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Linking Emissions Trading Schemes:
Analysis and Recommendations for EU-Australia and Quebec-California Linkages

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List of Abbreviations

AAUs	Assigned amount unit, issued to Annex B parties under the Kyoto Protocol
ACCU	Australian carbon credit unit
AIIUs	Australian-issued international units, issued under the Australian ETS to facilitate an indirect registry link
ANREU	Australian National Registry of Emissions Units
AUD	Australian dollar
Australian ETS	Australian emissions trading scheme
California ETS	California's emissions trading scheme
CARB	California Air Resources Board
CEA 2011	*Clean Energy Act 2011*
CER	Certified emissions reduction
CH_4	Methane
CO_2	Carbon dioxide
CPM	Carbon Pricing Mechanism
DOIP	Designated as an opt-in person
EC	European Commission
EEA-EFTA	European Economic Area and the European Free Trade Association
ERUs	Emissions reduction units
ETS	Emissions trading scheme
EU	European Union
EUAs	European Union allowances
EU ETS	European Union emissions trading scheme
EUR	Euro
GHG	Greenhouse gas
GWh	Gigawatt hour
IETA	International Emissions Trading Association
LDCs	Least Developed Countries
MRV	Monitoring, reporting and verification
MW	Megawatt

N_2O	Nitrous oxide
NGER Act	*National Greenhouse and Energy Reporting Act 2007*
OECD	Organization for Economic Co-operation and Development
OTN	Obligation transfer number
PFCs	Perfluorocarbons
ppm	Parts per million
Quebec ETS	Quebec's emissions trading scheme
RGGI	Regional Greenhouse Gas Initiative
RU	Removal unit
SF_6	Sulphur hexafluoride
US	United States
WCI	Western Climate Initiative

1.0 Introduction

Since the introduction of international emissions trading by the Kyoto Protocol,[1] the emissions trading mechanism used to reduce greenhouse gas (GHG) emissions appears to regain attention at both, the national and the regional levels. Currently, the European Union (EU), Australia, Japan, some United States (US) states and Canadian provinces, New Zealand, South Korea and China, have already established or are currently developing their emissions trading schemes (ETSs). Considerations for establishing further ETSs are also in progress in Brazil, Chile, Mexico, Ukraine and Turkey.

The emergence of different domestic ETSs poses the question of whether they should be linked to each other and if so, how. Linking between different ETSs takes place when the covered entities of one ETS are allowed to use emissions allowances or other trading units from another ETS in order to comply with their GHG emissions reduction commitments.

Most recently, four jurisdictions announced their intention to link to each other: Australian emissions trading scheme (Australian ETS) to the European Union emissions trading scheme (EU ETS) and Quebec's emissions trading scheme (Quebec ETS) to California's emissions trading scheme (California ETS).

EU ETS is currently the world's largest and most significant emissions trading scheme. It was launched in 2005 through the EU Trading Directive[2] as a means to help the EU and its member states to reduce greenhouse gas emissions and to fulfill their commitments under the Kyoto Protocol in a cost-effective way.[3] The EU Commission sees the EU ETS as an important building block for the development of a global network of ETSs.[4] To date, the EU ETS has already been linked with ETSs in Norway, Iceland and Lichtenstein, three member states of the European Economic Area and the European Free Trade Association (EEA-EFTA). Currently, the EU ETS is also negotiating with

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[1] *Kyoto Protocol to the Framework Convention on Climate Change*, 11 December 1997, 37 ILM 22 (entered into force 16 February 2005) [Kyoto Protocol].

[2] European Commission (EC), *Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC*, [2003] OLJ 275/32 [EU Trading Directive].

[3] MJ Mace et al, "Analysis of the Legal and Organizational Issues Arising in Linking the EU Emissions Trading Scheme to Other Existing and Emerging Emissions Trading Schemes" (May 2008) Foundation for International Environmental Law and Development (FIELD) Report at 1, online: FIELD <http://www.field.org.uk/files/Linking%20emission%20trading %20schemes_0.pdf>.

[4] See European Commission (EC), "Linking the EU ETS to Other Emissions Trading Systems and Incentives for International Credits", online: EC <http://ec.europa.eu/clima/policies/ets/linking_en.htm> (last visited 29 August 2012).

Switzerland the possibility on linking its ETS with the Swiss ETS.[5] The EU ETS allows linking through Article 25 of the EU Trading Directive[6] and the 2008 amendment[7] specifies that links can be pursued with other ETSs that are mandatory and have absolute emissions caps in place.

Most recently, on August 28, 2012, the Australian Federal Government and the European Commission (EC) jointly announced that they have agreed to link Australian ETS and the EU ETS. Australia's central carbon pricing and emissions trading feature is a Carbon Pricing Mechanism (CPM) which was established on July 1, 2012 under the Labor party's rule. It allows covered entities to purchase permits from the government at a fixed carbon price of $23 AUD (equal to 16 EUR), rising at 2.5% per year in real terms.[8] It also provides for the use of domestic offset credits. The CPM is planned to be converted into an ETS from July 1, 2015 onwards.[9] In view of current election results in Australia, however, the future of Australian ETS as well as the proposed linkage with the EU ETS is uncertain. The national election in September 2013 ended in the Labor party defeat and opposition leader Tony Abbott taking over as the Prime Minister. Tony Abbott has been a strong opponent of the carbon tax and the ETS in light of the absence of similar environmental policies in other countries (such as China and the US) and had pledged to repeal these tools if he came to power.[10]

Linking the Australian and EU ETSs can provide several potential benefits including reducing the emissions abatement costs, increasing carbon market liquidity, stabilizing the carbon price, providing businesses with more opportunities to trade, and supporting international cooperation on global climate changes.[11] Australia is expected to be a major importer of international units starting in 2015, whereas European market participants will gain enhanced business opportunities.[12]

However, recognizing the complexities of moving to a full link, both, the EU and Australia will proceed with a partial link initially, then followed by a full two-way link.

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[5] Federal Office for the Environment, "6. Verhandlungsrunde Schweiz — EU zur Verknüpfung der Emissionshandelssysteme", online: FOEN <http://www.bafu.admin.ch/emissionshandel/10923/10926/13748/index.html?lang=en> (last visited 23 February 2015).

[6] See EU Trading Directive, *supra* note 2.

[7] EC, *Proposal for a Directive 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 system of the Community*, COM (2008) 16 final, Art 25.

[8] *Clean Energy Act 2011* (Cth), s 100 [CEA 2011].

[9] Explanatory Memorandum, Clean Energy Bill 2011 at 12 [CEB 2011 Explanatory Memorandum].

[10] "New Australia PM: Carbon Tax Repeal Tops Agenda" (2013) 17 ICTSD Bridges Weekly 29 at 3.

[11] EC, *Memo/12/631: FAQ: Linking the Australian and European Union Emissions Trading Systems* (Brussels, 28 August 2012) [Memo/12/631].

[12] *Ibid*.

Under a partial link, Australian entities will be able to use EU allowances (EUAs) to discharge up to 50% of their emission reduction obligations under the Australian ETS from the beginning of the flexible price trading period in July 2015.[13] This will provide access to a broader range of credits from a more established EU carbon market to smooth the introduction of an ETS in Australia.[14]

By July 1, 2018, a full two-way link will be established to allow businesses to use trading units issued in Australia or the EU for their compliance under either ETS. To facilitate a full link, a number of changes will be made to the design of the Australian ETS including:

- the price floor will be removed; and
- a new sub-limit on the use of eligible Kyoto trading units will be introduced. While businesses in Australia will still be able to discharge up to 50% of their emissions reduction obligations through buying eligible international trading units, only 12.5% of their obligations will be met by the Kyoto trading units.[15]

In addition, the EC and the Australian Government have also identified a number of other policy matters to be negotiated before the full two-way link between them is established, namely:

- measurement, reporting and verification arrangements;
- the types and quantities of third party trading units that can be used into either ETS;
- the role of land-based offsets from Australia's Carbon Farming Initiative in the linked ETS;
- any impacts arising from supporting the competitiveness of the European and Australian industries, in particular for sectors exposed to a risk of carbon leakage; and
- comparable market oversight arrangements.[16]

In spite of uncertainty with respect to the establishment of the Australian ETS and its linkage with the EU ETS, it is worth noting, that if it proceeds, this linkage will be the first intercontinental one.

The linkage of the California and Quebec ETSs, on the other hand, is an example of a regional linkage. Quebec and California, both are participating members of the Western

[13] *Ibid.*
[14] *Ibid.*
[15] EC, "Australia and European Commission agree on pathway towards fully linking Emissions Trading systems" (28 August 2012), online: EC <http://europa.eu/rapid/press-release_IP-12-916_en.htm?locale=en>.
[16] Memo/12/631, *supra* note 11.

Climate Initiative (WCI) — a cooperative of independent jurisdictions in Canada and the US working together to identify, evaluate, and implement ETSs at a regional level.

Quebec enacted its cap-and-trade regulation on December 14, 2011.[17] Quebec, thus, became the first Canadian Western Climate Initiative partner jurisdiction to adopt its own regulation, placing it shoulder to shoulder with California, which enacted its cap-and-trade regulation on October 20, 2011.[18]

Both ETSs officially linked their respective ETSs on January 1, 2014. This linkage allows covered entities in both jurisdictions to purchase and sell emissions allowances and offsets in either jurisdiction. In addition, this linkage will guarantee that California and Quebec are working together to make sure both GHG emissions reduction targets will be met. For California, Quebec will likely buy trading units from California participants, providing more opportunities for California to invest in clean technologies that would eventually reduce GHGs emissions, promote job growth, and improve its economy. For Quebec — which at one-sixth the size of California's economy — this linkage will provide a larger partner to create an effective carbon market to successfully reduce GHGs emissions and advance its economy. Most importantly, this linkage might be an important step to encourage other states and provinces in North America to reduce their emissions and to tackle other climate change issues.

To facilitate the linkage of the ETSs, on December 12, 2012, Quebec amended its cap-and-trade regulations to align certain ETS design features with California.[19] The first joint auctions of both California and Quebec allowances began on November 25, 2014.

On October 1, 2013, the California Air Resources Board (CARB) and the Government of Quebec signed a linking agreement to harmonize and integrate their respective ETSs.[20] Although each ETS's laws and regulations are in place and operating, it is expected that both jurisdictions will continue to make adjustments during the

[17] *Regulation respecting a cap-and-trade system for greenhouse gas emission allowances*, RRQ, c Q-2, r 46.1.

[18] US, AB, 32, *An Act to Add Division 25.5 to the Health and Safety Code, Relating to Air Pollution*, Reg Sess, Cal 2006, s 95810 [AB 32].

[19] The *Regulation respecting a cap-and-trade system for greenhouse gas emission allowances* was enacted by Order in Council No 1297-2011 and published in the Quebec Official Gazette, Part 2, No 50B on 16 December 2011, page 5519B (page 3655B of the English version). The current version of the regulation can be found online: <http://www2.publicationsduquebec.gouv.qc.ca/dynamicSearch/telecharge.php?type=3&file=/Q_2/Q2R46_1_A.HTM>.

[20] See CARB, "Linkage", online: CARB <http://www.arb.ca.gov/cc/capandtrade/linkage/linkage.htm>. See California-Quebec Agreement to Integrate and Harmonize their Cap-and-Trade Programs.

implementation of their ETSs that will affect the ETS operations. Consequently, a linking agreement provides the overall framework for this continuous collaboration.[21]

This paper aims at examining the following question: Will the EU-Australia and Quebec-California be able to achieve an effective linkage with each other? In addressing this question, this paper will first discuss design elements that were identified in the literature review as crucial for the linking of different ETSs, and then consider how each design feature is addressed by the potential linking partners, identifying potential incompatibilities, if any, and outlining what adjustments, if any, might be made to facilitate effective linkages between them.

This paper is divided into three sections. Following this introductory section, Section 2 considers available literature on linking to determine which design elements are generally regarded as crucial for the linking of different ETSs and examines how each element is addressed by the EU, Australian, Quebec and California ETSs. The concluding Section 3 summarizes the findings of this paper.

[21] Notable provisions in the linking agreement include the following: the creation of a consultation committee to monitor the coordination of the ETSs, regulatory harmonization, and mutual recognition of the compliance instruments.

2.0 Literature Review and Analysis of EU-California and Quebec-California Linkages

2.1 General Observations

There have been efforts in the literature to identify some minimum requirements for the linking of the different types of ETSs.[22] It has been suggested that in order to be linked, each ETS must resolve a number of design elements which will include: coverage; definition and recognition of trading units; type and stringency of emissions targets; allocation; trading period; banking; borrowing; monitoring, reporting and verification; registries; compliance framework and penalties.[23] Since many of these design elements are resolved differently by the different ETSs, this might pose significant challenges for linking.[24]

2.2 Overarching Criteria to Guide Consideration

The literature emphasizes several core criteria to guide any consideration of how and whether to link ETSs:[25]

1. Environmental effectiveness — linking ETSs should not lead to lower GHG emissions reductions than would result if these ETSs operated independently;[26]
2. Cost effectiveness — linking different ETSs should provide the same or better cost savings relative to their independent operation;[27]
3. Equity — linking ETSs should not unfairly disadvantage any participants;[28]
4. Institutional compatibility — institutional elements of ETSs such as the allowances, coverage, and registries, should be generally compatible;[29]

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[22] Javier de Cendra de Larragan, "From the EU ETS to a Global Carbon Market: An Analysis and Suggestions for the Way Forward" (2010) 19:1 European Energy and Environmental Law Review 2 at 3.

[23] Eric Haites & Fiona Mullins, "Linking Domestic and Industry Greenhouse Gas Emissions Trading Systems" (2001) Electric Power Research Institute, International Energy Agency (IEA) and the International Emissions Trading Association (IETA) Report at 3, online: IEA <http://www.iea.org/>.

[24] *Ibid*.

[25] See generally Mace et al, *supra* note 3; Boyd et al, *Broadening Alberta's Carbon Markets*", Climate Change Central Discussion Paper (Calgary: Climate Change Central, 2008); Haites & Mullins, *supra* note at 23; William Blyth & Martina Bosi, "Linking Non-EU Domestic Emissions Trading Schemes with the EU Emissions Trading Scheme" (2004) Organization for Economic Co-operation and Development (OECD) Report, online: OECD <http://www.oecd.org/env/cc/32181382.pdf>; Wolfgang Sterk et al, "Ready to Link Up? Implications of Design Differences for Linking Domestic Emissions Trading Schemes" (Paper prepared for the German Federal Ministry of Education and Research, 2006), online: Wuppertal Institute for Climate, Environment and Energy <http://www.wupperinst.org/>.

[26] Mace et al, *supra* note 3 at 51.

[27] *Ibid*.

[28] *Ibid*.

[29] *Ibid*.

5. Political feasibility — linking ETSs should not lead to disruption or bypass of political goals/decisions on national mitigation efforts;
6. Transaction costs — linking ETSs should not lead to higher costs arising from the transfer of tradable permits, than would result if these ETSs operated independently;[30] and
7. Administrative costs — linking ETSs should not lead to higher operating costs of ETSs than would result if these ETSs operated independently.

2.3 Design Issues of Linking ETSs

2.3.1 The Coverage of the ETS

The question of coverage embraces several distinct issues: gases and sectors included in the scheme, whether emissions are targeted upstream or downstream, mandatory or voluntary participation, and finally opt-in and opt-out provisions.[31]

2.3.1.1 Gases Covered

Gas coverage refers to the gases that are included in an ETS. Not all of the ETSs cover the same gases. For example, the Kyoto Protocol covers six greenhouse gases.[32] Different ETSs may choose to regulate only one or several of these gases.[33] In order to increase environmental effectiveness and to create more diverse abatement options, it is argued that ETSs should cover as many types of gases as feasible.[34] Access to low-cost abatement options will provide covered entities in the more comprehensive ETSs with an advantage over their counterparts in the narrower ETSs.[35] Companies in the ETS with broader gas coverage, for example, due to their access to the lower options, may increase their ability to sell their allowances in the wider linked ETS.[36] Linking, in turn, will extend that benefit also to the covered entities in the narrower ETS because the low-cost

[30] Thomas H Tietenberg, *Emissions Trading: Principles and Practice* (Washington, DC: Resources for the Future, 2006) at 41. Tietenberg defines transaction costs as costs, other than price, incurred in the process of the exchanging goods and services. These include the costs related to things such as researching the market, finding buyers or sellers, negotiating and enforcing contracts for tradable permit transfers, completing all the necessary regulatory paperwork, as well as making and collecting payments.

[31] Sterk et al, *supra* note 25 at 14.

[32] *Ibid*. These are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons, perfluorocarbons (PFCs) and sulphur hexafluoride (SF_6).

[33] *Ibid*.

[34] *Ibid.* Blyth & Bosi, *supra* note 25 at 16; reductions of non-CO_2 gases are often more cost-efficient than CO_2 emissions reductions provided those gases can be determined accurately.

[35] *Ibid.*

[36] *Ibid.*

abatement options available in the other ETS might lower the overall price in the narrower ETS.[37]

2.3.1.1.1 EU ETS vs. Australian ETS

Although the EU Trading Directive lists all six gases covered by the Kyoto Protocol in its Annex, it has so far addressed only emissions which can be measured, reported and verified with a high degree of accuracy: carbon dioxide (CO_2), nitrous oxide (N_2O) and perfluorocarbons (PFCs).[38]

Australian ETS, on the other hand, will cover four out of the six GHGs under the Kyoto Protocol — CO_2, methane (CH_4), N_2O and PFCs from aluminum smelting.[39] The other two gases covered under the Kyoto Protocol, namely hydrofluorocarbons and sulphur hexafluoride, will face an equivalent carbon price through existing synthetic greenhouse gas legislation.[40]

2.3.1.1.2 California ETS vs. Quebec ETS

Both the California and Quebec ETSs cover the same six gases identified in the Kyoto Protocol: CO_2, CH_4, N_2O, sulphur hexafluoride (SF_6), hydrofluorocarbons (HFCs) and PFCs, plus nitrogen trifluoride.[41] However, Quebec ETS is broader than California ETS because it also includes hydrofluorocarbons from cooling units, SF_6 and PFCs from the electricity sector, process and fugitive emissions from magnesium production and high global warming potential gas emissions from electronic manufacturing.[42] California chose to regulate those gases through separate regulations, outside of the ETS.[43]

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[37] *Ibid*.

[38] EC, *Directive 2009/29/EC of the European Parliament and of the Council of 23 April 2009 amending Directive 2003/87/EC so as to improve and extend the greenhouse gas emission allowance trading scheme of the Community*, [2009] OJ L 140/63 [Directive 2009/29/EC] at Annex I. More specifically, it covers CO_2 emissions from following sectors: power and heat generation; energy-intensive industry sectors including oil refineries, steel works and production of iron, aluminium, metals, cement, lime, glass, ceramics, pulp, paper, cardboard, acids and bulk organic chemicals; civil aviation. N_2O emissions from production of nitric, adipic, glyoxal and glyoxlic acids as well as PFCs from aluminium production are also covered.

[39] CEB 2011 Explanatory Memorandum, *supra* note 9 at 33.

[40] *Ibid*.

[41] AB 32, *supra* note 18, s 95810; *Regulation respecting a cap-and-trade system for greenhouse gas emission allowances*, *supra* note 17, s 3(10).

[42] CARB, "Discussion of Findings Required by Government Code section 12894" (January 2013) at 5-6, online: CARB <http://www.arb.ca.gov/regact/2012/capandtrade12/2nd15dayatta6.pdf>.

[43] *Ibid*. These regulations are the *SF_6 Emissions Reductions from Gas Insulated Switchgear Regulation* (2010), the *Regulation Regarding Small Containers of Automotive Refrigerant* (2009) and the *Regulation for Management of High Global Warming Potential Refrigerants for Stationary Sources* (2009).

Nevertheless, both jurisdictions require the reduction of emissions from these sources, even though they employ different strategies to achieve the same.[44]

2.3.1.1.3 Analysis

Linking ETSs that differ in terms of the gases should not pose any difficulties but rather could lead, due to their access to the low-cost abatement options, to larger cost savings.

