



Climate  
Strategies

[www.climatestrategies.org](http://www.climatestrategies.org)

**Case Study: Taiwan  
Trading Carbon across  
Jurisdictions**

**WORKING PAPER**

**January 2013**

**Authors**

**Michael Mehling**

**Dr. Sebastian Mielke**

**Prof. Chien-Te Fan**

**Dr. Hui-Chen, Chien**

**Wei-Chen Tsai**

### Project Team

Michael Mehling  
Sebastian Mielke

Ecologic Institute,  
Washington DC



---

Chien-Te Fan  
Wei-Chen Tsai

National Tsing Hua  
University, Hsinchu



Hui-Chen, Chien

Environmental Protection  
Administration, Executive Yuan, ROC

### About Climate Strategies

Climate Strategies is a leading independent, international research organisation based in the UK. Through our network of global experts, we assist governments and industrial stakeholders around the world in developing climate change and energy policies. We are a not-for-profit organisation with all our activities funded through a broad spectrum of governments, businesses and foundations.

## Contents

---

Executive Summary	1
1. Introduction	1
2. General Framework of Climate Policy in Taiwan	2
2.1 General Information	2
2.2 Taiwan's Political System and Status in International Relations	2
2.3 Energy Supply and Emissions	3
3. Use of Market-based Instruments: Current Status	7
3.1 Domestic Level	7
3.2 International Level	8
4. Participation in the International Carbon Market	9
4.1 Access Conditions and Pathways	9
4.1.1 Formal Conditions: Eligibility	9
4.1.2 Substantive Conditions: Market Readiness	10
4.1.3 Conventional Pathways: Accession and Linkage	11
4.1.4 Alternative Pathways: Informal Cooperation	12
4.2 Access Points	12
4.2.1 Flexible Mechanisms of the Kyoto Protocol	12
4.2.2 New Market Mechanism (NMM) and Framework for Various Approaches (FVA)	13
4.2.3 National and Regional Carbon Markets	14
4.2.3.1 European Union Emissions Trading System (EU ETS)	14
4.2.3.2 Regional Greenhouse Gas Initiative (RGGI)	15
4.2.3.3 Western Climate Initiative (WCI)	17
4.2.3.4 New Zealand Emissions Trading System (NZ ETS)	18
4.2.3.5 Australian Carbon Pricing Mechanism (CPM)	19
4.2.3.6 Japan	20
4.2.3.7 Bilateral Offset Initiatives	21
5. Outlook and Recommendations for Action	22
Bibliography	24

---

## EXECUTIVE SUMMARY

---

Taiwan has an active interest in affording domestic emitters access to international carbon markets as a way to increase the diversity of abatement options and thereby lower the cost of compliance with domestic climate change mitigation commitments. Participation in carbon markets across political boundaries is conditional on eligibility requirements, however, such as accession to and ratification of an international treaty, conclusion of a cooperation agreement with the jurisdiction administering the carbon market, or the ability to meet certain material conditions related to market readiness. Conditions will vary by carbon market, and this paper surveys a number of existing emissions trading systems and offset crediting mechanisms to identify the specific conditions for participation.

Because of the unique status of Taiwan in international relations, access is restricted in some cases. Still, as the current Taiwanese practice of indirect participation in the Clean Development Mechanism (CDM) of the Kyoto Protocol shows, unilateral access to carbon markets remains possible even where formal eligibility criteria are not met. As the survey of emissions trading systems and offset crediting mechanisms shows, such opportunities can also be harnessed to obtain access to other domestic and international carbon markets. Taiwan can also engage – directly or indirectly – in the decision making processes leading to the definition of access conditions for future carbon markets, with a view to avoiding restrictions which might impede the participation of Taiwan or its domestic entities.

From the point of view of economic theory, expanded participation in carbon markets is desirable, as it increases liquidity in the market and helps reduce price volatility and the risk of manipulation. By broadening the scope of covered emitters, moreover, it increases the overall efficiency of climate change mitigation efforts. Given currently low carbon prices in a number of carbon markets, moreover, Taiwanese participation can create an additional source of demand for allowances or credits, thereby helping to support the weak carbon prices.

