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MAY LINK PREVAIL!

A Comparative Analysis of Lessons Learnt from (Not) Linking Carbon Markets in Japan and Oceania[1]

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Abstract:

What makes linking (un)successful? This is the question we would like to address in our GCET20 contribution.

The Paris Agreement urgently needs underpinning by ambitious domestic policies. Cost efficient greenhouse gas (GHG) cap-and-trade, or emissions trading, is still a promising tool, particularly with increasing mitigation costs in sight. Traditional economic theory emphasizes that linking domestic schemes even increases efficiency, but linking can also make cap-and-trade schemes more sustainable, as shown in an earlier study presented by the authors at GCET17 in 2016. No least, Art. 6 of the Paris Agreement explicitly allows trading of Internationally Transferred Mitigation Outcomes (ITMO) and thus also opens the door widely for market-to-market linkages. Empirical evidence on linking, however, is limited to some successful cases in North American, Europe, and Japan, while failed attempts include the European Union – Australia and the New Zealand – Australia links.

Against this background we comparatively analyze the successful Tokyo – Saitama and the failed New Zealand – Australia cases. We use Sustainability Economics, Public Choice, and Institutional Economics reasoning in order to evaluate the political process leading to (not) linking, the institutional setting, in which linking did (not) occur, and the consequences of (not) linking. By doing so, we can identify the technical, institutional, and political prerequisites for successful linking as well as respective barriers to linking.

Keywords: Climate policy, sustainability, emissions trading, linking

1. Introduction

Just like "Link", protagonist hero in Nintendo's game series "The Legend of Zelda", defeats evil forces, linking sustainable carbon markets could help in protecting our global climate. This is particularly true, as the Paris Agreement urgently needs underpinning by more ambitious, but at the same time cost-efficient policy approaches. In its headline statements, the recent report of the Intergovernmental Panel on Climate Change (IPCC) on the 1.5°C target emphasizes the necessity of "rapid and far-reaching transitions in energy, land, urban and infrastructure …, and industrial systems" for reaching this target (IPCC, 2018).

Emissions Trading Schemes (ETS), or, more precisely, greenhouse gas (GHG) cap-and-trade programs, still offer a set of advantages over alternative instruments for facilitating this transition, particularly with increasing mitigation costs in sight. Cap-and-trade programs

- are effective and cost efficient in the sense that they achieve pre-set emission reduction targets at minimum cost to society (Endres, 2011);
- can be designed in a sustainable way so that they not only fulfil economic, and environmental criteria but also take climate justice requirements into account (Rudolph et al, 2012);
- can be used to differentiate and prioritize scale, distribution, and allocation decisions in a society beyond growth[2];
- have been an integral part of the international climate regime, currently e.g. under the Paris Agreement's Art. 6 Internationally Transferred Mitigation Outcomes (ITMO) clauses[3]; and
- have been spreading across the globe and governance levels from local (e.g. Tokyo) to supra-national (EU) (ICAP, 2019)

In addition, linking can make even well designed domestic schemes more sustainable, as has been shown by the authors in an earlier contribution to the Critical Issues (Rudolph, Lerch and Kawakatsu, 2017). Linking previously separated schemes obviously enhances the economic efficiency of carbon markets, but it can also increase the overall environmental performance: First and foremost, linking reduces the total costs of achieving a pre-determined emission reduction target, because the linked system could exploit bigger differences in marginal abatement costs. In addition, market liquidity might increase and price volatility decrease. Linking might also lower administrative costs as well as transaction costs, e.g. if auctioning platform or monitoring, registration, and verification schemes are jointly used. Linking can also reduce competitive distortions and leakage. Environmental performance could be improved by increasing coverage of polluters and pollutants.

[2] Herman E. Daly, "Top 10 Policies for a Steady-State Economy", in https://steadystate.org/top-10-policies-for-a-steady-state-economy/ (retrieved Apr. 18, 2019).
[3] UN, Paris Agreement, (New York: UN, 2015).

