

Land Use, Climate Change and Emissions Trading

European and International Legal Aspects of the Post-Kyoto Process

(Carbon & Climate Law Review 2011, p. 371)

Land use is the second trigger of global climate change – the first being the use of fossil fuels – and thus of utmost importance for the future design of European and global climate policies. The current European and global framework for climate protection does not really consider aspects of land use; if it does, however, it tends to rather introduce new loopholes to the climate protection goals that are, considering the challenges, not very ambitious. The most convincing approach to implementing land use aspects in climate protection law would be a two-stage global emissions trading system (ETS) of entirely new design. A new global ETS would enhance the existing ETS of the Kyoto protocol and combine it with a reshaped European ETS based on the factors primary energy and land-use instead of industry sectors. Admittedly, the integration of land use aspects into climate protection law is difficult for several reasons and the current discussions of approaches for the post-Kyoto phase beginning in 2013 fairly take these difficulties into account. This shows that climate change legislation and emissions trading are not per se helpful, but only in case of ambitious objectives, a stricter enforcement, the prevention of rebound and displacement effects, and a solution of measurement and baseline problems (also, in exchange for high compensation payments for mitigation and adaptation in developing countries, involving all countries around the world is a necessity). Due to the aforementioned factors, any climate protection law that solely relies on efficiency, technical and command and control approaches will, however, be even less capable of providing global quantity control than the existing deficient global and EU ETS. Nevertheless, land use also shows some constraints of an ETS based quantity control.

I. Scientific and Economic Foundations

This paper is dedicated to land use as the second trigger of global climate change (in addition to the use of fossil fuels). Therefore, it will deal with the overlaps of two central areas of operation that are essential to a sustainable development yet difficult to manage if taken together. By analysing existing and potential new governance instruments, this paper addresses the aforementioned questions from a climate-socio-scientific and – to this extent – primarily legal perspective. We will begin with a brief natural scientific classification.

There are numerous interactions and interdependencies between the changes in global climate and the use of the earth's surface (soil, land and water). Land use in general accordingly addresses many aspects. Besides the provision of foodstuff on the premise of long-term global food security, land use should also serve goals like maintaining biodiversity, sustainable sup-

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ply of raw materials, energy supply, recreation and health. It is obvious that these goals cause not only synergies but also trade-offs.¹ Also, these questions relate to the ambivalences of bioenergy.² The debate about so-called LULUCF-activities (Land Use, Land-Use Change and Forestry) in climate policy refers primarily to two aspects of the broad spectrum of possible forms of land use: first, the use of ecosystem climate services and second the problem of agricultural greenhouse gas emissions.

The first major subject area is therefore the use of climate services to existing ecosystems.³ The quantitative and qualitative capacity of different ecosystems to provide ecosystem services depends on their condition: While it is true that modern land use practices increase the number of ecosystem services, e.g. climate regulation, in the short term, it is to be feared that due to various degradation processes the quality of many ecosystem services decreases (eventually to a significant extent) at regional as well as global level in the medium and long term. The set of problems most discussed in the debate over the climate impact of ecosystems has so far been the ecosystems' function as carbon sinks and the use of carbon sinks. Sinks are dynamic systems, either natural or anthropogenic, that absorb and bind CO₂ from the atmosphere. Common sinks are soils, forests, plants and oceans. Second to the lithosphere, forests (especially old forests that are rich in biomass such as rainforests and boreal forests) are the most important terrestrial eco-systems that act as sinks. Also wetlands and grassland areas are important carbon sinks. While reservoirs are static, sinks either grow and increase storage capacity or release the CO₂ stored in them (e.g. a forest can grow but also burn down, and swamps can be drained). While the release of carbon takes place relatively quickly, absorbing and binding CO₂ is a slow process (so-called "slow-in-fast-out" effect). This dynamic raises the question of the durability of sinks and is very important for the role of sinks in climate policy.

Adequate assessment of different ecosystems and their specific properties and complex interactions is also very difficult, as is adequate mapping of a number of ecosystem functions beyond climate protection. The same is true for other climate-related land use issues besides sinks, e.g. for so-called albedo effects that are even more difficult to record and map than carbon storage: Since different surfaces show different reflection ratios with regard to solar radiation, the impact of deforestation and agricultural use of former forest areas on global climate is difficult to assess. Moreover, in addition to sinks and albedo effects other climate-related ecosystem services must be taken into account as well.

Agriculture and forestry play a prominent role when considering the development of terrestrial ecosystems and their functions, as they are an important trigger for land use changes connected to the release of greenhouse gases, e.g. conversion of moors, grasslands and forests in

¹ On conflicts of aims and difficulties in general: Intergovernmental Panel on Climate Change (IPCC), *Land Use, Land-Use Change and Forestry, special report* (Cambridge, UK: Cambridge University Press, 2000), available on the Internet at <<http://www.ipcc.ch/pdf/special-reports/spm/srl-en.pdf>> (last accessed on 22 September 2011). Even in the current Fourth Assessment Report, the IPCC concludes that land use related climate policy and other policies of sustainable development are by no means always synergistic; cf. IPCC, *Climate Change 2007: Summary for Policymakers to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (2007), at 65.

² Cf. Felix Ekardt and Hartwig von Bredow, "Managing the Ecological and Social Ambivalences of Bioenergy – Sustainable Criteria versus Extended Carbon Markets", in Walter Leal (ed.), *The Economic, Social, and Political Aspects of Climate Change* (Berlin: forthcoming, 2010), available on the Internet at <<http://www.sustainability-justice-climate.eu/files/texts/SustainabilityCriteria.pdf>> (last accessed on 22 September 2011).

