme is to develop the forest resources with people's participation, with focus on improvement in livelihoods of the poor. With a view to increasing the efficiency of NAP, the monitoring and evaluation exercise of projects is undertaken both by the state and central governments. In 2009, the programme's operational guidelines were being revised to further decentralize the project cycle management of the scheme with a view to expedite fund transfer to the village-level implementing organizations, that is the Joint Forest Management Committees (JFMCs) and Eco-development Committees (EDCs).

When looking at *land tenure policies*, political will in India in favour of creating communal tenures has been rather weak in the past (Saxena, 1997). Land settlements carried out in the last 40 years have recognized communal tenure only in the north-east Indian states. Nonetheless, the Indian political system has been generally resilient and responsive to public opinion, probably because deforestation and land degradation weaken the state overall, whereas land rehabilitation policies make people depend more on the state authority, and thus strengthen it (ibid).

Climate policies: As part of India's "National Action Plan on Climate Change", a national programme for a "Green India" was put in place with the overarching objective to increase forest and tree cover in 5 million ha and improve the quality of forest cover in another 5 million ha. Forestry projects under the UNFCCC's Clean Development Mechanism (CDM) play a certain role, too, with presently eight A/R projects being implemented in India (UNFCCC, 2013). These range from rather small-scale agroforestry and cooperative afforestation projects to large-scale A/R projects of degraded lands and of land currently under agricultural use. Of the total of 45 A/R-CDM projects worldwide, India is the country implementing the greatest number of projects (ibid).

Employment policy: The recently introduced "Mahatma Gandhi National Rural Employment Guarantee Act" (2005) lowers labor costs for national afforestation projects by offering a limited job-guarantee with subsistence wages in plantation projects to the unemployed in rural areas.

Conclusions

Up to the 1980s, forest management strategies were distinctly biased in favour of commercial and industrial interests, with little attention paid to sustainability or social justice. However, in the last decades, as the forestry debate has intensified, the state has increasingly responded to the claims of forest dwellers voiced by activists and NGOs. The rehabilitation of degraded secondary forests and the afforestation of secondary forests by communities through Joint Forest Management by governments and communities, as well as through policies to reduce dependence on fuelwood, have contributed to the stabilisation of forest cover (Bhat et al., 2001).

The most pressing social and ecological risks linked with secondary forests are the risks of industrial plantations. Firstly, plantations can lead to the dispossessing of local communities of

their land and livelihoods. These risks are likely to be most serious where land conflicts are endemic and rural land tenure is unclear and overlapping, a situation that prevails in many timber-rich regions. Secondly, environmental concerns relate to extensive blocks of plantations. Reviews and empirical literature on afforestation and reforestation programmes worldwide highlight that A/R can have both positive and negative ecosystem impacts (e.g., Murdiyarso, 2004; SCBD, 2003, p. 58). They can help to restore forest areas, protect watersheds and biodiversity, support the return or survival of native plant and animal populations, reduce pressures on natural forests (as sources of forest products), etc. – but only under certain conditions, such as the use of natural regeneration and native species, minimization of chemical use, and environmentally-sensitive foresting techniques and management practices. On the downside, A/R can disturb natural ecosystems, intensify land-use, promote the clearing of existing natural forests while introducing large-scale mono-cultural plantations with exotic or genetically modified species, increase erosion, reduce underground water supply, and degrade soils and water quality through fertilizer use.

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3.7 Oceania

3.7.1 Mining Agreements in Australia

The locations of mining have moved from the developed economies (in 18th Century) to the emerging economies in the 1920s with a steady increase of mining activities for example in Australia, Chile, Brazil China or Russia (ICMM 2012). The reason for this rise of mining activities in emerging economies is the depletion of easy accessible mineral deposits in the developed economies. Another reason is large investments in the emerging economies in the past. An important change of the industry that took place in 20th century is a shift from underground to open pit mining techniques (ICMM 2012). The later development going hand in hand with an improvement of greater efficiency of rock drilling capacity, which sharply increased since the 1960ies and which allows to mine ores of declining grades and more complex mineralogy without increasing costs (ICMM 2012).

Today, Australia is one of the most important mining countries in terms of mineral production in the world with large shares in iron and coal (ICMM 2012). Besides mining regulations at state and federal level there is long experience in Australia having started in 1950ies with the use of mining agreements (in the following MA) for many large scale mineral and energy projects. The mining projects for which MA were established generally involve large scale mining operations with a considerable impact on the environment (Fitzgerald 2012). The share of open pit mining in the main mining areas worldwide is, with some exceptions, more than 75% (ICMM 2012). Especially open pit mining has severe impacts on the environment. For example open cut strip coal mines can extend for several square kilometers. Impacts on the environment in general and on the soil especially are caused by the open pit itself (e.g. the clearance of the vegetation, stripping of topsoil and stockpiling, etc.) but also the construction of the necessary infrastructure due to the remoteness of many projects.

Inevitably the development described above leads to increased consumption of land and the question what sustainable mining could look like or how sustainability standards can be incorporated in mining activities.

There are basically two ways to establish environmental standards in mining activities, either by prescriptive general legislation or by non-prescriptive contractual agreements. While general rules provide absolute standards, which are set by the relevant government departments and which must be met at all times, non-prescriptive legislation relies on the operator identifying the issues and making the management commitments to deal with them (Berlin Guidelines II 2002). Prescriptive legislation can be highly successful in reducing pollution from certain industries, but in the mining sector there are both advantages and disadvantages in the use of such an approach (Berlin Guidelines II 2002). For example large mining operations lack the degree of standardization which is typical for other industrial sectors. Therefore in the mining sector the use of general environmental standards might lead to reduced efficiency due to under-protection at some sites and unnecessary over-protection at others (Berlin Guidelines II 2002).

Mining Agreements and sustainable land-use standards

The principle of sustainability in mining comprises a wide range of aspects. Besides environmental topics, economic and social aspects must be considered. Regarding the broad field of “sustainable mining” (cf. Mudd 2009) this case study focuses on governance aspects of land use management, environmental impact assessment and permitting and post mining rehabilitation. Nevertheless, provisions in MA regulate economic and social aspects, e.g. establishing infrastructure to explore, smelt and transport the minerals, too.

Over the last 50 years great number of large scale mineral and energy projects have been set up in Australia using instruments called “state agreements”, “indents” or “mining agreements” (the terms are used synonymously).