Different from economic and environmental effects of carbon market linkages, however, justice implications are not immediately obvious. Still, linking domestic schemes can generate additional positive effects, especially with respect to the justice concepts of result-based distributive justice, justice within allocation, and redistributive justice. First, expanding the market promises extra efficiency gains and cost savings, which has positive justice implications on carbon markets: It relieves current generations from unnecessarily high cost-burdens of achieving a pre-given target and hence serves intergenerational justice. Additional cost savings also offer a bigger margin for re-distributional measures such as supporting developing countries in climate adaptation, thus fostering intra-generational international justice, or compensating poor households and communities for possible regressive effects of carbon pricing, thus serving intra-generational national justice.

Second, by eliminating price differences between previously separate carbon markets, linking reduces competitive distortions between polluters regulated under a previously more stringent domestic scheme on the one hand and those previously faced with a less stringent domestic cap on the other hand, thus serving the equality criteria of justice. In addition, price harmonization between jurisdictions with ex ante low and ex ante high allowance prices also serves the polluter-pays-principle and intra-generational justice, because the new average price in the linked system additionally burdens the laggards and disburdens the pioneers.

However, the empirical evidence on linking is still limited to a few successful cases in North America, Europe, and Japan, while failed attempts include the European Union – Australia and the New Zealand – Australia links. Scientific analysis of particular practice-based success and failure factors of linking domestic carbon markets is also limited (ICAP, 2018). Hence, in this chapter we focus on a comparison of successful and failed linkages and ask: What makes linking (un)successful in real-world climate policy?

In order to answer this question, we comparatively analyze the successful Tokyo – Saitama and the failed New Zealand – Australia cases. We use Sustainability Economics, Public Choice, and Institutional Economics reasoning in order to evaluate the political process leading to (not) linking, the institutional setting, in which linking did (not) occur, and the consequences of (not) linking. By doing so, we can identify the technical, institutional, and political prerequisites for successful linking as well as respective barriers to linking.

2. Success Factors and Barriers to Linking– a Survey

There is a broad literature on linking greenhouse gas emissions trading schemes (GHG ETS), and a good summary was published by Marchinski, Flachsland and Jakob (2012). This survey, however, focuses specifically on success factors of linking. Four categories of issues analysed in the respective literature that emphasises promoters and barriers to ETS linkages can be identified. First, design and political issues raising questions on definitions and methodologies and trying to answer the question “How to link?”. A second technical category evaluates costs

and benefits of linkages with respect to environmental and economics outcomes. The third category highlights the politico-institutional aspects by analysing cases of existing or potential future linkages, as well as implications of the international climate policy regime. Finally, a fourth category holistically assesses the current situation of linkage after the Paris Agreement and underlines future challenges.

In the first category, the literature focuses on design and political issues. In 2010, Fankhauser and Hepburn (2010) analysed design related issues for potential linkage and underlined design alignment requirements for linking. They emphasized the environmental ambition level consistency between partners as a critical factor of success. Later, several analyses described the mechanisms by which linking should be implemented, such as bilateral, unilateral or multilateral linkage. Tuerk, Mehling, Flachsland, and Sterk (2011) produced a comparison of different linking methodologies and outlined some the barriers to linking, including policy priority divergences between potential partners. Mehling and Haites (2011) analysed the multiple facets of the question "how to link?" and again stressed the importance of design alignments, mainly the necessity of a coordinated implementation schedule and limits to offsets credits to be accepted in the linked domestic scheme. These works triggered other more specific papers on the importance of political will to establish ambitious carbon markets and eventually link them, such as Rudolph and Schneider (2013).

The second type of research sketches environmental and economic criteria for successful linking. Early studies like Jaffe and Stavins (2009), Flachsland, Marchinski and Edenhofer (2009a), and Ranson and Stavins (2016); explored success factors of linking with respect to economic cost-efficiency and environmental effectiveness. They e.g. recognised the necessity of overcoming competitiveness concerns amongst linking partners as well as of having similar cap trajectories and a comparable level of environmental integrity. Accordingly, they noted domestic stakeholders' fear of losing control over their carbon policy as a major barrier to linking. Likewise, the OECD published a report modelling the effects of direct and indirect linkages and underlined the importance of a strongly designed domestic ETS for any kind of cost-saving linkage (Dellink et al, 2010). More recently, based on risk analysis and cost-benefit analysis, Zeng and Weishaar (2016) analysed the legal barriers and environmental risks of linking ETS with targets defined on different basis, in this case China with a relative and the EU with an absolute volume target. They show the importance of fraud-proved regulations and, again, of similar environmental ambitions.