³ See Millennium Ecosystem Assessment, *Ecosystems and Human Well-Being: Synthesis* (Washington, D.C.: Island Press, 2005), for more details on the importance of different ecosystem services.

cultivated land: Farmland covers about 40-50 % of the earth's land surface, whereof 70 % is used as pasture and about 30 % as arable land, at rapidly increasing rate. It must be taken into account that climate change (that may no longer be entirely prevented) may also have feedback effects on land, even if land use ostensibly does not change, e.g. in the area of permafrost soils and moors. In this context, it is important to point out that the exact measurement and recording of land use changes proves to be extremely difficult. As a matter of fact, the timeframe for the development of long-range and reliable recording and monitoring techniques that can be financially and technically implemented and manned in particularly affected developing countries is highly controversial. Along this line, the IPCC considers the improvement of remote sensing technology (in conjunction with soil sampling) for the analysis of the potential for CO₂ uptake by vegetation and soil and for the mapping of land-use changes a future "key technology for emissions reduction", especially in the forestry sector.⁴ Besides the difficulties concerning the measurement of land use changes, the assessment of a baseline scenario indicating the temporal and qualitative terms of the benchmark used for evaluation is very challenging as well.

In addition to the just-mentioned indirect emissions due to land use changes, emissions resulting directly from agriculture are also key factor in climate change. Significant amounts of methane derive from digestive processes of cattle and from the storage of manure and dung. Also, organic and mineral nitrogen fertilizers emit nitrogen oxides. Moreover, fertilizer production itself is very energy intensive (although the greenhouse gas emissions resulting from fertilizer production are rarely allocated to land use). Due to the rise in global meat consumption and intensive cultivation of land, agriculture has become a crucial factor in climate change. In particular, the anthropogenic emissions of methane (CH₄) and nitrous oxide (N₂O) are considered to be primarily caused by agriculture.⁵ It should be noted, however, that the impact on climate may differ significantly depending on farm products produced and the particular form of cultivation. In particular, organic farming emits mostly less greenhouse gases than conventional farming, yet it consumes more space. Agriculture can thus play an important role in the future reduction of greenhouse gas emissions, if we consider the range of optional production paths and forms of cultivation and their different impact on climate. The IPCC also notes that agricultural processes as a whole could make a significant contribution to lowering GHG emissions.⁶ However, recording GHG emissions from farming is as difficult as assessing the climate relevance of ecosystem services (see above). This complicates controlling these emissions in climate law, especially if we consider the large number of small emitters, the difficulties in verifying individual emissions and the drawbacks of monitoring methods.

II. Implementing Aspects of Land Use in Climate Protection Law: Land Use and Climate Protection De Lege Lata

Up to this point, it became clear that land use offers great opportunities for climate policy, both in terms of its ecosystem services, and in terms of direct emissions. It became also clear, however, that there are considerable difficulties. Accordingly, the ongoing discourse on land

⁴ See the table at IPCC, *Climate Change 2007: Summary for Policymakers*, supra, note 1, at 50.

⁵ See European Commission, Commission Staff Working Document – The role of European Agriculture in Climate Change Mitigation, SEC(2009) 1093 final, 2009, at 7, on more detailed numbers for the EU.

⁶ See IPCC, *Climate Change 2007: Summary for Policymakers*, supra, note 1, at 55.

use is long and controversial. A degree of clarity about the scientific data available is not only essential for the design, but also for the implementation and enforcement of political and legal governance and management tools (although approximations can eventually be sufficient). At the same time, however, a dramatic need for action becomes clear when one estimates the land use emissions, including deforestation, to represent one fourth or fifth of global emissions and takes the scientific evidence about climate change seriously. Scientific evidence shows that GHG reductions of about 80 % worldwide (!) by 2050 – this sums up to 95 % in the EU due to the above-average per capita emissions, as has recognized the EU Council of Ministers in 2009 – are required in order to avoid dramatic crises with heavy economic losses, possibly millions of deaths, violent conflicts over resources etc.⁷

The notion that it is desirable to avoid potential consequences of climate change is not a natural scientific, but rather a normative issue, as is the balancing of different interests that are affected by a more or less resolute climate policy. The weighing of different interests is indeed a precondition for any statement of the following kind: “emissions have to be reduced by X percent to Y financial conditions in state Z”. Normative statements, however, are not “axiomatically set” and “*per se* never objective”. Rather, for basic ethical and legal principles, there is – as was derived elsewhere in detail – an ethical and legal (based on human rights) obligation to reduce global greenhouse gas emissions dramatically and to distribute the remaining emissions allowances on a per capita basis while giving a high level of financial compensation for the benefit of people (not necessarily, however, the governments) in developing countries that are the main victims, but not the main cause of climate change. We therefore propose an international state emissions trading system (ETS) that provides an egalitarian distribution of emission rights (though slightly shifted towards developing countries because of the historical emissions) and a successive decrease of a total of 80 % worldwide in emission rights until the year 2050. In combination with a company ETS within states or supranational organizations (like the EU) based on primary energy and thus representing most emissions in a non-bureaucratic way (unlike the EU ETS that only applies to certain industry sectors), this approach would reduce emissions – no matter if these emissions are covered by emission rights that were originally given to the state or by emission rights that the state bought from another state.⁸ This approach would include emissions from agricultural power and fuel consumption as well as emissions linked to the production of fertilizer production. If the above-mentioned natural scientific (including technical) problems would be solved, any “other” land-use emissions, as for example those resulting from land use changes, deforestation and more generally from cultivation processes, could be integrated into the ETS as a second factor besides primary energy.

Existing legal practice and legal policy proposals suggest other ways that must now be considered in detail. We will neither present in detail here how the past and for the near future expectable climate change objectives (as well as the existent ETS between states) fall far from a global 80%-reduction target, nor will we show in detail how unambitious enforcement mechanisms, calculation tricks (e.g. CDM, see below, and the inclusion of exceptional emission re-

⁷ Felix Ekardt, “Climate Change”, supra, 1st note (*), chapter 3 provides a summary of scientific evidence.