---

### 1. Introduction

---

Taiwan has an active interest in affording domestic emitters access to international carbon markets as a way to increase the diversity of abatement options and thereby lower the cost of compliance with domestic climate change mitigation commitments. Such participation is conditional on a number of formal and material requirements, however, which limit the opportunities for active engagement in carbon markets established through multilateral cooperation or by domestic jurisdictions at the local, national and regional level. With this Case Study, the prospects for Taiwanese access to foreign and international carbon markets are assessed, based on an analysis of progress with climate policies and carbon market development in Taiwan, as well as a survey of major emissions trading systems and offset crediting mechanisms around the world. Section 2 provides an overview of energy generation and use in Taiwan, as well as its emissions profile, which places it among major global emitters. It briefly describes

the evolution of climate policy efforts and relevant institutions and rules in Taiwan, and highlights recent steps towards comprehensive domestic climate legislation. For purposes of the subsequent analysis of eligibility conditions, Section 2 also briefly reflects on the discussion about the status of Taiwan in international relations, including the implications thereof for participation in international cooperative efforts in climate change mitigation.

Section 3 then analyses past and current initiatives to participate in carbon markets, including a voluntary domestic carbon reduction program and a range of regulatory and institutional measures strengthening the market readiness of Taiwan. It also describes the restrictions Taiwan has been subject to when aiming for formal participation in the international carbon market, as well as the pragmatic approach it has adopted to nonetheless facilitate carbon market access to its domestic entities. Section 4 continues by highlighting formal and material conditions for participation in carbon

markets, and showing opportunities for market integration between a Taiwanese domestic market and foreign carbon markets. In the main section of the study, these general observations are placed in the context of specific emissions trading systems and offset crediting mechanisms currently operating or under preparation in different jurisdictions. This survey covers both multilateral and domestic carbon markets, and provides a brief description of each as well as a discussion of the relevant legal rules governing possibilities for market access. Based on this discussion, Section 5 concludes with recommendations for Taiwan as it explores opportunities for expanded participation in existing and emerging carbon markets.

## 2. General Framework of Climate Policy in Taiwan

---

### 2.1. General Information

Taiwan (The Republic of China, or ROC) consists of the island of Taiwan (approximately 99% of the landmass) plus the islands of Penghu, Kinmen, Matsu as well as other minor islands with an overall population of about 23,234,936 (effective July 2012).<sup>1</sup> Taiwan's climate can be characterized as tropical and marine. Cloudiness is persistent and extensive all year.

Taiwan's economy predominantly relies on the services sector, with industry playing an important second role. As of 2011, services contributed 68.8 % to the GDP, followed by industry (29.5 %) and agricultural/forestry production (1.8 %).<sup>2</sup> In 2010, only 5.2 % of Taiwan's population was employed in the agricultural sector. Taiwan had a trade surplus of more than USD 26 billion in 2011.<sup>3</sup> Its main exported goods are electronics, chemicals, electrical engineering goods and measuring and control equipment. Taiwan is well known for its production of personal computers (PCs) and motherboards, and ranks highly in all areas of the integrated circuit (IC) industry. Further important sectors are machinery and machinery tooling as well as biotechnology.

---

<sup>1</sup> CIA, "The World Factbook Taiwan", 20 December 2012, available on the Internet at <<https://www.cia.gov/library/publications/the-world-factbook/geos/tw.html>> (last accessed on 11 January 2013).

<sup>2</sup> Council for Economic Planning and Development, "Taiwan Statistical Data Book 2012", July 2012, available on the Internet at <<http://www.cepd.gov.tw/encontent/m1.aspx?sNo=0017349>> (last accessed on 11. January 2013), at 62.

<sup>3</sup> Ibid., at 218.

### 2.2. Taiwan's Political System and Status in International Relations

Taiwan is a multiparty democracy, and the current Chief of State is President Ma Ying-jeou, while the Head of Government and President of the Executive Yuan is Premier Sean C. Chen. Its unicameral legislature, the Legislative Yuan, comprises 113 seats, with 73 district members and 34 at-large members elected in an island-wide proportional vote.

Because of its unique history, Taiwan's status as a nation is subject to discussion, with very different views on its sovereignty and role in international relations (see Box 1). Without engaging in this political discussion, an understanding of state practice regarding Taiwan's status is important to determine its ability to participate in international climate cooperation efforts, including access to the international carbon market. Presently, only 23 nations maintain formal diplomatic relations with Taiwan, and none of the permanent members of the United Nations (UN) Security Council formally recognize the ROC as a sovereign state.