The third category focusses on institutional factors and includes several case studies of existing linkages. Of the latter, most analyses target established linkages in North America (Haites and Mehling, 2009) or intended linkages with the EU ETS, such as an EU-USA-link (Sterk and Kruger, 2009) or an EU-Australia link (Jotzo and Betz, 2009). Political leadership is a key success factor stressed in these case studies. Earlier analyses like Anger (2007), or Flachsland, Marschinski and Edenhofer (2009b), and later Redmont and Convery (2015) inserted linkages as major tools into the global climate regime such as the Kyoto Protocol and

the Post-Kyoto regime. They stressed accountability as being critical for linking, particularly for building a global carbon market from the bottom up. Later, Bodansky, Hoedl, Metcalf and Stavins (2016) as well as Mehling and Gorlach (2016) discussed the dynamics of enforcing the international transfer of mitigation outcomes to be expected under Article 6 of the Paris Agreement. They highlight the importance of the legal enforcement of measuring, reporting, and verification (MRV) rules for ETS linkages on the one hand and of the emergence of institutions facilitating linking at the international level on the other hand. In addition, works on practical cases such as Jevnaker and Wettestad (2016) or Tuerk and Gubina (2016) summarized ETS linking experiences up to date and deducted success and risk factors for future linkages. They recognised many factors to be critical for future linkages, including the importance of international agreements on rules for implementing carbon emission allowance transfers, a strong political willingness to sustainably link, and agreements on power-sharing in the market. They also emphasized that economic ties between respective jurisdictions prior to carbon market linking facilitate respective linkages.

The last category encompasses new developments in ETS linking. Recent reports by the World Bank's Partnership for Market Readiness (PMR) and the International Carbon Action Partnership (ICAP) act as concrete implementation guidelines for linking but also underline issues of political feasibility and of the implementation of the Paris Agreement's regulations on emission right transfer (PMR and ICAP, 2016). Other noticeable papers explore emerging political issues that present a potential threat to linking. Noticeably, Gulbransen, Wettestad, Victor and Underdal (2018) examined how organized political interests working against policy-makers' efforts to implement environmentally effective linkage pose a major risk to such efforts.

3. The Successful Tokyo – Saitama Link

Despite of the most prominent carbon market still being the supra-national European Union Emissions Trading Scheme (EU ETS), recent initiatives have increasingly targeted the sub-national level. Examples are the US Obama Administration's Clean Power Plan (CPP) Model Rule on state-level cap-and-trade and the Trudeau Administration's carbon pricing benchmark as part of the Pan-Canadian Framework on Clean Growth and Climate Change (US EPA, 2015; CAN Gov't, 2016/2018). This bottom-up approach to market-based climate policy is nowadays also supported by the New Environmental Federalism literature (Oates, 2004) and international institutions emphasizing the role of cities in climate policy (World Bank, 2010).

Facing a political deadlock over carbon markets on the national level in Japan, hence, under the strong political leadership of the local governors Shintaro Ishihara and Kiyoshi Ueda at the time, the Tokyo Metropolitan Area and the economically closely tied neighbouring Saitama Prefecture pioneered GHG ETS in at least two ways: They implemented the first schemes focused on the end-use of energy in buildings, and established the first working link at the sub-national level.

3.1 Design Alignment

In both jurisdiction the ETS is part of a broader climate strategy: Tokyo with 66 million tons of GHG emissions in 2016 aims at a reduction of 25% below 2000 levels by 2020, while Saitama with just below 37 million tons in 2016 intends to lower emissions by 21% below 2005 levels. The Tokyo Metropolitan Government Emissions Trading Scheme (TMG ETS) went into operation on April 1, 2010, followed a year after by the Saitama Government Emissions Trading Scheme (SG ETS).

The design of the independently established GHG ETS in Tokyo and its north-western neighbour Saitama has been aligned from the beginning, not least because of the strong economic ties between the two jurisdictions.[4] Due to the major share of carbon dioxide (CO_2) emissions originating from electricity consumption in the commercial sector, Tokyo took a unique approach and focused its ETS on the end-use of energy in large office buildings, while also including the few industrial emitters (20% of covered facilities), thus covering around 1,200 facilities with energy consumption ≥ 1,500kL crude oil per year and a share of 21% of Tokyo's total CO_2 emissions. Saitama took the same approach, although the manufacturing sector plays a significantly larger role (70% of covered facilities), now covering around 600 facilities in total.