⁸ Ibid., for example, for details on a per capita eco-bonus for all people (low in countries purchasing emissions rights and high in countries selling emission rights). The eco-bonus would be financed by the sales revenues from the company ETS. The revenues from company ETS itself would be increased or decreased according to the revenues or expenditures in the state ETS. This financial transfer to developing countries is necessary for ethical and legal grounds.

ductions such as the Eastern European industry collapse in 1990), the lack of reduction goals for developing countries and in return, lack of financial support from the developed countries are. This criticism applies not only to the existing EU ETS as the implementation of the existing state ETS, but ultimately to the whole of the EU climate policy, if measured by the objective concluded from the above-mentioned challenges.

1. International Law and Climate Related Land Use Rules

The Kyoto Protocol (KP) – hitherto dominating global climate protection – stipulates the possibility of including sinks in the calculation of the net changes of GHG emissions (Article 3 paragraph 3 KP). This way, since 1990 changes in carbon storage that are caused by directly human-induced land use change and forestry activities are counted, the allowable changes being explicitly limited to afforestation, reforestation and deforestation. The definition of these terms was not yet included in the KP itself, but the parties finally agreed upon the necessary definitions as part of the so-called Marrakesh Accords after an intensive preparatory process, incorporating the IPCC.⁹ In order to compensate for the fact that according to these rules countries with an active forest management can receive net debits despite the constant forest areas, it was agreed that these debits may during the first commitment period not exceed the credits incurred since 1990.¹⁰ In addition, Article 3, paragraph 4 KP stipulates that additional sink activity may eventually be eligible (already in the first commitment period, contrary to the in this respect somewhat confusing wording). According to the Marrakesh Accords, forest management, cropland and grassland cultivation and the greening, i.e. planting vegetation, of wastelands are recognized.¹¹ However, the quantitative limits for the consideration of forest management activities must be adhered to: The carbon sequestration achieved by forest management activities can – vis-a-vis the net debits from sink activities – only be accounted as a compensation for existing debits, and at most to a height of 9 Mt of carbon per year.¹² Moreover, in accordance with Article 3, paragraph 4, the appendix provides quantitative limits to the increase of carbon sequestration from forest management. For Germany, for example, the limit is 1.24 Mt C/ year.¹³

Another, still very controversial issue in relation to the recognition of LULUCF activities under the climate law is the regulation of sink projects under the flexible mechanisms of the KP, i.e. Joint Implementation (JI), Clean Development Mechanisms (CDM) and emission trading schemes (ETS). The basic idea of the JI mechanism enshrined in Article 3, paragraph 10 and 11 in conjunction with Article 6 KP is that an Annex I country shall be enabled to meet reduction commitments through specific projects realized jointly with another Annex I country. The reductions realized by the developer in the host country will then be transferred in the form of Emission Reduction Units (ERUs) to the foreign investor. The total emission rights of investor and host state will be adjusted accordingly. Sink projects are generally possible in the context of JI activities (see Article 6, paragraph 1 KP), but only within the national limits we already described.¹⁴

⁹ See Decision 11/CP.7, Land Use, Land-use Change and Forestry, UN Doc. FCCC/CP/2001/13/Add.1, at 58.

¹⁰ *Ibid.*, at 59.

¹¹ *Ibid.*, at 59.

¹² *Ibid.*, at 60.

¹³ *Ibid.*, at 60, 63.

¹⁴ *Ibid.*, at 60, 63.

According to Article 3, paragraph 12 in conjunction with Article 12 KP, Annex I countries can also acquire so-called Certified Emission Reductions (CERs) if they realize specific projects in developing countries. The CERs will then be added to the allotted amount of emission allowances. Thus, in contrast to the JI mechanism, CDM projects generate additional allowances. That is why the CDM is highly controversial, especially with reference to sinks. In contrast to Article 6 KP, Article 12 KP does not explicitly name sink projects. At first glance, this may lead to the conclusion that sink projects shall be excluded from CDM, but it was explicitly agreed in the context of the Marrakesh Accords that sink expansion projects are eligible for the CDM. However, this is limited to afforestation and reforestation activities. Also, in the first commitment period, the yearly amount of the CERs generated in sink expansion projects may not exceed the maximum limit of 1 % of the party's base year emissions.¹⁵ Furthermore, the treatment of land use activities in CDM projects will be reviewed in the course of negotiations for the next commitment period. Also, sink projects in the CDM only generate temporary certificates. Thus, the aforementioned problems of durability associated with ecosystem carbon sinks are addressed. A distinction is made between temporary Certified Emission Reductions (tCERs) and long-term certified emission reductions (lCERs).¹⁶

Moreover, Annex-B countries may trade their emission units under Article 3, paragraph 10, 11 in conjunction with Article 17 KP. This ETS between states including the Assigned Amount Units (AAUs) serves the states to meet their quantitative reduction commitments at least cost. Thus, after what has been said so far, different emission units (RMU, AAUs, ERUs, CERs) are tradable in the state ETS. The first commitment period under the Kyoto Protocol was launched in 2008 and ends in 2012, at what time the Kyoto Protocol itself ends as well. It is not clear yet whether the world's governments will agree on a similar regime with specific binding reduction commitments for the time after the end of the Kyoto Protocol. Negotiations in the so-called post-Kyoto process have so far proven very difficult.

The phase of post-2012 is already in the centre of the current debates on climate policy and current developments in climate policy. At the international level, forest issues are prominent and there is still much debate over the inclusion of these questions in a yet to be developed post-Kyoto agreement. While many of the terms have changed, the beginning of this debate dates back to the Kyoto Protocol. For example, the so-called Bali roadmap (the main part of the Bali Action Plan) was adopted in the context of the COP-13 in 2007 and explicitly calls for the inclusion of global forest protection in a post-Kyoto agreement (see No. 1 (b) (iii) of the Bali Action Plan).¹⁷ Thus, parties implemented a new policy approach that has been further developed in the upcoming negotiations. This new policy approach actually dates back to the COP-11 in 2005, when the governments of Papua New Guinea and Costa Rica and eight supporting parties put it on the agenda of the United Nations Framework Convention on Climate Change (UNFCCC). So far, the approach has shaped yet not simplified the debate: Since the Bali conference, parties have discussed – under the heading of Reducing Emissions from Deforestation and Forest Degradation in Developing Countries (REDD)¹⁸ – a set of policy

¹⁵ Decision 11/CP.7, Land use, Land-use Change and Forestry, UN Doc. FCCC/CP/2001/13/Add.1, 21 January 2002, at 60 f.