2.3.1.2 Sector Coverage

Sector coverage refers to the sources or categories of polluters that are covered by an ETS.[45] It is difficult for different ETSs to have completely equivalent sector coverage since different countries have different emissions profiles and as a result may decide to include different sources in their ETSs.[46] Sector coverage is normally established at the sector level, where minimum inclusion thresholds are also normally identified to eliminate very small polluters.[47]

A situation where one or more sources are covered by one ETS but not the other raises questions relating to the competitiveness and obtaining the necessary political support for linking.[48] However, competitive disadvantages and possible discrimination caused by the different treatment of sectors in two ETSs are not caused by linking and would also arise in its absence.[49] Nevertheless, it may be politically appropriate to coordinate the coverage of sectors through a linking agreement.[50]

Differences in sector coverage may, in fact have a positive effect on cost efficiency.[51] The higher the number of sources included, the lower the total emissions abatement costs.[52] Different abatement costs among the participants, thus, will lead to greater cost savings.[53] Thus, if the resistance of stakeholders based on competitiveness and the

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[44] *Ibid*.

[45] Richard Baron & Stephen Bygrave, "Towards International Emissions Trading: Design Implications for Linkages" (Paper prepared for the OECD, 2002) at 20, online: OECD <http://www.oecd.org/environment/cc/2766158.pdf>.

[46] *Ibid*.

[47] Scott Deatherage, *Carbon Trading: Law and Practice* (Oxford, NY: Oxford University Press, 2011) at 28-30.

[48] Sterk et al, *supra* note 25 at 14. If entities competing against each other are included in the ETS in one country but not in the other, this will lead to complaints of unfair treatment.

[49] *Ibid*.

[50] Mace et al, *supra* note 3 at 71.

[51] Baron & Bygrave, *supra* note 45 at 21.

[52] *Ibid*.

[53] *Ibid*.

different treatment of comparable emissions sources can be overcome, the differences in the sources should not hinder linking.[54]

2.3.1.2.1 EU ETS vs. Australian ETS

The EU ETS covers around 45% of the total EU emissions from more than 11,000 entities.[55] The EU ETS covers entities exceeding sector-specific thresholds.[56] Covered sources include power and heat generation, energy-intensive industry sectors including oil refineries, steel works and production of iron, aluminum, metals, cement, lime, glass, ceramics, pulp, paper, cardboard, acids, bulk organic chemicals and civil aviation.[57]

The Australian ETS is expected to cover around 60% of Australia's emissions from around 500 installations.[58] The Australian ETS covers only entities that annually emit 25,000 metric tons of CO_2 or more.[59] Covered sources include most power generation, oil and gas manufacturing processes (rather than point-of-use emissions), industrial processes, fugitive emissions (other than from decommissioned coal mines), and non-legacy waste.[60]

2.3.1.2.2 California ETS and Quebec ETS

Both the California and Quebec ETSs have identical emissions thresholds for inclusion, namely at least 25,000 metric tons of CO_2 annually.[61] Furthermore, in both ETSs, sector coverage is generally divided into two phases: phase one covering 2013-2014 and phase two covering 2015-2017.[62] During the first phase, both ETSs will cover

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[54] Haites & Mullins, *supra* note 23 at 39.

[55] EC, "The EU Emissions Trading System (EU ETS)" at 2, online: EC <http://ec.europa.eu/clima/publications/docs/factsheet_ets_en.pdf> (last visited 7 January 2014).

[56] Directive 2009/29/EC, *supra* note 38 at Annex I; for example, combustion installations fall under the EU ETS if they exceed 20 megawatts (MW) of total capacity while the lime, glass, and mineral wool insulation industries have daily GHG emissions thresholds of 50 tCO_2/day (tonnes of carbon dioxide), 20 tCO_2/day, and 20 tCO_2/day, respectively.

[57] *Ibid*.

[58] CEB 2011 Explanatory Memorandum, *supra* note 9 at 45-46.

[59] CEA 2011, *supra* note 8, s 20(4).

[60] CEB 2011 Explanatory Memorandum, *supra* note 9 at 32. See also CEA 2011, *ibid*, ss 19 & 30. However covered entities are not liable for following emissions from the operation of a facility: (a) emissions attributable to the combustion of certain fossil fuels; (b) emissions attributable to the combustion of biomass, biofuel or biogas; (c) agricultural emissions; (d) fugitive emissions from decommissioned underground mines; (e) emissions from legacy waste; (f) emissions from closed landfill facilities; and (g) emissions of certain synthetic greenhouse gases.

[61] AB 32, *supra* note 18, s 95812(b); *Regulation respecting the cap-and-trade system for greenhouse gas emissions allowances*, *supra* note 17, s 2.

[62] AB 32, *ibid*, ss 95840(a)-(b); *Regulation respecting the cap-and-trade system for greenhouse gas emissions allowances*, *ibid*, s 3(12).

the electricity and industrial sectors, plus CO_2 suppliers in California.[63] During the second phase, the scope in both ETSs will be extended to cover fuel distributors.[64] Nevertheless, Quebec ETS is broader than that of the California's,[65] insofar that it covers sources that no California regulation yet covers, such as natural gas transmission pipelines.[66]

2.3.1.2.3 Analysis

All four ETSs clearly differ in their coverage. These differences may cause competitiveness concerns. However these concerns would arise regardless of whether the ETSs are linked. Nevertheless, it would be politically feasible to coordinate the coverage of sectors in linked jurisdictions through a linking agreement. Another option would be the progressive expansion of the sector coverage over time in the ETSs covering fewer sources such as in California and Australian ETSs.

2.3.1.3 Upstream vs. Downstream

Depending on the point of application of the total limit on GHG emissions in the production and consumption cycle, an ETS can be either "upstream", "downstream" or a combination of both.[67] An upstream ETS targets the producers and importers of fossil fuels, whereas, a downstream ETS targets the GHG emissions of the end-users of energy — usually large industrial consumers of fossil fuels such as fossil-fired generating entities and large industries.[68]

An upstream ETS will cover fewer and much larger participants.[69] In terms of administrative efficiency, the fewer participants in an upstream ETS will be easier to manage and to monitor.[70] However, this can lead to the lower market liquidity.[71] There is also a possibility that upstream entities may simply pass on their compliance costs to consumers.[72] Conversely, a downstream ETS provides a wider coverage.[73] It can cover

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[63] AB 32, *ibid*, *ss* 95811(a)-(b), (g), 95851(a); *Regulation respecting the cap-and-trade system for greenhouse gas emissions allowances*, *ibid*, s 2.

[64] AB 32, *ibid*, ss 95811(c)-(f), 95851(b). *Regulation respecting the cap-and-trade system for greenhouse gas emissions allowances*, *ibid*, ss 2(2), 19.

[65] *Ibid*.

[66] *Ibid*.

[67] Sterk et al, *supra* note 25 at 15. In an upstream ETS, emissions are regulated at the point where carbon-based products are introduced into the economy (e.g. mining coal). By contrast, downstream ETS regulates emissions at the point at which emissions actually occur (e.g. burning the coal).

[68] *Ibid*.

[69] Baron & Bygrave, *supra* note 45 at 16.

[70] *Ibid*.

[71] Cédric Philibert & Julia Reinaud, "Emissions Trading: Taking Stock and Looking Forward" (Paper prepared for the OECD, 2004) at 23, online OECD <http://www.oecd.org/env/cc/32140134.pdf>.

[72] *Ibid*.

small consumers of coal, natural gas and refined oil products.[74] However, because of the large numbers of participants, a downstream ETS has the potential of becoming impractical.[75] To avoid this problem and to improve administrative effectiveness, thresholds for the number of sources/participants should be established.[76]

In the case of linking two ETSs with different coverage regimes, they should be linked in a way that avoids any double-counting.[77] One option to deal with this is not to require energy exporters in the upstream ETS to surrender tradable units to cover emissions associated with exported energy products.[78] Alternatively, they should not cover energy product users by an emissions reduction target in the downstream ETS.[79]

2.3.1.3.1 EU ETS vs. Australian ETS

The EU ETS is a downstream scheme as the allowances are distributed to the entities based on their direct emissions at the point of emission.[80] This way it concentrates on the end-users of energy.[81]

The point of regulation under the Australian ETS is also mainly downstream. It lies with the corporation or person who has "operational control" of a facility that meets the

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[73] Baron & Bygrave, *supra* note 45 at 15.

[73] *Ibid*. For example it can cover those in the transport, commercial and residential sectors.

[74] *Ibid*.

[75] Philibert & Reinaud, *supra* note 71 at 23.

[76] Baron & Bygrave, *supra* note 45 at 16.

[77] Sterk et al, *supra* note 25 at 15. See also Judson Jaffe & Robert N Stavins, "Linking a U.S. Cap-and-Trade System for Greenhouse Gas Emissions: Opportunities, Implications, and Challenges" (2008) Reg-Markets Center Working Paper No 08-01 at 26, online: Social Science Research Network (SSRN) <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1089042>. Double counting occurs usually when emissions reduction project's mitigation effort is counted twice unintentionally. For example, consider a situation in which an entity covered by the downstream ETS, receiving some of its fuel from supplier subject to the upstream ETS, reduces its emissions by one ton by reducing its fuel consumption. As a result of this emission reduction measure, it will receive, for example, one allowance which it can sell to another entity. The supplier in in the upstream ETS will also receive one allowance since its fuel sales will have declined. Therefore, although the emissions reduction measure undertaken in the downstream ETS only reduces emissions by one ton, it frees up two allowances (one in each ETS), leading to an offsetting two-ton increase in emissions. Because of this, allowance trading resulting from this emission reduction measure would lead to a net increase in emissions.

[78] Boyd et al, *supra* note 25 at 42. See also Michael Gillenwater & Wiley Barbour, *Tracking Indirect Emissions in the Electric Power Industry*, Environmental Resources Trust Discussion Paper (August 2004) at 1, online: Princeton University <http://www.princeton.edu>.

[79] *Ibid*.

[80] EU Trading Directive, *supra* note 2, Art 3(b).

[81] Michael Faure & Marjan Peeters, *Climate Change and European Emissions Trading: Lessons for Theory and Practice* (Cheltenham, UK: Edward Elgar Publishing, 2008) at 313.

emissions threshold.[82] The exception to this is the natural gas sector, where the point of regulation falls upstream on the supplier of gas through a pipeline, unless such liability is held by a "large gas consuming facility" or an Obligation Transfer Number (OTN) is quoted.[83]

2.3.1.3.2 California ETS vs. Quebec ETS

Both California and Quebec ETSs combine an upstream regime for small sources with a downstream regime for large sources. In particular:

- Emissions from industrial sources are regulated at the point of emission. The focus of regulations, therefore, will be on industrial entities (i.e. downstream regime)
- The point of regulation for electricity sector emissions is the first jurisdictional deliverer. For sources covered within their jurisdictions, this first jurisdictional deliverer will be the generator of power. For power generated outside their jurisdictions, this first jurisdictional deliverer will be the first entity that delivers that power (i.e. combination of upstream and downstream regimes).
- Residential, commercial, and industrial fuel combustion emissions are regulated where the fuels enter commerce in the jurisdictions, generally at a distributor stage (i.e. upstream regime).
- Finally, transportation fuel combustion emissions are regulated at the point where the fuels enter commerce (i.e. upstream regime).[84]

2.3.1.3.3 Analysis

The major challenge in linking the EU ETS, a downstream ETS, to the Australian ETS, a hybrid ETS that includes both large downstream point sources and upstream gas suppliers is ensuring that every ton of carbon is accounted for in both ETSs only once to

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[82] CEA 2011, *supra* note 8, s 20. See also *National Greenhouse and Energy Reporting Act 2007* (Cth), s 11 [NGER Act]. Operational control is defined as: a corporation or person has operational control over a covered entity if it has the authority to introduce and implement operational, environmental and health and safety policies for the entity or is declared by the Regulator to have operational control of the entity.

[83] CEA 2011, *ibid*, ss 33, 35; CEB 2011 Explanatory Memorandum, *supra* note 9 at 46. An OTN transfers liability for emissions originating from the use of natural gas from the supplier to the user of that gas; IETA, "The World's Carbon Markets: A Case Study Guide to Emissions Trading (Australia)" (June 2013) at 3, online: IETA <http://www.ieta.org/assets/Reports/EmissionsTradingAroundTheWorld/edf_ieta_australia_case_study_september_2013.pdf>. The rationale behind OTN is to permit consumers of natural gas to take on the responsibility for covering emissions rather than suppliers that might pass carbon related costs to consumers; CEA 2011, *ibid*, s 55A, large gas consuming facilities are defined as consumers with GHG emissions above 25,000 tCO_2e (tonnes of carbon dioxide equivalent) per financial year.

[84] *Regulation respecting a cap-and-trade system for greenhouse gas emission allowances*, *supra* note 17 at Appendix A; AB 32, *supra* note 18, s 95852.

avoid any double-counting.[85] One option to deal with this is not to require energy exporters (i.e. the suppliers of gas in Australia) with an upstream point of regulation to surrender tradable units to cover emissions associated with exported gas. Or, alternatively, do not cover gas users by an emissions target in the downstream EU ETS.

In the case of the California and Quebec ETSs, both combine similar upstream and downstream regimes. This design feature is, therefore, unlikely to cause a problem for linking.

2.3.1.4 Voluntary or Mandatory Participation

Participation in an ETS may either be mandatory[86] or voluntary.[87] The environmental effectiveness of a voluntary ETS is likely to be lower than that of a mandatory one for two main reasons.[88] First, there is bound to be an inconsistency between the demand and offers.[89] This is because the covered sources in a voluntary ETS prefer to be the sellers rather than the buyers and often adopt only relatively weak targets which they achieve mainly or exclusively through internal emissions reduction actions.[90] Joining such an ETS is hardly attractive for prospective buyers since it leads to low liquidity and prices.[91] Secondly, when a mandatory ETS is linked to a voluntary ETS, a participating entity in the voluntary ETS may shift its production and the attendant emissions to another entity that is not covered by the ETS in order to gain surplus allowances to sell, i.e. carbon leakage.[92] Voluntary ETSs normally achieve much lower coverage, so the scope for

[85] Double counting may occur, for example, when an entity covered by the downstream EU ETS, receiving some of its gas from supplier subject to the upstream Australian ETS, reduces its emissions by one ton by reducing its gas consumption. As a result of this emission reduction measure, it will receive, for example, one allowance which it can sell to another entity. The supplier in the upstream Australian ETS will also receive one allowance since its fuel sales will have declined. Therefore, although the emissions reduction measure undertaken in the downstream EU ETS only reduces emissions by one ton, it frees up two allowances (one in each ETS), leading to an offsetting two-ton increase in emissions. Because of this, allowance trading resulting from this emission reduction measure would lead to a net increase in emissions.

[86] This means that participation is mandatory for specified participants in an ETS. The demand in mandatory markets is created by regulatory instrument.

[87] The demand in voluntary market is created by voluntary buyers who purchase offsets. Participants normally have a powerful incentive to join the voluntary scheme, for example, in the form of a tax rebate or incentive payments from the government if they meet an agreed target. Usually, there are no penalties if targets are not met, but incentives may be removed from participants.

[88] Sterk et al, *supra* note 25 at 16.

[89] *Ibid*.

[90] Haites & Mullins, *supra* note 23 at 40.

[91] Sterk et al, *supra* note 25 at 16.

[92] *Ibid*. For example, if participation in an ETS increases the costs of the goods or services, sales by participants should decline while sales by firms outside the ETS should rise thus increasing the emissions of the firms outside the ETS. A participant in the ETS may be able to subcontract to a non-participant, for example, so that some of the emissions are transferred to non-participants. Such an action would free up allowances for sale but would increase leakage.

leakage is greater unless non-participants are covered by other policies, such as negotiated agreements or an emissions tax.[93]

If mandatory and voluntary ETSs are to be linked, it is important to make the targets of the participants in the voluntary ETS lower than business-as-usual emissions.[94] Furthermore, these targets also need to be bound through suitable penalties in case of non-compliance.[95] And finally, there would need to be a monitoring system in place to avoid the leakage in a voluntary ETS after the linkage has been achieved.[96]

2.3.1.4.1 EU ETS vs. Australian ETS

Participation in the EU ETS is mandatory for covered sources exceeding sector-specific thresholds.[97] Under the Australian ETS, only entities that emit 25,000 metric tons of CO_2 or more annually have a mandatory compliance obligation.[98]

2.3.1.4.2 California ETS vs. Quebec ETS

Participation in both California and Quebec ETSs is mandatory for entities that emit 25,000 metric tons of CO_2 or more annually.[99] In addition to mandatory participation by covered entities, both ETSs also allow specific entities to participate voluntarily. Under the California ETS, these are "opt-in entities",[100] "voluntarily associated entities"[101] and "other registered participants".[102] Non-emitting entities under the Quebec ETS may also

[93] Haites & Mullins, *supra* note 23 at 40.
[94] Sterk et al, *supra* note 25 at 16.
[95] *Ibid*.
[96] *Ibid*.
[97] EU Trading Directive, *supra* note 2, Arts 2(1), 4, Annex I.
[98] CEA 2011, *supra* note 8, ss 20(4), 21(4), 22(4).
[99] AB 32, *supra* note 18, s 95812; *Regulation respecting a cap-and-trade system for greenhouse gas emission allowances*, *supra* note 17, s 7.
[100] AB 32, *ibid*, s 95811. Entities that fall within the covered sources but do not meet the threshold for inclusion (i.e. 25,000 metric tons of CO_2 or more annually) may choose to participate in the ETS as an "opt-in entities". Once covered by the ETS, opt-in entities are subjected to the same compliance obligations as covered entities.
[101] *Ibid*, s 95814. These entities do not have emissions reduction obligation under the ETS but may want to buy, hold, sell, or voluntarily retire compliance instruments. Examples of possible voluntarily associated entities may include non-governmental organizations, private individuals, traders, brokers, emissions offset providers, and financial institutions.
[102] *Ibid*. This type includes participants who can register with the California ETS but cannot buy or hold compliance instruments. Examples may include data verifiers, verification bodies, offset project registries, as well as other registered third parties.

register with the ETS as voluntary participants if they are interested in purchasing and trading emission allowances.[103]

2.3.1.4.3 Analysis

Participation in all four ETSs is mandatory with California and Quebec ETSs allowing also some voluntary participation. Hence, this feature would not pose any problem for linking.

2.3.1.5 Opt-in and Opt-out Provisions

Opt-in provisions regulate how new gases, sectors or activities can be included in the ETS.[104] In contrast, opt-out provisions regulate how participating entities can be excluded from the ETS.[105]

The importance of the opt-in provisions is that they can increase the supply of allowances, motivate abatement efforts in entities/sectors not originally covered by the ETS, familiarize participants with the requirements of the ETS and potentially reduce compliance costs.[106] The decision to opt-in or not will normally depend on three factors: (1) the allocation of allowances it would obtain compared to its recent emissions, (2) its abatement costs compared to the market price, and (3) the compliance costs compared to any alternative policy that it may face if it remains outside the ETS.[107]

Conversely, generous opt-out rules may affect the environmental effectiveness of the ETS since they might permit net buyers to drop out, leaving only net sellers in the ETS.[108] Allowing a covered entity to opt-out and move to a less stringent compliance regime may also reduce the scope of an ETS and thus decrease its efficiency.[109] To prevent this from happening, restrictions on opting-out should be imposed.[110] In addition, opting-out entities should be covered by other measures to ensure the environmental effectiveness of the ETS.[111]

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[103] *Regulation respecting a cap-and-trade system for greenhouse gas emission allowances*, *supra* note 17, s 7.
[104] Faure & Peeters, *supra* note 81 at 314.
[105] *Ibid*.
[106] A Denny Ellerman, Paul L Joskow & David Harrison, Jr, "Emissions Trading in the US: Experience, Lessons, and Considerations for Greenhouse Gases" (Report prepared for the Pew Centre on Global Climate Change, 2003) at 46, online: Pew Centre on Global Climate Change <http://www.pewclimate.org/docUploads/emissions_trading.pdf>.
[107] *Ibid*.
[108] Sterk et al, *supra* note 25 at 17.
[109] Faure & Peeters, *supra* note 81 at 315.
[110] *Ibid*.
[111] *Ibid*.

