

# CLIMATE STRATEGIES



## **Working Paper Linking-3**

### **Prospects of linking the EU Emission Trading Scheme with a Federal US Emissions Trading Scheme along the lines of the Lieberman-Warner Proposal**

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**Abstract:**

A global carbon market is often advocated as the most cost-effective means to reach emission reduction targets. However, the environmental and economic benefits of emissions trading and by extension of linking crucially depend on the design of the trading systems. This paper therefore analyses the designs of the EU ETS and the US Lieberman-Warner proposal to assess whether these two (proposed) systems have design features that would lead to negative environmental or economic impacts in the case of linking. Particular areas of concern are the protection of the environmental integrity of the trading system as a whole, avoidance of negative economic or distributional impacts, and protection of design choices made in the establishment of an ETS.

In addition to the discussion of design elements, the paper also examines possible mechanisms for linking the EU to an US ETS. There exist various possible forms of linking, such as direct and indirect, bilateral and unilateral links, as well as various possible legal mechanisms to implement the link, such as treaties or more informal agreements. Moreover, since the USA has not ratified the Kyoto Protocol, linking to an US ETS faces additional challenges since Kyoto Protocol units can only be transferred between countries that have ratified this.

It emerges that the Lieberman-Warner scheme would be designed very differently from the EU ETS in crucial respects such as the stringency of the cap and the inclusion of cost-containment measures. Most importantly, what the various cost-containment measures of the Lieberman-Warner proposal aim to do is to keep allowance prices within a certain range. Through linking, the EU would therefore effectively cede control over its allowance price and the emissions implications to the USA. It can be expected that this situation would not be palatable to the EU.

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# 1 Introduction

Since the adoption of the Kyoto Protocol in 1997, the establishment of a harmonised international carbon market has been seen as one of the main strategies in international climate policy. So far, however, the state of the market is far from being globally harmonised or systematically linked as, for example, optimistically suggested by Wicke (2005). Instead, a mosaic of national and regional markets has been under development, differing in timing, location, relationship to the Protocol and their levels of legal commitment. While the traded commodities, metric tonnes of CO<sub>2</sub> equivalent (CO<sub>2</sub>-eq.), may seem identical, covered trading sectors and agents can be quite different.

While the EU has been among the frontrunners with its emission trading system (ETS) having been up and running since 2005, the emissions trading debate in the US Congress also continues to intensify, with various bills having been proposed both in the Senate and in the House of Representatives. The most prominent of these bills has recently been America's Climate Security Act (ACSA 2008) proposed by Senators Joseph Lieberman and John Warner. While the Lieberman-Warner bill did in the end not get passed, it is supposed to be reintroduced in 2009 and can be expected to have a significant influence on any US emissions trading legislation that may eventually be passed.

This paper therefore aims to assess the potential for linking a US scheme along the lines of the Lieberman-Warner proposal to the EU ETS. Linking means that one system's trading units can be used, directly or indirectly, by a participant in another system for compliance. Economic theory suggests that efficiency would increase if domestic trading systems were linked with each other. The inclusion of more participants entails a greater diversity of sources and more abatement options. This should in turn lead to improved market liquidity and result in a more efficient allocation of resources towards least-cost abatement measures and thus lead to lower overall compliance costs (Haites and Mullins 2001; Anger et al. 2006, Anger 2007).<sup>1</sup> Linking the emerging domestic systems could also be politically significant since the top-down approach of the Kyoto Protocol would be underpinned by a bottom-up process which might serve to further strengthen the Kyoto regime via bi- and plurilateral agreements.

In addition, linking the EU ETS to a US trading scheme might represent a vital first step to re-engage the world's second-largest GHG emitter in the international efforts to mitigate climate change. It is not yet clear whether reintegration of the USA into the international climate regime can take place through an immediate ratification of the Kyoto Protocol or a successor agreement. Instead, the USA might first establish a national climate policy, which is likely to have emissions trading at its centre, and then connect its domestic policy

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<sup>1</sup> However, despite these gains at the macro level, linking will inevitably create winners as well as losers at the micro level. While net sellers in a domestic emissions trading scheme with low permit prices will benefit from a linkage to a scheme where the allowance price for allowances is higher, the opposite is true for buyers in the first scheme. At the same time, net buyers in the high-price scheme win from linking, whereas sellers in this scheme lose.

to the international regime. Full reintegration of the USA would in this scenario take place only at a later stage (Ott 2007: 26).

However, these possible advantages are based on a best-case scenario where countries establish environmentally effective emissions trading systems and then link them with each other. Real-life emissions trading systems will not necessarily be environmentally effective. The environmental benefits of emissions trading and by extension of linking crucially depend on the design of a trading system. Most importantly, the amount of emission reductions achieved by cap-and-trade stems not from the trading but from the stringency of the cap. The environmental effectiveness of emissions trading is also determined by whether cost-containment features such as price caps are used. Through linking, such features would impact the whole combined trading scheme and thus impair rather than enhance its environmental effectiveness. It is therefore not advisable to link any emissions trading systems without any regard to their design. To the contrary, key features that determine schemes' environmental effectiveness such as the cap and cost-containment features should be harmonised prior to linking (see e.g. Sterk et al. 2006, Mace et al. 2008).

This paper will therefore analyse the design of the EU ETS and the Lieberman-Warner proposal. The main research question is whether these two (proposed) systems have design features that would lead to negative environmental or economic impacts in the case of linking.

In addition to the discussion of design elements, the paper will also examine possible mechanisms for linking the EU to an US ETS. There exist various possible forms of linking, such as direct and indirect, bilateral and unilateral links, as well as various possible legal mechanisms to implement the link, such as treaties or more informal agreements. Moreover, since the USA has not ratified the Kyoto Protocol, linking to an US ETS faces additional challenges since Kyoto Protocol units can only be transferred between countries that have ratified the Protocol.

It emerges that the Lieberman-Warner scheme would be designed very differently from the EU ETS in crucial respects such as the stringency of the cap and the inclusion of cost-containment measures. In result, the Lieberman-Warner scheme would be systematically less stringent than the EU ETS and linking would probably lead to significant net purchases by the EU, i.e. significant transfers of wealth, occurring not due to economic activity but solely as a result of US regulation. Most importantly, what the various cost-containment measures of the Lieberman-Warner proposal aim to do is to keep allowance prices within a certain range. Through linking, the EU would therefore effectively cede control over its allowance price and the emissions implications to the USA. It can be expected that this situation would not be palatable to the EU.

The introduction of emissions trading in the US is still under debate and it is not clear what shape an US ETS will finally take. On the one hand, this provides an opportunity to steer

the US discussion into the direction of an ETS which would be more environmentally effective and hence also be more compatible for international linkages. On the other hand, the US debate has so far been driven largely by domestic concerns and especially by a desire to contain participant's costs. At this point, decision makers and stakeholders in the US are more concerned with the immediate effects – and political feasibility – of different design options for the domestic market, and less concerned with future prospects for linking with the EU ETS.