Regarding relations between the United States and Taiwan, for instance, the United States Congress passed the Taiwan Relations Act<sup>4</sup> in 1979 ceasing relations with Taiwan and establishing relations with the People's Republic of China (PRC). Commercial, cultural and other relations with Taiwan are unofficially maintained through the American Institute in Taiwan, but lack official government participation. Likewise, the Federal Republic of Germany ceased diplomatic relations with Taiwan in 1979, and German interests in Taiwan are represented by the German Institute in Taipei (Deutsche Institut Taipei) and the Goethe Institute.

Accordingly, Taiwan does not currently enjoy membership in the United Nations (UN). By way of a Resolution adopted on 25 October 1971, the General Assembly withdrew recognition of the ROC as the legitimate government of China, causing the ROC to lose its permanent seat in the Security Council as well as any representation "at the United Nations and in all organizations related to it."<sup>5</sup> While this position has been upheld by the UN ever since, with the latest application for membership rejected by the United Nations subcommittee on 17 September 2008, some

---

<sup>4</sup> 96th H.R. 2479.

<sup>5</sup> Resolution 2758, Restoration of the Lawful Rights of the People's Republic of China in the United Nations, United Nations General Assembly XXVIth Session, 1976th Plenary Meeting, 25 October 1971.

form of “meaningful participation” by Taiwan in the subordinate organizations and specialized agencies of the UN has found support in the international community, specifically from the United States and the European Union, provided such participation does not presuppose statehood. Likewise, Taiwan is a member state of the World Trade Organization (WTO) and the Asia Pacific Economic Cooperation (APEC).

### Box 1: Sovereignty of Taiwan: Discussion Points

In the aftermath of World War II, the territory of what is currently known as Taiwan came under Chinese Nationalist control after having been under Japanese rule since 1895. Following the Communist victory on the mainland in 1949, about 2 million Nationalists withdrew to Taiwan and established a government. As a result of this unique situation, the status of Taiwan and the question of its sovereignty as a nation have been subject to differing views, with three alternative proposals commonly mentioned in international relations and public international law scholarship:

- the ROC as a Sovereign Nation;
- the ROC as the legitimate government of all of China, including mainland China;
- Taiwan as part of the PRC.

Within Taiwan itself, opinions differ widely between those supporting unification and those supporting independence. Supporters of (an eventual) unification of China under the ROC are represented by the Pan-Blue-Coalition of parties (consisting of the Kuomintang Party, or KMT, the People’s First Party, or PFP and the New Party, or CNP). The coalition has moved its position on unification from immediate unification towards a more pragmatic approach, arguing that unification with the PRC would only be possible either after the collapse of the communist regime in the People’s Republic of China or its transition to democracy. On the other side of the spectrum are the supporters of independence for Taiwan. Organized in the Pan-Green-Coalition (Democratic Progressive Party, or DPP, the Taiwan Solidarity Union, or TSU, and the Taiwan Independence Party, or TAIPI), they argue that Taiwan fulfills all criteria for statehood according to the Convention of Montevideo on Rights and Duties of States:<sup>6</sup> it has a permanent population, a defined territory,

<sup>6</sup> Signed 26 December 1933.

and a government.<sup>7</sup> A further argument put forward by proponents of Taiwanese independence is that the ROC has existed since its establishment in 1911, albeit since 1949 on a reduced territory due to the loss of the mainland. Furthermore, they claim, independence of a country should be considered from a factual standpoint, not merely from a legal one. Moreover, the PRC has never exercised control over Taiwan’s territory. A poll conducted by the Taiwan Indicator Survey Research (TISR) in August 2012 shows that 55.4 percent of Taiwanese population favor an eventual Taiwanese independence, up six percentage points from a year ago and the highest since 2006.<sup>8</sup>

By contrast, the PRC argues that – according to United Nations General Assembly Resolution 2758 – the PRC became the successor government to the ROC in representing China, and as such the PRC holds the sovereignty of Taiwan. Additionally, some have also argued that the United States holds in trust the sovereignty over Taiwan based on the San Francisco Peace Treaty of 1952,<sup>9</sup> which stipulates a cession of Taiwan without a recipient.<sup>10</sup> Moreover, Art. 23 of the Treaty designated the US as the “principal occupying power”.<sup>11</sup>

### 2.3. Energy Supply and Emissions

Taiwan possesses a small amount of coal and natural gas,<sup>12</sup> but depends on imports for a majority of its energy needs (about 99%<sup>13</sup> on average). In 2008, indigenous energy contributed only 0.66 % to the

<sup>7</sup> However, Article I of the Convention also prescribes the capacity to enter into relations with other states. This is being considered the decisive criterion for statehood by many jurists, e.g., Ian Brownlie, *Principles of International Law*, 7th ed. (Oxford: Oxford University Press, 2008), at 71. In the case of Taiwan, this capacity (another term would be independence) is being disputed.