2.3.1.5.1 EU ETS vs. Australian ETS

From 2008 (Phase II), the EU ETS permits its member states to opt-in activities, sectors and gases that were not already covered by the ETS provided that inclusion is approved by the EU Commission.[112] Conversely, the EU ETS permitted its member states to opt-out installations in Phase I, but they are not allowed to opt-out in Phase II (2008-2012).[113] Article 27 of the EU ETS Directive provides for a possible opt-out for small emitters and hospitals from the EU ETS in Phase III (2013-2020).[114] The small emitters who want to use this provision must have an annual emissions of less than 25,000 tons of CO_2 and a rated thermal input of less than 35 megawatts (MW) (excluding emissions from biomass) in the three years before the notification.[115] This opt-out provision is discretionary and will also depend on emissions from opted-out entities being subjected to alternative domestic tools which achieve an equivalent contribution to emission reductions.[116]

Under the Australian ETS, only the large liquid fuel users have the ability to manage their carbon price liabilities under the ETS instead of paying the equivalent carbon price through the fuel tax or excise systems.[117] To opt-in, an eligible person must apply to the Clean Energy Regulator to be the designated as an opt-in person (DOIP).[118] To be eligible, a person must pass the eligibility[119] and the threshold tests.[120] Having opted-in, the DOIP will be a liable entity for the complete financial year.[121] Under certain circumstances, a DOIP can also request to opt-out for a subsequent financial year.[122]

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[112] EU Trading Directive, *supra* note 2, Art 24. See also Blyth & Bosi, *supra* note 25 at 18.
[113] EU Trading Directive, *ibid*, Art 27.
[114] Directive 2009/29/EC, *supra* note 38, Art 27.
[115] *Ibid*.
[116] *Ibid*.
[117] These fuels are listed in Item 10 of the Schedule to the *Excise Tariff Act 1921* (Cth). They include petrol, diesel and other liquid fuels, kerosene, aviation gasoline, fuel oil, and heating oil.
[118] See CEA 2011, *supra* note 8, s 92A.
[119] *Ibid*, s 92A(4). A person passes the eligibility test if it would have been entitled to fuel tax credit in respect of the acquisition of the liquid fuel: (a) in its own right; (b) as a member of a GST Group where the members are entitled to the fuel tax credit; or (c) as a participant in the GST Joint Venture where the participants are entitled to the fuel tax credit. See also Australian Government, "Liquid Fuel Opt-in Scheme Guideline" (March 2013) at 9, online: Clean Energy Regulator <http://www.cleanenergyregulator.gov.au/>.
[120] *Ibid*, ss 20(4)-(5). The threshold test requires that either: (a) the person, or its GST Group or GST Joint Venture has used an amount of liquid fuel that embodies potential GHG emissions of 25,000 tons of CO_2 or more in either of the two previous financial years before the application is made or will likely use that amount in the relevant financial year; or (b) the person currently is or will become a liable entity under the CEA 2011 for the relevant financial year. See also "Liquid Fuel Opt-in Scheme Guideline", *ibid* at 9.
[121] CEA 2011, *supra* note 8, s 92A(1)(a).
[122] *Ibid*, s 90. The Clean Energy Regulator may allow a DOIP to opt out if: the DOIP informs the Clean Energy Regulator that it wants to opt-out; the DOIP does not submit its report due by 14 July; the DOIP does not provide the required consent from members or participants in their GST group or GST joint

2.3.1.5.2 California ETS vs. Quebec ETS

Under California ETS, any entity that falls within the list of covered sources but does not meet the threshold for inclusion (i.e. 25,000 metric tons of CO_2 or more annually) can nevertheless opt-in for the ETS during any trading period.[123] Conversely, these opt-in covered entities may also choose to opt-out of the ETS at the end of a trading period if their GHG emissions stay under the threshold for inclusion.[124]

Under Quebec ETS, non-emitting entities may also register as participants if they are interested in buying and selling allowances.[125] However, opting-out is not allowed under the Quebec ETS.[126]

2.3.1.5.3 Analysis

Both the EU and Australia allow opting-in and opting-out. Both ETSs cover their opting-out entities by other measures in order to ensure the environmental effectiveness of the ETS. However, these measures do not prevent these entities from moving to a less stringent ETS. This ability may reduce the scope of the combined ETS and thus decrease its efficiency. This issue is salient in the case of the small emitters under the EU ETS since the Australian ETS covers only entities that annually emit 25,000 metric tons of CO_2 or more. Large liquid fuel users included in the Australian ETS are more likely to be captured by the EU ETS. To avoid this issue, rules on opting-out should be harmonized in both ETSs.

Only the California ETS allows the opting-out option. As a result, California's entities falling within the list of covered sources might be motivated to reduce their emissions below the inclusion threshold, to opt out of the ETS and possibly physically to move to another less restrictive ETS. This could reduce the scope of California ETS and consequently decrease its efficiency. To prevent this, some restrictions on the opting-out ability of California's entities might be required. The opting-out entities should also be subjected to other measures to guarantee the environmental effectiveness of the California ETS.

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venture; the DOIP has become an externally administered body corporate within the meaning of the Corporations Act 2001; the DOIP applied to represent a GST group with more than 20 members, but did not provide consent from all members, and one of the members that did provide consent has become an externally-administered body corporate within the meaning of the Corporations Act 2001; shortfall of units remain unpaid 30 days after the payment due date; The Clean Energy Regulator is satisfied that person no longer meets the relevant eligibility or threshold tests for the financial year. See also "Liquid Fuel Opt-in Scheme Guideline", *supra* note 119 at 22.

[123] AB 32, *supra* note 18, s 95813.

[124] *Ibid*.

[125] *Supra* note 17, s 8. These participants may register on or after 1 May 2012.

[126] *Ibid*, ss 15 and 19.

2.3.2 Definition and Recognition of Trading Units

In the literature, there seems to be an agreement that the recognition of trading units is likely to be at the center of future linking negotiations. The domestic ETS thus must identify the unit of trade as well as the trading rules.[127] This also includes the question of whether trading units from other ETSs can be accepted for trading in the ETS.[128] In addition, the ETSs should also have the same quantitative units preferably as established by the Kyoto Protocol, namely the metric tons of CO_2, in order for them to be compatible for linking.[129] Otherwise, linking ETSs with differing trading units would require an exchange rate.[130]

Linking two ETSs with different recognized trading units will affect the total supply of these units in the combined ETS.[131] This can directly and indirectly affect the prices.[132] First, if an ETS which accepts a particular type of units (Scheme A) is linked to an ETS which does not (Scheme B, e.g. credits from carbon sinks in the EU ETS), the covered entities in Scheme A can keep those non-recognized units for their domestic compliance and sell the recognized units in Scheme B.[133] These non-recognized trading units would thus indirectly offset emissions in Scheme B.[134] Second, if Scheme A has already been linked to a third ETS (Scheme C) that is not yet linked to Scheme B, the trading units from Scheme C can also be used to indirectly offset emissions in Scheme B.[135] The political decision in Scheme B about which trading units to accept would thus be bypassed.[136] Furthermore, if the price of the external trading unit is lower than the price of the domestic trading unit, the total amount of units in the combined ETS will be much greater than if these ETSs were not linked and functioned separately.[137]

To avoid the issues discussed above, states should harmonize the rules for the recognition of trading units.[138] While the ETS (Scheme B above) with fewer recognized trading units may take adjustment actions such as establishing exchange rates, these would only increase the transaction costs while producing only limited gains in terms of

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[127] Sterk et al, *supra* note 25 at 17.

[128] *Ibid*.

[129] *Ibid*.

[130] Faure & Peeters, *supra* note 81 at 311.

[131] Andreas Tuerk et al, *Linking Emissions Trading Schemes: Synthesis Report* (Cambridge, UK: Climate Strategies, May 2009) at 27, online: Climate Strategies <http://climatestrategies.org/wp-content/uploads/2009/05/linking-synthesis-final-may-09.pdf>.

[132] *Ibid*.

[133] *Ibid*.

[134] *Ibid*.

[135] Sterk et al, *supra* note 25 at 17.

[136] Blyth & Bosi, *supra* note 25 at 20.

[137] *Ibid* at 21. If the price of external units is lower than the price of allowances within the domestic ETS, there will be a demand for them. The flow of these credits into an ETS will depend on any restrictions that are incorporated into the provisions of the ETSs.

[138] Sterk et al, *supra* note 25 at 18.

reduced emissions and undermining environmental effectiveness.[139] In addition, Scheme B would have no way to tell if an incoming trading unit from Scheme A (above) was freed up by the use of an external trading unit which Scheme B does not accept.[140] Ultimately, each country must decide to what extent it wants to keep its rules for the recognition of the trading units rather than harmonizing them.[141] If the inclusion of certain trading units is considered unacceptable by the ETS with the narrower recognition of trading units, then the only way to keep them out would be to refuse linkages with the ETS that includes them.[142]

2.3.2.1 EU ETS vs. Australian ETS

For the purpose of regulatory compliance, covered entities in both the EU and Australia may surrender as compliance instruments, allowances and offsets. To comply with the cap-and-trade program, the EU allows its covered entities the use of EUAs,[143] Certified Emissions Reductions (CERs),[144] Emissions Reduction Units (ERUs)[145] and also the mutually recognized third-country allowances.[146] Covered entities under the Australian ETS can discharge their liability by surrendering three kinds of eligible emissions units: a) a carbon unit; b) an eligible Australian carbon credit unit (ACCU); and c) an eligible international emissions unit.[147]

In both ETSs, allowances and offsets (CERSs and ERUs) cover the emissions of one ton of CO_2 equivalent.[148]

In terms of internal trading units, only the Australian ETS accepts credits from domestic offset projects and sinks (i.e. ACCUs).[149] The EU ETS does not allow its covered entities to accept these credits.[150]

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[139] *Ibid*.

[140] *Ibid*.

[141] Wolfgang Sterk & Ralf Schuele, "Advancing the Climate Regime Through Linking Domestic Emissions Trading Systems" (2009) 14 Mitig Adapt Glob Change 409 at 417.

[142] *Ibid*.

[143] EU Trading Directive, *supra* note 2, Art 3(a).

[144] EC, *Directive 2004/101/EC of the European Parliament and of the Council of 27 October 2004 amending Directive 2003/87/EC establishing a scheme for greenhouse gas emission allowance trading within the Community, in respect of the Kyoto Protocol's project mechanisms*, [2004] OLJ 338/18, Art 15 [Directive 2004/101/EC].

[145] *Ibid*.

[146] EU Trading Directive, *supra* note 2, Art 25.

[147] CEA 2011, *supra* note 8, ss 99 & 5.

[148] EU Trading Directive, *supra* note 2, Art 3(a); CEA 2011, *ibid*, ss 4-5 & 122(1); see also CEB 2011 Explanatory Memorandum, *supra* note 9 at para 3.33.

[149] *Carbon Credits (Carbon Farming Initiative) Act 2011* (Cth), ss 53-54 [CFI Act 2011]. ACCUs are issued for GHG abatement activities undertaken as part of the Australian Government's Carbon Farming Initiative. A project is an emissions avoidance offsets project if it is: (a) an agricultural emissions avoidance

Within limits, covered entities in both ETSs can also purchase certain international offset credits created under the Kyoto Protocol. These include CERs issued through the Clean Development Mechanism and the ERUs issued through the Joint Implementation mechanisms.[151] Both ETSs, however, prohibit its entities from surrendering CERs and ERUs generated from projects involving the destruction of trifluoromethane; N_2O created as a result of producing adipic acid; projects for the production of nuclear energy; projects for the production of hydropower with a generating capacity of greater than 20 MW, unless the project meets the criteria adopted by the EU (based on the World Commission on Dams guidelines).[152] Both ETSs apply the same quantitative limit, namely 50%.[153] However, the EU ETS does not accept removal units (RUs) whereas Australian ETS does.[154] In addition, after 2012 only CERs that result from an approved list of Least Developed Countries (LDCs) can be used for compliance in the EU ETS, whereas the Australian ETS does not include this limitation.[155] Moreover, the list does not include large emerging economies such as India and China. The exclusion of such

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project; (b) a landfill legacy emissions avoidance project; (c) an introduced animal emissions avoidance project; or (d) a project of a kind specified in the regulations. A project is a sequestration offsets project if it is a project: (a) to remove carbon dioxide from the atmosphere by sequestering carbon in living biomass, dead organic matter, soil; or (b) to remove carbon dioxide from the atmosphere by sequestering carbon in, and to avoid emissions of GHGs from living biomass, dead organic matter, soil.

[150] Directive 2004/101/EC, *supra* note 144, Art 11(a)(3)(b) (Forestry, land use and land use change credits are not allowed at this time to be used in the EU ETS), Art 11a(3)(a).

[151] Directive 2004/101/EC, *ibid*, Art 15; *Australian National Registry of Emissions Units Act 2011* (Cth), s 4 [ANREU Act 2011]; CEA 2011, *supra* note 8, ss 5 (see definitions of "eligible emissions unit", "eligible international emissions unit" and "fixed charge year"), 122(8), 123A(6); *Clean Energy Regulations 2011* (Cth), s 6.1 [CER 2011].

[152] Directive 2004/101/EC, *ibid*, Arts 11(a)(3)(b), 11b(6); See also EC, *Memo/10/615: Questions & Answers on Emissions Trading: Use restrictions for certain industrial gas credits as of 2013, Memo/10/615* (Brussels, 25 November 2010); *Guidelines for the implementation of Article 6 of the Kyoto Protocol*, Dec 9/CMP.1, UNFCC, 1st Sess, FCCC/KP/CMP/2005/8/Add.2 (2006). An exception is made until 30 April 2013 for the destruction of trifluoromethane and N_2O emissions that is credited before 1 January 2013, for compliance with 2012 emissions reduction commitments; ANREU Act 2011, *ibid*, s 4; CEA 2011, *ibid*, ss 5, 122(8), 123A(6); CER 2011, *ibid* at s 6.1.

[153] Directive 2009/29/EC, *supra* note 38, Art 11a (8); CEA 2011, *ibid*, s 133(7).

[154] ANREU Act 2011, *supra* note 151, s 4; CEA 2011, *ibid*, ss 5 (see definitions of "eligible emissions unit", "eligible international emissions unit" and "fixed charge year"), 122(8). RUs issued by the Kyoto Protocol country on the basis of land use, land use change and forestry activities are eligible emissions units under the ETS (under Arts 3.3 and 3.4 of the Kyoto Protocol). Land use, land use change and forestry activities are limited to afforestation, reforestation and deforestation that have occurred since year 1990. Eligible RUs cannot be surrendered to discharge liabilities arising in the fixed price charge period.

[155] See EC, "Definition of Least Developed Countries in the context of Article 11a(4) of Directive 2009/29/EC of the European Parliament and of the Council of 23 April 2009, amending Directive 2003/87/EC so as to improve and extend the greenhouse gas emission allowance trading scheme of the Community (OJ L 140, 5.6.2009, p 77)" (2009), online: EC <http://ec.europa.eu/clima/policies/ets/linking/docs/def_ldc_en.pdf>. See also Sabina Manea, "The Future of International Emissions Credits in the EU ETS" (2012), online: Climatico <http://www.climaticoanalysis.org/post/the-future-of-international-emissions-credits-in-the-eu-ets>.

countries is intended to motivate them to reduce GHG emissions in ways other than the generation of CERs and thus step up their regulatory approaches to mitigating the effects of climate change.[156]

2.3.2.2 California ETS vs. Quebec ETS

For the purpose of regulatory compliance, a covered entity in both California and Quebec may surrender as compliance instruments allowances and offsets.[157] In both ETSs, allowance and offsets cover the emissions of one metric ton of CO_2 equivalent.[158]

The offset programs in both California and Quebec are also equivalent. In both ETSs the use of offsets is limited to 8% of their total compliance obligation for each trading period.[159] The same as allowances, offsets issued by each ETS are fully compatible and once issued, are recognized as valid compliance instruments for the ETS. The offsets themselves must be approved by the respective governments, and ensure that emission reductions are real, additional, permanent, enforceable, verifiable, and quantifiable.[160] Both, Quebec's and California's offset projects include sources that neither ETS regulates.[161] In terms of internal trading units, while both ETSs plan to accept credits from offset projects in agriculture, forestry, waste management, and destruction of ozone-depleting substances, these projects are not identical. Quebec's offset protocols are limited to agricultural methane destruction, small landfill site methane destruction, and ODS destruction; whereas, California's offsets are limited to projects in the areas of forestry, urban forestry, dairy digesters and destruction of ozone-depleting substances.[162] Moreover, Quebec limits the approved offset projects to those which originated in Canada.[163] That requirement is not parallel to California ETS limiting approved offset projects to those originated within the US, Canada and Mexico.[164] A thorough pre-linking

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[156] *Ibid*.

[157] AB 32, *supra* note 18, s 95820(a)(55); *Regulation respecting a cap-and-trade system for greenhouse gas emission allowances*, *supra* note 17, s 37.

[158] AB 32, *ibid*, s 95802(a)(12); *Regulation respecting a cap-and-trade system for greenhouse gas emission allowances*, *ibid*, s 3(5).

[159] AB 32, *ibid*, s 95854; *Regulation respecting a cap-and-trade system for greenhouse gas emission allowances*, *ibid*, s 20.

[160] AB 32, *ibid*, ss 95973(a)(2), 95821; *Regulation respecting a cap-and-trade system for greenhouse gas emission allowances*, *ibid*, ss 37, 70.3.

[161] AB 32, *ibid*, s 95973(a)(2)(A); *Regulation respecting a cap-and-trade system for greenhouse gas emission allowances*, *ibid*, s 70.3(6)(a).

[162] AB 32, *ibid*, s 95973; *Regulation respecting a cap-and-trade system for greenhouse gas emission allowances*, *ibid* at Appendix D.

[163] AB 32, *ibid*, ss 95973, 95972(c); *Regulation respecting a cap-and-trade system for greenhouse gas emission allowances*, *ibid* at Appendix D.

[164] AB 32, *ibid*, s 95973.

analysis of protocols, however, found that both offset programs and protocols were compatible.[165]

There is also a difference between California and Quebec ETSs in how invalidated offsets are replaced. California adopted a "buyer liability" approach putting this responsibility on the entities purchasing offsets.[166] This approach contrasts with the method adopted in Quebec that instead maintains a state-run Environmental Integrity Account for offsets to replace those invalidated.[167]

Finally, in addition to general offsets discussed above, both ETSs also recognize the early action offsets but only California ETS will include international sector-based offsets.[168]

2.3.2.3 Analysis

For the purpose of regulatory compliance, covered entities in all four ETSs are allowed to surrender as compliance instruments allowances and offsets covering one metric ton of CO_2 equivalent. In this regard, trading between these ETSs would be straightforward.

The recognition of trading units, however, is likely to be an issue when examining the potential for linking. Only Australian ETS accepts RUs, CERs not from the list of LDCs, credits from domestic offset projects and sinks. Similarly, only California ETS is planning to include international sector-based offsets. These trading units, accepted by

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[165] See generally CARB, "Initial Statement of Reasons" (9 May 2012), online: CARB <http://www.arb.ca.gov/regact/2012/capandtrade12/isormainfinal.pdf>.

[166] AB 32, *supra* note 18, s 95985. If an offset is invalidated under the California ETS, it will be removed from the ETS. There are three reasons for invalidation: overestimation, illegality and double-counting. If the offset had already been used for compliance, the participant that surrendered the invalidated offset is required to obtain and surrender the replacements. *Regulation respecting a cap-and-trade system for greenhouse gas emission allowances*, *supra* note 17 at Appendix D.

[167] *Regulation respecting a cap-and-trade system for greenhouse gas emission allowances*, *ibid*, s 70.20. If an offset is later invalidated, Quebec ETS requires the offset developer to replace it. There are three reasons for invalidation: miscalculation, false information, and double-counting. If the offset developer is unable to do so, Quebec will withdraw replacements offset from an Environmental Integrity Account. This Environmental Integrity Account is managed by Quebec. It is filled by requiring that each offset project submit 3% of its issued offsets into the account.

[168] AB 32, *supra* note 18, ss 95990, 95991, 95854. In s 95990, only those GHG emission reductions that occurred between 1 January 2005 and 31 December 2014 will qualify for the Early Action offsets. They are limited to 2% of an entity's total compliance obligation in the first trading period and 4% of an entity's total compliance obligation in the second and third trading periods. *Regulation respecting a cap-and-trade system for greenhouse gas emission allowances*, *ibid*, s 3(5). Only covered entities covered under the first trading period that made investments leading to emissions reductions between 2008 and 2011 may apply for early reduction credits. Emissions reductions in 2008-2011 will be compared to a 2005-2007 emissions level. In order to obtain early reduction credits, emitters must apply for these credits by 31 December 2011.