Nevertheless, given the potential economic and political benefits a linked trans-Atlantic emission trading system could provide, it might be advisable to broaden the scope of the US debate to take more account of international concerns. The EU could pro-actively engage with US actors to share its lessons learned and try to develop a harmonised approach to emissions trading. The EU and USA actors are already taking steps in this direction, for example through the International Carbon Action Partnership (ICAP), which does not, however, currently engage the federal legislator. These dialogue initiatives should therefore be expanded further and strengthened.

## **2 Comparative Analysis of the EU ETS and the Lieberman-Warner Scheme**

The EU emissions trading directive (“ET Directive”) was passed in 2003 and the EU system started its operation at the beginning of 2005, with a first three-year trial period until end of 2007, followed by a five-year trading period from 2008 to 2012. The ET Directive is currently undergoing a revision for the period after 2012. On 23 January 2008, the European Commission released a proposal, which, if adopted, would lead to significant changes in the functioning of the EU ETS (European Commission 2008a). Since even with a successful passage of the Lieberman-Warner bill a US ETS would have been established only in 2012, the following will focus on the post-2012 design of the EU ETS as proposed by the Commission.

While the USA did not ratify the Kyoto Protocol, emissions trading has been discussed for several years now. In 2003 Senators John McCain and Joseph Lieberman introduced the “Climate Stewardship Act”, which would have placed mandatory limits on GHG emissions and established a US ETS. The debate intensified after the Democratic mid-term election victory in November 2006. By now, more than a dozen emission trading bills have been introduced in both houses of Congress. The most prominent one, the Lieberman-Warner bill, even made it to the Senate floor, but in the end consideration was blocked by the Republicans. When the bill came up for debate, the Republican leadership for example forced clerks to read out the entire 492-page bill, which took more than 9 hours. The Democrats finally moved a cloture vote to close debate but failed to gain the necessary 60

votes by a vote of 48-36. The Democratic leadership then took the bill off the floor.<sup>2</sup> While it is unlikely that there will be further decisive developments before the Congressional and Presidential elections in November, the Lieberman-Warner bill is supposed to be reintroduced in 2009. Given the stated commitment of both major Presidential candidates Barack Obama and John McCain to a strengthened climate policy the debate might evolve very quickly after the election.

The basic design choices that need to be made when establishing an ETS are:

- the GHG and industry sector coverage;
- the definition and recognition of trading units;
- the setting of targets and the allocation of trading units;
- rules for banking and borrowing;
- the compliance framework.

The provisions for monitoring, reporting and verification (MRV) of emissions are also crucial for achieving a credible ETS, since they are the key to determining whether each trading unit actually corresponds to one tonne of emissions. However, assessing their credibility would require a detailed in-depth examination, which is beyond the scope of this paper.

The following will go through each of the items listed above in turn to examine in *how far the designs of the Lieberman-Warner scheme and the EU ETS would be compatible with each other and thus allow for linking without negative effects*. Particular areas of concern are:

- Protection of the environmental integrity of the trading system as a whole
- Avoidance of negative economic or distributional impacts
- Protection of design choices made in the establishment of an ETS

The results are summarised in Table 1 at the end of this section.

## 2.1 The GHG and Industry Sector Coverage

### Description

The EU ETS is a **downstream cap-and-trade system**. According to Annex I of the ET Directive, four main categories of activities – energy activities, production and processing of ferrous metals, mineral industry and the production of pulp, paper, and board with a

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<sup>2</sup> Kate Shepard: An inhospitable climate, Climate Security Act dies, failing to muster enough votes to move forward, 6 June 2008, available from: <http://gristmill.grist.org/story/2008/6/6/6159/54712> [accessed 10 July 2008]

specific production capacity – are regulated, mostly subject to a minimum threshold for output. Installations or parts of installations used for research, development and testing of new products and processes are excluded from the directive. In total, the currently about 10,500 installations covered across the 27 Member States account for about 41% of Community-wide GHG emissions (European Commission 2008b: 13).

While the ET Directive lists all the six gases included in the Kyoto Protocol in its Annex, it has so far addressed only CO<sub>2</sub> emissions, due to concerns about the accuracy of measurement of other greenhouse gases. For the period post-2012, the Commission proposes to expand the EU ETS to cover new gases and sectors. It would include CO<sub>2</sub> as well as N<sub>2</sub>O and PFCs from the chemical and aluminium sectors. In combination with a harmonised interpretation of combustion installation, coverage is expected to increase by 140-150 Mt CO<sub>2</sub>-eq (European Commission 2008a: 6). In addition to the core EU ETS, Parliament and Council just agreed on a separate directive providing for the inclusion of aviation in the EU ETS starting in 2012.<sup>3</sup>

The coverage envisioned in the Lieberman-Warner Bill is very comprehensive. The compliance obligation would apply to emissions of GHGs which were emitted through the use of coal, GHGs that will be emitted through the use of liquid or gaseous fuels or petroleum coke that was produced or imported into the USA in the preceding year, GHGs that will be emitted through the use of natural gas produced or imported into the USA, and GHGs that were produced or imported into the USA (Section 202). The bill thus foresees a **mixed upstream-downstream system**, with downstream coverage of coal-based emissions and upstream coverage of emissions from fuel, natural gas and non-CO<sub>2</sub> GHGs. A separate trading system would be established for hydrofluorocarbons (Sections 1501-1503).

## Analysis

The EU ETS and the proposed Lieberman-Warner scheme clearly differ in their coverage. In principle, differing sector or gas coverage is not a matter of institutional compatibility, nor does it affect the environmental effectiveness of a linked trading scheme. A constellation where one or more gases or categories of sources are included in one scheme but not in the other raises first and foremost questions regarding competitiveness and gaining the necessary political support for linking under these circumstances. However, competitive disadvantages and possible discrimination due to diverging treatment of sectors in two trading regimes are not caused by linking and would also occur in its absence. Possible economic discrimination against certain sources can also be mitigated by economically efficient cap-setting: In the optimal case of sharing out reduction efforts according to each sector's abatement costs, which is admittedly difficult to do, the

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<sup>3</sup> European Parliament: Aviation to be included in the European Trading System from 2012 as MEPs adopt legislation, 8 July 2008, available from: [http://www.europarl.europa.eu/news/expert/infopress\\_page/064-33577-189-07-28-911-20080707IPR33572-07-07-2008-2008-false/default\\_en.htm](http://www.europarl.europa.eu/news/expert/infopress_page/064-33577-189-07-28-911-20080707IPR33572-07-07-2008-2008-false/default_en.htm) [accessed 10 July 2008].

economic impact would be the same as in an economy-wide emission trading system covering all emitters.