The caps in both jurisdictions are set bottom-up by implementing reduction targets below base-year emissions for the first (2010/11-2014) and second (2015-2019) compliance periods. Reduction targets for Tokyo were –6% (factories) and –8% (buildings) for the first period and–15% (factories) and –17% (buildings) for the second period, while the targets for Saitama were identical for the first period but –13% (factories) and –15% (buildings) for the second period (ICAP, 2019).

Instead of distributing allowances for all emissions under the cap, both jurisdictions only issue excess reduction credits (ERC) for reductions beyond the reduction obligations. While banking is allowed without limitations, borrowing is prohibited. Offsets are accepted from non-covered small-and-midsize facilities, renewable energy projects, and installations outside of the two jurisdictions but inside Japan; and Saitama additionally allows Forest Absorption Credits.

Bilateral trading of ERC and offset credits has been allowed since 2011. While no use is made of stock exchanges, supply-demand-matching fairs are organized frequently for facilitating trading.

Both jurisdictions use reliable monitoring, reporting, and verification schemes, but while Tokyo applies fines of up to 500,000 ¥ and a 1.3 times ex-post surrender of excess emissions in case of non-compliance, there are no penalties for Saitama facilities if they fail to hold an adequate number of allowances in their accounts to cover respective emissions. Both

[4] TMG, *Tokyo Cap-and-Trade Program* (Tokyo: TMG, 2010); SG E*missions Trading System in Saitama – Target Setting Emissions Trading System* (unpublished, provided to the authors by SG on Mar. 26, 2019); Rudolph and Kawakatsu (2013).

jurisdictions, however, publish companies' names, which in Japan has traditionally been an effective enough means for deterring facilities from non-compliance with regulations.

3.2 Design Evaluation and Recent Results

Both schemes have been linked since the start of the Saitama ETS in April 2011. An evaluation of this design based on ambitious sustainability criteria for carbon market design Rudolph et al (2012) shows that while the programs pioneer cap-and-trade linking on the local level with a focus on the end-use of energy in office building, there is much leeway for improvements such as

- extending and tightening the cap for improving the environmental effectiveness,
- phasing in auctioning of full-fledged rights-to-emit and allowing trading of all allowances via established stock exchange in order to increase cost efficiency.
- on the basis of revenue neutrality, re-distributing the revenues e.g. on an equal per capita climate dividend basis

While there is scope for improvement, some positive results are particularly noteworthy. Despite of the lack of penalties for non-compliance in Saitama, both programs realized an almost 100% compliance rate in their 1st compliance periods. In addition, emission reductions of 28% in Saitama and 26% in Tokyo in 2016 compared to base periods have gone way beyond the initial targets.[5] Admittedly, some of the reductions can be attributed to energy savings after the triple catastrophe of 3/11 in the Tohoku region. However, major measures had already been implemented before the earthquake hit, these measures went beyond the savings required by the energy saving regulations, and they have continued to be implemented even after the relaxation of the regulations, thus indicating an independent effect of the respective ETS.

The opportunity offered to facilities to minimize compliance costs by trading was increasingly used towards the end of the 1st compliance period.[6] Trading data from Tokyo suggests that by the end of 2018 a total of more than 713,000 credits had been transferred in 249 individual transactions. With a steady increase from 2011, the most active year of trading was 2016, when the period for surrendering 1st compliance phase credits finally ended. Inter-prefectural trading was limited to only six cases of credit transfers from Saitama to Tokyo and nine cases vice versa. The total trading volume in Saitama in the 1st compliance period was 200,000 executed by 66 facilities with the vast majority of transfers in the range between 100 and 3,000 credits. Prices have decreased significantly form initial estimates of more than 100 US $ to 3,500 JP ¥ (100 ¥ = 0.89 US$).

In sum, despite of the design flaws – if compared to an ideal sustainable carbon market –

[5] TMG, *Results of Tokyo Cap-and-Trade Program in the 8th Fiscal Year* (Tokyo: TMG, 2019); SG E*missions Trading System in Saitama – Target Setting Emissions Trading System* (unpublished, provided to the authors by SG on Mar. 26, 2019).