Mining agreements are long term resource development contracts between the state as the owner of the resource and the project developer (Fitzgerald 2001). After a project developer has discovered a mineral deposit on the territory of the respective state and normally before the extent and viability of the reserves has been investigated, both sides start a negotiation process on the terms of condition for the exploitation of the mineral resource. Before the final MA (contract) is signed by the project developer and the state, it is reviewed by government authorities. After that, the MA is ratified by the Parliament. The reason for the ratification of the MA is that in case a provision in the MA is inconsistent with existing Australian legislation it will override that legislation and amend it. Ratification confers legislative status on the agreement and amends any inconsistent provision of the general law applying to the project (Fitzgerald 2001).

Fitzgerald (2001) assumes that an important reason for the widespread use of mining agreements in Australia is that the instrument reflects the economic interest, which the state has in such a project and that it secures the state’s support for the project. There are several strong points from an environmental perspective in favor of MA (Fitzgerald 2001):

- Individually negotiated project agreements like mining agreements offer the possibility to incorporate environmental conditions and criteria which can be specifically tailored to the individual mining project.
- Host countries have a degree of bargaining power to negotiate special environmental protection provisions for individual ventures on a project by project basis due to the fact that mining projects are less transportable than other industrial projects.
- International consensus regarding the special environmental protection responsibilities of transnational corporations International mining companies have adopted higher environmental standards in Australian agreements.

However, it depends on the genuine willingness of both partners (state and contractor) to follow the agreed provisions in the MA, i.e. implement the actions foreseen in the provisions of the MA. If both sides see the MA as a merely symbolic act, it will be difficult for other parties to enforce the implementation. The danger of a symbolic act arises for example if a state wants to attract an economically important project. In this case (higher) environmental standards may be stated in the MA in order to satisfy demands by international obligations or environmental NGOs, but the risk is that the environmental protection and rehabilitation obligations will not be fully enforced (Fitzgerald 2001). Furthermore, preventing environmental impacts by individual mining projects

without an overarching regulatory structure, which puts national and global sustainability goals (e.g. national limits for greenhouses gases reduction) into practice is hardly achievable.

It should be noted that there is an increasing effort in countries to draft specific environmental legislation for the mining industry. As a result quite often conflicts occur between mining and environment departments regarding the responsibility for implementation (Berlin Guidelines II 2002).

From a procedural aspect it is interesting to see that instruments formerly used in MA where later incorporated in general resource management and environmental legislation of Australian states. For example in the Environmental Management and Pollution Control Act 1994 (Tas)¹⁹⁹ the following instruments were introduced (Fitzgerald 2001):

- Environmental impact assessment principles;
- Taxation and fee relief in recognition of good environmental practices;
- Environmental audits carried out to establish the environmental performance of an operation;
- Provisions requiring financial assurances to guarantee environmental performance;
- Mandatory environmental improvement programs containing public participation and appeal rights.

Furthermore, in the Mineral Resources Development Act 1995 (Tas)²⁰⁰ a provision was introduced, which entitles the minister to require the rehabilitation of abandoned mining land or land affected by earlier rehabilitation activities (Fitzgerald 2001).

A way forward to use MA agreements in order to establish GSLS for mining projects all over the world – not only in Australia - could be to incorporate them in model mining agreements, for example in the frame of the project “Model Mining Development Agreement – MMDA”²⁰¹. The MMDA project was initiated by the Mining Law Committee of the International Bar Association in 2009 in order to prepare a Model Mining Development Agreement (MMDA) that can be used by mining companies and host governments for mining projects aimed primarily in developing countries, in particular where a mature mining code is not in place or effective. Led by the Mining Committee, further project partners were civil society and university-based groups working with the Committee.²⁰² The project idea was not to have the MMDA as a kind of blueprint for MA but rather to provide an agenda for negotiations based on a sustainable development objective that is common to all parties. For that purpose the Committee collected and analyzed over 50 existing mining development agreements. The MMDA may also be of use where the mining code must be supplemented by private agreement, or as a template for agreements with state owned mining enterprises. The public nature of the project has the aim to allow local communities and civil society groups to contribute in a sound manner to negotiation processes.

¹⁹⁹ For the latest version of the Act, see: <http://epa.tas.gov.au/policy/empca> (as from 15.04.2013).

²⁰⁰ For the latest version of the Act, see: (as from 15.04.2013).

²⁰¹ The Model Mining Development Agreement (MMDA) Project, see: <http://www.mmdaproject.org/> (as from April 2013).

²⁰² Information taken from the homepage of the project, see: <http://www.mmdaproject.org/> (as from April 2013).

Conclusions

MA offer flexibility to define site specific environmental standards that are higher than the environmental standards or are tailored to the individual environmental situation of the concrete mining projects.

In general, it was observed that MA have stimulated the development of the overall environmental legislation relevant for mining in mining countries, by incorporating instruments first used in MA into mining or environmental legislation later on. Thus, MA could be an instrument and process to introduce GSLS in mining projects all over the world as well as for other large infrastructure projects, where the foreign investor has an interest to conduct the project and consequently might be willing to accept higher environmental standards.

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3.8 Europe

3.8.1 Germany - Landscape Planning

The German system of spatial planning and landscape planning is unique in Europe and the world. It is an interesting case for multilevel governance at various levels (EU, national, regional, local) and for the integration of different sectoral planning aspects.

This case study describes the

1. elements of the German spatial planning and landscape planning system and interaction of different governance levels
2. effectiveness of the policy mix and
3. transferability of the named German policies/ instruments to other countries.