However, differences in scope result in different impacts of price adjustments caused by linking. Price adjustments in the EU ETS only affect prices of energy-intensive goods and electricity. By contrast, due to the comprehensive coverage envisioned by Lieberman-Warner, price adjustments in the US would impact the whole economy, including the price of gasoline and home heating. Links that would significantly increase prices might therefore not be politically acceptable, at least initially, even if the US economy as a whole would benefit (Jaffe and Stavins 2008: 25). As will be shown in the following, allowance prices in the Lieberman-Warner scheme would probably be significantly below EU prices. The comprehensive US coverage might therefore indeed be an obstacle to linking.

## 2.2 Definition and Recognition of Trading Units

### Description

According to Article 11 of the ET Directive, an EU Allowance (EUA) covers the emission of one metric tonne of carbon dioxide equivalent.

As for **external units**, the EU “Linking Directive” allows operators to purchase and use **Certified Emission Reductions (CERs) from and Emission Reduction Units (ERUs)** from the Kyoto Protocol’s project-based mechanisms, the Clean Development Mechanism and Joint Implementation, subject to certain conditions.

First, the Linking Directive contains a number of qualitative restrictions on the type of projects whose credits will be eligible in the EU ETS. Thus, in line with the Marrakesh Accords, credits from nuclear facilities are excluded. Moreover, credits from sink projects are not eligible due to concerns about the permanence of the achieved carbon sequestration. Finally, taking into account concerns about possible negative social and environmental consequences of large hydropower projects, credits from these are admitted only if they “respect” the criteria established by the World Commission on Dams (WCD).

Second, there are quantitative restrictions to ensure that the use of project-based credits remains “supplemental” to domestic action in accordance with the Kyoto Protocol. For post-2012, the proposal of the European Commission for revising the ET Directive envisages two scenarios for the use of CDM/JI:

- If there is no new international climate agreement, installation operators will only be able to use leftover CERs and ERUs from period 2008 to 2012. New credits can only be used if agreements are made with the respective host countries and these credits do not increase the total amount of available credits.

- If there is a new international agreement which commits the EU to a target that is stricter than 20%, the allowed amount of CERs and ERUs will automatically be raised by half of the necessary additional effort. However, credits would only be accepted from countries that have ratified the new international agreement.

In addition to the CDM and JI, the EU Commission foresees the introduction of “**Community Offset Projects**” in sectors not covered by the EU ETS.

According to the Lieberman-Warner proposal, starting in 2012, covered entities would be required to submit one tradable allowance for every metric tonne of CO<sub>2</sub>-eq. they emit (Section 202).

In addition to allowances, the Lieberman-Warner bill would allow the use of various alternative national and international trading units:

- First, it would establish a **domestic offset programme**. Offsets would be awarded for agricultural and land-use, land-use change and forestry (LULUCF) activities. Section 303 lists the eligible activities, which range from agricultural land sequestration and management via reduction of nitrogen fertiliser use to manure management. Activities may also cover the reduction of fugitive GHG emissions not covered by the cap-and-trade scheme. It would also be possible to petition to the Administrator for the inclusion of additional project categories. Issuance of offset credits per year would not exceed 15% of the quantity of allowances established for that year (Section 302).
- Second, it would also be possible to use **offsets from other countries** up to 5% of the amount of US allowances established for that year. International offset credits would have to meet the requirements established by the act for US offsets and would not be allowed to come from facilities directly competing with US facilities. (Section 321).
- Third, the bill would allow the use of **international forest carbon credits** for up to 10% of US allowances. These credits would be awarded for national level reductions in deforestation and forest degradation in countries that have a national forestry baseline, that is, local forestry projects would not be able to generate these credits (Section 1314).

In total, the bill would therefore allow the use of external units to up to 30% of a year’s cap. If the limit on a particular type of unit was not exhausted, it would be possible to use units from other categories:

- If the 15% limit on domestic offsets was not exhausted, it would be possible to use offsets from other countries as well as international forest carbon credits (Section 302).

- If the 5% limit on international offsets or the 10% limit on international forest carbon credits were not exhausted, it would be possible to use **allowances from other countries** if their systems are deemed to be of comparable stringency (Sections 321f and 1314).

Finally, any unused amounts could also be carried over to the next year and be added to that year's limit on external units.

## **Analysis**

Both the EU ETS and the Lieberman-Warner scheme would have the same quantitative unit of trading based on the Kyoto Protocol, namely metric tonnes of CO<sub>2</sub>-eq. In this regard, trading between the two schemes would be straightforward.

The recognition of external trading units is one of the crucial points when examining the potential for linking. For example, if a particular type of unit, such as credits from carbon sinks, is not recognised in one scheme, companies in another scheme, which accepts this unit, could use them for domestic compliance purposes, thus free up 'regular' domestic allowances and sell them to companies in the first scheme. The political decision in the first scheme about which trading units are recognised would thus be bypassed (Blyth and Bosi 2004: 20).

This issue is salient in particular with regard to the use of credits from carbon sinks and domestic offset projects, which the EU ETS currently excludes but the Lieberman-Warner scheme would include. According to the European Commission's ETS revision proposal, domestic offset projects may be included in the EU from 2013, but sinks would continue to be excluded.

While a scheme with a more narrow recognition of units, here the EU ETS, may take adjustment measures such as the introduction of exchange rates, these would increase transaction costs while producing only limited effects: The scheme's administrators would never be able to tell whether an incoming allowance has maybe been freed up by use of an external trading unit which they themselves would not accept for compliance. The question would therefore probably rather be to which extent the negotiators from both countries would want to maintain their rules for the recognition of units instead of harmonising them for the purpose of linking. If the inclusion of certain units is considered to be intolerable by a scheme with a more narrow recognition of units, the only option to really keep them out would be not to link to schemes which include them. Given the European Commission's continued opposition to sinks, the inclusion of sink offsets in the Lieberman-Warner scheme would therefore pose a serious obstacle to linking.

It also bears noticing that the prospect for linking the EU ETS to the latest version of the Lieberman-Warner proposal would be restricted from the outset since the Lieberman-Warner system would allow international allowances only if participants had not exhausted

the 5% quota for “international offset allowances” or the 10% quota for “international forest carbon credits”.

## 2.3 The Setting of Targets and the Distribution of Trading Units

### Description

The EU ETS is based on **absolute caps** on emissions. The ET Directive currently does not establish an overall **cap** on emissions for the covered installations. Instead, Member States are responsible for elaborating National Allocation Plans (NAPs) determining the amount and method of allocation. However, since the elaboration of NAPs has been a cumbersome, highly contentious procedure in many Member States the European Commission proposes to replace the system of NAPs by one **EU-wide cap** for the post-2012 period. The proposal suggests to reduce ETS emissions by 21% compared to 2005 by 2020, which would mean an average annual cap of 1,8 Gt for the period 2013 to 2020. This value is based on the unilateral target of a 20% reduction in its GHG emission compared to 1990 the EU has committed to. If the international negotiations lead to a stricter target, the cap will be adjusted accordingly.