<sup>8</sup> Taipei Times, “Taiwanese Independence More Popular, Survey Says”, 11 August 2012, available on the Internet at <<http://www.taipetimes.com/News/taiwan/archives/2012/08/11/2003540007>> (last accessed on 15 January 2013).

<sup>9</sup> Signed 8 September 1952.

<sup>10</sup> Article 2 of the Treaty refers to “Formosa” which was the name of a former colony of the Netherlands now known as Taiwan.

<sup>11</sup> Thus, article 23 does not mention the ROC/Taiwan.

<sup>12</sup> Ibid.

<sup>13</sup> Atomic Energy Council, “Status of Nuclear Programs in Taiwan”, available on the Internet at <<http://www.aec.gov.tw/www/english/whatsnew/article.php?n=64>> (last accessed on 11 January 2013); see also Anton Ming-Zhi Gao, “Taiwan’s Recent Efforts to Promote Renewable Energy Development: Policy Measures, Legal Measures, Challenges, and Solutions in the Post-Fukushima Era”, 4 *Renewable Energy Law and Policy Review* (2013), forthcoming.

country's supply.<sup>14</sup> In terms of energy consumption by sources, oil covers almost half and coal about one third of total energy use. Fossil fuels accounted for approximately 90% of total primary energy supply.<sup>15</sup> 52.6% of Taiwan's energy is consumed by the industrial sector, followed by transportation (12.8%), services (11.7), residential consumption (11.5%) and other activities (11.4%).<sup>16</sup> In terms of greenhouse gas (GHG) emissions, the International Energy Agency (IEA) has estimated Taiwan's CO<sub>2</sub> emissions in 2010 at 270 Megatonnes (Mt), making it the 20th largest emitter in the world with 0.89 percent of total global emissions. Taiwan is also ranked as the 20th largest emitter per capita, at 11.66 metric tons.

Aside from the co-benefit of greater energy security, climate policy has entered the public discussion in part due to the vulnerability of the country to a changing climate: according to estimates of the Intergovernmental Panel on Climate Change (IPCC), the country will be directly impacted by sea-level rise due to climate change.<sup>17</sup> Due to its unique political status, however,<sup>18</sup> Taiwan has been unable to formally join the United Nations Framework Convention on Climate Change (UNFCCC)<sup>19</sup> as a Party, but participates in various processes as an observer and has voluntarily decided to implement the UNFCCC obligations. In the past, Taiwanese delegates have participated in the Conferences of the Parties to the UNFCCC (COPs) through a non-governmental organization (NGO), the Industrial Technology Research Institute (ITRI), enabling them to follow all open negotiating sessions and participate in side events.<sup>20</sup> Additionally, Taiwan has fostered bi- and multilateral cooperation outside the scope of the UNFCCC through a range of activities, including:<sup>21</sup>

- Environmental Leadership Dialogue: Since 2006, Taiwan has consecutively invited environmental ministers of allies from Central America, the Pacific and Africa to visit Taiwan to attend ministerial meetings addressing environmental protection;
- Exchanges of best practices on climate policy: Taiwan has convened activities such as the "International Conference on Atmospheric Protection" or the "2010 International Conference on Nationally Appropriate Mitigation Actions in Taiwan";
- Sharing of green technology: a variety of meetings and conferences such as the "2010 International Semiconductor Environment, Safety & Health Conference (ISESH)" or the "2010 International Workshop on Greenhouse Gas Management and reduction technology" have been hosted in Taiwan.
- Climate science: Taiwan is participating in the global carbon dioxide concentration measurement program developed by the European Union through integrating Taiwan's industry, government, academia and research institutes.

Meanwhile, Taiwan has also begun to autonomously implement domestic measures to reduce greenhouse gas (GHG) emissions.<sup>22</sup> Already in 1998, the Taiwanese government held a National Energy Conference in which it set the target of reducing emissions from fuel combustion to 2000 levels by 2020.<sup>23</sup> At a follow-up conference held in 2005, reduction targets were further tightened.<sup>24</sup> The outcomes of this conference are a basis for a variety of GHG emission reduction strategies implemented by different government agencies,<sup>25</sup> including a

<sup>14</sup> Jenn Jiang Hwang and Wei Ru Chang, "Policy Progress in Mitigation of Climate Change in Taiwan", 39 *Energy Policy* (2011), 1113, at 1114.