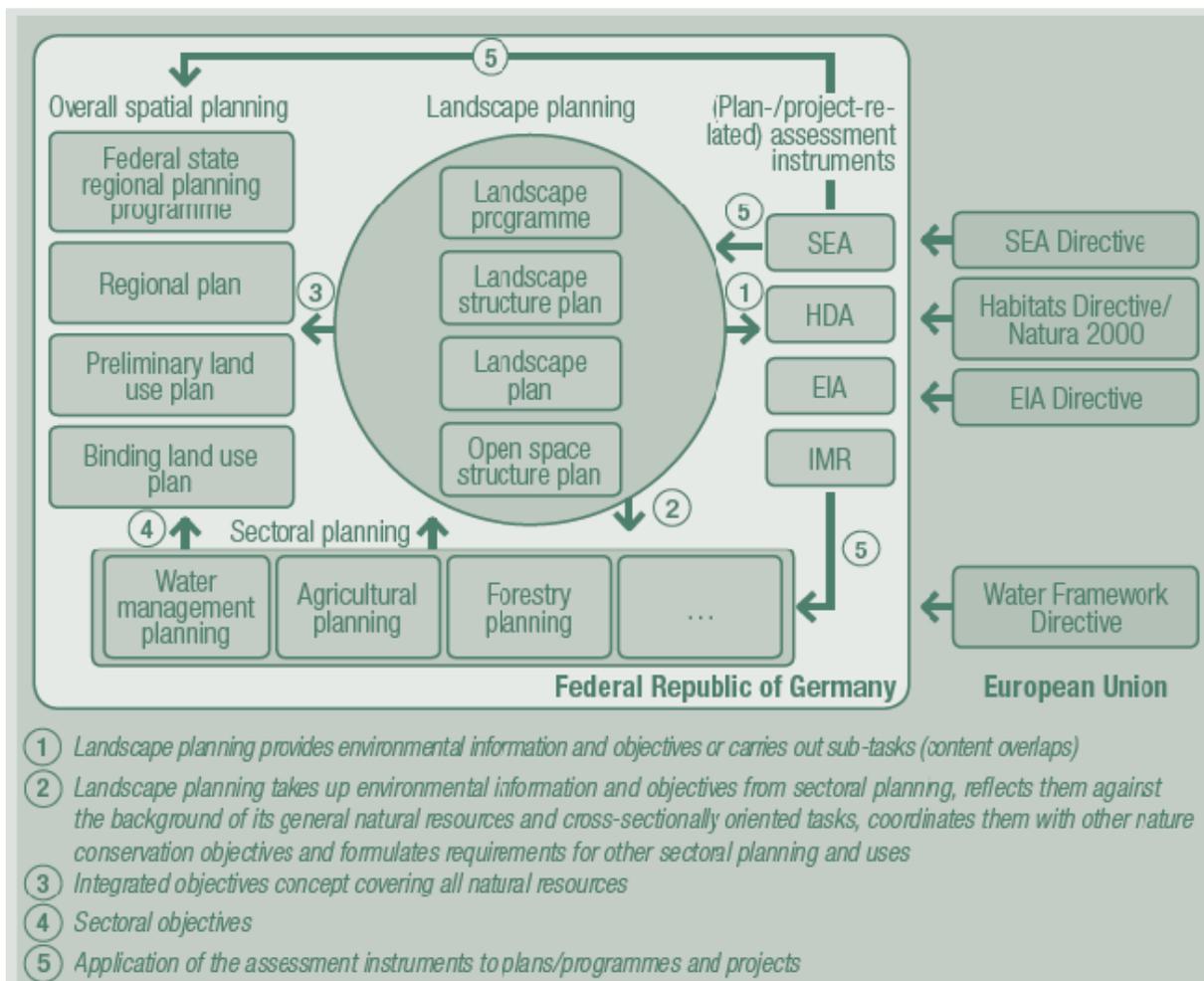
While there are many aspects of interest, this case study will concentrate on the policies that aim to reduce land take/urbanisation²⁰³ as is in this context there are some particularly interesting (new) instruments.

Elements of the policy mix/ interaction of different levels

In Germany there are four planning levels: the municipal, the regional, the federal state ("Bundesländer") and the federal level. The spatial planning act ("Raumordnungsgesetz") provides the framework for spatial order and planning. The federal states make this framework operational through a federal state planning. Each federal state consists of several planning regions, which work out regional plans with guidelines on the regional planning structure. These guidelines are to be taken into consideration on the municipal level (Malburg-Graf et al 2007, p.1-2).

In parallel to the overall spatial planning process, landscape planning comprehensively addresses environmental issues. The figures below illustrate the position of landscape planning within the overall spatial planning system. For both spatial planning and landscape planning each respective higher level plan forms the functional orientation framework for the subordinate planning level.

²⁰³ Land take in Europe is generally understood as "urbanisation", "increase of artificial surfaces" and represents an increase of settlement areas (or artificial surfaces) over time, usually at the expense of rural areas (Prokop et al 2011, p.24).



Abbreviations: SEA: Strategic Environmental Assessment, HDA: Habitats Directive Assessment, EIA: Environmental Impact Assessment, IMR: Impact Mitigation Regulation

Figure 1: Position of landscape planning in the German planning system

Source: Haaren et al 2008

Planning area	Landscape planning	Overall spatial planning	Sectoral planning ⁴⁾	Planning scale of landscape planning
Land (federal state)	Landscape programme ¹⁾	Federal state regional planning programme ¹⁾	Sectoral programme or sectoral plan at federal state level	1 : 500,000 to 1 : 200,000
Region/ administrative district, district	Landscape structure plan ¹⁾	Regional plan	Sectoral framework plan	1 : 100,000 to 1 : 25,000
Municipality	Landscape plan ²⁾	Preliminary land use plan	Project plan at approval or planning determination level and/or construction plan	1 : 10,000 to 1 : 5,000
Part of the municipal area	Open space structure plan ³⁾	Binding land use plan		1 : 2,500 to 1 : 1,000

1) These plans have different names in individual federal states.
2) Except the city states Berlin, Bremen and Hamburg as well as North Rhine-Westphalia and Thuringia.
3) These plans are not provided for in all federal states; in some they have different names.
4) Including EIA and landscape envelope planning.

Figure: Plan products of landscape planning at the levels of overall spatial planning and sectoral planning

Source: Haaren et al 2008

Despite the regulations provided by the higher planning levels, the local level still has considerable power in Germany: Germany's constitution ("Grundgesetz") and the spatial planning act, guarantee local planning autonomy ("kommunale Planungshoheit"). The building law ("Baugesetzbuch") regulates land use planning at local level.

The current version of this legal framework contains a soil conservation article and a powerful link to the nature conservation act (BNatSchG 2010), which requires the legally binding compensation of environmental impacts in the case of building measures (Eingriffsregelung") (Malburg-Graf et al 2007, p.1-2). The Impact Mitigation Regulation ("Eingriffsregelung") follows the principle to avoid and minimize environmental impacts and to compensate those, which are not avoidable.

In addition to the above mentioned regulatory and planning instruments there is a range of strategies and voluntary instruments that play a positive role to reduce land take in Germany.

Since 2002 the Federal Government of Germany has a "30 hectare goal" by 2020, meaning that the land take in Germany should be reduced to 30 ha per day by 2020. The "30 ha goal" is a non binding political intention, as laid down in the Federal Strategy for Sustainable Development, that defines the increase/decrease of the settlement area per day as one of 21 sustainability indicators (Bundesregierung 2002). It serves as a symbol of sustainable land use in the future and not only as

a quantitative aim (Malburg-Graf 2007). It also doesn't have a qualitative dimension, e.g. which areas should be particularly protected etc.