Moreover, the Commission proposes to shift to **100% auctioning by 2020**. Due to its ability to pass costs through to consumers, the energy sector is proposed to shift to 100% auctioning in 2013 already. Other sectors would be shifted gradually, starting with an 80% free allocation in 2013. The Commission estimates that overall 2/3 of allowances would be auctioned in 2013 (European Commission 2008a: 8). The remaining cost-free allocation is to be done on the basis of harmonised rules.

The Lieberman-Warner proposal also adopts an approach based on **absolute targets**. The **cap** would initially be set at 2005 levels, equalling 5,775 Mt CO<sub>2</sub>-eq., and then be lowered by 2% each year through 2050 (Section 201). This would translate into a 19% reduction by 2020 and a 71% reduction by 2050.

The scheme would incorporate a complex **distribution** system combining free allocation in the form of “transition assistance” for covered companies, which decreases over time, and an increasing share of auctioning. The auctioning revenues are earmarked. For example, in 2012 1% of allowances would be auctioned to provide funds for a “Climate Change Worker Training and Assistance Fund”, which would increase to 4% of allowances by 2031 (Section 531f). In total, 24% of allowances would be auctioned in 2012, increasing to about 60% in 2037. Nevertheless, only the minority of allowances would be allocated free of charge as “transition assistance”. In 2012, Carbon-intensive manufacturers would receive 11%, fossil-fuel fired electricity generators 18%, refiners of petroleum-based fuel 2%, and natural gas processors 0.75% of all allowances established for that year free of charge (Sections 541-572). The remainder would be allocated as subsidies to specific programmes, e.g. for renewable energy or energy efficiency.

In addition, in December of each year until 2027 the scheme administrator would conduct a “cost-containment auction”. In these auctions, the administrator would offer allowances beginning at a minimum price. For 2012, the price would be established by the President based on economic computer modelling, but limited to the range between 22 and 30 US-\$. In each subsequent year, the price would be increased by 5% plus the rate of inflation. The pool for the cost-containment auctions would consist of 6,000,000,000 allowances taken from the period 2030 to 2050. In 2012, a maximum of 450,000,000 allowances would be auctioned. For the subsequent years, this limit would be decreased by 1% each year (Section 522-526).

One the other hand, the bill also establishes a floor price for regular auctions. The price for 2012 would be 10 US-\$. It would subsequently be increased annually at the same rate as the cost-containment price (Sec. 524).

### **Analysis**

As for the **comparative stringency of targets**, a perfect balance of efforts is very unlikely to be achieved. However, while competitiveness issues would not arise as a result of linking – they would also arise if the two schemes operated separately – it is probably a political precondition for linking that all sides demonstrate efforts to establish comparable caps.

A comparison of the caps in the EU ETS and the Lieberman-Warner proposal renders the following results: According to the Commission proposal, the unilateral EU target of 20% would be implemented by a 21% reduction in the ETS compared to 2005. If the EU internationally commits to a target that is stricter than 20%, the ETS cap will be adjusted accordingly. The Lieberman-Warner proposal envisages a reduction of 19% by 2020 compared to 2005. On the surface, the EU 20% case and the Lieberman-Warner target are therefore similarly strict. A more detailed judgement would require an assessment of relative abatement costs in both systems.

However, one also needs to take into account the cost-containment auctions. Through this instrument, the US government would effectively borrow from future allowance budgets to increase the current cap. The 450 million allowances foreseen for the auction in 2012 therefore need to be added to the cap of 5,775 Mt, an effective increase of 7.8%. The US market could actually be oversupplied at the start (PointCarbon 2008).

Moreover, the 20% case is only the EU’s fallback position. The EU is pushing for a comprehensive international agreement that would include a stricter EU commitment. In this case, the EU ETS cap would become even more stringent than the Lieberman-Warner cap.

Differences in the **way allowances are distributed** to the companies covered by an ETS usually have no impact on the system’s environmental effectiveness since this is solely

determined by the overall cap. However, there may be distributional effects since free allocation is a transfer of wealth, effectively a lump-sum subsidy.

In the EU ETS, free allocation has led to undesirable distributional effects since many companies, especially electricity generators, were able to include the opportunity costs of allowances in their product prices and thus reap substantial windfall profits (European Commission 2008b: 90-93). This was one of the main reasons why the Commission proposed to shift to 100% auctioning by 2020. Already in 2013 about 2/3 of allowances would be auctioned. Under the Lieberman-Warner proposal, 24% of allowances would be auctioned in 2012, 31.75% would be allocated free of charge and the remainder would be allocated to various environmental programmes. By 2020, the ratio of free allocation would decline to 27%. While not fully as strict as the Commission proposal, US companies under the Lieberman-Warner scheme would nevertheless probably not have much potential for windfall profits.

## 2.4 Rules for Banking and Borrowing

### Description

Since EUAs are valid for one trading phase, **banking** within trading periods is possible. Furthermore, Article 13 of the ET Directive obliges Member States to replace leftover allowances from the previous in the next trading phase.

Within trading periods, some sort of **borrowing** is effectively also possible at the moment: whereas operators are allocated the amount of EUAs assigned to them at the end of February of each calendar year, they have to surrender units to demonstrate compliance *ex post* only four months into the next year. Hence, at the time of determining compliance, they dispose of two annual sets of EUAs to cover their emissions – except for the final year of each trading period where only one set is available. However, this feature will be progressively phased out as the EU shifts to 100% auctioning and hence less and less allowances will be allocated at the start of the year.

The proposed Lieberman-Warner scheme would accord considerable **temporal flexibility** to companies on how to comply with their targets. First, it would allow for unlimited banking of allowances (Section 501). Second, operators would be able to borrow up to 15% of their compliance obligation from up to 5 year in the future. The borrowed allowances would need to be repaid with interest equal to 1.1 raised by an exponent equal to the difference between the source year and the use year (Section 511-513).

### Analysis

Banking allowances from one trading period to the next provides emitters with an incentive to overachieve their targets as they can use the resulting allowances at a later date and it gives them additional flexibility to deal with uncertainties such as future production

levels. If a scheme which prohibits banking was linked to a scheme which allows banking, the latter would effectively provide a banking option for all the companies on the combined market. In practice, both the EU ETS and the Lieberman-Warner proposal would allow banking.