¹⁶ These certificates are provided with an expiry date, which varies according to the type of certificate: tCER are valid up to the end of the next commitment period, while lCERs are valid up to the end of the crediting period of the project. Temporary certificates must be replaced by definitive certificates after expiration.

¹⁷ See Decision 1/CP.13, Bali Action Plan, UN Doc. FCCC/CP/2007/6/Add.1, 14 March 2008, at 3.

¹⁸ Respectively REDD+. The term REDD+ stresses that REDD is not related solely to the reduction of deforestation but also on additional measures such as reforestation and sustainable forest management.

models that aim at establishing and operationalising a global forest carbon market by 2013. The idea is to promote forest protection, especially in developing countries, by assigning a monetary value to the forests, thus increasing their importance in future policy decisions. This requires an assessment of the affected emissions and the development of appropriate mechanisms. These issues are currently discussed under the heading of REDD, but there still is controversial debate over the concrete design: parties discuss different types of operationalisation (e.g. inclusion in the ETS, fund solutions, and the development of an entirely new instrument) and a consensual solution is not yet in sight. The scientific, political and socio-economic challenges connected to this approach are obvious and diverse. On request of various countries and stakeholders and encouraged by some donor countries, FAO, UNDP and UNEP established a joint fund-based REDD Programme (The United Nations collaborative programs on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries) following the Bali roadmap. The programme's goal is the further development of projects and concepts in the context of REDD.¹⁹

Contrary to the plans of the Bali Roadmap, however, a viable consensus on a post-Kyoto agreement or a comparable independent REDD agreement has not been developed so far. For the time being and despite intense discussions, especially in context of potential REDD mechanisms, the negotiations that took place in Copenhagen in December 2009 ended in no more than a political declaration (the Copenhagen Accord). The Copenhagen Accord merely mentions the need for action in general terms. In general, negotiating parties in Copenhagen showed a strong effort to increase the level of detail concerning LULUCF-related statements and to create a regime – possibly in a treaty separated from the yet to be changed Kyoto Protocol – that, in a first step, reveals and monitors deforestation in tropical developing countries in particular and, if possible, slows down or even stops deforestation by implementing support mechanisms. A first REDD agreement under the umbrella of the UN Framework Convention on Climate Change Conference 2010 has been adopted on the climate conference in Cancun in 2010.²⁰ However, the agreement does not yet include the actual implementation of appropriate financing mechanisms, commitments or sanction models or other concrete details.²¹ Rather, it is a first step in a multistep process that initially aims at “Readiness for REDD”, thus targeting the national conditions in affected developing countries (e.g. recording of forest resources, development of national action plans and monitoring systems, communication with the relevant stakeholders). For the first time, parties have stipulated so-called safeguards that aim at protecting the rights of indigenous peoples and other issues related to REDD (e.g. biodiversity conservation).²² However, key issues such as financing, definitions of essential terms (such as “sustainable forest management”), the decision on the introduction of market mechanisms for REDD, and its relation to the reduction targets of a possible post-Kyoto agreement, are still unsolved.

¹⁹ On activities and policies see the homepage <<http://www.un-redd.org/>> (last accessed on 25 September 2011).

²⁰ See Section C. (Art. 68-79) of the central outcome document of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention at COP-16 (hereinafter COP-16/LCA), 15 March 2011, available on the Internet at <<http://unfccc.int/resource/docs/2010/cop16/eng/07a01.pdf#page=2>> (last accessed on 25 September 2011).

²¹ See Art. 77 COP-16/LCA, supra, note 20. This article postpones further discussion of financing options to the COP-17.

²² See Article 69 and Annex I COP-16/LCA, supra, note 20. COP-16/LCA does not, however, explicitly require a monitoring system to monitor compliance with the safeguards, Instead, parties are only obliged to “develop ... a system for providing information” (Art. 71 (d) COP-16/LCA).

Since Copenhagen, parties have discussed more detailed changes to the wording of the Kyoto Protocol for the period from 2013, and these changes also concerned the LULUCF sector and the consideration given to the LULUCF activities in the context of the reduction targets and flexible mechanisms. These changes were neither adopted nor even taken note of in Copenhagen. Recently, negotiating parties have discussed extending eligible LULUCF measures. In addition to the already eligible measures concerning forests (afforestation, reforestation and deforestation), they discuss the inclusion of revegetation, forest management, cropland management, grazing land management and wetland management. The egalitarian inclusion of all countries in land use issues is also considered, as this would ensure comparability. The EU has submitted a very controversial proposal about the right of Contracting States to set an arbitrary baseline that would be the basis for credits and debits. The discussion is also about including CDM – which is, by the way, ecologically rather problematic²³ – in further LULUCF activities. In Cancun, it has been held once again that the KP definitions of relevant terms that had been reached in Marrakesh in an arduous process will remain valid in a possible second commitment period. Also, the negotiating parties decided to further examine whether emissions from forest management activities should be included in forest management measures in a new cap.²⁴ At the same time, LULUCF activities shall remain part of the flexible mechanisms. To a large extent, the potential for carbon sinks will still be taken into account in the decisions on the emission reduction commitments – provided that there is a follow-up agreement.