Australia and California but not the EU and Quebec, may impair linking by increasing prices and emissions. Covered entities in Australia and California could use them for domestic compliance purposes thus freeing up recognized domestic trading units and selling them to entities in the EU and Quebec. These non-recognized units would thus indirectly offset emissions in the EU and Quebec. In addition, the political decision in the EU and Quebec about which trading units to recognize would thus be bypassed. And finally, if the price of these trading units is lower than the price of the recognized trading unit, the total amount of emissions in both ETSs will be much greater than if these ETSs were not linked and operated separately. While both the EU and Quebec may introduce adjustment measures such as the exchange rates, these rates would eventually increase transaction costs while producing only limited effects. The EU and Quebec ETSs would never be able to tell whether an incoming trading unit has been freed up by the use of a non-recognized trading unit in the EU and Quebec ETSs. To avoid this issue, all four ETSs should harmonize the rules for the recognition of these trading units by including them in or excluding them from the ETSs.

Finally, differences in replacing invalidated offsets in both Quebec and California ETSs might also lead to fragmented carbon markets with differential offset pricing based on the perceived risk profiles between the California and the Quebec offsets.[169] As a result, the effectiveness of the combined offset market might be affected. To prevent this, California should adopt Quebec's approach regarding the replacement of the invalidated offsets to provide greater certainty in a combined offset market.

2.3.3 Emissions Targets

2.3.3.1 Stringency of Emissions Targets

The stringency of targets indicates how much emissions must be reduced compared to historic or projected emissions.[170] Since the emerging ETSs have rather different approaches to target-setting, a perfect balance is very unlikely to be attained. However, it is probably a political precondition for linking that all affected ETSs demonstrate similar mitigation efforts and therefore establish comparable caps.[171] This is because cap levels jointly with the abatement costs determine the international distribution of mitigation costs, and linking raises the question of whether countries consider their levels of emissions reduction efforts mutually acceptable.[172]

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[169] IETA, "The World's Carbon Markets: A Case Study Guide to Emissions Trading (Quebec)" (May 2013), online: IETA <http://www.ieta.org/assets/Reports/EmissionsTradingAroundTheWorld/edf_ieta_quebec_case_study_may_2013.pdf> at 4.

[170] Faure & Peeters, *supra* note 81 at 312.

[171] Sterk & Schuele, *supra* note 141 at 418.

[172] Andreas Tuerk et al, "Linking Carbon Markets: Concepts, Case Studies and Pathways" (2009) 9 Climate Policy 341 at 347.

Linking an ETS with strict targets to an ETS with weaker targets will lead to higher emissions in the combined ETS than the emissions of the separate ETSs.[173] An entity in an ETS with stricter targets could largely meet its emissions reduction target by buying allowances from an ETS with lenient targets.[174] This, in turn, may lead to a significant transfer of wealth from the ETS with a stricter target to the ETS with a more lenient target.[175] This may also provide an incentive to a government to relax its targets or caps in order to become a net seller.[176] To prevent these effects, the countries involved should have a comparably ambitious climate policy strategy and a joint vision about the medium and long-term emissions trends.[177] It would also be helpful to agree on the joint caps in all linked ETSs to assure all stakeholders that no country is intending to take advantage of the others.[178]

2.3.3.2 Kind of Targets Adopted: Absolute vs. Relative Targets

The kind of targets adopted by individual ETSs may also raise a concern. Two kinds of targets could be adopted by the ETSs — absolute and relative targets. Absolute targets limit the total GHG emissions within a specific period.[179] Total emissions should not exceed the set target.[180] Relative targets are defined as emissions per unit of output or activity.[181] In an ETS with relative targets, emissions may increase as long as this is justified by an increase in production or GDP and the emissions have stayed below the relative target.[182]

Linking ETSs with different targets may actually impair rather than improve the liquidity of the combined ETS.[183] This is because in an ETS with relative target, allowances are allocated in two steps: initial allocation of allowances based on production levels and adjustment ex post when actual production levels are verified.[184] This may lead

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[173] Faure & Peeters, *supra* note 81 at 312.
[174] *Ibid*.
[175] Mace et al, *supra* note 3 at 60.
[176] Sterk & Schuele, *supra* note 141 at 418.
[177] *Ibid*.
[178] *Ibid*.
[179] Faure & Peeters, *supra* note 81 at 312.
[180] *Ibid*.
[181] *Ibid*.
[182] AM Gielen, PR Koutstaal & Herman RJ Vollebergh, "Comparing Emission Trading with Absolute and Relative Targets" (Paper presented at the 2nd CATEP Workshop on the Design and Integration of National Tradable Permit Schemes for Environmental Protection, hosted by University College London, 25-26 March 2002) at 4, online: ResearchGate <http://www.researchgate.net/publication/241756096_Comparing_Emission_Trading_with_Absolute_and_Relative_Targets>.
[183] Sterk et al, *supra* note 25 at 18.
[184] *Ibid*.

to spikes in liquidity at the time of ex post adjustment and also affect an ETS with absolute targets.[185]

Moreover, linking an ETS with absolute targets to an ETS with relative targets may also prompt equity and environmental effectiveness concerns. In an ETS based on relative targets, emissions levels are typically linked to economic growth.[186] This means that entities in such an ETS will obtain more allowances the more they produce, provided that they do not exceed their relative target.[187] As a result, entities under the ETS with relative targets may be motivated to increase their emissions since they will receive more allowances the more they produce, whereas entities in the ETS with an absolute target face higher costs for any increase of emissions.[188] These output increases will inflate the amount of allowances available in the combined ETS.[189] This, in turn, could result in a smaller total emissions reduction.[190]

There are several options to deal with this problem: (i) tax the trade between the linked ETSs, (ii) introduce an exchange rate to adjust for the relative allowance value, (iii) adjust allocation in the ETS with relative targets to account for changes in growth levels stemming from the linkage of the ETS, and (iv) establish a gateway.[191] However, all these options would make the combined scheme more complex and increase the transaction costs.[192] The most desirable solution would be to introduce absolute instead of relative targets.[193] This would not only guarantee the full environmental and cost benefits of emissions trading, but would also prevent burdensome adjustment arrangements.[194] However, if relative targets are retained, the most appropriate remedy for an ETS with relative targets would be to set sufficiently strict relative targets to keep them from undermining the environmental effectiveness of the ETS with absolute targets.[195]

2.3.3.3 EU ETS vs. Australian ETS

Both the EU and Australian ETSs are based on absolute caps on emissions. The EU's current target for reducing EU's GHG emissions for 2020 is 20% below the 1990 levels

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[185] *Ibid*.

[186] *Ibid*. See also Faure & Peeters, *supra* note 81 at 312.

[187] Haites & Mullins, *supra* note 23 at 48.

[188] *Ibid*.

[189] *Ibid*.

[190] Faure & Peeters, *supra* note 81 at 312.

[191] Carolyn Fisher, "Combining Rate-Based and Cap-and-Trade Emissions Policies" (2003) at 12-19, online: Resources for the Future <http://www.rff.org/Documents/RFF-DP-03-32.pdf>.

[192] Sterk et al, *supra* note 25 at 19. Under this mechanism, allowances from an ETS with relative targets will be transferred into the ETSs only as long as total emissions of an ETS based on relative targets does not exceed certain ceiling.

[193] Sterk & Schuele, *supra* note 141 at 421.

[194] *Ibid*.

[195] *Ibid*.

or 30% if other major economies commit themselves to comparable targets.[196] Its long-term target is reducing EU GHG emissions by 80-95% compared to 1990 levels by 2050.[197]

The stringency of the current and long-term targets is different in Australia. Its current target for reducing Australia's GHG emissions for 2020 is 5% below 1990 or 25% if the world agrees to ambitious targets capable of stabilizing levels of GHGs in the atmosphere at 450 parts per million (ppm) CO_2 or lower.[198] Its long-term target of reducing Australia's GHG emissions is 80% below 2000 levels by 2050.[199]

2.3.3.4 California ETS vs. Quebec ETS

Both California and Quebec established absolute emissions reduction targets. California's target is to reduce its GHG emissions to 1990 levels by 2020.[200] Quebec's target is to reduce its GHG emissions to 20% below 1990 levels by 2020.[201] It should be noted that in 1990, California's GHG emissions were 427 million metric tons of CO_2 equivalent, or approximately 14.2 metric tons per capita.[202] In comparison, Quebec's GHG emissions in 1990 were 83.8 million metric tons of CO_2 equivalent, or approximately 12.1 metric tons per capita.[203]

Another significant difference between both jurisdictions is that Quebec's electricity sector is practically emission free because hydropower accounts for almost all power

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[196] Directive 2009/29/EC, *supra* note 38, Art 1(1), Preamble (3).

[197] *Ibid* at Preamble (4).

[198] Australian Government Department of the Environment, "Australia's Submission to the Copenhagen Accord" (27 January 2010), online: Australian Department of the Environment <http://www.climatechange.gov.au/sites/climatechange/files/files/UNFCCC-letter-Jan-2010.pdf>.

[199] CEA 2011, *supra* note 8, s 3(c). See also CEB 2011 Explanatory Memorandum, *supra* note 9 at 11, 18. The targets under the Climate Change Convention (5% below 2000 levels by 2020) and Kyoto Protocol (108% below 1990 levels by 2012) targets are not explicitly included in the objectives of the CEA 2011 however the Explanatory Memorandum notes these targets.

[200] AB 32, *supra* note 18, s 38550. See also CARB, "Overview of ARB Emissions Trading Program" at 1, online: CARB <http://www.arb.ca.gov/newsrel/2011/cap_trade_overview.pdf>. All programs developed under AB 32 are expected to deliver an overall 15% GHGs reduction compared to business-as-usual scenario in 2020 if nothing was done.

[201] This emissions reduction target was adopted by Order in Council 1187-2009 which has force of law. See Order in Council 1187-2009, (2009) GOQ II, 5871 (French version only).

[202] See CARB, "California 1990 Greenhouse Gas Emissions Level and 2020 Emissions Limit" (16 November 2007) at 1, online: CARB <http://www.arb.ca.gov/cc/inventory/pubs/reports/staff_report_1990_level.pdf>.

[203] See Quebec Ministry of Sustainable Development, Environment, Wildlife and Parks, "Inventaire québécois des émissions de gaz à effet de serre en 2010 et évolution depuis 1990" (February 2013) at 7, online: Quebec Ministry of Sustainable Development, Environment, Wildlife and Parks <http://www.mddep.gouv.qc.ca/changements/ges/2010/inventaire1990-2010.pdf>.

generation in the province.[204] As a result, while California can meet its emissions reduction target by shifting to a lower-emitting or non-emitting power generation, Quebec can achieve its target by reducing emissions almost entirely from the transport and industrial sectors.[205]

2.3.3.5 Analysis

As for the kind of targets adopted, all four ETSs have established absolute emissions reduction targets. This feature is therefore unlikely to hinder their linkages.

As for stringency of targets, all four ETSs define their emissions reduction targets relative to their 1990 emissions. Further, their emissions reduction targets have the force of law. However, the overall EU and Quebec emissions reduction targets are numerically stricter than that of Australia and California. In the case of linking, covered entities in the EU and Quebec ETSs (ETSs with stricter targets) could largely meet their emissions reduction targets by buying allowances from Australian and California ETSs (ETSs with more lenient targets). This, in turn, may lead to higher emissions in both ETSs and a significant transfer of wealth from the EU to the Australian ETS and from Quebec to the California ETS. This might also provide an incentive to relax emissions reduction targets in order to become a net seller. To prevent these effects, both linked jurisdictions (i.e. EU and Australia-Quebec and California ETSs) should have a comparably ambitious climate policy strategy and a joint vision about medium- and long-term emissions trends. It would also be helpful if both linked jurisdictions would set the same caps to assure all stakeholders that no country is intending to take advantage of the other.

2.3.4 Allocation

Generally, there are two basic types of ETSs: cap-and-trade and baseline-and-credit ETSs. In a cap-and-trade ETS, a highly controversial issue is the distribution of allowances as this impacts ETS's distribution of costs.[206] Emissions allowances can be allocated free of charge, auctioned[207] or through a combination of these two

[204] *Ibid*.
[205] *Ibid*.
[206] Sterk & Schuele, *supra* note 141 at 421.
[207] *Ibid*. See also Baron & Bygrave, *supra* note 45 at 9. The government sells allowances to covered entities (and possibly other interested parties) through a competitive auction. The advantage of auctioning is that it bypasses the difficult negotiation of source-by-source allocations. Instead, each entity decides how many allowances it needs to buy to meet its emissions reduction targets, and bids for these allowances in the marketplace.

approaches.[208] Free distribution is typically based on historic levels of emissions ("grandfathering")[209] or benchmarks.[210]

Free allocation is preferred for a number of reasons. First, it makes strict emissions reduction targets more acceptable than it would be politically possible with high levels of auctioning.[211] Second, it helps to reduce negative impacts for sectors exposed to international competition by reducing their costs.[212] However, a number of concerns associated with free allocation have also been raised in the literature. First, while competitiveness will not be impacted, there will be an equity issue if allowances are distributed for free in one ETS and auctioned in another.[213] Because the creation of allowances creates new economic value, entities in the ETS with free distribution will receive a lump sum subsidy while entities in the ETS with auctioning do not.[214] This distortion would occur despite linking, but entities in the ETS with auctioning can probably be expected to demand the harmonization of subsequent allocation rules prior to linking.[215] Second, in the case of grandfathering, governments may in subsequent trading periods decide to distribute allowances based on emissions from the new, up-dated base year rather than using the same base-year as the first trading period.[216] In this case, if the allowance prices are likely to be higher in later trading periods, entities may decide to avoid emission reductions in the initial period and instead, buy allowances from the markets since they can expect that high emissions will result in a more generous allocation of additional allowances in the second period.[217] In addition, linking two ETSs in which one uses updating and the other does not could result in emissions (and also the attendant production) being moved to the ETS with updating in order to obtain a more generous allocation.[218] To avoid this, the updating provisions should be harmonized

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[208] Julia Reinaud & Cédric Philibert, "Emissions Trading: Trends and Prospects" (Paper prepared for the OECD and International Energy Agency, 2007) at 24, online: OECD <http://www.iea.org/publications/free publications/publication/ET_TrendsProspects.pdf>.

[209] *Ibid*. See also Baron & Bygrave, *supra* note 45 at 10. Allowances are allocated gratis in proportion to sources' past emissions. There can be a one-off distribution to existing entities, or distribution can be regularly updated, with new emissions data. Grandfathering is less costly for covered entities since they only need to purchase allowances for emissions in excess of their initial allocation.

[210] *Ibid*. Allowances are allocated free of charge to entities, but each entity's allocation is updated on the basis of its activity level — measured by a given metric such as an industrial output (e.g. tons of cement, gigawatt hour (GWh) of electricity, etc.). An entity that can't meet the benchmark will have a shortage of allowances and the option to either reduce its emissions (e.g. through engaging in abatement) or to buy needed allowances on the market to cover its excess emissions.

[211] Mace et al, *supra* note 3 at 69.

[212] *Ibid*.

[213] Sterk & Schuele, *supra* note 141 at 418.

[214] *Ibid*.

[215] *Ibid*.

[216] Blyth & Bosi, *supra* note 25 at 25

[217] *Ibid*.

[218] Sterk et al, *supra* note 25 at 21.

among the ETSs prior to linking.[219] Third, several issues may arise in relation to plant closures and new entrants. If existing covered entities receive allowances for free but new entrants have to buy them; this restricts market entry and reduces competition.[220] At the same time, free allocation may restrict market exit.[221] The requirement under an ETS that an entity must be kept open to receive free allowances may hinder the closure of inefficient plants, keeping emissions at higher levels than otherwise necessary.[222] On the other hand, giving an on-going stream of free allowances to plants for a period of time after they have been shut down may constitute a subsidy that benefits entities that have decided to move to an ETS with lower environmental standards[223] or an ETS that allocates allowances for free to new entrants.[224] This distortion would arise regardless of whether the ETSs are linked and might be short-term if updating is used.[225] Nevertheless, the rules on plant closures and new entrants should be harmonized.[226] Fourth, grandfathering generally leads to an increased lobbying of powerful industries since allowances, which have a monetary value, are distributed for free.[227] Government pressure is a time-consuming and costly process.[228]

Auctioning of allowances on the other hand, offers a number of advantages over free allocation. First, it imposes upfront costs on emitters covered under the ETS because they have to buy allowances for every ton they emit; this is not the case when allowances are distributed for free.[229] This awareness of abatement costs may lead to more efficient decisions.[230] Secondly, auctioning allows governments to use revenues to assist industries and consumers affected by the ETS, to invest in the development of clean or low-emitting technologies, or to provide financing for other countries' efforts for climate change mitigation and adaptation.[231] Thirdly, auctioning provides stronger incentives for technological innovation.[232] Under free allocation, some emitters are buyers and some are sellers, where the sellers have the incentive to keep allowance prices high by avoiding technological innovation.[233] Under auctioning, all sources are buyers.[234] Buyers have an

[219] *Ibid*.
[220] Steffen Brunner et al, "Domestic Emissions Trading Systems" (Paper prepared for the Potsdam Institute for Climate Impact Research, 2011) at 237, online: PIK <http://www.pik-potsdam.de/members/brunner/publications/domestic-emissions-trading-systems/view>.
[221] *Ibid*.
[222] *Ibid*.
[223] Reinaud & Philibert, *supra* note 208 at 27.
[224] Sterk et al, *supra* note 25 at 21.
[225] *Ibid*.
[226] Reinaud & Philibert, *supra* note 208 at 27.
[227] Brunner et al, *supra* note 220 at 237.
[228] *Ibid*.
[229] Reinaud & Philibert, *supra* note 208 at 25.
[230] Brunner et al, *supra* note 220 at 237.
[231] Cameron Hepburn et al, "Auctioning of EU ETS Phase II Allowances: How and Why?" (2006) 6 Climate Policy 137 at 237.
[232] Brunner et al, *supra* note 220 at 237.
[233] *Ibid*.

incentive to develop low-carbon technologies and benefit from decreased marginal abatement costs and permit prices.[235]

While auctioning has some advantages over free allocation, a good design is necessary since auctioning can impact not only the carbon price but also the legitimacy of the ETS as a whole.[236] For example, the format of an auction will affect bidding patterns and strategies, and ultimately, the price paid by auction participants.[237] Although there are a variety of different auction formats, the sealed-bid[238] and the ascending clock[239] auction formats are the leading candidates.[240] A number of economists have taken sides, some advocating support for the sealed-bid auction and others advocating support for the ascending clock auction format.[241] While both types of auctions are expected to perform well on a variety of important dimensions, they contrast in two key features.[242] The sealed-bid auction is more robust to collusion; on the other hand, the ascending clock auction provides bidders and the market with better information throughout the whole bidding process that allows for more efficient price discovery.[243] The literature suggests that susceptibility to collusion is a more serious problem compared to the potentially

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[234] *Ibid*.

[235] *Ibid*.

[236] Mace et al, *supra* note 3 at 69.

[237] Giuseppe Lopomo & Leslie M Marx, "Carbon Allowance Auction Design: An Evaluation of the Current Debate" (2009) at 3, online: The Nicholas Institute for Environmental Policy Solutions <http://nicholas institute.duke.edu/sites/default/files/publications/carbon-allowance-auction-design-an-evaluation-of-the-current-debate-paper.pdf>.

[238] In a sealed-bid auction, bidders simultaneously submit bids. Each bid indicates a price and a quantity. Bids are ranked by price. The market clearing price is then established by setting total demand equal to available supply. Bids at or above the market clearing price are winners. Each bidder obtains the quantity bid and pay the prices at or above the market clearing price, and all bidders pay the (same) market clearing price.

[239] In an ascending clock auction, the auctioneer announces the current price and bidders nominate the quantity they want to buy at that price. If the demand exceeds supply, the price is increased. This process continues until the number of carbon units offered is equal to or greater than demand. Finally winning bidders pay the same per-unit price.

[240] Lopomo & Marx, *supra* note 237 at 2.