[6] TMG, *Carbon Market Development* (unpublished, provided to the authors by TMG on Nov. 12, 2018).

the TMG-SG-ETS has delivered significant GHG emission reductions at decreasing prices, but at relatively low levels of trading activity particularly across prefectural borders.

3.3 Success Factors of Linking

The domestic Tokyo and Saitama ETS have been linked since 2011. This linkage has benefitted from five major success factors[7]:

- far reaching design alignment from the beginning
- geographic proximity of the two jurisdictions
- strong economic ties between the respective jurisdictions
- political leadership of the respective governors at the time
- guidance by the institutionally best equipped partner

Interestingly, this link has been successful despite of the differences in economic structures between the two jurisdictions. However, cross-jurisdictional trading has suffered from an insufficient market infrastructure, emission reductions could have even gone further if targets would have been more stringent, and (partial) auctioning of full-fledged emissions rights would have provided revenues for redistributive measures.

4. The Unsuccessful Australia – New Zealand Link

The New Zealand ETS was the first national ETS to be implemented in the Australasian region, starting on 1 January 2008, and is now the longest lasting. Since the early consultation phases for the NZ ETS, the Government expressed an openness to linking the NZ ETS to international markets (Ministry for the Environment and The Treasury, 2007) including Australia[8].

While the NZ ETS was entering its first trading period, in 2008, the Australian Labor government under Prime Minister Kevin Rudd proposed the introduction of a cap-and-trade scheme called the Carbon Pollution Reduction Scheme (CPRS)[9]. Over the next two years, the Rudd government introduced three consecutive Bills to implement the CPRS[10]. The Bills passed the House of Representatives but failed to pass through chambers. After the third failed attempt in 2010[11], Rudd deferred the CPRS legislation until the end of the first commitment period of the Kyoto Protocol in 2012. The decision to postpone the CPRS Bills eventually cost

[7] TMG and Saitama Gov't, personal interviews of Sven Rudolph and Takeshi Kawakatsu with Environmental Bureau staff, June 11 and March 27, 2019.
[8] For a comprehensive analysis of the legislative evolution of the NZ ETS with a focus on linking, see Leining, Ormsby and Kerr (2017).
[9] Carbon Pollution Reduction Scheme Bill 2009 (Cth).
[10] Carbon Pollution Reduction Scheme Bill 2009 (Cth); Carbon Pollution Reduction Scheme Bill (No. 2) 2009 (Cth); Carbon Pollution Reduction Scheme Bill 2010 (Cth).
[11] Carbon Pollution Reduction Scheme Bill 2010 (Cth).

Rudd his position as Labor Party Leader and Prime Minister[12].

In July 2011, the Labor government under new leadership of Prime Minister Julia Gillard proposed a revised cap-and-trade scheme, the Carbon Pricing Mechanism (CPM) [13]. This time backed by the Greens, the legislative package passed the Parliament in November 2011, and received Royal Assent in December 2011[14]. The CPM commenced on 1 July 2012[15]. However, only two years later, the election of a Coalition under Prime Minister, Tony Abbott, resulted in the repeal of the CPM, effective from 1 July 2014[16].

The legal framework of the CPM was developed with a clear view to allow linking with domestic and international offset schemes and with existing and emerging independent carbon markets. In fact, negotiations to link the CPM and the EU ETS advanced rapidly, and on 28 August 2012 the linking was announced[17].

Efforts to link the CPM and the NZ ETS were also carried out[18]. The New Zealand Government monitored closely the developments in Australia, welcoming the Australian government's proposal for the CPRS in 2008[19]. The geographical proximity and volume of trade between New Zealand and Australia made the two jurisdictions obvious candidates for a future linking.

In 2009, amongst efforts to pass the CPRS Bills and with a first review of the NZ ETS underway, the terms of reference for a "Trans-Tasman Officials Group on Harmonisation of Carbon Pollution Reduction Schemes" were released under the auspices of the Trans-Tasman Officials Group, jointly chaired by the Australian Department of Climate Change and New Zealand Department of the Prime Minister and Cabinet[20]. The work didn't progress due to the failure to pass the CPRS Bills through Senate.