2. European Law and Climate Related Land Use Rules

As already pointed out, a distinction is drawn between Europe's central climate protection instrument, i.e. the European company ETS limited to specific industries, and a state ETS on the level of international law. The EU ETS under the EU Emissions Trading Directive (ETS Directive) being the first cross-border and the world's largest company ETS is also one of the most important means by which the EU tries to comply with its reduction commitment under the Kyoto Protocol. Starting with the beginning of the first trading period of the state ETS in 2008, the mechanisms and certificates are partly linked. The EU ETS currently covers CO₂ emission limits of some 12,000 plants in 30 European countries (EU, Liechtenstein, Iceland and Norway). During the second trading period of the EU ETS (2008-2012), it covers certain industrial activities in large industrial plants, such as energy conversion and transformation, ferrous metal production and processing, the mineral industry (cement, glass, ceramics) and some other industries (paper pulp production from wood and other fibrous materials, paper and cardboard production).²⁵ Recently, the EU has decided some amendments and readjust-

²³ It should be noted in this context that the "additionality" to the business-as-usual scenario is considered doubtful in about half of the CDM projects in a given developing country. Sink projects within CDM may therefore contribute little to climate protection. This shows that the discussions in the post-Kyoto process about including CDM in LULUCF activities is not very useful. More about the criticism on CDM: Felix Ekardt, Anne-Katrin Exner, and Sybille Albrecht, "Climate Protection, Justice, and CDM. A Review of the Copenhagen Protocol Draft", 3 *Carbon & Climate Law Review* (2009), 261, at 264 et seq. with further references.

²⁴ For more information on this and on the following, see the Report of the Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol at its 15th session (COP-16/KP), FCCC/KP/AWG/2010/L.8/Add.1, 10 December 2010, available on the Internet at <<http://unfccc.int/resource/docs/2010/awg15/eng/l08a01.pdf>> (last accessed on 25 September 2011), and the outcome document on land use, land-use change and forestry (COP-16/LULUCF), also accessible at the website of the UNFCCC.

²⁵ Cf. Appendix I of the ETS Directive, Directive 2003/87/EC of the European Parliament and of the Council,

ments for the next trading period. For example, air traffic will be covered by the EU ETS in future.²⁶ In addition to emissions trading, the so-called Linking Directive (Directive 2004/101/EC) integrated other flexible mechanisms of the Kyoto Protocol (CDM and JI) into the EU ETS, thus creating a link between the systems. The use and trade of credits from sink projects (RMU, ERU from RMU, t-/l-CER) as a means to comply to reductions commitments is not allowed within the plant based EU ETS but only within the state ETS. ERU generated from AAU of the host country (for other JI projects), however, can be held on the accounts of industrial plants and on personal accounts. Participants of the EU ETS may use these ERU for compliance with their reduction commitments. This is limited to 22 % of the allocation of a given industrial plant (in total, along with the CERs from CDM projects outside of the LU-LUCF sector).

But how does the inclusion of land use present itself within European law? First, it has to be noted that the sectoral consideration of LULUCF activities in the emissions trading is not possible under current EU law, whereas it is possible to a certain degree in international law: As already described, the EU ETS is limited to the activities mentioned in Annex I of the ETS Directive. That is, emissions from agricultural and forestry operations are currently not covered by the cap-and-trade system of the EU ETS. In principle, however, such a sectoral expansion of the EU ETS is legally possible: Article 24 ETS Directive provides a method for unilateral inclusion of additional activities and gases. From 2008, Member States may apply emissions trading to activities not listed in Annex I, installations and greenhouse gases, provided the Commission approved the extension in the proceeding specified in Article 23, paragraph 2 ETS Directive (so-called “opt-in”). Here, the Commission has to take into account all relevant criteria. Art. 24 ETS Directive specifically mentions in particular effects on the internal market, potential distortions of competition, the environmental integrity of the scheme and reliability of the planned monitoring and reporting system. Once the Commission approves the inclusion, it shall also consider whether Annex I should be amended to include emissions from these activities in a harmonised way throughout the EU. The opt-in procedure has not yet been applied to agricultural activities in the EU.²⁷

Since plant operators participating in the company ETS can partially fulfil their reduction commitments by means of JI and CDM projects (see above), the question remains whether and to what extent LULUCF activities can be used in this framework. As on the international level, this question has long been controversial in the EU. Finally, the Linking Directive introduced several passages to the ETS Directive that deal with LULUCF-related aspects: Recital 9 of the Linking Directive referred to the decisions 15/CP.7 and 19/CP.7 (parts of the Marrakesh Accords) and to the insight that environmental integrity is to be achieved, inter alia, through sound modalities, rules and guidelines for the mechanisms, and through sound and strong principles and rules governing LULUCF. The following problems of afforestation and reforestation projects should be pointed out explicitly: the lack of durability, the additionality

OJ 2003 L 275/32.

²⁶ See Directive 2008/101/EC of the European Parliament and of the Council amending Directive 2003/87/EC so as to include aviation activities in the scheme for greenhouse gas emission allowance trading within the Community in particular, OJ 2008 L 8/3. The Decision No. 406/2009/EC of the European Parliament and of the Council on the effort of Member States to reduce their greenhouse gas emissions to meet the Community's greenhouse gas emission reduction commitments up to 2020, OJ 2009 L 140/136 and the Directive 2009/29/EC of the European Parliament and of the Council amending Directive 2003/87/EC so as to improve and extend the greenhouse gas emission allowance trading scheme of the Community, OJ 2009 L 140/63.

²⁷ See European Commission, Commission Staff Working Document, supra, note 5, at 17.

which is always the essential prerequisite in the CDM, the threat of mere displacement effects that make these efforts pointless regarding climate protection (we will come back to this at the end of this text), the uncertainties, and socio-economic and environmental impacts, including impacts on biodiversity and natural ecosystems. The need to consider technical regulations in the review of the ETS Directive in 2006 was recognized. These technical regulations concerned the consideration of LULUCF projects – please refer to the new Article 30, paragraph 2 item o) ETS Directive that was added by the Linking Directive.