[241] For example, see Charles Holt et al, "Auction Design for Selling CO_2 Emission Allowances Under the Regional Greenhouse Gas Initiative" (2007), online: Regional Greenhouse Gas Initiative (RGGI) <http:// www.rggi.org/docs/rggi_auction_final.pdf> and Giuseppe Lopomo & Marx, *ibid* in support of the uniform-price sealed-bid auction, and Peter Cramton & Suzi Kerr, "Tradable Carbon Permit Auctions: How and Why to Auction and Not Grandfather" (2002) 30:4 Energy Policy 333; Evans & Peck, "Possible Design for a Greenhouse Gas Emissions Trading System: Further Definition of the Auction Proposals in the NETT Discussion Paper" (2007), online: University of Maryland <http://www.cramton.umd.edu/papers2005-2009 /australia-nett-auction-design-report.pdf>, and Regina Betz et al, "Auctioning greenhouse gas emissions permits in Australia" (2009) 54 The Australian Journal of Agricultural and Resource Economics 219 in support of the ascending clock auction.

[242] Lopomo & Marx, *ibid* at 2.

[243] *Ibid* at 15-18.

superior information aggregation capabilities of the ascending clock auction.[244] In particular, the experimental evidence suggests that the potential for more efficient price discovery with an ascending clock auction may not occur in practice.[245]

Furthermore, to ensure efficiency, auctions should be opened to the bidders from all sectors.[246] Poor auction design may lead to non-competitive behaviours by bidders that can potentially impact the carbon price not only at the auction but also in the whole carbon market.[247] Limits should be placed on the number of allowances any participant can purchase at the auction to prevent the manipulation of the auction price.[248] Since the periodicity of auctions can also affect the liquidity of the ETS, smaller more frequent auctions are considered to be more effective in limiting the market power of large bidders.[249] They may also encourage the participation of smaller bidders, allowing players to adjust their bids and promoting price stability.[250] In contrast, large infrequent auctions may help minimize administrative and transaction costs.[251] They may also allow large polluters to buy the bulk of allowances and then use them to dominate the secondary carbon market.[252] In cases where state runs the auctions, the state may attempt to influence the market price by establishing the timing and the volume of auctions relating to market projections; this may create a conflict of interest where the state also controls the auction revenues.[253] Some forms of separation between those establishing the timing of auctions and those using the auction revenues are therefore desirable if linking is considered.[254] Finally, to limit the volatility of the carbon prices (i.e. price spikes and collapses), minimum and maximum prices for auctioned allowances could be

[244] *Ibid*.

[245] See Jacob K Goeree, Theo Offerman, & Randolph Sloof, "Demand Reduction and Pre-emptive Bidding in Multi-Unit License Auctions" (2005), online: California Institute of Technology Division of the Humanities and Social Sciences <http://www.hss.caltech.edu/~jkg/tango.pdf>. Demand reduction and pre-emptive bidding may be an issue in ascending auctions. In general, bidders with demand for allowances have an incentive to bid strategically. They may understate their demand in case one of their bids turns out to be the one that sets the price they must pay for units won. This means that the ascending auction is likely to perform worse both in terms of revenue and efficiency.

[246] *Ibid*.

[247] *Ibid*.

[248] *Ibid* at 70. In an ETS that employs a very high proportion of auctioning there is a risk that without limits allowance price on the market could be affected by large bidders.

[249] Hepburn et al, *supra* note 131 at 16-17.

[250] *Ibid*.

[251] *Ibid*.

[252] *Ibid*.

[253] Mace et al, *supra* note 3 at 70.

[254] *Ibid*.

established.[255] Any maximum and minimum prices will impact the allowance price, and hence, should be harmonized across all linked ETSs.[256]

2.3.4.1 EU ETS vs. Australian ETS

In terms of distribution of allowances, both ETSs intend to allocate allowances for free to specific sectors. In the EU, no more free allocation will be distributed to power generators.[257] The manufacturing industry will be allocated 80% of its allowances for free in 2013, but this will decrease annually to 30% by 2020.[258] In the aviation sector, however, only 15% of the aviation allowances will be auctioned over the entire third trading period (2012-2020).[259] Sectors identified as being at significant risk of carbon leakage will continue receiving up to 100% of their allowances for free.[260] In Australia, on the other hand, allowances are issued for free only to trade-exposed emissions intensive industries and to certain coal-fired electricity generators.[261]

Both ETSs provide for distribution of allowances through auctions. In the EU ETS, only allowances which are not allocated free of charge will be auctioned. The EU ETS

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[255] Michael Grubb & Karsten Neuhoff, "Allocation and Competitiveness in the EU Emissions Trading Scheme: Policy Overview" (2006) 6 Climate Policy 7 at 7, 12, 22-23.

[256] Mace et al, *supra* note 3 at 70.

[257] "The EU Emissions Trading System (EU ETS)", *supra* note 55 at 3. However, eight member states, namely Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Lithuania, Poland and Romania, have made use of a derogation (see Directive 2009/29/EC, *supra* note 38, Art 10(c)) which allows them to continue distributing limited number of free allowances to existing power plants until 2019.

[258] *Ibid* at 4.

[259] *Ibid*.

[260] EC, *Commission Decision of 27 April 2011 determining transitional Union-wide rules for harmonised free allocation of emission allowances pursuant to Article 10a of Directive 2003/87/EC of the European Parliament and of the Council*, [2011] OJ L 130 at Preamble (2) [Commission Decision 2011/278/EU]. From 2013, benchmarks for free allocation are based on the average performance of the 10 % most efficient entities in a sector or sub-sector in the EU in the years 2007-2008. See also "The EU Emissions Trading System (EU ETS)", *supra* note 55 at 4. Covered entities that fall short of the benchmark will receive a proportionately lower number of free allowances compared to their emissions, and hence will have to reduce their emissions and/or purchase more allowances.

[261] CEA 2011, *supra* note 8, s 198, Parts 7 and 8. CEB 2011 Explanatory Memorandum, *supra* note 9 at 5.11-5.18; *Clean Energy Amendment Regulation 2012 (No 1)* (Cth), s 907(4). Entities will be considered trade-exposed if the value of their imports and exports is greater than 10% of the value of their domestic production. Emissions-intensity will be determined based on a threshold of emissions as a percentage of revenue or value added. Allocation of free permits is based on the weighted average emissions per unit of production across all entities conducting the activity, during the period 1 July 2006 to 30 June 2008. The most emissions-intensive trade-exposed entities will receive 94.5% while less emissions-intensive trade-exposed entities will receive 66% of their allowances for free in the first year. This assistance will be reduced by 1.3% each year to incite industry to cut pollution. CEA 2011, *ibid*, s 166(2). Only coal-fired electricity generators with an emissions intensity greater than 1.0 that supplied electricity to a main grid between 1 July 2008 to 30 June 2010 are eligible for assistance.

auctions are carried out by the means of single-round, sealed-bid format.[262] In the Australian ETS, the exact amount of allowances that will be auctioned is not a fixed percentage, but will be determined by the Clean Energy Regulator once free allowances are allocated or bought back by the Clean Energy Regulator from covered entities.[263] Thus, the number of free allowances will depend upon the number of emissions-intensive trade-exposed industries that apply for assistance.[264] In Australia, the ETS contemplates the use of the ascending clock auction format.[265]

Another auction design feature treated differently in both ETSs is a price floor/ceiling. In this regard the EU ETS provides that "where the auction clearing price is significantly under the price in the secondary market prevailing during and immediately before the bidding window when taking into account the short term volatility of the price of allowances over a defined period preceding the auction, the auction platform shall cancel the auction."[266] Theoretically it seems possible to purchase allowances in the auction cheaper than the price in the secondary carbon market, but probably not significantly cheaper. The meaning of price being "significantly under" the price in the secondary market is still needed to be determined. In Australia, on the other hand, as originally planned, there will be no price floor in place from 2015 onwards as a result of the linkage agreement between the EU and Australia.[267] However, during the first three

[262] EC, *Commission Regulation (EU) No 1031/2010 of 12 November 2010 on the timing, administration and other aspects of auctioning of greenhouse gas emission allowances pursuant to Directive 2003/87/EC of the European Parliament and of the Council establishing a scheme for greenhouse gas emission allowances trading within the Community Text with EEA relevance*, [2010] OJ L 302 at Recital (17) [Commission Regulation 1031/2010].

[263] CEA 2011, *supra* note 8, ss 111, 116. Only allowances are issued for free to trade-exposed emissions intensive industries and to certain coal-fired electricity generators in the fixed price period can be bought back by the Clean Energy Regulator between 1 September of their validity year until 1 February of the next calendar year; s 5 — definition of "auction".

[264] Australian Government, "Establishing a system for auctioning carbon units", online: Clean Energy Regulator <http://www.cleanenergyregulator.gov.au/carbon-pricing-Mechanism/about-the-mechanism/auctioning-carbon-units/Pages/default.aspx> (last accessed 16 November 2013).

[265] Australian Government, "Auctions: Position Paper on the Legislative Instrument for Auctioning Carbon Units in Australia's Carbon Pricing Mechanism" (2012) at 11-12 [Auctions: Positions Paper], online: Climatechange <http://www.climatechange.gov.au/sites/climatechange/files/documents/04_2013/auction-carbon-credits-position-paper-pdf.pdf>. For example, Australian regulatory authority auctions 100 carbon units and starts bidding at $21 per unit. Participants A, B and C each will buy 50 units at this price. As demand exceeds supply, the price will increase to $22 per unit. Participant A will still buy 50 at this price, Participant B will also buy 50 units at this price, but Participant C will lower their demand to 20 units. As demand still exceeds supply the price will increase to $23. Participant A will only buy 40 units at this price, Participant B will also buy 40 units and Participant C will buy 15 units. This means that under ascending clock auction format 5 units will not be sold.

[266] Commission Regulation 1031/2010, *supra* note 262, Art 7(6).

[267] *Supra* note 15.

years of the flexible price charge period, the price ceiling will be set at $20 above the expected international price and will rise by 5% in real terms each year.[268]

In terms of periodicity of auctions, in Australia it is proposed that four auctions will be held during the compliance year, one in each quarter (about three months apart)[269] whereas under the EU ETS the auctions of allowances will be conducted on a weekly basis.[270]

Both ETSs set different minimum and maximum number of units that a participant can bid on. The minimum number of units that a participant under the EU ETS can bid on is the integral multiples of lots of 500.[271] The EU ETS does not specify currently the maximum bid-size.[272] The minimum number of units that a participant in Australian ETS can bid on is one carbon unit.[273] The maximum number is no more than 25% of the total amount of carbon units sold at each auction for a particular year.[274]

Another auction design difference between the two ETSs is that in the EU, auctions are conducted using auction platforms being regulated by markets[275] whereas, Australia proposes to conduct auctions using an electronic platform and an electronic settlement system "operated by the Regulator".[276]

Under both ETSs there will be no deferred payment arrangements for auctions. The EU ETS allows for the payment of the auctioned products to be made either before or at the latest upon the delivery of the allowances into the bidder's holding account.[277] In Australian ETS, settlement day will be three business days after the end of the auction, except where settlement was cancelled.[278] In regard to currency, under the EU ETS, payments to the auctioneers can be made in euros or in the currency of the member state

[268] CEA 2011, *supra* note 8, ss 100(1) & 5 (definition of "flexible charge year").
[269] Auctions: Positions Paper, *supra* note 265 at 7, 9 (auction calendar will be determined by the Regulator).
[270] Commission Regulation 1031/2010, *supra* note 262, Art 8(4).
[271] *Ibid*, Art 6(1).
[272] *Ibid*, Art 57. Regulation, however, provides that a maximum bid-size, or any other measures necessary to mitigate an actual or potential risk of market abuse, money laundering, terrorist financing or other criminal activity, as well as anti-competitive behaviour, may be prescribed after consulting the Commission and obtaining its opinion thereon, provided that implementation of a maximum bid-size or any other remedial measures would effectively mitigate the risk in question.
[273] Auctions: Positions Paper, *supra* note 265 at 15.
[274] *Ibid* at 16.
[275] Commission Regulation 1031/2010, *supra* note 262 at Recital (29).
[276] Auctions: Positions Paper, *supra* note 265 at 18. See also CEB 2011 Explanatory Memorandum, *supra* note 9 at 3.61. The state also will control the auction revenues by using it for policy objectives, such as providing assistance to households and businesses.
[277] Commission Regulation 1031/2010, *supra* note 262, Art 44(1).
[278] Auctions: Positions Paper, *supra* note 265 at 18-19.

that is not a member of the euro-zone.[279] This is different in Australia, where it is proposed that payments will be permitted only in Australian currency.[280]

Australia plans to hold advance auctions of future vintage year allowances to "assist the development of forward price signals and help promote business certainty about future carbon prices".[281] This means that allowances issued in the flexible price period may be auctioned during the fixed price period subject to a limit of 15 million units for each vintage year where auctions take place more than 6 months before the relevant vintage year is due to begin and there are no regulations in place setting the pollution cap (i.e. before May 31, 2014).[282] The EU ETS provided for advanced auctions of the future allowances in 2011 or 2012 to ensure a smooth transition to the third trading period starting in 2013.[283] However, there are no provisions on advance auctions beyond 2013.

Finally, both the EU and Australian ETSs would appear to treat new entrants in the same way as the existing covered entities.[284] However, they differ in their treatment of closures. Under the Australian ETS, when a covered entity permanently closes, allowances attributable to production which did not take place will be required to be relinquished.[285] Under the EU ETS, if a covered entity closes, no allocation will be made from the year following the closure.[286]

2.3.4.2 California ETS vs. Quebec ETS

Quebec and California both distribute allowances through free allocation and quarterly auctions consisting of a single round of bidding, using sealed bids.[287] Both allow bids in jointly held auctions in both Canadian dollars and in US dollars.[288] The administration of the auctions in both Quebec and California has been delegated to a non-profit organization called the Western Climate Initiative (WCI Inc). Both ETSs have a floor price starting at $10 for 2012 and allowances rising annually by 5% plus

[279] Commission Regulation 1031/2010, *supra* note 262, Art 44(3).
[280] *Ibid.*
[281] CEB 2011 Explanatory Memorandum, *supra* note 9 at 3.65.
[282] *Ibid* at 3.68; CEA 2011, *supra* note 8, s 16(1).
[283] Commission Regulation 1031/2010, *supra* note 262, Art 10(1).
[284] CEA 2011, *supra* note 8, s 100.
[285] *Ibid*, s 146.
[286] Commission Decision 2011/278/EU, *supra* note 260, Arts 22(3)-(4).
[287] AB 32, *supra* note 18, ss 95911, 95849 et seq; *Regulation respecting a cap-and-trade system for greenhouse gas emission allowances*, *supra* note 17, ss 39-44, 49.
[288] AB 32, *ibid*, s 95912; *Regulation respecting a cap-and-trade system for greenhouse gas emission allowances*, *ibid*, s 50.

inflation.[289] Both provide for equal auction limits[290] as well as equal treatment for closures and new entrants.[291]

Both ETSs incorporate a reserve for allowances that will be made available at the quarterly reserve sales at predetermined prices.[292] Only covered entities from the jurisdiction conducting the sales will be able to participate in the reserve sales.[293] Both ETSs fill their respective reserves by withholding a portion of the allowances from the auction each year.[294] In order to purchase allowances from the reserve in Quebec, a covered entity must hold no allowances in its general holding account.[295] California ETS does not include this requirement, making allowances from the reserve more accessible to the covered entities in California.[296]

Finally, both ETSs impose the same holding limits, i.e. limits on the number of compliance instruments one party can hold.[297]

2.3.4.3 Analysis

In terms of distribution of allowances, all four ETSs distribute allowances through free allocation. However, free allocation to certain power generators under the Australian ETS as well as in eight EU member states that made use of derogation raise particular

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[289] AB 32, *ibid*, s 95911(b)(6); *Regulation respecting a cap-and-trade system for greenhouse gas emission allowances*, *ibid*, s 49.

[290] AB 32, *ibid*, ss 95911(c)(d); *Regulation respecting a cap-and-trade system for greenhouse gas emission allowances*, *ibid*, s 50. No single covered entity can purchase more than 25% of future year allowances. Any covered entity can purchase no more than 15% of the allowances sold at any current auction, while non-covered entities can purchase no more than 4%. Furthermore, there is a 40% purchase limit on current year allowances for electricity utilities.

[291] AB 32, *ibid*, ss 95831, 95853(e), 95891(c)(3); *Regulation respecting a cap-and-trade system for greenhouse gas emission allowances*, *ibid*, ss 17-19. Under both ETSs, when a covered entity permanently closes, that entity would not receive free allocations infinitely. In addition, both ETSs will treat new entrants in the same way as existing covered entities.

[292] AB 32, *ibid*, ss 95910-95914; *Regulation respecting a cap-and-trade system for greenhouse gas emission allowances*, *ibid*, ss 6(3), 38, 45, 58. The percent of allowances withheld from auction in the reserve will be as follows: 1% for years 2013-2014, 4% for years 2015-2017, and 7% for years 2018-2020. These allowances will be divided equally into three equally sized tiers and will be sold at $40, $45 and $50 respectively.

[293] AB 32, *ibid*, s 95913; *Regulation respecting a cap-and-trade system for greenhouse gas emission allowances*, *ibid*, s 46.

[294] AB 32, *ibid*, s 95913; *Regulation respecting a cap-and-trade system for greenhouse gas emission allowances*, *ibid*, s 38.

[295] *Regulation respecting a cap-and-trade system for greenhouse gas emission allowances*, *ibid*, s 56. This requirement provides allowances to covered entities that otherwise can't obtain allowances.

[296] AB 32, *supra* note 18, s 95913(c).

[297] AB 32, *ibid*, s 95920; *Regulation respecting a cap-and-trade system for greenhouse gas emission allowances*, *supra* note 17, s 32. (In both ETSs, holding limit is calculated using the same equation: Holding Limit (current year) = 0.1*Base + 0.025*(Annual Allowance Budget – Base).

concern. The EU ETS experience shows that power generators have been able to pass costs associated with the ETS to customers even if they received allowances for free.[298] They essentially receive a subsidy which they may then sell in the carbon market. To avoid this distortion, harmonization of allocation rules prior to linking may be feasible.

In terms of auction design, while all four ETSs provide for auctions, a number of features differ considerably and may affect linking.

First, in terms of the types of auctions, both Quebec and California use auctions consisting of a single round of bidding, using sealed bids. This feature is unlikely to affect their linkage. The EU and Australian ETSs, on the other hand, provide for different types of auctions: the EU ETS provide for a single-round, sealed-bid auction, whereas the Australian ETS for an ascended clock auction. To prevent collusion and to improve better price discovery, the Australian ETS should use sealed-bid auctions, the preferred auction format for emissions markets in the EU ETS, and, more generally, other financial markets in Australia.

Secondly, Article 7(6) of Commission Regulation 1031/2010 may theoretically provide for a price floor which may affect the overall allowance price. To avoid this effect, the minimum price should be removed from the EU ETS or harmonized across both ETSs. This feature is unlikely to cause a problem for the Quebec and California linkage since both employ the same price floor.

Third, in terms of periodicity of auctioning, both Quebec and California ETSs provide for the same quarterly auctions. While quarterly auctions are unlikely to affect the Quebec and California ETSs linkage, this is different for the EU and Australian ETSs linkage. Less infrequent quarterly auctions under the Australian ETS can lead to a massive injections of allowances and potentially affect the carbon price, discourage the participation of smaller bidders and allow large bidders to buy a large amount of allowances and then use them to dominate the carbon market. The more frequent and preferably harmonized with the EU ETS, auctions in the Australian ETS will enhance price stability and reduce potential participation and domination concerns.

Fourth, different minimum and maximum number of units that a participant can bid on may impair linkage. In particular, the maximum number of units (i.e. up to 25% of the total number of carbon units sold at each auction for a particular year) in a bid under the Australian ETS may expose the future Australian carbon auction to the risk of market manipulation. To avoid market manipulation, the maximum number of units in a bid under the Australian ETS should be reduced and harmonized across both ETSs. This feature, however, would not affect the Quebec and California ETSs since both provide for the same auction limits.

[298] See "The EU Emissions Trading System (EU ETS)", *supra* note 55.