An important and successful voluntary instrument on the regional/municipal level is cooperative municipal and regional area management (Ulmer 2007, Malburg-Graf 2007, Jörissen/ Coenen 2007).

Besides "traditional" forms of cooperation (association of local authorities, communes and regions)²⁰⁴ which are also foreseen in the building law, the 1998 amendment of the building law and spatial planning act of 1998²⁰⁵ institutionalized new instruments of voluntary cooperation, e.g. urban development contracts, regional development concepts²⁰⁶ etc. (Jörissen/ Coenen 2007).

These forms of cooperation can directly impact land take if e.g. building and business areas or "commonly planned areas for compensation measures" ("Kompensationsflächenpools") are planned, or simply measures that are taken to share data/ information (Jörissen/ Coenen 2007).

Also considered very useful, but only available in a few regions are building area cadastrals (Baulandkataster) which provide an overview about available building potentials. There are ongoing discussions on whether or not such a building area cadastral could be established at the federal level (Bundesregierung 2012, p.243).

A rather new concept that can be part of regional area management is "circular flow land use management" ("Flächenkreislaufwirtschaft"). This approach developed by the German Institute of Urban Affairs (Difu) since 2003, and tested in five German regions²⁰⁷ is a problem solving approach and overall strategy/ planning paradigm for land use (Bundesamt für Bauwesen und Raumordnung 2006 cited in Malburg Graf, p.4). It transfers the concept of a circular economy to the use and management of land (Difu 2013) and follows the objective to integrate derelict land into a qualified inner development of urban areas. It has been first tested in Germany and now transferred to Italy, Austria, Poland, Slovakia and the Czech Republic²⁰⁸.

The concept includes "land recycling" activities but even goes beyond specific recycling instruments as it requires an integrated approach of different policies and instruments that all aim to reduce additional land take (Malburg-Graf, p.4, RNE 200, p.19). It assures that all (potential) options and phases of land use (planning, use, abandonment, temporary use, permanent (re)use, renaturation etc.) are considered in land use management and policies (Difu 2013). A successful implementation requires a policy mix of current and new legal, planning, economic and communication instruments as well as cooperation between actors and governance levels (Malburg-Graf, p5, Difu 2013).

²⁰⁴ „Gemeindeverbände, Regionalverbände, Zweckverbände“

²⁰⁵ BauROG - Einführungserlaß zum Bau- und Raumordnungsgesetz 1998
Vorschriften mit Bezug zum allgemeinen und besonderen Städtebaurecht. 18. August 1997. BGBl. I S. 2081

²⁰⁶ „städtebauliche Verträge, Städtenetze, regionale Entwicklungskonzepte, vertragliche Vereinbarungen zur Vorbereitung und Verwirklichung von Raumordnungsplänen, Möglichkeit zur Erstellung regionaler Flächennutzungspläne“ (Jörissen/ Coenen 2007). Many best practice examples are outlined in LABO 2010.

²⁰⁷ e.g. Freiberg in Middle Saxony, see http://www.circuse.eu/index.php?option=com_content&view=article&id=92%3Amiddle-saxony-de-&catid=26&Itemid=31

²⁰⁸ See CircUse project website: <http://www.circuse.eu/index.php?s=1>. CircUse is a project is implemented through the CENTRAL EUROPE Programme co-financed by the ERDF.

Moreover, informative planning tools, such as “follow-up cost calculators” (e.g. “Folgekostenrechner für Kommunen” used in Hamburg²⁰⁹) have been developed that intend to help take informed decisions about new building projects and their (often hidden) costs.

Several regions have also created web based information and communication tools, including:

- North Rhine-Westphalia has set up the “Land alliance” (“Allianz für die Fläche”), intending to increase exchange of best practice to reduce land take, to bring together different actors, to promote a regional certificates for land saving municipalities (“Zertifizierungssystem für Flächen sparende Kommunen”) etc.²¹⁰
- Baden-Württemberg (“Flächenmanagement-Plattform”) initiated a land recycling award and other measures²¹¹.

Eventually “Tradeable planning permits” may play a positive role in the future to reduce land take. In Germany, a lot of research has been underway on this issue for years now, including a currently running pilot project²¹². Over the course of 4 years 40 municipalities will take part in the pilot project (Prokop et al 2011, p. 80). The idea of tradable planning permits stems from the concept of tradable CO₂ rights, more accurately the cap and trade system. If the mechanism is applied to the field of land use planning, the communal development plans are only legally valid if they are backed by planning permits, which have to be held by the communes (Loehr 2012).

However, whereas economists are convinced of the optimal goal achieving potential, the instrument of permits is often contested from a judicial point of view. Critics point to the difficulties in allocating the contingents and the conflict with the local planning autonomy or challenge whether a permit solution would lead to a real change of consciousness because of the possibility of using land for settlement purposes up to a certain target (Jörissen/ Coenen 2007; Malburg-Graf et al 2007, p.5-6). The implementation is also likely to lead to high administrative costs.

Effectiveness of the policy mix

The explanations above illustrate that there is a broad mix of instruments available to shape and steer the reduction of land take in Germany. The last 10 years after 2002 have lead to considerable improvements of the planning policies and contributed to slowing down the additional daily land take (from more than 120 ha per day in 1993 to 81 ha a day in 2011), although the actual *overall* land take and sealed surface per capita²¹³ is nevertheless increasing and remains at a high level²¹⁴.

²⁰⁹²⁰⁹ the calculator has been developed by the German research project REFINA, for further information see <http://refina.segeberg.de/index.phtml?NavID=1862.84&La=1>

²¹⁰ <http://www.allianz-fuer-die-flaeche.de>

²¹¹ <http://www2.mvi.baden-wuerttemberg.de/servlet/is/103764/>

²¹² “Projekt Forum – Handel mit Flächenzertifikaten”, <http://www.ufz.de/index.php?de=21103>

²¹³ Population in Germany is declining each year. This means that the sealed surface/ artificial surface per capita is actually rising.

²¹⁴ Between 1992 and 2007 settlement and traffic areas grew from 40305 km² to 46789 km², which equates an increase by 16.1% (BfN 2008, p.4).

However, many experts agree that the planning and regulatory instruments and policies available to steer land take and land use are generally suitable instruments (Jörissen/Coenen 2007, BfN 2008). At the same time they agree on a lack of enforcement, e.g. due to conflicting interests of different planning levels as well as conflicting environmental, social and economic objectives etc. (BfN 2008, RNE 2004).