Borrowing is not seen favourably from an environmental perspective. First, borrowing entails the risk that mitigation measures may not be taken in future periods either, for example due to lack of enforcement or if a company goes bankrupt. Second, companies may have an incentive to rely heavily on borrowing to artificially raise their future compliance cost curve and then argue that they need softer targets because otherwise the costs would be prohibitive (Boemare and Quirion 2002: 223).

Thus, linking a system without borrowing to a regime that allows borrowing may require restrictive provisions to be taken so as to maintain the environmental effectiveness of the linked trading scheme. One option would be to allow purchases from the scheme with borrowing only after its compliance period has been completed and only from companies that did not borrow, i.e. to allow only ex-post purchases of surplus allowances (Hautes/Mullins 2001: 62).

As explained above, the EU has a form of borrowing within trading periods, but this feature will be progressively phased out as the EU shifts to 100% auctioning. Apart from the environmental risks, one could also imagine that European companies might complain about the additional flexibility granted to US companies. The Warner-Lieberman borrowing provisions might therefore pose an obstacle to linking.

## **2.5 Compliance Framework and Intervention Mechanisms**

### **Description**

**Compliance** in the EU ETS is determined annually. Until 30 April each operator of a covered installation has to deliver an amount of EUAs or other recognised units that covers the amount of CO<sub>2</sub> emission of the installation during the preceding year (Article 12).

Non-compliant installation operators need to pay fines of EUR 100 per excess tonne of CO<sub>2</sub> emissions. In addition, they are required to surrender a compensating amount of compliance units in the subsequent year. Additional civil and criminal penalties, for example for fraudulent reporting, are left to Member States, under the condition that the relevant legal provisions are notified to the European Commission and that they are effective, proportionate, and dissuasive. Finally, the obligation to publish the names of the offending entities adds a “name and shame” element to the compliance regime (Article 16).

Under the Lieberman-Warner proposal, covered entities would be required to submit one tradable allowance for every metric tonne of CO<sub>2</sub>-eq. they emit not later than 90 days after the end of the calendar year. Failure to submit allowances would be punished by a penalty

equal to the greater of either 200 US-\$ or three times the average market value for the year in which allowances were due. In addition, operators would need to submit the missing allowances in the following calendar year (Section 203).

The Lieberman-Warner proposal provides for various **intervention mechanisms**. It would establish a “Carbon Market Efficiency Board”, which would be charged with gathering information on the functioning and impacts of the ETS (Sections 421-423). In addition, the Board would be allowed to carry out one of the following cost relief measures (“emergency off-ramps”) if it deems it necessary “to avoid significant economic harm” (Section 521):

- Raise the limit on borrowing
- Expand the repayment period for borrowing
- Increase the limit on international allowances
- Increase the limit on offsets

The measures would be applicable for the ongoing year.

### **Analysis**

From the environmental perspective, the financial penalties for non-compliance should be significantly higher than the cost of allowances. A different philosophy is that of the ‘price cap’ where paying the penalty exempts companies from submitting allowances. Yet another option for regulators is to establish a ‘safety valve’. With this mechanism, the regulator commits to selling allowances at a pre-determined price in whatever quantity is demanded once the market price for allowances rises above a certain level. This mechanism limits the cost of the market participants to the safety-valve level but at the cost of missing the environmental target. One of the main advantages of cap-and-trade emission trading is the ability to precisely define the environmental outcome. Price caps and safety valves crack the cap.

Moreover, if a system with strict penalties such as the EU ETS was linked to a system with a safety valve or where paying the penalty exempts companies from submitting allowances, the safety valve or penalty rate in this system would effectively act as a price cap for the combined system. As long as the market price was higher than the price cap or safety valve level, companies in the price cap/safety valve system would have an incentive to sell their allowances to companies in the other system until prices were equalised at the price cap/safety valve level. The environmental effectiveness of the combined scheme would thus suffer since total emissions would be higher than if the two schemes were kept separate (Blyth and Bosi 2002: 29f). Stakeholders in a scheme with strict non-compliance provisions might also object to linking to a scheme with less stringent provisions (Ellis and Tirpak 2006: 25).

Both, the EU ETS and the Lieberman-Warner scheme would have very stringent penalties which should be sufficiently dissuasive. The environmental integrity of both schemes would also be safeguarded by the requirement to make up for any shortfall of allowances in the following year.

However, while not a safety valve in the strict sense, the Lieberman-Warner scheme would have a whole raft of mechanisms designed to control the market price. Through the cost containment auctions, the government would effectively loosen the cap by a significant amount. At between 22 and 30 US\$, which is about 14.2 to 19.35 € the starting price in the cost-containment auctions would be significantly below the current EUA price, which fluctuates around 25 €. In addition, the Carbon Market Efficiency Board could take various emergency off-ramp measures to lower prices. While these are supposed to be taken “only as needed to avoid significant economic harm”, the Lieberman-Warner scheme would nevertheless be systematically less stringent than the EU ETS.

Even more importantly, what the various cost-containment measures of the Lieberman-Warner proposal aim to do is to keep allowance prices within a certain range. Through linking, the EU would therefore effectively cede control over its allowance price and the emissions implications to the US (Jaffe and Stavins 2008: 40f). It does not seem likely that the EU would be willing to do this.

	European Union	Lieberman-Warner	Linking Implications
<b>Coverage</b>	Downstream coverage of energy and industry sectors	Downstream coverage of coal-based emissions and upstream coverage of emissions from fuel, natural gas and non-CO2 GHGs, separate trading system for hydro fluorocarbons	Price adjustments due to linking would impact whole US economy, including gas and heating prices for consumers
<b>Definition and recognition of trading units</b>	EU Allowances measured in metric tonnes of CO2-eq.; non-LULUCF CERs/ERUs up to - 20% target: leftover amount from period 2008-2012 - more stringent target: half of additional effort needed	Allowances measured in metric tonnes of CO2-eq.; Domestic offsets credits up to 15% of cap, international offsets up to 5%, international forest carbon credits up to 10% allowances from other countries if limits on international offsets or international forest carbon credits are not exhausted leftover amounts may be substituted with other credit categories or be carried over to following year	Ex ante no full link possible with Lieberman-Warner since allowances from other countries are restricted  Linking would undermine EU decision to exclude sinks
<b>Stringency of targets</b>	Depending on international agreement, at least 21% below 2005 levels by 2020	Nominal cap at 2005 levels, lowered 2% each year, 19% reduction by 2020, 71% reduction by 2050  Cap increased significantly by cost-containment auctions, probably leading to oversupply in first years	Lieberman-Warner probably less stringent than EU ETS
<b>Distribution methodology</b>	Shift to 100% auctioning proposed for post-2012, 2/3 auctioning in 2013, 100% in 2020	Combination of auctioning, starting at 24%, free allocation, starting at 31.75%, and allocation of remainder to environmental programmes  Slow increase of auctioning and decrease of free allocation	EU ETS more stringent but probably little room for windfall profits in either system
<b>Banking/borrowing</b>	Banking possible; de facto borrowing possible within trading periods but phasing out with shift to 100% auctioning	Banking possible; borrowing possible up to 15% of cap from up to 5 years into future, repayment with interest	Borrowing frowned on from environmental perspective, may raise concerns about unequal treatment
<b>Penalties</b>	EUR 100 per excess tonne plus surrendering of missing allowances in the next calendar year	Greater of 200 US-\$ or 3 times average market value in that year plus surrendering of missing allowances in the next calendar year	Strict penalties in both systems
<b>Intervention mechanisms</b>	None	Cost-containment auctions  Possibility for emergency off-ramps: Raise the limit on borrowing, expand the repayment period for borrowing, increase the limit on international allowances, increase the limit on offsets	EU would cede control over carbon price and emission implications to US