Fifth, it is because of the Australian proposal using auction platforms "operated by the Regulator" rather than regulated by markets, an option adopted under EU ETS, that there is a potential for the Australian government to become an active market player. Hence, the Australian government may try to influence the market price. In addition, this may create a conflict of interest since the Australian government also controls the auction revenues. Therefore, it may be desirable that there be some forms of separation between those establishing the timing of auctions and those making use of the auction revenues under the Australian ETS.

Sixth, in regards to the currency used in the EU ETS, payments to the auctioneers can be made in Euros or in the national currency of the member state that is outside the euro-zone; whereas in Australia these payments are allowed in Australian currency only. These currency differences may increase the administrative and transaction costs and hence should be harmonized. This design feature will not affect Quebec and California ETSs linkage since both allow the use of Canadian and US dollars as the currency.

Seventh, another price stability measure that has the potential to undermine the effectiveness of the combined ETS is Australia's intention to have advanced auctions of future vintage year allowances. However, since both ETSs have no plans to hold advance auctions of any future year allowances beyond 2015 (2015 in Australian ETS, whereas 2011-2012 in the EU ETS), this feature is unlikely to cause a problem for linking. Similarly, both the Quebec and California ETSs allow their covered entities to purchase no more than 25% of future year allowances. Since both purchase limits are identical, this feature is unlikely to affect their linkage.

Eighth, as opposed to the EU and Australian ETSs, both the Quebec and California ETSs incorporate allowance reserve in their respective ETSs. The Quebec ETS allowance reserve sales are stricter than in California. This discrepancy is, however, remedied by equal holding limits. In addition, by incorporating an allowance reserve, both jurisdictions have increased reliance on offset markets to mitigate the costs of meeting their respective emissions reduction targets.[299] However, markets for offsets acceptable for compliance in both California and Quebec ETSs have been slow to develop. This creates a risk that a sufficient offset supply will not be available to help contain costs in both ETSs should high allowance prices emerge. Greater urgency by both ETSs in developing these markets, specifically in approving protocols for new kinds of projects, is therefore necessary.

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[299] Robert N Stavins & Todd Schatzki, "Three Lingering Design Issues Affecting Market Performance in California's GHG Cap-and-Trade Program" (29 January 2013) at 2, online: Analysis Group <http://www.analysisgroup.com/uploadedFiles/Publishing/Articles/Three_Cap_and_Trade_Design_Issues.pdf>. By removing allowances from ETS budget, the allowance reserve increases the cap stringency of the ETS, this in turn increases allowances price. This increased cap stringency could be compensated only if the market supplies a sufficient amount of offsets at reasonable costs. If not, then the allowance reserve only increases cap stringency without helping control costs.

Ninth, both the Quebec and California ETSs, as opposed to the EU and Australian ETSs, impose equal holding limits. On one hand, holding limits may prevent market manipulation by limiting a market participant ability to obtain a large enough position to manipulate the market.[300] On the other hand, however, they may produce costs.[301] Specifically, these limits may impose costs if they limit the entity's ability to hedge ETS financial risks[302] or if they limit an entity's ability to bank allowances for use in future trading periods.[303] The best solution to deal with this situation would be to not include the holding limits in the California and Quebec ETSs. However, if these limits are retained, rules specifying holding limits should be modified. This could be done through modification of holding limits to account for the differences in costs and benefits across market participants,[304] or through more frequent auctions.[305]

Finally, all linking partners provide for equal treatment of new entrants. However, in terms of closure rules, only Quebec and California have equal rules. Closure rules under the Australian ETS are different from those in the EU ETS. These different rules in Australia may create the perverse incentive to keep inefficient entities open as long as their returns from selling surplus allowances is greater than the loss from keeping these entities open. This incentive is stronger in the Australian ETS since it affects not only future allocation but also allocation for the year the entity closes. This, in turn, will keep emissions in Australia at higher levels than otherwise necessary. This distortion would arise regardless of whether both ETSs are linked. Nevertheless, the rules on plant closures should be harmonized. Otherwise, it could be expected that EU ETS entities will lobby for closure rules similar to those under the Australian ETS that would give them more allowances.

2.3.5 Trading Period

Trading periods are periods within which allowances that have been issued can be used. The body of literature on linking provides different answers to the question of

[300] *Ibid* at 9-10.

[301] *Ibid*.

[302] *Ibid*. One important hedging strategy for covered sources is to buy allowances early in a trading period to cover emissions later in the same period. This strategy may become particularly crucial if robust derivative markets for allowances are not developed. But holding limits would limit a covered entity's ability to pursue this strategy.

[303] *Ibid*. Banking allows covered entities to mitigate price volatility and ensure emissions reductions cost-effectively, given emission uncertainty. However, holding limits would impair covered entity's ability to bank allowances for use in the future trading periods, which may rise costs.

[304] *Ibid* at 11-12. These modifications may include: increases in holding limits; setting holding limits for each covered entity based on its expected compliance obligations or past emissions; or providing exemptions for legitimate hedging and banking activities.

[305] *Ibid*. More frequent auctions would eliminate the need for holding limits, or at least allow less stringent holding limits. They would also improve price discovery, reduce price volatility and reduce possibilities for market manipulation.

whether the trading periods of linked ETSs should be harmonized. Some argue that differences in trading periods do not pose a problem.[306] On the contrary, such differences can improve market liquidity, since temporary market shortages in one ETS at the end of its trading period can be offset by purchases from another ETS that is at the beginning of its trading period.[307]

However, others point out that if trading periods are not harmonized, surplus allowances from one ETS can affect the environmental effectiveness of another ETS that has a later starting date.[308] For example, if allowances are available at a low price in Scheme A at the end of its trading period, they will be sold to Scheme B where its trading period is just starting.[309] Consequently, it will not be necessary to use allowances issued in Scheme B.[310] Since the trading periods overlap, these surplus allowances will then again be available to entities from Scheme A during the next trading period.[311] Even if allocation of allowances does not ultimately provide a surplus, it is clear that harmonized trading periods would afford policymakers the possibility of controlling the total amount of issued allowances within a trading period without uncertainty.[312] If this is desirable, the trading periods of the ETSs to be linked should be harmonized.[313]

2.3.5.1 EU ETS vs. Australian ETS

The EU ETS is divided into three trading periods: Phase I (2005-2007); Phase II (2008-2012); and Phase III (2013-2020).[314] The Australian ETS, on the other hand, is divided into two compliance periods: from July 1, 2012 to June 30, 2015 being the first fixed price period and from July 1, 2015 onwards being the second flexible price period.[315]

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306 Sterk et al, *supra* note 25 at 21.

307 *Ibid*. See also Blyth & Bosi, *supra* note 25 at 27.

308 Jane Ellis & Dennis Tirpak, "Linking GHG Emission Trading Schemes and Markets" (Paper prepared for the International Energy Agency, 2006), at 23 online: IEA <https://www.iea.org/publications/freepublications/publication/Linking.pdf>.

309 *Ibid*.

310 *Ibid*.

311 *Ibid*. See also Ottmar Edenhofer, Christian Flachsland & Robert Marschinski, "Towards a Global CO_2 Market: An Economic Analysis" (2007) at 16, online: PIK <https://www.pik-potsdam.de/members/flachs/publikationen/towards-a-global-co2-market>.

312 Edenhofer, Flachsland & Marschinski, *ibid* at 16.

313 *Ibid*.

314 "The EU Emissions Trading System (EU ETS)", *supra* note 55 at 4.

315 CEA 2011, *supra* note 8, s 5. See definitions of fixed and flexible charge year.

2.3.5.2 California ETS vs. Quebec ETS

Both California and Quebec will incorporate the same three trading periods: 2013-2014, 2015-2017 and 2018-2020.[316]

2.3.5.3 Analysis

For California and Quebec ETSs this feature is unlikely to pose any obstacle to linking since both ETSs have the same three trading periods.

In case of the EU and the Australian ETSs, if the trading periods in both ETSs are not harmonized, surplus (i.e. over-allocated) allowances from one ETS could potentially impact the environmental effectiveness of another ETS. For example, if surplus allowances were available at a low price (lower than the ones under the Australian ETS) in the EU ETS at the end of its trading period, they could be sold to the Australian ETS. Consequently, there will be no need to acquire allowances in Australia. These surplus allowances could then again be available to entities from the EU ETS during its next trading period.

2.3.6 Banking

The possibility of banking allowances extending from one trading period to the next is an important feature for the successful functioning of the ETS.[317] It allows the participating entities to overachieve their emissions reduction targets if they expect that future allowance prices will be higher than the current ones.[318] It also provides them with additional flexibility to deal with uncertainties such as future levels of production.[319]

Some consider that differences in banking would not pose any serious barriers for linking.[320] Even if an ETS which does not allow banking is linked to an ETS which allows banking, the latter would effectively provide a banking opportunity for all the covered entities in the combined market.[321] Furthermore, since banking effectively means that there can be potentially more emissions reduced than demanded by a set cap, this should also not cause any environmental problems.[322] “All emerging ETSs seem to allow banking.[323]

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[316] AB 32, *supra* note 18, s 95840; *Supra* note 17, s 3(12).
[317] Sterk et al, *supra* note 25 at 22.
[318] Sterk & Schuele, *supra* note 141 at 419.
[319] *Ibid*.
[320] See generally Sterk & Schuele, *supra* note 141; Tuerk et al, *supra* note 131; de Larragan, *supra* note 22; Sterk et al, *supra* note 25.
[321] Sterk et al, *supra* note 25 at 22.
[322] Sterk & Schuele, *supra* note 141 at 419.
[323] Tuerk et al, *supra* note 131 at 347.

Nevertheless, there is a suggestion that banking could become problematic given its relationship with the allocation of allowances.[324] First, business as usual emissions might or might not be accurately determined during the initial allocation of allowances.[325] This could lead to an over-allocation of allowances and result in larger than expected levels of banking.[326] Second, government awareness that covered entities have accumulated significant amounts of banked credits may have an impact on a government's decisions in relation to subsequent trading period caps — encouraging a downward revision.[327] While it may appear logical to correct an earlier over-allocation, equity considerations come into play where banked allowances reflect in some cases over-allocation and in other cases significant mitigation effort.[328] In this case, a limitation of transferability (by introducing a limit on transferable allowances per installation, for example) can make sense in order to avoid the use of allowances from an earlier trading period obtained by over-allocation, in other words, to avoid the banking of "hot air".[329]

2.3.6.1 EU ETS vs. Australian ETS

Banking of the EUAs from Phase I into Phase II was at the discretion of member states in the EU and from Phase II onwards, there is an obligation on the member states to allow for the unlimited banking of the EUAs into subsequent trading periods.[330]

In the Australian ETS, banking is not allowed within the first three years, which is the fixed price period.[331] However, unlimited banking of allowances will be allowed in the flexible price period after 2015.[332]

2.3.6.2 California ETS vs. Quebec ETS

In both California and Quebec, banking of allowances from any previous or current trading period is allowed.[333] Banked allowances will never expire unless retired.[334] The

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[324] Mace et al, *supra* note 3 at 61.
[325] *Ibid*.
[326] *Ibid*.
[327] *Ibid*.
[328] *Ibid*.
[329] Edenhofer, Flachsland & Marschinski, *supra* note 311 at 15.
[330] EU Trading Directive, *supra* note 2, Arts 13(2)-(3). Also see Mark C Lewis & Isabelle Curien, "A Reminder of the EU-ETS Rules on Banking for EUAs" (Report prepared for the Deutsche Bank, 2010) at 1, online: Long Finance <http://www.longfinance.net/images/reports/pdf/db_euets_2010.pdf>.
[331] CEA 2011, *supra* note 8, ss 115, 121, 122(7) & 5 (see definition of eligible financial year and definition of fixed charge year).
[332] *Ibid*, ss 121 & 122(4).
[333] AB 32, *supra* note 18, s 95922(a); *Regulation respecting a cap-and-trade system for greenhouse gas emission allowances*, *supra* note 17, ss 32, 37.
[334] AB 32, *ibid*, s 95922(c); *Regulation respecting a cap-and-trade system for greenhouse gas emission allowances*, *ibid*, ss 32, 37.

quantity of allowances that covered entities can bank, however, is subjected to holding limits.[335]

2.3.6.3 Analysis

Since both the EU and the Australian ETSs are going to allow unlimited banking after linkage is established, this design feature should not pose any problems.

Banking limits in California and Quebec ETS, however, may produce costs if they limit an entity's ability to bank allowances for use in future trading periods.[336] The best solution to deal with this situation would be to not include the holding limits in both ETSs. However, if these limits are retained, rules specifying holding limits should be modified or more frequent auctions should be employed (see discussion above).

2.3.7 Borrowing

There seems to be agreement in the literature that borrowing is a design feature for which consistency is essential if different ETSs are to be linked. Basically, borrowing allows a covered entity to delay emissions reduction measures until future trading periods where they might be achieved more cost-effectively.[337] This is generally not seen favorably from an environmental viewpoint for several reasons.[338] First, borrowing entails the risk that reduction measures may not be taken in future trading periods either because of a weak compliance regime or because the covered entity ceased to exist before the repayment of the borrowed allowances was due.[339] Second, the covered entities may have a motive to borrow heavily in order to artificially increase their future compliance cost curve and then argue that they need softer emissions reduction targets because otherwise the costs would be prohibitive.[340] With these reasons in mind, it's been argued that linking an ETS that allows borrowing to another that does not, may require restrictive measures to be taken to maintain the environmental effectiveness of the combined ETS.[341]

Several options have been suggested in the literature to mitigate concerns related to borrowing. One option would be to allow purchases from the ETS that permits borrowing but only after its trading period has been completed and only from covered entities that

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[335] AB 32, *ibid*, s 95920(c); *Regulation respecting a cap-and-trade system for greenhouse gas emission allowances*, *ibid*, s 32.

[336] Stavins & Schatzki, *supra* note 299 at 9-10.

[337] Sterk et al, *supra* note 25 at 22.

[338] *Ibid.*

[339] *Ibid.*

[340] Catherine Boemare & Phillipe Quirion, "Implementing Greenhouse Gas Trading in Europe: Lessons from Economic Literature and International Experiences" (2002) 43 Ecological Economics 213 at 223.

[341] Sterk & Schuele, *supra* note 141 at 419.

did not borrow.[342] The second option would be to limit the amount that covered entities could borrow.[343] A third option would be to allow covered entities to borrow but only for their own emissions' needs, i.e. only if their emissions exceed their initial allocation and they have decided not to buy from the market.[344] This would prevent the covered entities from exporting their borrowed allowances to others but at the same time would require additional monitoring by the governments of the ETSs.[345]

2.3.7.1 EU ETS vs. Australian ETS

Because allowances in the EU ETS are only valid for emissions during the trading period for which they are issued, allowances that are issued for a subsequent trading period cannot be borrowed and used for compliance in the current trading period.[346]

On the other hand, in the Australian ETS, borrowing will not be allowed during the fixed price period.[347] Limited borrowing, however, will be allowed during the flexible price period; a covered entity will be able to surrender allowances from the upcoming vintage year to discharge up to 5% of its current year's liability.[348]

2.3.7.2 California vs. Quebec ETSs

The borrowing of allowances from future trading periods is not permitted in both the California[349] and Quebec[350] ETSs.

2.3.7.3 Analysis

In the case of California and Quebec, this design feature will not pose any problem for linking since it has been harmonized in both ETSs.

It may pose a problem, however, in the case of the linkage between the EU and the Australian ETSs. This is because borrowing of allowances from future trading periods is permitted in the Australian ETS but not in the EU ETS. To maintain the environmental effectiveness of the combined ETS, purchases from the Australian ETS that permits borrowing should only be allowed from covered entities that did not borrow. The best solution would be to allow Australian entities to borrow but only for their own needs, i.e. only if their emissions exceed their initial allocation and they have decided not to buy

[342] Haites & Mullins, *supra* note 23 at 62.
[343] Baron & Bygrave, *supra* note 45 at 30.
[344] *Ibid*.
[345] *Ibid*.
[346] EU Trading Directive, *supra* note 2, Art 3(a).
[347] CEA 2011, *supra* note 8, s 122(6).
[348] *Ibid*, ss 122(4) & 133(6).
[349] AB 32, *supra* note 18, s 95922(b).
[350] *Regulation respecting a cap-and-trade system for greenhouse gas emission allowances*, *ibid*, ss 20-21.

from the market. This would prevent the Australian entities from exporting their borrowed allowances to the EU ETS but at the same time would require additional monitoring by the government.

2.3.8 Monitoring, Reporting and Verification (MRV)

The literature suggests that robust monitoring, reporting and verification (MRV) provisions are essential since MRV provisions determine whether each trading unit does in fact correspond to one ton of avoided emissions.[351] If the MRV regime is not sufficiently robust, this may create an incentive to under-report annual emissions (or over-report base year emissions).[352] This would undermine confidence in the trading units.[353] This, would also frustrate the environmental effectiveness of the combined ETS[354] since an entity subject to inaccurate GHG monitoring could sell unqualified allowances to other entities resulting in higher emissions levels overall.[355] If this was widespread, it could reduce allowance prices, thus reducing the incentive for participants to undertake mitigation measures.[356] Conversely, if this were to lead to a higher allowances price, linking ETSs would provide covered entities subject to less accurate MRV procedures with the incentive to understate their emissions levels in order to sell unused allowances or to avoid having to obtain them to cover their emissions.[357] All in all, a lack of full harmonization of MRV regimes in different ETSs should not pose an obstacle for linking; but the absence of a MRV regime that can demonstrate equivalent stringency would.[358] Therefore, linked ETSs should have equally credible MRV standards.[359]

2.3.8.1 EU ETS vs. Australian ETS

The MRV provisions in both ETSs are not entirely identical. Only covered entities and aircraft operators covered by the EU ETS are required to have an approved monitoring plan, according to which they have to monitor and report their emissions during the reporting year.[360] In Australia, on the other hand, the *National Greenhouse and Energy Reporting Act 2007* (NGER Act) makes registration and reporting mandatory for

[351] Sterk & Schuele, *supra* note 141 at 419. See also Baron & Bygrave, *supra* note 45 at 32; Sterk et al, *supra* note 25 at 22; Haites & Mullins, *supra* note 23 at 54; Blyth & Bosi, *supra* note 25 at 28.
[352] Blyth & Bosi, *ibid* at 28.
[353] Sterk et al, *supra* note 25 at 22.
[354] Baron & Bygrave, *supra* note 45 at 32.
[355] *Ibid*.
[356] *Ibid*.
[357] Haites & Mullins, *supra* note 23 at 55.
[358] Mace et al, *supra* note 3 at 68.
[359] *Ibid* at 67.
[360] EC, *Commission Regulation (EU) No 601/2012 of 21 June 2012 on the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC of the European Parliament and of the Council*, [2012] OJ L 181at Art 11 [Commission Regulation No 601/2012].

entities whose energy production, energy use or GHG emissions meet specified thresholds.[361] There are two types of thresholds, facility thresholds and corporate group thresholds. The thresholds for facilities required to report under the NGER Act are 25,000 tons of CO_2 or 100 terajoules of electricity.[362] For corporations, the thresholds as of 2010-2011 and onwards are 50,000 tons of CO_2 or 200 terajoules of electricity.[363]

Further, the reporting year under the EU ETS will cover a calendar year from January 1 to December 31,[364] whereas emissions reporting under the Australian ETS will cover a calendar year from July 1 through June 31.[365]

Moreover, at the end of each reporting year, the EU covered entities and aircraft operators must surrender an annual emissions report.[366] The annual emissions report must then be verified by an independent accredited verifier and submitted to the competent authority by March 31 each year.[367] In Australia, however, the verification of the report prior to submitting it to the Clean Energy Regulator is not a requirement under the NGER Act. Entities can voluntarily engage any auditor to conduct an audit to verify data. However, an audit conducted voluntarily will not be recognized as a formal audit for the purpose of the NGER Act unless it has been conducted by a registered greenhouse and energy auditor.[368] Finally, under both ETSs, covered entities are required to retain records for ten years after the end of the year in which the recorded activities occurred.[369]

2.3.8.2 California ETS vs. Quebec ETS

Both California and Quebec ETSs require reporting at a threshold of 10,000 metric tons of CO_2.[370] Both ETSs require the same instrument calibration to guarantee

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[361] *Supra* note 82.

[362] NGER Act, *supra* note 82, s 13.