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[12] Sopher, Peter, Anthony Mansell and Clayton Munnings, 'Australia' (EDFIETA, 2014).

[13] Australian Government, 'Securing a clean energy future: The australian government's climate change plan' (2011).

[14] *Clean Energy Act 2011* (Cth); *Clean Energy Regulator Act 2011* (Cth); *Climate Change Authority Act 2011* (Cth); *Australian National Registry of Emissions Units Act 2011* (Cth); *Clean Energy (Charges—Customs) Act 2011* (Cth); *Clean Energy (Charges—Excise) Act 2011* (Cth); *Clean Energy (Consequential Amendments) Act 2011* (Cth); *Clean Energy (Household Assistance Amendments) Act 2011* (Cth); *Clean Energy (Unit Issue Charge—Auctions) Act 2011* (Cth); *Clean Energy (Unit Issue Charge—Fixed Charge) Act 2011* (Cth); *Clean Energy (Unit Shortfall Charge—General) Act 2011* (Cth); *Clean Energy (Tax Laws Amendments) Act 2011* (Cth).

[15] For a detailed description of the CPM, see Aydos (2017).

[16] *Clean Energy Legislation (Carbon Tax Repeal) Act 2014* (Cth) sch 1 pt 1. For an analysis of the underlying reasons for the Coalition government to adopt its current climate change policy, see Elena and Rudolph (2018): 12; Aydos (2015): 75.

[17] Australian Government, 'Australia and European Commission agree on pathway towards fully linking Emissions Trading Systems' (2012) <http://www.climatechange.gov.au/en/media/whats-new/linking-ets.aspx>.

[18] Australian Government, 'Australia and New Zealand advance linking of their emissions trading schemes' (2011) <http://www.climatechange.gov.au/ministers/hon-greg-combet-am-mp/media-release/australia-and-new-zealand-advance-linking-their>.

[19] New Zealand Cabinet, "Australian ETS Similar to New Zealand's" (18 July 2008) https://www.beehive.govt.nz/release/australian-ets-similar-new-zealand%E2%80%99s.

[20] New Zealand Cabinet, "Australia and New Zealand Strengthen Climate Change Cooperation" (20 March 2009) <https://www.beehive.govt.nz/release/australia-and-new-zealand-strengthen-climate-change-cooperation>; New Zealand Cabinet, *New Zealand Emissions Trading Scheme: Harmonisation with Australian Carbon Pollution Reduction Scheme*. Cabinet Paper CAB (09) 107 (2009) http://www.mfe.govt.nz/sites/default/files/cab-09-107.pdf.

In 2011, after the introduction of the CPM Bills to Parliament, the two governments met again, recognising "the long term importance of aligning our respective approaches to pricing carbon pollution"[21]. This time the linking was not possible due the lack of design alignment between the two schemes, and the justifiable concerns over the political stability of the CPM (Leining, Ormsby and Kerr, 2017).

4.1 Design Alignment

In contrast to the successful Tokyo – Saitama link, in the case of the NZ ETS – CPM link, the two schemes presented fundamental discrepancies in relation to emissions cap, use of international offsets, and price interventions and compliance.

The original framework of the NZ ETS did not provide for an absolute emissions cap. New Zealand's strategy to meet its emission reduction targets of limiting emissions to 1990 levels during the first commitment period of the Kyoto Protocol[22] was the backing of domestic units with an equivalent amount of approved international units[23]. Differently, while emissions were not capped during an initial transitional period of three years of the CPM[24], from 1 July 2015 onwards, an absolute cap would have been set by regulations[25], reflecting Australia's medium- and long-term GHG reduction targets[26]. The cap was expected to gradually decrease[27].

The NZ ETS did not impose quantitative restrictions on the use of units from the Kyoto flexible mechanisms during the first years of the scheme, until 2015. Consequently, there was a predominant use of international offset credits to meet compliance under the NZ ETS, reaching 95 per cent of units surrendered in 2012[28]. In contrast, Kyoto units were not eligible during the first three years of the CPM, known as the fixed charge years (from 1 July 2012 until 30 June 2015). In the original design of the CPM, Kyoto units would be eligible after 2015, limited to up to 50 per cent of the participants' liability for the relevant year[29]. However, in order to facilitate the linking of the CPM and the EU ETS, this limit was drastically reduced to up to 12.5 per cent of their carbon pricing liabilities[30].