<sup>15</sup> *Ibid.*

<sup>16</sup> *Ibid.*, Figure 3.

<sup>17</sup> Environmental Protection Administration, "Towards UNFCCC", 4. November 2011, available on the Internet at <http://unfccc.epa.gov.tw/unfccc/english/index.html> (last accessed on 11 January 2013).

<sup>18</sup> See preceding section, *supra*, Section II.2.

<sup>19</sup> United Nations Framework Convention on Climate Change (UNFCCC), New York, 9 May 1992, in force 21 March 1994, 31 *International Legal Materials* (1992), 849.

<sup>20</sup> Chea Yuan Young and Wei Ming Huang, "Review of Taiwan's Climate Policy after Copenhagen", 16 *Renewable and Sustainable Energy Reviews* (2012), 20, at 24.

<sup>21</sup> Environmental Protection Administration, "Taiwan Initiates Nationally Appropriate Mitigation Actions", available on the Internet at [http://unfccc.epa.gov.tw/unfccc/english/\\_uploads/20100901](http://unfccc.epa.gov.tw/unfccc/english/_uploads/20100901)

/B5-NAMAs\_en.pdf> (last accessed on 16 January 2013), at 11 sqq.

<sup>22</sup> See generally Jenn Jiang Hwang, "Policy Review of Greenhouse Gas Emission Reduction in Taiwan", 15 *Renewable and Sustainable Energy Reviews* (2011), 1392, at 1397.

<sup>23</sup> Jenn et al., "Policy Progress in Mitigation", *supra*, note 14, at 1117 (Table 1).

<sup>24</sup> A reduction of CO<sub>2</sub> emissions in the 2025–2030 period by 30% below the Business-As-Usual (BAU) scenario was now adopted.

<sup>25</sup> For instance, the Environmental Protection Administration (EPA) partnered with the Taiwan Semiconductor Industry Association (TSIA) and the Taiwan TFT-LCD Association (TTLA) to voluntarily reduce the level of perfluorocompound (PFC 5) emissions by 2010 to below 90% of the average emission level of the period 1997-1999; and in March 2007, the Ministry of Economic Affairs and the semiconductor and optoelectronics industry stipulated a voluntary commitment to reduce GHG emissions by said industries in the amount of 24 million tons of carbon dioxide by 2010, see EPA, "Taiwan's Policies and Measures for Energy Conservation and Carbon Reduction", available on the Internet at

Taiwan Industrial Greenhouse Gas Office (TIGO) established on 16 June 2006 by the Taiwanese Ministry of Economic Affairs (MOEA) to govern emission reduction efforts of local industries,<sup>26</sup> and the Office of Greenhouse Gas Reduction Management (OGGRM) created on 10 January 2008 by the EPA to draw up policies and regulations on GHG management, integrating and coordinating inter-ministerial efforts, promoting inventory work and national carbon reduction initiatives, and expanding international participation.<sup>27</sup>

On 5 June 2008, the EPA published the “Framework of Taiwan’s Sustainable Energy Policy”. In addition to energy intensity and renewable energy deployment targets,<sup>28</sup> this top-down strategy also sets out the objective to maintain CO<sub>2</sub> emissions at 2008 levels between 2016 and 2020, and to reduce them to 2000 levels by 2025. By 2050, this level is supposed to be halved.<sup>29</sup> These strategic targets were eventually confirmed at the Third National Energy Conference held in 2009; in that same year, the Taiwanese Government set up a “Steering Committee on Energy Conservation and Carbon Reduction”.<sup>30</sup> Also, responding to the Copenhagen Accord adopted at the 15th Conference of the Parties to the UNFCCC in 2009, Taiwan voluntarily pledged that it would cut GHG emissions by at least 30 percent below business-as-usual levels by 2020, and that it would

---

<[http://unfccc.epa.gov.tw/unfccc/english/\\_uploads/policy\\_en.pdf](http://unfccc.epa.gov.tw/unfccc/english/_uploads/policy_en.pdf)> (last accessed on 16 January 2013).

<sup>26</sup> On 18 April 2008, TIGO was renamed “Greenhouse Office of MOEA” (GO-MOEA), responsible for helping integrate reduction efforts at various government levels under MOEA; it was again renamed on 11 March 2010 to “Energy Saving and Carbon Emission Reduction Office”, extending its coverage beyond carbon reductions to energy saving, see GO-MOEA, “About GO-MOEA”, available on the Internet at <<http://www.go-moea.tw/en/index.html>> (last accessed on 10 January 2013).