[363] *Ibid*.

[364] Commission Regulation No 601/2012, *supra* note 360, Art 12.

[365] Australian Government, "National Greenhouse and Energy Reporting: About the NGER Scheme" (August 2013), online: Clean Energy Regulator <http://www.environment.gov.au/climate-change/greenhouse-gas-measurement/nger>.

[366] Commission Regulation No 601/2012, *supra* note 360, Art 67.

[367] *Ibid.* See also EC, *Commission Regulation (EU) No 600/2012 of 21 June 2012 on the verification of greenhouse gas emission reports and tonne-kilometre reports and the accreditation of verifiers pursuant to Directive 2003/87/EC of the European Parliament and of the Council*, [2012] OJ L 181, Arts 42-43 [Commission Regulation No 600/2012].

[368] Australian Government, "The National Greenhouse and Energy Reporting Audit Determination Handbook" (August 2013) at 7, 16, online: Clean Energy Regulator <https://www.cleanenergyregulator.gov.au/>.
See also *National Greenhouse and Energy Reporting Regulations 2008* (Cth), ss 6.3-6.7.

[369] Commission Regulation No 600/2012, *supra* note 367, Art 66(1); NGER Act, *supra* note 82, s 22(3).

[370] *Regulation for the Mandatory Reporting of Greenhouse Gas Emissions*, CCR, tit 17 (ss 95100-95158), s 95101 [MMR]; *Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere*, RRQ, c Q-2, r 15, ss 4, 6.1.

accuracy.[371] Emissions reports in both ETSs will cover a calendar year from January 1 through December 31.[372] However, the deadlines for emissions records submissions are different. Quebec's is by June 1 whereas in California by June 1 for the electric power entities and April 10 for the facility operators.[373] In Quebec, all reporting entities are required to retain all information used to complete the emissions report for at least seven years.[374] The California ETS, on the other hand, differentiates between entities that have a compliance obligation under the ETS and entities that do not. Entities that have a compliance obligation under the ETS must retain all records for a period of ten years,[375] whereas entities that do not, only have a compliance obligation for a period of five years from the date of certification.[376]

Once an entity prepares its annual emissions report, both ETSs require the report to be verified by an accredited third-party verifier. This requirement applies to all reporting entities in California.[377] In Quebec only entities that emit equal to or greater than 25,000 metric tons of CO_2 are required to have their emissions reports verified.[378] Both ETSs require verification by the accredited third-party to be based on the standards set by the International Organization for Standards.[379]

2.3.8.3 Analysis

Both the Quebec and California ETSs are of equivalent stringency even though their approaches are not identical. Linking these two ETSs with different MRV provisions should not pose an obstacle as long as these ETSs are robust enough to maintain confidence in the value of the trading units to prevent fraud, such as the under-reporting of the emissions which is the case here.

The lack of a rigorous, transparent and reliable approach to verification in the Australian ETS, may negatively affect linkage with the EU ETS as the absence of such

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[371] MMR, *ibid*, s 95103(k); *Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere, ibid*, ss 6.1, 6.6, Schedule A.2

[372] MMR, *ibid*, s 95103(e); *Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere, ibid*, ss 6.1, 6.6, Schedule B.

[373] MMR, *ibid*, s 95103(e); *Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere, ibid*, s 4.

[374] *Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere, ibid* at s 7.

[375] MMR, *supra* note 370, s 95105(a).

[376] *Ibid*.

[377] *Ibid*, s 95101(a)(3). See also ss 95130-95133.

[378] *Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere, supra* note 370, s 6.6.

[379] MMR, *supra* note 370, s 95105; *Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere, ibid*, s 6.6.

regime may undermine confidence in the trading unit.[380] This, may also undermine the environmental effectiveness of the combined ETS since Australian entities subject to inaccurate, not verified GHG monitoring could sell unqualified allowances to EU entities resulting in higher emissions levels overall. If this were widespread, it could reduce allowance prices as well as the incentive to undertake mitigation measures. Conversely, if this were to increase allowances prices, linking would provide entities in the Australian ETS with the incentive to understate their emissions in order to sell unused allowances or to avoid having to obtain them to cover their emissions. In essence, while the lack of full harmonization of MRV regimes in both ETSs should not pose an obstacle for linking, the absence of verification of equivalent stringency might. Therefore, the Australian ETS should have an equally credible approach to verification.

2.3.9 Registries

Linking of the different ETSs also requires registries to be sufficiently harmonized to allow a smooth transfer of allowances between them.[381] This, in turn, requires the development of common data exchange standards.[382] The parties to the Kyoto Protocol have established national registries which have to submit to detailed guidelines in order to assure their compatibility.[383] Domestic and regional ETSs that use Kyoto trading units also undertake their settlements through these registries.[384] Linking ETSs that do not use Kyoto trading units would necessitate an agreement to connect the registries to one another.[385]

2.3.9.1 EU ETS vs. California ETS

The EU system of registries has been in operation since January 2005.[386] Initially, each EU member state had its own registry.[387] In 2012, these registries were replaced by a single Union Registry operated by the EC.[388] It provides a harmonized way to transfer

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[380] Verification in essence checks monitoring procedures and emissions calculation methodologies against good practice and against the monitoring and reporting plans established for a specific entity under the ETS.

[381] See Sterk et al, *supra* note 25 at 23; Blyth & Bosi, *supra* note 25 at 28.

[382] Blyth & Bosi, *ibid* at 28.

[383] Faure & Peeters, *supra* note 81 at 315.

[384] *Ibid.*

[385] *Ibid.*

[386] EC/Australian Government, "Registry Options to Facilitate Linking of Emissions Trading Systems: Consultation Paper" (2013) at 11 [Registry Options: Consultation Paper], online: Australian Department of the Environment <http://www.climatechange.gov.au/reducing-carbon/consultations/registry-arrangements-facilitate-linking-eu-emissions-trading-system>.

[387] *Ibid*.

[388] *Ibid.*

allowances across 31 countries participating in the EU ETS and also acts as the EU Party's registry under the Kyoto Protocol.[389]

In Australia, the Australian National Registry of Emissions Units (ANREU) is an electronic system designed to hold and perform transactions[390] on all eligible domestic and international emissions trading units. Domestic trading units include: carbon units issued by the Clean Energy Regulator and ACCUs from the Carbon Farming Initiative.[391] Some restrictions exist on the export of domestic emissions trading units.[392] International trading units include eligible (Kyoto) and prescribed (non-Kyoto) units.[393] Non-Kyoto international units (e.g. units from other domestic ETSs) can be imported into, and surrendered under the Australian ETS, by prescribing through regulations the registry from which they originate as a foreign registry.[394]

2.3.9.2 California and Quebec ETSs

Both California and Quebec are members of the Climate Registry, a single, unified registry that creates consistent and transparent emissions reporting standards throughout North America.[395]

2.3.9.3 Analysis

In regard to the California and Quebec ETSs, this design feature is unlikely to cause any linking problems since both are the members of the same Climate Registry.

It is different in Australia and the EU. Allowances issued in the Australian and EU ETSs are entirely represented by electronic entries in a registry.[396] This means that a link

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[389] *Ibid.*

[390] The following transactions can be performed through the ANREU: transfer emission trading units to other ANREU account holders, or account holders who have accounts established in national registries linked through the Kyoto Protocol; cancel units; purchase and surrender units; and buy-back of units.

[391] CEA 2011, *supra* note 8, ss 99 & 5.

[392] *Ibid*, s 108(3). Export of carbon units issued by the Clean Energy Regulator will not be permitted during the fixed charge period, nor while a price ceiling is in place during the flexible charge period. All restrictions will be lifted once there is no longer a price ceiling and where there is a bilateral linking agreement in place. CFI Act 2011, *supra* note 149, ss 11, 157. There are two types of the ACCUs issued under the CFI: Kyoto compliant and non-Kyoto compliant. Non-Kyoto compliant ACCUs are those whose abatement occurred after the end of the relevant accounting period for the Kyoto Protocol first commitment period. Kyoto-compliant ACCUs can be exported during both the fixed and the flexible price periods. To be exported, ACCUs must be exchanged in the ANREU for an equivalent Kyoto unit such as AAUs, RUs and ERUs.

[393] *Ibid*, ss 5 and 123.

[394] ANREU Act 2011, *supra* 151 note, s 4.

[395] For more details, see "The Climate Registry", online: The Climate Registry <http://www.theclimate registry.org> (last accessed 15 May 2013).

[396] Registry Options: Consultation Paper, *supra* note 386.

between the Australian and EU registries is required to transfer allowances from one ETS to be used for compliance in the other.[397] In March 2013, the EU Commission and the Australian Government issued a joint consultation paper on registry options. This paper sets out proposals for two types of registry links:

- An indirect registry link starting in 2015, which would not involve the direct transfer of the EUAs into the Australian registry.[398] Rather, the EUAs will be kept in an Australian Government account in the EU registry and an equivalent number of Australian-issued international units (AIIUs) will be issued in the Australian registry to 'shadow' these EUAs.[399] These AIIUs could then be transferred into the Australian registry and surrendered for compliance under the Australian ETS, or swapped-back into the EUAs for trading in the EU ETS;[400]
- A direct link starting in 2018, where AIIUs would be automatically exchanged for EUAs, effectively making EUAs compatible and exchangeable with AIIUs.[401]

2.3.10 Compliance Framework and Penalties

From an environmental perspective, penalties for non-compliance should be sufficiently severe in order to ensure the effective operation of the ETS.[402] This requirement is, however, limited to a mandatory ETS because voluntary ETSs do not have non-compliance penalties.[403]

Penalties in an ETS can either be financial, i.e. fixed sum per ton for exceeded emissions, or loss of allowances, i.e. where excess emissions can be deducted from the allowance holdings allocated in the following trading period, or a combination of both.[404] From an environmental perspective, the financial sanctions for any non-compliance should be much higher than the cost of the allowance.[405] To maintain the environmental effectiveness of the ETS, payment of the financial penalty should not discharge the covered entities from their obligation to make up for an allowances shortfall in the next

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[397] *Ibid*.
[398] *Ibid* at 13-14.
[399] *Ibid*.
[400] *Ibid*.
[401] *Ibid*.
[402] Sterk et al, *supra* note 25 at 23.
[403] Haites & Mullins, *supra* note 23 at 58. In a voluntary ETS, each participant chooses its own targets as well as the cost it is prepared to incur in meeting its targets. If emissions are higher than expected, a participant can choose to incur additional cost or exceed its target.
[404] Sterk et al, *supra* note 25 at 23.
[405] Frank Convery, "Emissions Trading and Environmental Policy in Europe" (Paper presented at the Pre-Summit Conference: Knowledge and Learning for a Sustainable Society, Climate and Global Justice Session, Goeteborg University, Sweden, 12-14 June 2001) at 7, online: <http://www.iser.osaka-u.ac.jp/~saijo/warming/00/01/convery1.pdf>.

trading period.[406] By contrast, in the ETSs where participants who have to pay a penalty are exempted from the obligation to cover their excess emissions with allowances or with eligible credits, the penalty operates as a price cap: participants have no incentive to buy allowances above the penalty.[407]

Governments may also introduce a "safety valve".[408] Under this mechanism, the regulator is committed to selling allowances to participants at a pre-determined price in whatever quantity is demanded once the allowance market price increases above a certain level.[409] One of the major advantages of a cap-and-trade ETS is the capability to precisely define the environmental outcome.[410] Price caps and safety valves tend to crack the cap.[411] In addition, they also dampen innovation because the incentive for developing low-emission technology is greater, the higher the price.[412]

If an ETS with strict penalties was linked to an ETS with a safety valve or price cap, the safety valve or penalty rate in the second ETS would effectively act as a price cap for the whole ETS.[413] As long as the market price of allowances is higher than the price cap or safety valve level, covered entities in the price cap/safety valve ETS would have an incentive to sell their allowances to entities in the other ETS until prices equalize at the price cap or safety valve level.[414] As a result, the environmental effectiveness of the combined ETS would also suffer since the total emissions would be higher than if the two ETSs had operated separately.[415] The most efficient solution to the safety valve/price cap issue would be to harmonize the non-compliance regimes in all relevant ETSs. If such a solution is not possible, there would need to be a limit on the exchange of trading units.[416] The best option with regard to the safety valve would be to issue additional allowances only to covered entities from the ETS which have this feature (i.e. safety valve) and only up to the differences between the initial allocation and the actual emissions.[417] This would not completely prevent access to the lower market rate allowances, but would limit the amount of additional allowances being traded.[418] For ETSs with the price cap, the best option would probably be to create a gateway, whereby transfers of allowances from an ETS with the price cap would be restricted once emissions in this ETS exceeds a

[406] Sterk et al, *supra* note 25 at 23.
[407] *Ibid*.
[408] *Ibid*.
[409] *Ibid*.
[410] Sterk & Schuele, *supra* note 141 at 419.
[411] *Ibid*.
[412] *Ibid*.
[413] *Ibid*.
[414] *Ibid*. See also Sterk et al, *supra* note 25 at 23.
[415] See Blyth & Bosi, *supra* note 25 at 29 f.
[416] Sterk & Schuele, *supra* note 141 at 420.
[417] *Ibid.* See also Blyth & Bosi, *supra* note 25 at 31.
[418] *Ibid*.

particular level.[419] Apart from higher emissions, however, these measures may also split the carbon market once the price reached the price cap/safety valve level, with prices in the price cap/safety valve ETS staying at the price cap/safety valve level while prices in the other ETSs continue to increase.[420] This would diminish the cost benefit of linking.[421] In this situation it would be advisable to keep the ETSs separate.[422]

Finally, different compliance regimes in a combined ETS may give rise to a "race to the bottom".[423] This means that if penalties are not comparable across all linked ETSs, non-compliance is likely to be exported to the ETS with the lowest penalty level.[424] Also for this reason, the harmonization of respective compliance regimes should be sought before considering any linking.[425] In sum, while it is not necessary to have identical non-compliance penalties between linked ETSs, they must be comparable in magnitude, effectiveness and stringency.[426]

2.3.10.1 EU ETS vs. California ETS

Member states are required to impose effective, proportionate and dissuasive penalties for infringements of the national measures adopted pursuant to the EU ETS Directive.[427] The EU ETS Directive provides specific penalties in two circumstances. Firstly, it requires member states to make sure that an entity whose annual emissions report has not been verified as satisfactory by March 31 of the following year, cannot make further transfers of allowances until the report has been verified as satisfactory.[428] Secondly, each year by April 30, entities covered under the EU ETS have to surrender allowances for every ton they emitted in the previous year.[429] In the event of non-compliance, non-compliant entities need to pay fines of €100 per excess ton of CO_2 emissions.[430] In addition to paying this fine, the entities have to purchase the number of allowances that they need to cover the previous year's emissions and submit these

[419] Sterk et al, *supra* note 25 at 9.
[420] *Ibid*.
[421] *Ibid* at 24.
[422] *Ibid*.
[423] Sonja Peterson, "Monitoring, Accounting and Enforcement in Emissions Trading Regimes" (Paper prepared for the OECD, 2003) at 10, online: OECD <http://www.oecd.org/env/cc/2957646.pdf>.
[424] *Ibid*.
[425] *Ibid*.
[426] Mace et al, *supra* note 3 at 67.
[427] EU Trading Directive, *supra* note 2, Art 16(1).
[428] *Ibid*, Art 15.
[429] *Ibid*, Arts 16(3), 12(3).
[430] *Ibid*, Art 16(3).

allowances.[431] Finally, member states are also required to publish the names of the entities that have breached the requirements to surrender sufficient allowances.[432]

As in the EU, at the end of each financial year, entities covered under the Australian ETS must surrender one carbon unit for every ton of CO_2 they have emitted in that year.[433] However, the surrender timetable and quantity differ. During the fixed price period (from 2012 to 2015), only 75% of emissions are required to be surrendered by June 15 of the relevant compliance year.[434] The remaining 25% must be surrendered by February 1 of the following year.[435] During the flexible price period (from 2015 onwards), 100% of emissions are required to be surrendered by February 1 of the following year.[436]

The penalty of non-compliance in Australia also differs from that in the EU ETS. In the Australian ETS, if a covered entity does not surrender any or enough units by February 1, it must pay a unit shortfall charge as follows:

- For the fixed price period, this charge is set at 130% of the fixed price for the relevant fixed price year;
- For the flexible price period, this charge will be set at up to 200% of the benchmark average auction price for the relevant period.[437]

In addition, if the covered entity in Australia fails to pay the unit shortfall charge, it will be subject to a late payment penalty.[438] The late payment penalty is set at 20% per year of the value of the shortfall charge, unless otherwise prescribed by regulations.[439]

2.3.10.2 California ETS and Quebec ETS

Both the California and Quebec ETSs require each covered entity to surrender sufficient allowances following the end of each trading period.[440] In the case of non-compliance, both ETSs are required to obtain and surrender a number of allowances for every metric ton of CO_2 not covered: three-to-one for each un-surrendered allowance.[441]

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[431] *Ibid*.
[432] *Ibid*, Art 16(2).
[433] CEA 2011, *supra* note 8, s 121.
[434] *Ibid*.
[435] *Ibid*.
[436] *Ibid*.
[437] CEB 2011 Explanatory Memorandum, *supra* note 9 at 137-138. See also CEA 2011, *ibid*, s 5 (definition of "unit shortfall"), ss 125, 128-129 & 134.
[438] CEA 2011, *ibid*, s 135.
[439] *Ibid*.
[440] AB 32, *supra* note 18, s 95856; *Regulation respecting a cap-and-trade system for greenhouse gas emission allowances*, *supra* note 17, s 22.
[441] AB 32, *ibid*, s 95857; *Regulation respecting a cap-and-trade system for greenhouse gas emission allowances*, *ibid*, s 22.

Note that none of the ETSs allows for the substitution of this penalty with a monetary payment.

2.3.10.3 Analysis

Both California and Quebec have established comparable compliance frameworks. This feature is unlikely to create a barrier to their linkage.

As for the EU and the Australian ETSs, in both the financial penalties for non-compliance (i.e. shortfall penalty) are higher than the cost of allowances. However, the Australian ETS employs the price cap where paying the penalty exempts entities from surrendering shortfall allowances. If the EU ETS is linked to the Australian ETS, the penalty rate in the Australian ETS may act as a price cap for the combined ETS. As long as the market price for allowances is higher than the price cap, Australian entities might have an incentive to sell their allowances to entities in the EU ETS until prices are equalized at the price cap level. The environmental effectiveness of the combined ETS would thus be undermined since total emissions would be higher than if the two ETSs were functioning separately. Therefore, the best solution to the price cap issue would probably be to create a gateway, whereby transfers of allowances from the Australian ETS would be restricted once emissions in this ETS exceeds a specific level.

Apart from higher emissions, however, a price cap may also split the combined ETS after the price reaches the price cap level, with prices in the Australian ETS staying at the price cap level and the prices in the EU ETS continuing to increase, thereby reducing the cost benefits of the linking. If this is the case, both ETSs should be kept separate.

3.0 Conclusion

Emissions trading is not a new phenomenon. ETSs have long been used as market-based environmental policy tools for combating climate change in a cost-effective way. Linking such ETSs can further increase overall cost efficiency and provide for international cooperation in climate policy allowing the countries involved to preserve some national autonomy.

This paper focuses on two of the most recently announced cases of linkage: a linkage that has been already established between Quebec and California, and one being negotiated between the EU and Australia, on the other hand.

This paper specifically examines how each aspect of the design of the ETS, identified in the literature review as crucial for linking, is addressed by the EU, Australia, Quebec and California ETSs. The analysis of these linkage case studies indicates that there are number of design features that may impair rather than enhance the efficiency and environmental effectiveness of a combined ETS. These features include the recognition of trading units, opting-in and opting-out provisions, stringency of emissions targets, allocation, trading periods, banking and borrowing, MRV provisions, registry, participation, point of regulation, and compliance penalties. These features are addressed differently in both linkage cases. While the Quebec and California ETSs were harmonized to operate with equal rigor, this was not the case for the EU and Australian ETSs. To facilitate their full link, a number of changes will need to be made to the design of the EU and Australian ETSs. However, analysis of these studies shows that linkage does not require complete harmonization of the domestic ETSs. It requires only a certain degree of harmonization, meaning that some differences can exist between the linked ETSs.