In terms of price interventions and compliance, the 2009 amendment of the NZ ETS

[21] New Zealand Cabinet, "Progress Made on Trans-Tasman Carbon Market" (2 August 2011) <https://www.beehive.govt.nz/release/progress-made-trans-tasman-carbon-market>.

[22] *Kyoto Protocol to the United Nations Framework Convention on Climate Change,* opened for signature 11 December 1997, 2303 UNTS 148 (entered into force 16 February 2005)

[23] *Climate Change Response Act 2002* (NZ). It is important to note that a review of the NZ ETS in 2012 introduced a new power for the government to set an overall cap into the future (s 30GA).

[24] *Clean Energy Act 2011* (Cth) s 100(7).

[25] Ibid s 14.

[26] Ibid s 14(2).

[27] Explanatory Memorandum, Clean Energy Bill 2011 (Cth) 2.4.

[28] Environmental Protection Authority, 'The New Zealand Emissions Trading Scheme. ETS 2012 – Facts and Figures' (2012).

[29] *Clean Energy Act 2011* (Cth) ss 121, 123A (8), s 5 (definition of 'Kyoto unit').

[30] Explanatory Note to the Clean Energy Legislation Amendment (International Emissions Trading and Other Measures) Bill 2012 (AUS) and related bills.

implemented a feature commonly referred to as "one-for-two surrender obligation"[31]. Under the one-for-two rule the transport, energy and industry sectors were required to surrender only one eligible emission unit for every two tonnes of carbon dioxide equivalent (CO_2-e) produced, with the practical effect of moderating the price signal and weakening the effectiveness of the NZ ETS[32]. In 2012, a second legislative amendment indefinitely extended the "one-for-two surrender obligation"[33].

4.2 Design Evaluation and Results

An evaluation undertaken on the CPM design, based on the ambitious sustainability criteria for carbon market design, has concluded that the CPM complied to a great extent with the sustainability criteria, especially in relation to mandatory participation, revenue recycling, and compliance (Aydos and Rudolph, 2018). Other design elements, including emissions cap, allocation of permits, and flexibility mechanisms were set to improve after the initial transitional period of three years (from July 2012 until June 2015)[34]. Despite being in operation for only two years, the CPM delivered promising early emission reductions results in the short period of its efficacy (Marianna and Frank Jotzo, 2014). However, the political turmoil around climate policy in Australia undermined these efforts. After the repeal of the CPM, greenhouse emissions have increased, and Australia is unlikely to meet its 2030 emission reductions targets under the Paris Agreement[35].

In contrast, an evaluation of the NZ ETS based on ambitious sustainability criteria for carbon market design Rudolph et al (2012) shows that the ETS started with predominantly unsustainable design features, including the absence of absolute cap on emissions, no auctioning (free allocation only), and unlimited use of international units[36]. The "one-for-two surrender obligation" furthered weakened the scheme, impacting price signals. New Zealand has not achieved meaningful emission reduction since the implementation of the NZ ETS. Instead, it relied on units from the Kyoto Protocol flexible mechanisms and forestry activities to meet its emission reductions targets in the past and into 2030[37].

However, the NZ ETS has demonstrated to be resilient and there is promise of a stronger design in the near future. A third review of the NZ ETS was conducted between 2012 and 2014, marking new efforts to fortify the scheme, including the limiting and eventually phasing off of

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[31] Section 222A(2) of amended *Climate Change Act*. In 2012, a second legislative amendment indefinitely extended the "one-for-two surrender obligation".
[32] Ibid.
[33] Amended *Climate Change Response Act 2002* (NZ).
[34] Ibid.
[35] Stephanie March, '2030: Will We Make It?' (2019) https://www.abc.net.au/news/2019-04-01/is-australia-on-track-to-meet-its-paris-emissions-targets/10920500
[36] *Climate Change Response Act 2002* (NZ).
[37] Ministry for the Environment, 'Latest update on New Zealand's 2020 net position' (2019) <https://www.mfe.govt.nz/climate-change/climate-change-and-government/emissions-reduction-targets/reporting-our-targets-0>

Kyoto units eligible for surrender under the NZ ETS[38]. The NZ ETS is currently undergoing a significant reform that will, among other things, introduce an absolute cap on emissions for the first time in the history of the NZ ETS[39], which will assist New Zealand to reach net zero emissions by 2050[40].