Table No.1: *Prospects of Linking the EU Emissions Trading Scheme with US Emissions Trading Schemes along the Lines of the Lieberman-Warner Proposal*

### 3 Linking Options

“Two national emissions trading schemes are linked if one country’s allowance can be used, directly or indirectly, by a participant in the other country’s scheme for compliance purposes” (Haites 2003). As already indicated by the words “directly or indirectly”, links between emissions trading schemes may take a variety of forms, both regarding the nature of the link and its legal form.

As for the nature, there are two basic options: direct and indirect links. Each of these contains a number of sub-options.

Direct linking means to allow regulated entities to directly purchase and use allowances from another trading scheme for their domestic compliance obligations. Available sub-options are:

- A full bilateral or multilateral link where allowances may be freely traded between two or more systems and each system’s allowances are equally valid for compliance in all other systems. An example for a full multilateral link of several national schemes is the EU ETS. In such a link, the registries would most likely be directly connected electronically.
- A bilateral or multilateral link channelled through an intermediary. For example, markets may be linked via each country’s governments under Art. 17 of the Kyoto Protocol. Under such an approach, an entity in scheme A wanting to sell allowances to scheme B would hand the respective amount of allowances to its government. The government would convert these allowances into AAUs and transfer them to the government of scheme B. Government B would then convert these AAUs into its national allowances and issue them to the buyer.
- A unilateral link where entities in system A can purchase and use allowances from system B for compliance but not vice versa.

As to the legal mechanism to implement a direct link, there are three distinct options (adapted from Mehling 2007):

- A link could be established through a formal and binding international treaty between the governments involved. This approach would require a lengthy negotiation and ratification process but provide a high degree of legal certainty and transparency. Also, treaties can only be concluded by formal subjects of international law, typically precluding treaties with sub-national trading schemes. Nevertheless, given the economic implications of a link and the high stakes involved, a formal treaty will probably be the option of choice and is in fact the approach foreseen in Article 25.1 of the EU emissions trading directive. After conclusion of the treaty, each partner’s respective emissions trading legislation would need to be amended to allow their entities to purchase allowances from each

other's system and use them for compliance. This is likely to happen through the legislation ratifying and/or implementing the treaty.

- Alternatively, governments may come to an informal agreement to amend their respective emissions trading legislation. A more formal way of documenting such an understanding could for example be a joint political declaration or a memorandum of understanding, which, while not legally binding, creates a common frame of reference and certain reciprocal expectations. A country could also unilaterally decide to amend its legislation to allow the use of allowances from another system. This would be the approach to be taken for establishing a unilateral link.
- Finally, in the absence of a formal link, private market participants could use private law to bridge trading schemes by creating a system for the conversion of units. This bridge would rest on the vital distinction between trading, in which basically anyone can participate, and transfers, which are usually only open to market participants. In fact, history has already provided an example of a swap between two private companies bridging the trading schemes of Denmark and the UK in 2002.

**Indirect** links occur when two schemes A and B are linked to another system C but not to each other. If for example the EU ETS was linked to a system in the USA and a system in Australia, developments in the USA and Australia would have an impact on each other even if they were not formally linked. In fact, most emerging emission trading systems will probably be indirectly linked through the Kyoto Protocol's CDM, because most systems plan to allow regulated entities the use of CERs.

Linkages between domestic emission trading systems cannot be regarded in isolation from the international climate regime. Domestic emissions trading represents a key tool for countries to meet their emissions reduction objective they committed to in the Kyoto Protocol. Within the EU ETS, from 2008 onwards transfers of EU Allowances are in fact transfers of AAUs.<sup>4</sup> The same will probably be the case for the emerging ETS of other Annex B Parties. Thus, even if the EU would fulfil its Kyoto target only by purchasing allowances from abroad, which are backed up by AAUs, it would still comply with its obligations under the Protocol. The situation would be different, however, with regard to a link between the EU ETS and a trading system of a Kyoto non-ratifier such as the USA.

It would generally be possible for entities from the USA to purchase EUAs provided that they possess an account in an EU Member State. This would apply, for example, to entities covered by the EU ETS that are subsidiaries of US companies, but in principle any – legal or natural – person can open an account in an EU Member State registry, regardless of

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<sup>4</sup> The EU Registry Regulation sets out the details in this regard: From 2008, EU allowances will be issued by converting the corresponding amount of AAUs through adding a specific EU allowance code to the AAU serial number. Subsequently, at the annual surrendering of allowances, EU allowances will be reconverted into AAUs and retired for the purpose of compliance with the Kyoto Protocol. (*European Commission, Commission Regulation for a standardised and secured system of registries pursuant to Directive 2003/87/EC of the European Parliament and of the Council and Decision No 280/2004/EC of the European Parliament and of the Council (EU 'Registry Regulation'), 2216/2004/EC, 21 December 2004, Art. 45 and 59*).

whether they have a physical presence in Europe. A crucial problem would, however, occur in the second step – the transfer of EUAs from the EU Member State registries into the registry of the non-ratifier. The Kyoto requirement that transfers of Kyoto units (and EUAs would have to be considered as such, given their equivalence to AAUs stipulated in the EU Registry Regulation) may only occur between Annex B Parties to the Kyoto Protocol would prevent this kind of transaction. It could only be completed if an EUA was stripped of its AAU property when exiting the Kyoto system. However, this would also be problematic since the transferring country would then dispose of a free AAU which it could use to cover emissions in the non-ETS sectors, while the EUA could be used to cover emission in the non-Kyoto Party, that means the unit would be counted twice. The AAU would thus have to be cancelled to ensure the system's environmental effectiveness.

As to the transfer of allowances from the USA into the EU ETS, difficulties would arise since the allowances from the USA would not be backed up by AAUs. In this case, if the EU turned out to be a net importer of allowances, this would inflate emissions in the EU without a corresponding acquisition of AAUs and could thus bring the EU into non-compliance with the Protocol.