In conclusion, there is a growing interest in ETS linking. It is a dynamic issue. The potential for additional ETS links, however, will depend on the willingness of governments to establish domestic ETSs and then sufficiently harmonize them to facilitate linkages.

Bibliography

Primary Sources

Legislation: Statutes and Regulations

Australian National Registry of Emissions Units Act 2011 (Cth).

Carbon Credits (Carbon Farming Initiative) Act 2011 (Cth).

Clean Energy Act 2011 (Cth).

Clean Energy Amendment Regulation 2012 (No 1) (Cth).

Clean Energy Regulations 2011 (Cth).

EC, *Commission Decision of 27 April 2011 determining transitional Union-wide rules for harmonised free allocation of emission allowances pursuant to Article 10a of Directive 2003/87/EC of the European Parliament and of the Council*, [2011] OJ L 130.

EC, *Commission Regulation (EU) No 1031/2010 of 12 November 2010 on the timing, administration and other aspects of auctioning of greenhouse gas emission allowances pursuant to Directive 2003/87/EC of the European Parliament and of the Council establishing a scheme for greenhouse gas emission allowances trading within the Community Text with EEA relevance*, [2010] OJ L 302.

EC, *Commission Regulation (EU) No 600/2012 of 21 June 2012 on the verification of greenhouse gas emission reports and tonne-kilometre reports and the accreditation of verifiers pursuant to Directive 2003/87/EC of the European Parliament and of the Council*, [2012] OJ L 181.

EC, *Commission Regulation (EU) No 601/2012 of 21 June 2012 on the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC of the European Parliament and of the Council*, [2012] OJ L 181.

EC, *Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC*, [2003] OJ L 275/32.

EC, *Directive 2004/101/EC of the European Parliament and of the Council of 27 October 2004 amending Directive 2003/87/EC establishing a scheme for greenhouse gas emission allowance trading within the Community, in respect of the Kyoto Protocol's project mechanisms*, [2004] OJ L 338/18.

EC, *Directive 2009/29/EC of the European Parliament and of the Council of 23 April 2009 amending Directive 2003/87/EC so as to improve and extend the greenhouse gas emission allowance trading scheme of the Community*, [2009] OJ L 140/63.

EC, *Proposal for a Directive 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 system of the Community*, COM (2008) 16 final.

Excise Tariff Act 1921 (Cth).

National Greenhouse and Energy Reporting Act 2007 (Cth).

National Greenhouse and Energy Reporting Regulations 2008 (Cth).

Order in Council 1187-2009, (2009) GOQ II, 5871.

Order in Council 1297-2011, (2011) GOQ II, 5519B.

Regulation for the Mandatory Reporting of Greenhouse Gas Emissions, CCR, tit 17 (sections 95100-95158).

Regulation respecting a cap-and-trade system for greenhouse gas emission allowances, RRQ, c Q-2, r 46.1.

Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere, RRQ, c Q-2, r 15.

US, AB 32, *An Act to add Division 25.5 to the Health and Safety Code, relating to air pollution*, Reg Sess, Cal 2006.

Legislation: Guidelines and Memos

Australian Government, "Liquid fuel Opt-in Scheme guideline" (March 2013), online: Clean Energy Regulator <http://www.cleanenergyregulator.gov.au/Carbon-Pricing-Mechanism/Fact-sheets-FAQs-and-guidelines/Guidelines/Documents/Guideline%20-%20Liquid%20fuel%20Opt-in%20Scheme.pdf>.

Australian Government, "The National Greenhouse and Energy Reporting Audit Determination Handbook" (August 2013), online: Clean Energy Regulator <https://www.cleanenergyregulator.gov.au/National-Greenhouse-and-Energy-Reporting/Auditors/Documents/Audit%20determination%20handbook.pdf>.

EC, *Memo/10/615: Questions & Answers on Emissions Trading: Use restrictions for certain industrial gas credits as of 2013, Memo/10/615* (Brussels, 25 November 2010).

EC, *Memo/12/631: FAQ: Linking the Australian and European Union emissions trading systems* (Brussels, 28 August 2012).

EC, "Definition of Least Developed Countries in the context of Article 11a(4) of Directive 2009/29/EC of the European Parliament and of the Council of 23 April 2009, amending Directive 2003/87/EC so as to improve and extend the greenhouse gas emission allowance trading scheme of the Community (OJ L 140, 5.6.2009, p 77)" (2009), online: European Commission <http://ec.europa.eu/clima/policies/ets/linking/docs/def_ldc_en.pdf>.

Explanatory Memorandum, Clean Energy Bill 2011.

International Official Documents

Guidelines for the implementation of Article 6 of the Kyoto Protocol, Dec 9/CMP.1, UNFCC, 1st Sess, FCCC/KP/CMP/2005/8/Add.2 (2006).

Kyoto Protocol to the United Nations Framework Convention on Climate Change, 1 December 1997, 2303 UNTS 148, 37 ILM 22 (entered into force 16 February 2005).

Secondary Sources

Books

Deatherage, Scott. *Carbon Trading: Law and Practice* (Oxford: NY: Oxford University Press, 2011).

Faure, Michael Faure & Marjan Peeters, *Climate Change and European Emissions Trading Lessons for Theory and Practice* (Cheltenham, UK: Edward Elgar Publishing, 2008).

Tietenberg, Thomas H. *Emissions Trading: Principles and Practice* (Washington, DC: Resources for the Future, 2006).

Articles

Betz, Regina *et al*, "Auctioning greenhouse gas emissions permits in Australia" (2009) 54 The Australian Journal of Agricultural and Resource Economics 219

Boemare, Catherine & Phillipe Quirion. "Implementing Greenhouse Gas Trading in Europe: Lessons from Economic Literature and International Experiences" (2002) 43 Ecological Economics 213.

Cramton, Peter & Suzi Kerr. "Tradeable Carbon Permit Auctions: How and Why to Auction and Not Grandfather" (2002) 30:4 Energy Policy.

Fisher, Carolyn. "Combining Rate-Based and Cap-and-Trade Emissions Policies" (2003) 3:2 Climate Policy 89.

Hepburn, Cameron *et al*, "Auctioning of EU ETS Phase II Allowances: How and Why?" (2006) 6 Climate Policy 137.

Grubb, Michael & Karsten Neuhoff. "Allocation and Competitiveness in the EU Emissions Trading Scheme: Policy Overview" (2006) 6 Climate Policy 7

Larragan, Javier de Cendra. "From the EU ETS to a Global Carbon Market: An Analysis and Suggestions for the Way Forward" (2010) 19:1 European Energy and Environmental Law Review 2.

"New Australia PM: Carbon Tax Repeal Tops Agenda" (2013) 17:29 ICTSD Bridges Weekly.

Sterk, Wolfgang & Ralf Schuele. "Advancing the Climate Regime Through Linking Domestic Emissions Trading Systems" (2009) 14 Mitig Adapt Glob Change 409.

Tuerk, Andeas *et al*, "Linking Carbon Markets: Concepts, Case Studies and Pathways" (2009) 9 Climate Policy 341.

Other Materials

Australian Government. "Auctions: Position Paper on the Legislative Instrument for Auctioning Carbon Units in Australia's Carbon Pricing Mechanism" (2012), online: Climatechange <http://www.climatechange.gov.au/sites/climatechange/files/documents/04_2013/auction-carbon-credits-position-paper-pdf.pdf>.

_____, "Australia's Submission to the Copenhagen Accord" (27 January 2010), online: Australian Government Department of the Environment <http://www.climatechange.gov.au/sites/climatechange/files/files/UNFCCC-letter-Jan-2010.pdf>.

_____, "Establishing a system for auctioning carbon units", online: Clean Energy Regulator <http://www.cleanenergyregulator.gov.au/Carbon-Pricing-Mechanism/About-the-Mechanism/auctioning-carbon-units/Pages/default.aspx>.

_____, "National Greenhouse and Energy Reporting: About the NGER Scheme" (August 2013), online: Clean Energy Regulator <https://www.cleanenergyregulator.gov.au/NATIONAL-GREENHOUSE-AND-ENERGY-REPORTING/ABOUT-NGER/Pages/default.aspx>.

Baron, Richard & Stephen Bygrave. "Towards International Emissions Trading: Design Implications for Linkages" (Paper prepared for the Organisation for Economic Co-operation and Development (OECD), 2002), online: OECD <http://www.oecd.org/environment/climatechange/2766158.pdf>.

Blyth, William & Martina Bosi. "Linking Non-EU Domestic Emissions Trading Schemes with the EU Emissions Trading Scheme" (Report prepared for the OECD, 2004), online: OECD <http://www.oecd.org/dataoecd/38/7/32181382.pdf>.

Boyd, Richard *et al*, "Broadening Alberta's Carbon Markets" (Discussion paper prepared for the Climate Change Central, 2008), online: Climate Change Central <http://www.climate changecentral.com/files/C3_BroadeningAlbertasCarbonMarkets_PhaseI.pdf>.

Brunner, Steffen *et al*, "Domestic Emissions Trading Systems" (Paper prepared for the Potsdam Institute for Climate Impact Research, 2011), online: Potsdam Institute for Climate Impact Research <http://www.pik-potsdam.de/members/brunner/publications/domestic-emissions-trading-systems/view>.

California Air Resources Board. "California 1990 Greenhouse Gas Emissions Level and 2020 Emissions Limit" (16 November 2007), online: Air Resources Board <http://www.arb.ca.gov/cc/inventory/pubs/reports/staff_report_1990_level.pdf>.

_____, "Discussion of Findings Required by Government Code section 12894" (January 2013), online: Air Resources Board <http://www.arb.ca.gov/regact/2012/capandtrade12/2nd15dayatta6.pdf>.

_____, "Initial Statement of Reasons" (9 May 2012), online: Air Resources Board <http://www.arb.ca.gov/regact/2012/capandtrade12/isormainfinal.pdf>.

_____, "Linkage", online: Air Resources Board <http://www.arb.ca.gov/cc/capandtrade/linkage/linkage.htm>.

_____, "Overview of ARB Emissions Trading Program", online: Air Resources Board <http://www.arb.ca.gov/newsrel/2011/cap_trade_overview.pdf>.

Convery, Frank. "Emissions Trading and Environmental Policy in Europe" (Paper delivered at the Pre-summit Conference: Knowledge and Learning for a Sustainable Society, Climate and Global Justice Session, Goetteborg University, Sweden, 12-14 June 2001), online: University College Dublin <http://www.ucd.ie/envinst/envstud/CATEP%20 Webpage/publications/goteborg.pdf>.

Edenhofer, Ottmar; Christian Flachsland & Robert Marschinski. "Towards a Global CO_2 Market: An Economic Analysis" (2007), online: Potsdam Institute for Climate Impact Research (PIK) <http://www.pik-potsdam.de/members/robert/gutachtenaa>.

Ellerman, Denny; Paul L Joskow & David Harrison, Jr. "Emissions Trading in the US: Experience, Lessons, and Considerations for Greenhouse Gases" (Report prepared for the Pew Centre on Global Climate Change, 2003), online: Pew Centre on Global Climate Change <http://www.pewclimate.org/docUploads/emissions_trading.pdf>.

Ellis, Jane & Dennis Tirpak. "Linking GHG Emission Trading Schemes and Markets" (Paper prepared for the International Energy Agency (IEA), 2006), online: IEA <http://www.iea.org/papers/2006/Linking.pdf?>.

Evans & Peck. "Possible Design for a Greenhouse Gas Emissions Trading System: Further Definition of the Auction Proposals in the NETT Discussion Paper" (2007), online: University of Maryland <http://www.cramton.umd.edu/papers2005-2009/australia-nett-auction-design-report.pdf>.

European Commission/Australian Government. "Registry Options to Facilitate Linking of Emissions Trading Systems: Consultation Paper" (2013), online: Australian Department of the Environment <http://www.climatechange.gov.au/reducing-carbon/consultations/registry-arrangements-facilitate-linking-eu-emissions-trading-system>.

European Commission. "Australia and European Commission Agree on Pathway towards Fully Linking Emissions Trading Systems" (August 28, 2012), online: European Commission <http://europa.eu/rapid/pressReleasesAction.do?reference=IP/12/916&format=HTML&aged=0&language=EN&guiLanguage=en> (last visited 2 September 2012).

_____, "Emissions Trading System (EU ETS)", online: European Commission <http://ec.europa.eu/environment/climat/emission/index_en.htm> (last visited 2 August 2012).

_____, "Linking the EU ETS to other Emissions Trading Systems and Incentives for International Credits", online: European Commission <http://ec.europa.eu/clima/policies/ets/linking_en.htm> (last visited 29 August 2012).

Gielen, AM; PR Koutstaal & Herman RJ Vollebergh. "Comparing Emission Trading University College London, 25-26 March 2002, available online: University College Dublin <http://www.ucd.ie/envinst/envstud/CATEP%20Webpage/Papers/Koustaal.pdf>.

Gillenwater, Michael & Wiley Barbour. "Tracking Indirect Emissions in the Electric Power Industry" (Discussion paper prepared for the Environmental Resources Trust, August 2004), online: Princeton University <http://www.princeton.edu/~mgillenw/Electricity %20Accounting%20Paper%20_v2formated.pdf>.

Goeree, Jacob; Theo Offerman & Randolph Sloof. "Demand Reduction and Pre-emptive Bidding in Multi-Unit License Auctions" (2005), online: California Institute of Technology Division of the Humanities and Social Sciences <http://www.hss.caltech.edu/~jkg/tango.pdf>.

Haites, Eric & Fiona Mullins. "Linking Domestic and Industry Greenhouse Gas Emissions Trading Systems" (Report prepared for the Electric Power Research Institute (EPRI), the International Energy Agency (IEA) and the International Emissions Trading Association (IETA), 8 October 2001), online: International Energy Agency (IEA) <http://www.iea .org/papers/2001/epri.pdf>.

Holt, Charles *et al*, "Auction Design for Selling CO_2 Emission Allowances Under the Regional Greenhouse Gas Initiative" (2007), online: Regional Greenhouse Gas Initiative (RGGI) <http://www.rggi.org/docs/rggi_auction_final.pdf>.

International Emissions Trading Association (IETA). "The World's Carbon Markets: A Case Study Guide to Emissions Trading (Australia)" (June 2013), online: IETA <http://www.ieta.org/assets/Reports/EmissionsTradingAroundTheWorld/edf_ieta_australia_case_study_september_2013.pdf>.

_____, "The world's Carbon Markets: A Case Study Guide to Emissions Trading (Quebec)" (May 2013), online: IETA <http://www.ieta.org/assets/Reports/EmissionsTradingAroundTheWorld/edf_ieta_quebec_case_study_may_2013.pdf>.

Jaffe, Judson & Robert N Stavins. "Linking a US Cap-and-Trade System for Greenhouse Gas Emissions: Opportunities, Implications, and Challenges" (Working paper prepared for the Reg-Markets Center, 2008), online: Social Science Research Network (SSRN) <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1089042>.

Lewis, C Mark & Isabelle Curien. "A Reminder of the EU-ETS Rules on Banking for EUAs" (Report prepared for the Deuthsche Bank, 2010), online: Carbon Emissions <http://www.longfinance.net/images/reports/pdf/db_euets_2010.pdf>.

Lopomo, Giuseppe & Leslie M Marx. "Carbon Allowance Auction Design: An Evaluation of the Current Debate" (2009), online: The Nicholas Institute for Environmental Policy Solutions <http://nicholasinstitute.duke.edu/sites/default/files/publications/carbon-allowance-auction-design-an-evaluation-of-the-current-debate-paper.pdf>.

Mace, MJ *et al*, "Analysis of the Legal and Organizational Issues Arising in Linking the EU Emissions Trading Scheme to Other Existing and Emerging Emissions Trading Schemes" (Repot prepared for the Foundation for International Environmental Law and Development (FIELD), May 2008), online: FIELD <http://www.field.org.uk/files/Linking%20emission %20trading%20schemes_0.pdf>.

Manea, Sabina. “The Future of International Emissions Credits in the EU ETS” (2012), online: Climatico <http://www.climaticoanalysis.org/post/the-future-of-international-emissions-credits-in-the-eu-ets>.

Ministry of Sustainable Development, Environment, Wildlife and Parks. “Inventaire québécois des émissions de gaz à effet de serre en 2010 et évolution depuis 1990” (February 2013), online: Ministry of Sustainable Development, Environment, Wildlife and Parks <http://www.mddep.gouv.qc.ca/changements/ges/2010/inventaire1990-2010.pdf>.

Peterson, Sonja. “Monitoring, Accounting and Enforcement in Emissions Trading Regimes” (Paper prepared for the Organization for Economic Co-operation and Development (OECD), 2003), online: OECD <http://www.oecd.org/dataoecd/11/56/2957646.pdf>.

Philibert, Cédric & Julia Reinaud. “Emissions Trading: Taking Stock and Looking Forward” (Paper prepared for the OECD, 2004), online: OECD <http://www.oecd.org.ezproxy.lib.ucalgary.ca/dataoecd/58/59/32140134.pdf>.

Reinaud, Julia & Cédric Philibert. “Emissions Trading: Trends and Prospects” (Paper prepared for the OECD and International Energy Agency, 2007), online: OECD <http://www.oecd.org/dataoecd/60/38/39725657.pdf>.

Stavins, N Robert & Todd Schatzki. “Three Lingering Design Issues Affecting Market Performance in California’s GHG Cap-and-Trade Program” (29 January 2013), online: Analysis Group <http://www.analysisgroup.com/uploadedFiles/Publishing/Articles/Three_Cap_and_Trade_Design_Issues.pdf>.

Sterk, Wolfgang *et al*, “Ready to Link Up? Implications of Design Differences for Linking Domestic Emissions Trading Schemes” (Paper prepared for the German Federal Ministry of Education and Research, 2006), online: Wuppertal Institute for Climate, Environment and Energy <http://www.wupperinst.org/uploads/tx_wibeitrag/ready-to-link-up.pdf>.

“The Climate Registry”, online: The Climate Registry <http://www.theclimateregistry.org> (last accessed 15 December 2014).

Tuerk, Andreas *et al*, “Linking Emissions Trading Schemes” (Paper prepared for the Climate Strategies, May 2009), online: Climate Strategies <http://www.climatestrategies.org/research/our-reports/category/33/148.html>.

“6. Verhandlungsrunde Schweiz — EU zur Verknüpfung der Emissionshandelssysteme”, online: Federal Office for the Environment (FOEN) <http://www.bafu.admin.ch/emissionshandel/10923/10926/13748/index.html?lang=en> (last visited 23 February 2015).

Websites

Air Resources Board <http://www.arb.ca.gov> (last visited 25 January 2015).

Australian Department of the Environment <http://www.climatechange.gov.au> (last visited 23 February 2015).

Australian Government ComLaw <http://www.comlaw.gov.au> (last visited 28 February 2015).

CanLII <http://www.canlii.ca> (last visited 15 January 2015).

Clean Energy Regulator <https://www.cleanenergyregulator.gov.au> (last visited 15 January 2015).

Climate Change Central <http://www.climatechangecentral.com> (last visited 16 September 2014).

European Commission <http://ec.europa.eu> (last visited 15 January 2015).

Federal Office for the Environment (FOEN) <http://www.bafu.admin.ch> (last visited 23 February 2015).

International Emissions Trading Association (IETA) <http://www.ieta.org> (last visited 20 February 2015).

International Energy Agency <http://www.iea.org> (last visited 15 September 2014).

Ministry of Sustainable Development, Environment, Wildlife and Parks <http://www.mddep.gouv.qc.ca> (last visited 25 January 2015).

Organization for Economic Co-operation and Development (OECD) <http://www.oecd.org> (last visited 16 September 2014).

Pew Centre on Global Climate Change <http://www.pewclimate.org> (last visited 16 September 2014).

Potsdam Institute for Climate Impact Research <http://www.pik-potsdam.de> (last visited 10 January 2014).

Regional Greenhouse Gas Initiative (RGGI) <http://www.rggi.org> (last visited 10 January 2015).

Social Science Research Network (SSRN) <http://papers.ssrn.com> (last visited 16 November 2014).

The Climate Registry <http://www.theclimateregistry.org> (last accessed 15 December 2014).

Wuppertal Institute for Climate, Environment, Energy <http://www.wupperinst.org> (last visited 16 September 2014).

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