Article 11a, paragraph 3 ETS Directive that was amended by the Linking Directive is particularly relevant to our analysis: According to this article, all CERs and ERUs which may be traded under the state ETS, may also be used in the EU ETS (see above). However, there are two important constraints, one for nuclear power projects (lit. a), the other for project activities in the areas of LULUCF (lit. b). This means that LULUCF projects are specifically excluded from the EU ETS. This also explains what we already mentioned regarding ERUs generated from RMUs as well as regarding tCERs and ICERs: Since all of these certificates are generated in context of sink projects, they may not be used in the EU ETS, but only in the ETS between states.²⁸ Although the EU has already decided the further development of the EU ETS that may also imply changes regarding the treatment of LULUCF activities, this is irrelevant for the current trading period. Article 3 of the Amending Directive 2009/29/EG provisions that the ETS Directive applies until 12/31/2012, i.e. the end of the current trading period, in the version amended, among others, by the Linking Directive. The new rules thus only concern future developments.

The Complementary Directive 2009/29/EC amends the ETS Directive and brings a number of innovations in regard to LULUCF that will become effective in 2012 (see Article 3 Directive 2009/29/EC). Within three months of the signature of a post-Kyoto agreement, the Commission shall submit a report assessing, inter alia, the following elements (see Article 28 ETS Directive as amended by the Complementary Directive): the impact on the EU agriculture sector, including carbon leakage risks; the appropriate modalities for including emissions and removals, i.e. carbon storage, related to LULUCF in the EU; afforestation, reforestation, avoided deforestation and forest degradation in third countries in the event of the establishment of any internationally recognised system in this context. In addition, the Complementary Directive provisions a new version of Article 10 ETS Directive, which governs the future auctioning of allowances. The new Article 10, paragraph 3 requires that at least 50 % of the revenues generated from the auctioning of allowances should be used for, inter alia, measures to avoid deforestation in developing countries and forestry sequestration of carbon in the EU. Furthermore, the Commission made clear as early as 2008 that the EU shall consider the recognition of credits generated by forestry only as a complementary instrument, only in the longer term – i.e. for the period after 2020 – and only under the condition that, inter alia, the supply/demand balance and liability are resolved.²⁹

²⁸ This is not paradoxical, since not all emission rights given to a country by international law are subject to the country ETS.

²⁹ European Commission, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: Addressing the Challenges of Deforestation and Forest Degradation to Tackle Climate Change and Biodiversity Loss, COM(2008)645 final, at 11.

III. Toward a Better Implementation of Land Use Issues in Climate Protection Law: Quantitative Control and Monetary Valuation

The criticism on the current treatment of land use and on the openness of the CDM is quite understandable, considering the measurement and baseline problems and the low (or, because of loopholes, even negative) contribution to global climate protection. According to the criticism, the possibility of including sinks has “watered down” the KP reduction target. But how can the difficulties in emissions trading be reconciled with the need for action that exist in spite of these difficulties? And can the two be reconciled at all? As pointed out before, an increased inclusion of land use in the ETS could prove the most interesting approach, simply because the ETS could be the most effective climate protection instrument, if the following conditions are met: stricter global reduction targets, stricter enforcement mechanisms, involvement of more states and parties worldwide (combined with very high financial compensations for developing countries) and prevention of possible loopholes. But how can land use be included in the ETS?

A full integration of land use in an ETS that needs to be stricter, as just mentioned, would mean something like this: In order to include land use in the international ETS, all forms of land use must mandatorily (i.e. no longer just facultative and partially) be covered by the regime that sets up the reduction targets (and hence the tradability of emission allowances between countries). If, in the next step, the EU creates an expanded, internal company ETS that covers essentially the entire amount of greenhouse gases allocated to a state respectively the EU, a primary energy ETS, with a gradually decreasing amount of greenhouse gases would replace the existing sectoral ETS (and probably some other climate policy instruments) and represent the total of reduction targets in the EU. This company ETS would include land use as far as the emissions connected to it are not already covered by the ETS like, for example, agricultural electricity consumption and (energy-intensive) fertilizer production. On the one hand, this approach would map all relevant emissions and impose a price on these emissions. On the other hand, the primary energy ETS would show actual (climate) results in land use and make these results marketable. This monetary valuation of land use would result in an additional valorisation and also to some extent “increased privatization” of the soil and, most of all, the “climate use”. The value of the natural resource “soil” would in some way be emphasized, even independent of climate protection. This would also have very practical consequences for soil protection in other respects: If the ETS would impose a price on ploughing for reasons of climate protection and thus make ploughing less attractive, this would also serve the enrichment of organic matter in the soil and nature conservation.

CDM (and probably JI), by the way, would have no place in this new ETS as these mechanisms currently are mere “crutches” that aim at promoting singular emission reduction measures in developing countries not participating in the international ETS because of a lack of own national reduction targets. The emissions reductions achieved in these countries by CDM projects automatically reduce the load of reduction of the respective industrial state. In a new ETS, however, all countries worldwide would be involved with reduction targets in order to meet the real need for action and avoid substitution effects. In return, the developed countries would provide high financial compensations³⁰ for developing countries by purchasing emis-

³⁰ And, as we have seen, these compensations should preferably not be paid to governments, but to individual people as an eco-bonus and in form of an internationally monitored individual entitlement. In regions where there are no bank accounts, investing in certain social measures such as the implementation of a social security

sion rights in the South. These financial compensations would be further enhanced in favour of the South due to an asymmetric distribution of emission rights. Note that without these compensations developing countries could not afford the necessary mitigation and adaptation to climate change.