Transferability and conclusions

Germany has a broad policy mix to address land take. It also has some particular instruments, that only few countries have experiences with, such as its complex system of landscape planning, the impact mitigation regulation (“Eingriffsregelung”) or more recently with trading certificates for land or Circular Flow Land Use Management.

Particularly these instruments are suitable and potentially interesting for other countries and EU regions, that face similar challenges like Germany (land take, densely populated, demographic change etc.). However, the complex spatial and landscape planning system is difficult to transfer as it is very complex and formalised and tailored to the German federal system (Blotevogel 2003, p.6). It may therefore only be transferable to a limited extent, especially with its specific distribution of competences across different levels. This is not to say, however, that it may not be possible to progressively put similar tools and instruments in place in other EU MS, adapting it to the institutional context, where there is political will to do so. It is however also clear that introducing an adapted version of the German system primarily makes sense in countries where there is the administrative capacity to manage and enforce such a complex system. Where relatively effective spatial planning systems are already in place, some of the tools and instruments used or tested in Germany could still help further increase their efficiency and effectiveness.

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3.8.2 Veggie Day- Ghent Belgium

The high level of consumption of meat and dairy products has dramatic impacts on the sustainability of land use²¹⁵. A transition towards less meat-intensive diets in countries with high consumption levels would be an effective way of reducing demand for land.

However, changing diets is a highly polarizing issue and it is still unclear which role governmental and nongovernmental policies can play within that transition. So far, there are few approaches known. The most prominent in Europe is the “Veggie Day” campaign that started in Ghent, Belgium, which will be described in this case study.

The case study will outline the emergence and development of the campaign with a focus on enabling conditions, barriers and stakeholders involved. It will then outline first evidence about the impacts of the campaign and draw conclusions about the transferability of the campaign to other cities and countries.

²¹⁵ as described in the global governance screening of the GLOBALANDS project, see Wunder et al. 2013

Development of the campaign

The Thursday Veggie Day campaign - *Donderdag Veggiedag* in Flemish - was launched in 2008 by EVA (*Ethisch Vegetarisch Alternatief*), a non-profit organisation promoting vegetarianism. With 4000 members (Debourdeau 2012) it is the biggest vegetarian organization in Belgium. The purpose of the campaign is to promote the adoption of one vegetarian/vegan day a week. While it is not obligatory, the Veggie Day has been incorporated into school lunch systems²¹⁶, restaurants and some other public establishments such as hospitals.

The Thursday Veggie Day (TVD) was first targeted at the whole of Flanders and worked with a "very limited budget" (Leenaert 2011). In May 2009, the city of Ghent backed the campaign officially and since then also gives some financial support to it (Leenaert 2011). The Veggie Day works for approx. 2/3 of all meals sold on Thursdays in Ghent, in schools its even 90%.

Today, the town with 240.000 inhabitants receives a lot of interest due to the veggie days, including international delegations (South Korea, Japan, Brazil etc.) and currently publishes the second edition of city guides illustrating the more than 100 restaurants that participate. The initiative already spread worldwide, e.g. to San Francisco, Cape Town, Sao Paulo, Zagreb and Washington DC (Debourdeau 2012) and to a number of cities in Germany (e.g. Wiesbaden, Bremen, Karlsruhe, Paderborn and Schweinfurt).

The emergence of the Veggie Day campaign, however, goes back many more years and is strongly connected with the founder and director of EVA, Tobias Leenaert. His first actions started in 1998 where he organized some actions with friends to raise awareness about animal suffering (Jaecques 2013). In 2000, he founded the non-profit organisation EVA²¹⁷. First actions included the publication of a restaurant guide (where to eat vegetarian in Ghent), a website with information on vegetarian food, a quarterly magazine and infostalls on different locations, where more than 100 000 free publications were distributed (Jaecques 2013). Since 2002 until now they organized gastronomical vegan diners (thereby starting to introduce high-level vegan dishes in restaurants), vegetarian fairs with lectures, veggie cafes, meetings and conferences (Jaecques 2013).

A breakthrough was achieved in 2008 when EVA organized a big event called "Less Meat, less heat", for which EVA invited the IPCC²¹⁸ chair Rajendra Pachauri, who spoke about meat consumption and its large impact on climate change. This conference attracted a large audience (about 600 people), including many municipality officials and deputy-mayor Tom Balthazar - also responsible for the environment, health, environment, animal welfare and north-south relationships (EVA 2010b) - who declared that this conference convinced him of the importance to commit with such initiative (Debourdeau 2012).

In the follow up of the event and after a veggie gastronomic tour de force by the well-known vegetarian chef Philippe van den Bulck at the town hall (Debourdeau 2012), the city of Ghent

²¹⁶ In October 2009 35 city schools representing 11.000 children joined the Veggie Day, by proposing a vegetarian meal as 'default' menu each Thursday. About 95% of the parents gave their consent to the initiative, and most of the children adopt the vegetarian diet on Thursday (93%) (Debourdeau 2012).

²¹⁷ however still as a volunteer as he was teaching IT in a high school and worked for EVA after hours from his department.

²¹⁸ Intergovernmental Panel on Climate Change

backed the campaign officially - mobilized mainly with climate arguments - and even provided financial support (Jaecques 2013).

Over the next years EVAs campaigns were further developed and diversified including Christmas Lunch for celebrities and press/ Vegetarian Christmas Cooking Class with celebrities, an intercultural project about Thursday Veggieday in Turkish restaurants in Ghent, the launch of an educational program and materials for schools, the Veggielympics, the publication of a Veggie map of Brussels, the launch of a Veggie lunchbox campaign, a Veggie Valentine with celebrities, Veggie cooking classes for children, the campaign 'veggie in big kitchens and canteens', the website "Veggie for chefs", a Veggie app for smartphones etc. Particularly the distribution of veggie maps are a powerful marketing tools as 200,000 of them have already been distributed, incentivizing the restaurant industry to offer vegetarian options. EVA is also supporting restaurants through training courses for traditional chefs and a veggie chef cookbook (Ashoka 2010).

Since 2010 EVA got involved in a structural cooperation with - meanwhile 9 - European vegetarian organizations (Jaecques 2013). After having been founded in 2000 as a mere volunteer organization, EVA has now a staff of six people (Debourdeau 2012).

Impact

All the stakeholders, and especially EVA and Ghent city council, agree on the statement that TVD is a real success, which is still growing thanks to a permanent public campaign, the organisation of events, etc. (Debourdeau 2012).