There are three options to circumventing these problems.

- The first option would be to establish only a semi-open link between the trading systems where entities from the USA could only purchase but not sell allowances into the EU ETS. Such a link could actually be implemented unilaterally if an US ETS allowed companies to cancel EUAs within the EU ETS and count this toward compliance in their own system. If allowances were to be actually transferred, a gateway mechanism would need to be set up by which outgoing EUAs would be stripped of their AAU property, which would then have to be cancelled to safeguard the system's environmental effectiveness.
- A full link between the EU and an US ETS would require a similar gateway. Under such an approach, the AAUs stripped from the outgoing EUAs would be put into a specific account and used to back up incoming allowances. Thus, acquisitions from the non-ratifier's ETS could only be completed if there were sufficient AAUs available in the gateway and it would be ensured that the EU would remain a net seller (Zhang 2003: 17). Such a gateway would certainly diminish the benefits from linking. Nevertheless, it is the only means to avoid that the EU's ability to comply with its Kyoto target is compromised by an inflation of its allowance pool not backed up by Kyoto units.
- The third option would be an amendment of the Kyoto rules. Such an amendment may indeed be necessary for the period post-2012 if the reintegration of the USA into the climate regime cannot take place through an immediate accession to the Kyoto Protocol but rather through linking a domestic emission reduction system to

the Kyoto system. Such an amendment would then need to stipulate that trading units can be transferred between the USA and the Kyoto system and that US allowances would be eligible for Kyoto compliance. However, such an amendment could probably only be agreed as part of a comprehensive post-2012 agreement

## 4 Legal Considerations<sup>5</sup>

The creation of a link between the EU ETS and a federal emissions trading scheme in the USA would raise a number of **legal implications** affecting the legal admissibility of the link. A range of procedural and substantive considerations set out requirements and constraints which need to be taken into account for the link to become operational. Likewise, compliance with the overall regulatory framework determines whether the link **conflicts** with applicable rules and principles of law. Leaving international law aside, such considerations may originate in constitutional law (USA) or an establishing treaty (EU), statutory law (USA) or secondary legislation (EU), customary law, and judicial case law. The following section will briefly address these issues, starting out with an assessment of the mandates discernible in the legislation creating the EU ETS and the Lieberman-Warner proposal, relevant procedural requirements, and other substantive norms which may affect a transatlantic link between the EU and the USA.

### 4.1 Linking Mandate

A concrete mandate to create a link between emissions trading markets in the EU and the USA would have a strong determining effect on the nature and scope of the link. A mandate would already define linking as a desirable objective and thereby obviate the need to justify any related action. At the same time, the mandate may also define the **conditions for its exercise**, including material and formal restrictions to the scope and partners of the link. While the mandate may usually be amended, such an amendment will typically be subject to the same procedural requirements which governed the adoption of the mandate itself, and thus necessitate a protracted legislative or diplomatic effort that can be politically undesirable. For that reason alone, it is worth analysing to what extent the EU ETS and the Lieberman-Warner bill already contain mandates that may affect the future implementation of a link.

As already mentioned earlier, the ET directive, in Article 25.1, specifies that “[a]greements should be concluded with third countries listed in Annex B to the Kyoto Protocol which have ratified the Protocol to provide for the mutual recognition of allowances between the Community scheme and other greenhouse gas emissions trading schemes in accordance with the rules set out in Article 300 of the Treaty.” Article 25.2, moreover, empowers the European Commission to “draw up any necessary provisions relating to the mutual recognition of allowances” under such an agreement.

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<sup>5</sup> This section was authored by Michael Mehling, Ecologic Institute, Washington, D.C.

From this provision, an important consequence can be inferred for a link between trading schemes in the EU and the USA: currently, the mandate limits linking partners to countries “which have **ratified the Protocol**”, ruling out the USA as a party to a linking agreement pursuant to Article 25.1. While this mandate is phrased in positive terms, and thus does not categorically preclude the adoption of a linking agreement under different terms than those set out in Article 25.1, it is unlikely that the EU would pursue efforts beyond the scope of this explicit mandate, as this would arguably set a higher threshold for the justification of such a measure.

For the period beyond 2012, however, the European Commission has already proposed amending the directive to allow that agreements “be made to provide for the recognition of allowances between the Community scheme and mandatory greenhouse gas emissions trading systems with absolute emissions caps established **in any other country** or in sub-federal or regional entities” (European Commission 2008a: 30).<sup>6</sup> Although not yet adopted and therefore still subject to change, this proposal suggests that the foregoing limitation to countries which have ratified the Kyoto Protocol will no longer apply after 2012, eliminating this barrier to a link with a federal US scheme such as the Lieberman-Warner bill, even if the USA continues to not ratify the Protocol.

Unlike the EU ETS, the Lieberman-Warner bill does not contain an explicit mandate for bilateral links with other trading schemes. It does contain an option for the **unilateral recognition of foreign allowances**, however, including a mandate for the administrator of the scheme.<sup>7</sup> Under this mandate, the administrator should adopt rules “approving the use in the United States of emission allowances issued by nations other than the United States” within two years after enactment of the Lieberman-Warner bill (Section 322.a). To be **eligible**, such allowances would have to be issued by a foreign country “pursuant to a governmental program that imposes mandatory absolute tonnage limits” of “comparable stringency ... including comparable monitoring, compliance, and enforcement” (Section 322.b).

For this option to become available, however, participants may not have exhausted the 5% **quota** for “international offset allowances” or the 10% quota for “international forest carbon credits”. While these restrictions limit the usefulness of the foregoing mandate as a basis for coordination, the US could theoretically exercise this option to establish **reciprocal unilateral links** with other jurisdictions, thereby facilitating trade between the participating schemes. If the EU adopts the proposed changes to the EU emissions trading directive, however, the proposed wording suggests its linking mandate will still be geared

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<sup>6</sup> Moreover, the proposed changes would allow that “[n]on-binding arrangements may be made with third countries or with sub-federal or regional entities to provide for administrative and technical coordination in relation to allowances in the community Scheme or other greenhouse gas emissions trading systems with absolute emissions caps.” It is unclear, however, whether such coordination is also meant to include (mutual) recognition of allowances for compliance purposes, although the requirement of “absolute emissions caps” suggests that this possibility is, at least, not excluded.

<sup>7</sup> Pursuant to Section 4(2), “administrator” means the Administrator of the United States Environmental Protection Agency.

towards adoption of a formal agreement. The Lieberman-Warner bill does not contain a mandate for the adoption of such an agreement, but it also does not preclude it.

## 4.2 Procedural Issues

Of the various linking options outlined earlier, the two most likely options presuppose either the adoption of an international treaty – followed by implementing legislation at the domestic level – or the amendment of domestic legislation. In both cases, the measures required to create the link will presuppose observance of **legislative procedures** and established doctrines on the **distribution of powers**.