This kind of comprehensive company ETS (as well as its alternative, a comprehensive energy and land use tax) can be described as a form of “quantity control” of the climate change problem, combined with indirect effects and effects of quantity control³¹ for the soil and nature conservation. Such an approach has many theoretical advantages, but is still not very common in (not only) European environmental policy. It is an attempt to respond to the fact that the current European “policy mix” with many small-scale instruments which are often bureaucratic, uninspiring and weak regarding enforcement, has indeed not solved important environmental problems. Despite a very large number of policy instruments and the necessity to reduce GHG emissions by 95 % by 2050, GHG emissions per capita, for example, remain constant on a high level in the EU, if one leaves out common calculation tricks. This is not very surprising: The prohibitions and technical efficiency rules that are typical for environmental legislation and also for land use, such as certain rules “per plant” or per arable land area, for structural reasons, can never really solve quantity problems like climate (and, incidentally, biodiversity, availability of fertile land, availability of drinking water, etc.). This is an important insight and often overlooked by the whole of environmental policy: An efficiency requirement by means of command and control, for example, to use “a little less power in the cultivation of certain foodstuff”, will not result in drastic quantity reduction and cycle orientation for scarce resources. They have virtually no effect, if the global agricultural production and therefore the greenhouse gas quantity is increasing at the same time, for example because of energy crops (which do indeed have some impact on the climate) or a rise in global meat consumption³² (rebound effect). As environmental law typically focuses on “individual cases” or “individual land users” it tends to overlook that many small individual actions may in sum have fatal consequences to the environment and our natural resources (cumulation problem).³³ That’s why it is necessary to submit individual actions to a quantitative management rather than to optimize them individually. Moreover, a quantitative control is easier to enforce than regulatory law. Similarly, it would indeed not be helpful to regulate only fossil fuels and not the land use since this approach would, for example, trigger a run on bio-energy and cause other problems regarding climate change and the world food situation. These displacement effects may generally be caused by a selective and in particular a command and control policy.³⁴

Since land users would partly pass on the ETS-induced increase in land costs to consumers, system may replace the individual payment.

³¹ ETS and charges both intend a quantity reduction and achieve the reduction by a price. Formally, charges set a price and leave the quantitative developments to the market, while the ETS’s approach is just the opposite.

³² Cf. Secretariat of the Convention on Biological Diversity, *Global Biodiversity Outlook 3*, available on the Internet at <<http://www.cbd.int/doc/publications/gbo/gbo3-final-en.pdf>> (last accessed on 25 September 2011), at 75, and in particular the establishment of different management scenarios at 77, that illustrate the negative impacts a C-price without consideration of land use may have on ecosystems.

³³ For more general remarks on the limits of economic growth see Felix Ekardt, “Climate Change”, supra, 1st note (*), Chapter 3. Economic growth will come to an end in the Western hemisphere in the mid-term (!), once all potentials of efficiency and dematerialization strategies are used. This is due to the rebound effect, the extent of climate and resource problems and the physical finiteness of the world.

³⁴ See Felix Ekardt and Hartwig von Bredow, “Managing the Ecological and Social Ambivalences of Bioenergy”, supra, note 2, on the problems of bioenergy and Felix Ekardt, Nadine Holzappel and Andrea Ulrich, “Phosphorus, Land Use and Absolute Quantity Reductions as a Legal Problem”, 7 *Journal for European Environmental & Planning Law* (2010), at 267 et seq. on the quantity problem of scarce (essential) phosphorus.

the price of food at the counter, for example, would “tell the truth about the environment and the resources”: Animal products, for example, would be significantly more expensive, and food (especially meat) would be used sparingly. This approach also is more adequate to democracy than the traditional environmental law since the necessary decisions are taken by the legislator and do not depend primarily on the ascertainties and enforcement capabilities of an administrative body – as is the case in the limit value-oriented command and control law.

A land-use ETS has to meet several conditions in order to make sense in terms of climate policy: First, the global impact of land use on climate change can only be displayed fully if land use is globally subject to an ETS or a similar instrument. Otherwise there would be the risk that the GHG intensive land use activities would simply be shifted to other countries with lower climate policy requirements (displacement effects). Second, the baseline has to be set in an appropriate manner – and not, as discussed in Copenhagen, arbitrarily by national governments – and their enforcement has to be ensured. This requires not only a global sufficiently powerful law enforcement institution and therefore a reassessment of the UN Climate Secretariat. It is also necessary, and this is our third point, to ensure that the assessment of the climate impact of different land uses and their measurement in the monitoring of specific individual actions (e.g. by means of remote sensing) actually succeeds. This may require a profound intensification of scientific research. While it is by no means necessary to obtain a perfect database, since an effective control can also be based on approximations, the question remains whether the scientific knowledge base will be sufficient in the near future – a question not to be answered from a climate sociological perspective. In any case, the extended integration of land use aspects in the drafts of a post-Kyoto climate protection regime can only be evaluated on the basis of answers to, inter alia, the aforementioned questions. Fourth, the ETS’s creation of new revenue streams is not an end in itself. The ETS will only achieve its goal if it sets up drastic objectives that, unlike the existing international ETS and the company ETS, meet the margin “around minus 95 % in the EU until 2050”. This implies also: The inclusion of land use must be designed in a way that it does not turn to a loophole for an irregular softening of reduction commitments. Moreover, it may be necessary to adapt the quantitative reduction targets to the integration of land use. Fifth, the regime has to go about land use not only globally, but also in a continuous manner in order to avoid e.g. “temporary” afforestation, or substitution effects. The problems numbered three and four, in particular, raise complex questions:

IV. Obstacles and Dilemmas of an Extended Inclusion of Land Use

So far, an extension of the ETS-inclusion of land use is subject to significant problems. These problems relate to natural scientific ambiguities, in particular, and the aversion of national governments to a powerful international management authority as well as to truly relevant GHG reduction targets. Due to the vagueness of baselines and calculations, present consideration of sinks in the KP has been perceived as a loophole rather than as a real contribution to climate protection. To that extent – and considering the enforcement problem – the optimism of some regarding the resolvability of the problems seems inappropriate.