In March 2011 Ghent and EVA commissioned two surveys: one representative for Flanders (n=1164) and one representative for Ghent (n=415) (Leenaert 2011). The surveys by the Belgian research agency iVOX showed great adoption and popularity of the veggie day campaign. After more than two years of promoting Thursday Veggieday in Ghent in cooperation with EVA, the city could also submit figures that were significantly better than the rest of Flanders: Among the Flemish population, almost 1 out of 3 knew about the campaign; in Ghent this was 2 out of 3. 60% of the Flemish population agreed with the claim that livestock has a big impact on the climate (70% in Ghent). One out of two respondents had the intention of decreasing their meat consumption (EVA 2011b).

In 2011, Ghent counted twice as many vegetarians and parttime-vegetarians as the Flemish average and was considered to be "the veggie capital of the world" with the highest per capita number of vegetarian restaurants (13 out of a population of 240.000 citizens) (EVA 2011b).

The results of a survey realised by iVOX in March 2011 also confirmed a strong institutionalisation of Veggie Day in the Flemish food landscape. Some of these results are summarised in the following table.

Items / area	Ghent	Flanders
Participate at least once a month	30%	17%
Participate Weekly	19%	13%
Will try	43%	42%
Is aware of the campaign	67%	30%
Ate less meat because of the campaign	15%	13%

Source: Leenaert (2011)

The iVOX survey shows that the Veggie Day is well implemented in Flemish people's lives, especially in Ghent. A large part of the Flemish population is aware of the campaign and a relatively high rate of people takes part in the Veggie Day (more or less frequently). However, relatively few people are considering that their meat consumption has decreased thanks to the campaign (see also Debourdeau 2012).

The significant scope is reinforced by various means of communication, through which EVA "reaches nearly 3,000 people a day through our website, 10,000 readers via EFTA Magazine, 14,000 subscribers through [our] newsletters, and many people using fireworks, cooking classes, lectures, film screenings and other activities" (EVA 2010a).

Success factors and barriers

The Thursday Veggie Day campaign in Ghent and the surrounding actions and campaigns of the NGO EVA contributed significantly to put the topic of meat reduction on the political agenda.

One of the most important factors is the **official support by the city of Ghent**, which plays a major role in the launching and institutionalisation of the initiative and to get support for the introduction of Veggie Days within schools, canteens, hospitals etc, to develop and distribute campaign materials etc.: "Indeed, both EVA members and Ghent municipality representatives considered the commitment of (local) public and political authorities as the necessary catalyst that made an effective Thursday Veggie Day possible." (Debourdeau 2012)

A second success factor is that EVA **changed the discourse** around vegetarianism in Belgium and has been promoting it in a new way that aims to make vegetarian meals attractive and accessible through a large number of creative initiatives based on positive and attractive messages. The usual vegetarian stance, often linked with animal rights and protection, is highly normative and has led to a situation where meat consumption is a polarizing and taboo subject. EVA, on the contrary, mobilizes customers to voluntarily change their behavior towards more healthy²¹⁹ and sustainable food, while proving that this shift can be at the same time easy, fun and tasty. Doing so, they are

²¹⁹ The impact of meat production and consumption on environment and health are the main justifications and arguments emphasised by the public campaign. The City council largely instigated this position, and especially the ranking of the issues at stake (Debourdeau 2012).

taking a progressive approach to promote the integration of vegetarian meals into everybody's diet, rather than promoting the more difficult shift to full vegetarianism. In the campaign, the impact of meat production and consumption on environment and health are the main justifications and arguments emphasised by the public campaign. The City council largely instigated this position, and especially the ranking of the issues at stake (Debourdeau 2012). Arguments and recommendations are scientifically based to justify and legitimate the project.

Another success factor is EVA's focus on outreach and multimedia campaigns, including celebrities and other important stakeholders, such as cooks and teachers. Most of the exposure came from press coverage of several events (Jaeques 2013), and which have been estimated to be worth almost 20 Mio Euro²²⁰.

Forthly, EVA has developed a business-friendly approach that is opening ways for businesses to be socially responsible and profitable at the same time. For example, partnerships with the restaurant industry are enabling EVA to incentivize and train chefs so that they can offer high-quality and tasty dishes without meat. They are also partnering with agro-industrial groups who develop meatless products or meat alternatives to go mainstream (Ashoka 2010).

EVA has also developed a large network of stakeholders beyond government and politicians including consumer, the educational system, the educational system (teachers, student, parents, universities/ colleges), the commercial sector (caterers and restaurants, producers, chefs, hotels etc.) as well as volunteers for EVA and civil society organizations (health organizations, north-south NGOs, animal rganisations, socio-cultural organizations etc.) (Debourdeau 2012).

EVA is either the only or one of the few vegetarian organisations that receives structural funding from its government (Flanders²²¹, the Dutch speaking part of Belgium and the city of Ghent). Moreover, it receives structural support by Alprosoya for the Thursday Veggieday campaign and received some European subsidies to start international cooperation with other vegetarian organizations in 2010 (Jaecques 2013).²²²

Eventually, EVA has a good reputation and is considered to work professionally and reliable (Debourdeau 2012) and last but not least, Ghent is a relatively "young" city (in terms of the age of their inhabitants), which is particularly open to vegetarian/ vegan food (Debourdeau 2012).

With regard to barriers EVA's members identified four main barriers to the development of alternative vegetarian food practices (Debourdeau 2012):

- 1) Public authorities are reluctant to act
- 2) "Animal products are omnipresent; alternatives aren't yet", referring to the lack of alternative veggie/vegan and good-tasting products that can replace meat products.

²²⁰ The Belgium "Federatie Sociaal-cultureel Werk" estimated that until 2012 the value of the stories on radio, television, written press and the web about the Veggie Day in Ghent was 19,688,885 Euro (Federatie Sociaal-cultureel Werk 2012, cited in Debourdeau 2012).

²²¹ The Flemish government subsidises EVA since 2003 (Debourdeau 2012).

²²² In 2008 it also received a grant from the Ministry of Health to teach food service professionals (Food and Health Award for the Best project 2008) (Debourdeau 2012).

3) “Large lack of knowledge concerning the problem, both in theory and practice”: vegetarian and vegan food practices remain unconventional and as such, they are not well understood by the public. Environmental, health and sustainability issues associated with meat consumption are often ignored by most of the people who are moreover lacking from the knowledge and skills (recipes, etc.) required for preparing tasty veggie meals.

4) ‘Less meat’ is easily interpreted as ‘no meat’’: Because veggie food practices are still marginal and supported by activists, many people overestimate the extremism of the TVD initiative. A lot of people are still suspicious about vegetarianism, which is often associated to be unpleasant.