4.3 Factors that Prevented Linking

As mentioned above, design discrepancies between Australia and New Zealand prevented the success of linking, especially the following features in the first years of the NZ ETS:

- lack of absolute emissions cap;
- lack of quantitative restrictions on the use of units from the Kyoto flexible mechanisms;
- the "one-for-two surrender obligation".

In addition to the discrepancy in design, there was an inconsistency of international commitments between the two countries. In 2013 New Zealand announced that it would not participate in a second phase of the Kyoto Protocol. Following this decision, regulations were put in place to exclude Kyoto units from the NZ ETS. Participants had until 31 May 2015 to use these units[41]. From 1 June 2015, Kyoto units could no longer be surrendered to meet emissions obligations and NZUs became the predominant means to meet compliance under the NZ ETS[42]. Australia's decision to join the second commitment period under the Kyoto Protocol and link the CPM and the EU ETS was incompatible with the NZ ETS phasing out of Kyoto units, becoming another barrier to the linking of the CPM and the NZ ETS (Leining, Ormsby and Kerr, 2017).

Finally, a determining factor was the lack of political strength of climate change policy, and more specifically carbon pricing, in Australia (Aydos and Rudolph, 2018). The CPM did not exist for long and the negotiations for a direct link with the NZ ETS were not successful prior to its infamous repeal (Aydos, 2015).

5. Conclusions and Lessons for Linking

"Dark Link", the shadow doppelgänger and antagonist of "Link" in Nintendo's "The Legend of Zelda" tries what he can to prevent Link from overcoming evil forces. However, if Link prevails, evil can be defeated. In the same manner, linking of carbon markets could play a major

[38] *Climate Change Response (Unit Restriction) Amendment Act 2014* (NZ). Also see Leining, Ormsby and Kerr, 2017).
[39] The 2012 amendment of the NZ ETS had introduced a new power for the government to set an overall cap into the future (Amended *Climate Change Response Act 2002* (NZ), s 30GA), which the government now intends to use. Also see Ministry for the Environment, 'Proposed improvements to the NZ ETS' < https://www.mfe.govt.nz/climate-change/proposed-improvements-nz-ets> (31 July 2019). It is worth mentioning that the 2012 amendment of the NZ ETS had already introduced a new power for the government to set an overall cap into the future (Amended *Climate Change Response Act 2002* (NZ), s 30GA).
[40] *Climate Change Response (Zero Carbon) Amendment Act 2019* (NZ).
[41] *Climate Change (Unit Register) Amendment Regulations 2014* (NZ) SR 2014/364.
[42] Ibid.

role in preventing further climate change.

Carbon markets still remain a key policy tool for reaching the ambitious Paris Agreement goal of limiting global warming to 2°C at the maximum. Linking of domestic markets promises to not only increase the efficiency of this instrument, but would also lead to further improvements with respect to environmental effectiveness and justice, thus making carbon markets more sustainable.

Experiences with linking in practice, however, are limited to a few successful cases in North America, Europe, and Asia, while on the other hand there are also examples of linkage failure. Comparing the successful Tokyo – Saitama link and the unsuccessful Australia – New Zealand link the following factors of success can be identified:

- geographic proximity and strong economic ties of the jurisdictions to be linked
- consistent political commitments to climate policy (targets) and to international collaboration for reaching targets jointly
- strong political will to implement a sustainable carbon market domestically and to link it with partner jurisdiction's scheme
- guidance by the institutionally best equipped partner jurisdiction
- early design alignment of the respective domestic schemes, particularly with respect to an absolute emissions cap, offset rules, and the value and validity of emission rights

The Tokyo – Saitama link as well as other successful linkages in North America (California – Quebec) show that linking domestic (sub-national) schemes is possible and can even be sustainable. While most certainly there is need for more in-depth research on linking, particularly with respect to experiences in practice, the cursory evidence so far suggests that linking domestic carbon markets is an important and promising component of a sustainable climate policy mix. Hence: May Link prevail!

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