Article 25.1 of the ET directive expressly refers to Article 300 of the Treaty establishing the European Community (EC Treaty). This provision stipulates the process for **adoption of international agreements** between the EC and third states or international organizations, and would thus become relevant if the EU and the USA were to create a link by way of an international treaty. Essentially, Article 300 of the EC Treaty grants the Commission a power to negotiate international agreements, subject to prior authorization by the Council of the European Union. Once the negotiations result in an agreement on the text of the agreement, the Commission submits the text to the Council for approval. **Ratification** of the international agreement – a vital precondition of its entry into force – occurs through a Council decision. In the case of a linking agreement, the Council would have to decide by qualified majority and with the participation of the European Parliament. Due to shared competences between the EU and its Member States, the link would probably be adopted as a **mixed agreement** to which both the Community and the Member States are parties.

In the USA, the federal **Constitution** sets out rules outlining the power to adopt treaties. Its Article II, Section 2, Clause 2 states that the President “shall have Power, by and with the advice and consent of the Senate, to make treaties, provided two-thirds of the Senators present concur.” Again, international treaties do not usually become binding US law until Congress has enacted implementing legislation, and it is a longstanding practice of the executive branch not to bind the USA internationally until such legislation has been adopted; in certain cases, known as “executive agreements”, Congressional approval may even obviate the need for a supermajority in the Senate (Purvis 2008: 10). If a link between the EU ETS and a federal US trading scheme were to be implemented through a formal treaty, as envisaged in the ET directive, it would require observance of the foregoing procedure. In the past, the steep requirement of a two-thirds majority in the Senate has prevented the ratification of a number of environmental treaties previously signed by the President, but a linking agreement would arguably enjoy support in the legislature due to the fact that the trading scheme itself would already have been previously approved.

If the trading link between the EU ETS and the scheme established under the Lieberman-Warner bill were to be established **unilaterally or by way of mutually reciprocal**

**domestic legislation**, the applicable legislative procedures would be the same governing the adoption of the original scheme. In the case of the **ET Directive**, the legislative basis was Article 175.1 of the EC Treaty, which sets out a general mandate for action on environmental protection. It calls upon the European Commission to submit a proposal to the European Parliament and the Council, which votes by qualified majority and in co-decision with the European Parliament. In the USA, a member of Congress will usually **introduce a bill** for consideration; following committee and subcommittee approval, the bill will be reported to the full legislature. If both legislative bodies - the House and the Senate – approve the bill in identical form, it becomes enrolled and sent to the President for signature into law. Congress may override a presidential veto through a two-thirds vote in Congress by a quorum of members in both the House and Senate.

In both cases – the adoption and implementation of an international treaty or the mere amendment of domestic legislation – the elaboration of a link will evidently be a lengthy process. To avoid further cumbersome negotiation and lawmaking procedures if the modalities of the trading link need to be altered or fine-tuned it could be advisable to incorporate a **simplified amendment process** in the treaty or legislative amendment. This way, required changes to the link will not necessitate full recourse to the formal procedures outlined above. Such a simplified process may also be extended to additional links with further partners, for instance through inclusion of all recognised unit types in a schedule contained in an annex or protocol.

## 5 Conclusions

A global carbon market is often advocated as the most cost-effective means to reach emission reduction targets. Currently a mosaic of national emission trading systems is emerging. Economic theory would suggest that the efficiency of trading would increase if these systems were linked with each other. Especially a link to a potential US ETS could also yield palpable political benefits in terms of reintegrating the USA into the international climate protection effort. The Lieberman-Warner bill has recently been the most prominent proposal for establishing an US ETS.

However, the environmental and economic benefits of emissions trading and by extension of linking crucially depend on the design of the trading systems. The need for harmonisation varies widely with regard to different design elements. Some design options such as the systems' coverage may raise equity issues and stir opposition from concerned stakeholders. However, they are unlikely to adversely affect the overall effectiveness of the linked regimes. Other aspects have important implications for the equity, the economic and the environmental effectiveness in a combined scheme, namely the definition and recognition of trading units, the nature and the stringency of the targets, the distribution of trading units, the provisions for banking and borrowing, monitoring, reporting and verification, the compliance regime and market intervention measures.

In fact, the prospect for linking the EU ETS to the latest version of the Lieberman-Warner proposal would be restricted from the outset since the Lieberman-Warner system would allow international allowances only if participants had not exhausted the 5% quota for “international offset allowances” or the 10% quota for “international forest carbon credits”. In addition, the comparison reveals that the Lieberman-Warner scheme would be designed very differently from the EU ETS in crucial respects:

- The cap would probably be significantly weaker than the EU cap
- The level of auctioning would be much lower
- US companies could borrow allowances from future years for up to 15% of their compliance obligation
- The US scheme would include sink credits, which the EU ETS excludes
- The Lieberman-Warner scheme would include a whole raft of cost-containment measures.

In result, the Lieberman-Warner scheme would be systematically less stringent than the EU ETS. It can be expected that US prices would be consistently below EU prices. In case of linking, this would probably lead to significant net purchases by the EU, i.e. significant transfers of wealth, occurring not due to economic activity but solely as a result of US regulation. It can be expected that this situation would not be palatable to the EU. Linking would also undermine the EU’s decision of not allowing sink credits into the EU ETS.

Most importantly, what the various cost-containment measures of the Lieberman-Warner proposal aim is to keep allowance prices within a certain range. Through linking, the EU would therefore effectively cede control over its allowance price and the emissions implications to the US. It does not seem likely that the EU would be willing to do so.

It can therefore be concluded that the EU would probably not agree to link its ETS to an US ETS along the lines of the Lieberman-Warner proposal.

The introduction of emissions trading in the US is still under debate and it is not clear what shape an US ETS will finally take. On the one hand, this provides an opportunity to steer the US discussion into the direction of an ETS that would be more environmentally effective and hence also be more compatible for international linkages. On the other hand, the US debate has so far been driven largely by domestic concerns and especially by a desire to contain participant’s costs. At this point, decision makers and stakeholders in the US are more concerned with the immediate effects – and political feasibility – of different design options for the domestic market, and less concerned with future prospects for linking with the EU ETS.

Nevertheless, given the potential economic and political benefits a linked trans-Atlantic emission trading system could provide, it might be advisable to broaden the scope of the US debate to take more account of international concerns. The EU could pro-actively

engage with US actors to share its lessons learned and try to develop a harmonised approach to emissions trading. The EU and US actors are already taking steps in this direction, for example through the International Carbon Action Partnership (ICAP), which does not, however, currently engage the federal legislator. These dialogue initiatives should therefore be expanded further and strengthened.

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