Moreover, EVA’s self assessment in 2011 (SWOT Analysis) noted “organized opposition” as a threat. However, it could just as well have been a promoter, as the opposition generated national media-attention, culminating in a prime time TV-debate in 2011 between Tobias Leenaert, director of EVA and Piet Vanthemsche, president of the Farmer’s Union (EVA 2011b).

Transferability and Conclusions

The Thursday Veggie Day in Ghent has been a success story in its efforts to reduce meat consumption. However, in order to transfer this success it is important to reflect on the local circumstances and enabling factors (as described above) that have played a role in Ghent. These circumstances are difficult to simply copy in other local contexts, but adapted solutions need to be found.

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3.9 Summary

This chapter summarises the main conclusions, which could be derived from the case studies in order facilitate a further consolidation and discussion of the results in chapter 4:

- 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 (Niger/BF, Cuba, 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 processes and to enable them to support the implementation of the policy. (Cuba, Niger/BF, India?)
- An overarching governance system for land use planning requires a well-functioning administrative system, and needs to fit into national institutional settings (DE, Indonesia).
- 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. (Brazil, Argent., Bolivia)
- 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. (BE, Bol, DE, Niger/BF)
- Sustainable landuse requires not only explicit „sustainability policies“, but much could already be achieved if perverse incentives would be abolished and coherence created among various policy fields. For abolishing such counterveiling policies, the national level is particularly relevant. (Br, Arg, ...)

4 Conclusions, outlook and open questions

Building on the broad screening of land-use relevant international policies and ten national case studies of land use regimes, this chapter outlines the main findings gained from the governance screening at hand. The findings were also inspired by various discussions within the GLOBALANDS project team. 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 that should facilitate a subsequent discussion. For illustration purposes, examples of policies are given where they support the findings and theses formulated in this chapter. The first part consists of some general findings gained from the screening and the analysis, followed by some observations on the policies identified in the screening. Finally, some open questions are formulated that could guide a further discussion.

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 three UN conventions (CBD, UNCCD and UNFCCC) deal with land-related issues and various international processes put more and more emphasis on land (e.g. the Voluntary Guidelines on the Responsible Governance of Tenure). Yet, not even a common understanding of what defines the *problem* of unsustainable land-use could be gained so far: is it about environmental degradation, food security, environmental security more widely, about global equity, competing land use demands, inefficiency of land use or combinations of these? Land use involves a great variety of actors who have different perspectives on land-related problems and whose policy ideas vary widely.

The various rather land-related policies identified in the GLOBALANDS screening directly address land use only in the context of agricultural, forest, biodiversity, climate, resource or development policies. Other policies such as on trade and investment do **not have land use as an explicitly considered issue** but have **substantial (often negative) side effects** on the sustainability of land use.

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 policies that do not consider the 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 (besides the three identified conventions CBD, UNCCD, UNFCCC 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 their area of application is restricted to certain regions (such as the UNCCD focus on arid, semi-arid and sub-humid areas).

Also, it has to be noted that **current international policies do not or not effectively address the most significant drivers** of unsustainable land use, such as population growth, increasing consumption and material inputs and (western) diets. The same is often true for national/ regional policies.

Comparing the different policies and forms of international governance that have been analysed in this paper, the following observations can be made:

- Policies vary significantly in their **levels of institutionalisation and enforcement**, ranging from a quasi non-regime for international forestry and agriculture to areas of internationally agreed targets that are 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 **roof of a single UN convention** (e.g. biodiversity under the CBD and soil desertification under the UNCCD). Yet others are **hardly regulated** at all but 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) as prominent examples. Moreover, highlighting the costs of policy inaction with regard to climate change and biodiversity protection, the Stern Review, the Millennium Ecosystem Assessment and the report on The Economics of Ecosystems and Biodiversity (TEEB) 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 biofuel sector (Roundtable for Sustainable Biofuels, 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 and stakeholder participation** became more important. Examples include the development of the Voluntary Guidelines on the Responsible Governance of Tenure under the roof of the Committee on World Food Security or the establishment of the Global Soil Partnership by the FAO.

With regard to the main trends in global land use it can be concluded that despite of 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, sectors, local/ cultural diversity between regions and time seem to require a more integrated policy approach in order to address the various underlying causes of unsustainable land use. The national case studies undertaken in this project support this conclusion.

However, designing and implementing such an integrated policy of sustainable land use faces several challenges. In order to move towards such an approach we suggest addressing the following questions:

- **Policy level:** What is an effective balance between an international approach to address sustainable land use versus more regionally and national approaches? How can an international policy approach account for regional/ national/ local divergences? How can provisions be flexible enough to be applicable to different cultural, ecological, political and social circumstances?
- **Policy coordination/integration:** Land use is cross-sectoral by definition and cannot be addressed by sectoral policies only. How can an integrated approach be designed in order to deal with the inconsistent objectives and mechanisms between land-use relevant (sectoral) policies? What synergies can be found and made operational? How can available concepts such as multifunctional agriculture, food and land sovereignty or the concept of ecosystem services be combined or further developed in a concept that levels off trade-offs between competing uses of land?
- **Policy levers:** What is the biggest political leverage and how can it be effectively addressed? Which synergies with other instruments can be used?
- **Policy mix:** What is the right balance between regulative, market-based, communication and voluntary measures?
- **Actors:** Which actors need to be involved in the policy process and at which stage and how can they be motivated to shape and implement sustainable land use policies? What are effective measures of finding consensus, of conflict prevention and dispute settlement – particularly given the large number of actors that need to be considered in a truly participatory and integrated approach? Which actors are likely to lose from and hence obstruct sustainable land use policies?
- **Efficiency and effectiveness:** Policies necessitate sufficient funding to enable implementation, enforcement and monitoring of their provisions in order to be effective (see e.g. the implementation of CBD goals at national level). This leads to the question which funding sources can be tapped in the future to strengthen sustainable land use. In this context, the role of private sector involvement and market-based instruments needs to be discussed, also taking into account the downsides these approaches can have.
- **Institutionalisation and enforcement:** What are the main reasons for the differing levels of institutionalisation and enforcement among policies and what can be learnt from these insights with regard to a global (and integrated) governance of sustainable land use? And which strategies can be pursued in countries with weak administrative capacities?
- **Policy mandate:** What organisation/ institution could provide the ‘anchor point’ for an international policy on sustainable land use?
- **Policy performance:** How can improvements be monitored?

To answer these questions and to discuss possible approaches with different experts from practice, research, policy and civil society will be subject to further work within the GLOBALANDS project. This paper presents an invitation to all interested parties to join us in our upcoming discussions and reflections on potential strategies to strengthen sustainable land use in international policies.