Even if politicians and the government bureaucracy stress the inevitable trade-off character of global climate protection policy in response to these statements, we must nevertheless give

account for whether the measures that are “realistic” really contribute to solving the problem - or whether these attempts (for example the Copenhagen Accord or the ETS Directive) are a rather symbolic legislation. While there are frequent requests for clear rules concerning the crediting of changes in land use and forestry, it has to be stated that the negotiating parties mainly agreed on the inclusion of LULUCF in the KP for the simple reason that the rules were so vague that anyone could administrate at will his baseline, the execution and ultimately his loophole. Regarding the negotiations still to come, one might predict concrete and clear regulatory proposals for the LULUCF sector will hardly find general consensus and therefore cannot easily be implemented by international law. During recent negotiations, for example, some of the negotiating parties tried to take the baseline determination as a starting point to produce a similar effect as we have seen regarding the treatment of sinks within the KP. Some argued for a model set in which the countries themselves set their own baselines. Unfortunately, this favours the design of baseline scenarios that imply a very high rate of deforestation in order to refer to refrains from deforestation and certain afforestation measures when regarding the reduction commitments. Germany, for example, has brought into conversation a baseline model that would substitute up to 6 % of its reduction commitments. This approach does not speak for a clear and effective policy approach but is more likely a continuation of the (erroneous) view that climate protection equals costs that have to be avoided. As LULUCF activities are somewhat elusive, they appear to be predestinated to be used as a fall-back option in this context – all opposing “rhetoric” notwithstanding.

What approaches, besides ETS, are discussed so far? Fund solutions focussing on the deforestation of rain forests are currently in the centre of attention. It is often pointed out that fund models have the advantage of a relatively simple management and include aspects of capacity building. However, it is fairly obvious that the proverbial “financial pots for the developing countries” often have not proved very successful in the past. The “financial pots” are often not filled to the extent promised, they degrade the developing countries to petitioners, they are vulnerable to the luxury needs of southern elites, and, above all, they only address a very limited (though important) portion of the problems of land use. Moreover, none of the above problems – especially law enforcement, understandability, demanding baseline and ambitious goals – is in any way “non-existent” to fund solutions. The problems exist here the same way they exist within the ETS. While everyone knows that the ETS needs international control (thus raising awareness of these problems), fund solutions quickly show the psychological effect of sedation: It appears as if “something has been done” – but the real effects of the money are uncertain. For these reasons, little is gained by general demands for a forest conservation fund, better links between climate and biodiversity policies, a coherent promotion of forest conservation, grassland and wetland protection, and the request for land use forms that are nature friendly and adapted to climate change. In the absence of precise, demanding and strictly enforced requirements, these proposals may very well be a well-intentioned, but rather inconsequential contribution to basic intentions such as “knowledge transfer”, “more financial aids for developing countries”, etc.

Including land use in CDM only and not including it as a whole in the ETS does not seem to be a good idea. Unlike under the current approach, this would continuously imply a state ETS restricted to developed countries. Developing countries would be included in the ETS only selectively via the CDM, as is currently discussed. We therefore agree with the scepticism e.g. the EU Commission shows towards including land use into the existing (!) ETS. This is true

not only because of the general, already mentioned, uncertainty of many actual CDM projects. Rather, the field of land use would exacerbate the problem even more. The CDM lacks a rigorous supervision of projects, and, as mentioned before, many dubious projects get approved. In addition, the architecture of the CDM provides no lasting examination of projects. This makes “interim” measures, such as afforestation, that can be reversed or otherwise affected at the next opportunity, very attractive. At the same time, limiting the land use issue on CDM projects would encounter the same difficulties as does the full inclusion in the ETS. Therefore, “limitation to CDM” does not promise any gain in terms of feasibility, etc.

It is actually not very important where, i.e. in what agreements or regulations, land use is enshrined in international law, even if national governments probably attach a high symbolic significance to that question. For not the location of the scheme but its substantive quality and the question of who will be bound by it in what way is ultimately decisive. First, the elaboration of a new separate and sectoral land use international legal “land-use protocol” on the reduction of emissions due to deforestation would be possible within the UNFCCC. It would obviously make sense to include land use in the existing regulations. The current debate whether there will be a new general framework for international climate protection, or whether there will be a second protocol regulating the obligations of states that do not participate in the KP, is ultimately a symbolic issue. It clearly is more important to regulate land use in a uniform and binding way for all states, as has been discussed internationally. While a uniform regulation would benefit climate protection, not much is gained as long as the other issues are not solved.

ETS and fund solutions would in any case have to take into account further details in order not to appear counterproductive. For instance, it would by no means be desirable to equate the value of agricultural plantations with the value of existing forests. New biomass plantations may hardly substitute the ecosystem services of old forests rich in biomass, since the accumulation of carbon takes much longer periods of time than its release (“slow-in-fast-out effect”). Also, an intensified plantation management of areas that were formerly covered by forests is associated with other problems, e.g. the creation of monocultures, soil erosion, the change of the regional water balance, etc. Also, the cultivation of invasive species may threaten local biodiversity. This shows once again that a narrowing of the debate could occur if one focuses too much on the purely climate related aspects of LULUCF. Just as forests are complex ecosystems and may not be restricted to climate services, climate services cannot be restricted to forests. Nevertheless, a C-Price can cause significant and important effects beyond climate protection as well. However, further soil protection and nature conservation schemes, preferably on the international level, are of course useful and necessary besides climate change law.

The type of forests that are mainly addressed by the REDD concept do not only supply ecosystem services, but, above all, anthropogenic habitats for local forest dependent communities and indigenous people. Also, pervasive corruption in developing countries often poses problems. All this reveals the necessity of strict international surveillance. Needless to say, national states are reluctant to international monitoring, as they are often in the grip of traditional concepts of sovereignty. Should it appear that the measurement and enforcement problems cannot be resolved in a satisfactory manner (even by making use of standardizations), the aporia of an urgent need for action on the one hand and a lack of suitable regulatory options on the other hand would prevail. The main obstacle, however, is certainly not to be seen in

scientific problems but rather in the lack of will to move towards truly ambitious global climate protection. Despite the industrial countries' initial high payments to developing countries, an ambitious climate policy that would gradually enforce a significant change of lifestyles would be sustainably advantageous with regard to peace policy, the safeguarding of our natural resources and economy.