5 Windows of Opportunity for international Policies

The analysis undertaken in the GLOBALANDS research project covers more than 120 policies. The screening unveils 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 chapter on the limits of the governance screening).

This section provides a synthesis of potential “windows of opportunities” that have been identified to strengthen sustainable global land use, while more detailed information to each of the presented options can be found within the report.

The findings suggest that governance on sustainable land use might gain most momentum from the following policy efforts:

- The UN **Convention on Biological Diversity** with its internationally binding “Aichi biodiversity targets” and its various Programmes of Work on forests, agriculture, drylands, protected areas etc. is among the most relevant international conventions with regard to sustainable land use and provides different potential leverages. The recently launched “**Green Development Initiative**” (GDI) establishes a scheme for biodiversity-positive area management through registering and/or certifying biodiverse sites against the GDI standard. This initiative aims at attracting financial support from private investors for restoring ecosystems or their sustainable management.
- **Climate policies** can provide synergies to improve the sustainable use of land. **REDD+** intends to reduce deforestation and forest degradation through offering financial incentives to maintain the carbon stored in forests and to manage forests sustainably. Ideally, this can be aligned with protecting biodiversity and with the generation of livelihood ‘co-benefits’. The effectiveness of REDD+ will depend, among others, on the degree to which national drivers of deforestation and forest degradation are taken into account when implementing funding schemes. Moreover, closing land use related gaps in climate policies such as the inclusion of emissions related to the agricultural sector and peatlands can have significant impacts on sustainable land use as well.
- The development of **Sustainable Development Goals** (and indicators) and their integration into the UN’s post-2015 Development Agenda might lead to an increased emphasis on soil and land, building on the agreed language in the Rio+20 outcome document, emphasizing “the need for urgent action to reverse land degradation (...) In view of this, we will strive to achieve a land degradation neutral world in the context of sustainable development”. In this context, an SDG on “**zero net land degradation**” and new legal instruments (such as a Protocol on Zero Net Land Degradation) to the **UNCCD** are under discussion, too.
- In response to the widely recognized need to address the negative impacts of large scale land investments (“land grabbing”) mainly in developing countries the Committee on World Food Security (CFS) has adopted the **Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests** in May 2012. While it is still unclear what impacts the guidelines will have on the ground, their development – which included broad participation of heterogeneous stakeholders and a relatively fast decision making

processes – has been remarkable and might provide a reference for future land use governance initiatives.

- Within **resource efficiency policies** the land topic is of growing importance, especially at EU level. The Roadmap to a Resource Efficient Europe includes the milestone that by 2020, EU policies are on track with an aim to achieve no net land take by 2050. Moreover, the EU Commission is planning to develop a “**land communication**” in 2014.
- After a worldwide increase of biofuel production, the sustainability of bioenergy (particularly with regard to impacts on the environment and food security) has been controversially discussed over the last years. In response to the reiterated concerns, various **governmental and private standards for the sustainable use of biofuels** have been developed. However, subsequent studies and analysis made clear that standards and certification schemes focusing solely on biofuels inevitably lead to inconsistencies and leakage effects (e.g. indirect land use change). More recent approaches therefore center on the extension of biofuels standards to standards counting for biomass in general. These have a potential of being aligned with a broader approach to sustainable land use.

The described developments can potentially act as catalysts or “windows of opportunity” to strengthen global governance towards sustainable land use. Besides these developments, the screening also identifies a range of cross-cutting issues that potentially have a large influence on land use, but for which presently no or hardly any (effective) policies exist at global level. The most important issues in this context are:

- Impacts of (Western) **diets** with a large share of animal products on land use, given the enormous land requirements to produce feed and grow livestock.
- **Food waste** is a serious issue as about one third of all food production world-wide gets lost or wasted in the food production and consumption systems. This inevitably means that huge amounts of natural resources, including land, are used in vain.
- The growth of **population** particularly in the developing world is not only a challenge for food security, poverty alleviation and health issues but also imposes high pressures on land.

While it may be difficult to address these issues in the context of sustainable land use, there are many links to other policy areas such as health, education, food security etc. that provide synergies and entry points for national and international policies and touch upon more widely perceived requirements.

The analysis of international trade policies in their relation to land use results in ambiguous findings. Although the complexity of global trade often leads to different interpretations, we find that current trade policies mostly focusing on liberalization of markets including better market access have rather negative impacts on (sustainable) land use since they set economic incentives and pressures for additional land conversion. Moreover, they enable developed countries to virtually (or, when coupled with investment in land, actually) occupy foreign land for their own consumption. Unilateral environmentally-motivated exceptions to the principle of “non-discrimination” are possible but not to primarily address environmental goods in foreign territory. At the moment, a reform of the WTO regime remains stuck in the Doha Round and it is unclear

whether and when it will be revived. In the meantime, however, trade and investment agreements between the EU and other regions/countries emerge and ever new ones are on the way (as with the US). There is scope in such regional agreements for more environmentally protective clauses.

Similar to trade policies the current international policy framework on investment can indirectly impact on land-related environmental standards/regulation and on land use. The tremendous growth of Foreign Direct Investment (FDI) in OECD countries and increasingly also in developing countries in the last decades is a result of the removal of regulatory investment barriers (“investment liberalization”).

Resource extraction and the increased opportunities to exploit forests and other land with regard to timber production, agricultural products or mining activities are of major concern with regard to sustainable land use. Higher flows of investment are likely to exacerbate the extraction of weakly regulated resources. In addition, the Convention on International Centre for Settlement of Investment Disputes (ICSID) gives companies the right to sue countries in terms of their investment policies and hence to challenge domestic environmental/ sustainability regulations. So-called Investor-State Dispute Settlements (ISDS) have rapidly increased in the last two decades.

Against the backdrop of growing concerns about unsustainable investment practices (also in land), the UNCTAD (2012) has proposed a new policy framework in 2012, emphasizing inclusive growth and sustainable development through a set of principles. This framework could provide a good basis for upcoming investment agreements and possibly also for renegotiating existing ones.

Notwithstanding our findings for the international level, the analysis also shows that the implementation of global policy frameworks strongly depends on national or even regional conditions (for example, which actors are involved, local governance, the level of corruption, choice of instruments etc.). These conditions also determine which effects can be expected from any policy on land use. We would therefore also like to point to the national case studies of the GLOBALANDS project as they highlight different policy areas in different countries and illustrate potential opportunities and challenges to domestically implement sustainable land use policies.

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