<sup>27</sup> See EPA, “Promoting Industry Greenhouse Gas Voluntary Reduction Strategies”, available on the Internet at <<http://www.epa.gov.tw/en/NewsContent.aspx?path=426&NewslD=2602>> (last accessed on 10 January 2013).

<sup>28</sup> Aiming at different sectors such as the industrial, transportation, residential and commercial sectors as well as the public sector, this framework contains incentives for clean production technologies or assistance for small and middle-sized enterprises to improve their emission reduction capacity. Among other objectives, this framework seeks to increase energy efficiency by more than 2% annually for the eight years following its adoption, which (using 2005 levels as a baseline) would lower Taiwan’s emissions intensity by at least 20% by 2015, 30% by 2025, and more than 50% by 2025; also, renewable energies should be actively promoted to reach 15% of total capacity by 2025, and low-carbon energy to account for over 55% by 2025, up from 40% presently; see EPA, “Taiwan’s Policies and Measures”, supra, note 25, at 3.

<sup>29</sup> *Ibid.*, at 1395; Jenn et al., “Policy Progress”, supra, note 14, at 1113.

<sup>30</sup> International Emissions Trading Association (IETA), “Asia and Beyond: the Roadmap to Global Carbon & Energy Markets”, Greenhouse Gas Market 2011, at 2.

implement Nationally Appropriate Mitigation Actions (NAMAs). An “Energy Saving and Carbon Reduction Promotion Commission” created by the Executive Yuan in January 2010, moreover, aims to implement domestic carbon energy saving measures and to strengthen cross-department integration of energy issues. In March 2010, the Commission published the “National Energy Saving and Carbon Reduction Plan”.<sup>31</sup>

A number of measures and activities have since been implemented to achieve the strategic objectives.<sup>32</sup> Examples of legislative measures on energy sustainability and climate change recently taken by the Taiwanese government include:<sup>33</sup>

- the Renewable Energy Act (approved 8 July 2009);<sup>34</sup>
- the Energy Management Act (approved 8 July 2009);<sup>35</sup>
- the Energy Tax Act (draft version);<sup>36</sup>

---

<sup>31</sup> *Ibid.*, at 4; as of 2011, a total of 230 action plans had been implemented in Taiwan. Based on a projected business-as-usual (BAU) scenario under high gross domestic product growth, the CO<sub>2</sub> emissions are expected to rise to 465 Megatonnes (Mt) in 2020, requiring 213 Mt in reductions if the target of 252 Mt is to be achieved (equivalent to a 45.8% reduction from the BAU scenario).

<sup>32</sup> For a more detailed list of measures, see Jenn, “Policy Review”, supra, note 22, at 1394.

<sup>33</sup> Jenn, “Policy Review”, supra, note 22, at 1395.

<sup>34</sup> The Renewable Energy Act of 8 July 2009 aims at increasing the capacity of renewable energy from 6.5 GW to 10 GW within the next 20 years, and is designed to promote renewable energy to the public, see Taiwan GHG Emissions Registry, “Actions to Reduce GHG”, available on the Internet at <[http://estc10.estc.tw/ghgenglish/reduction\\_ghg.asp](http://estc10.estc.tw/ghgenglish/reduction_ghg.asp)> (last accessed on 11 January 2013). Thirteen regulations have been promulgated in accordance with the Act on validating renewable power generation equipment, providing incentives for demonstration sites, granting regulate standards of facilities, exempting from miscellaneous license, and subsidizing thermal utilization of renewable energy, which can promote the utilization of renewable energy, improve energy diversity, nourish relative industries and facilitate national sustainable development.

<sup>35</sup> Promulgated on 8 July 2009, this act aims to enhance energy management and promote energy efficiency. It also includes penalties to require the industry adopting high energy-efficient process and facilities on production. It contains inter alia explicit regulations on electricity consumption, air conditioning and refrigeration of department stores, office buildings and other public spaces.

<sup>36</sup> The Energy Tax Act will create a tax incentive to promote energy conservation and energy efficiency improvement as well as a tax concession on vehicles adopting alternative fuels; this will help energy prices reflect internal cost in the short term, and reasonable external costs in the medium and long term, see EPA, “Mitigation Actions”, supra, note 21, at 4, 9; in the current draft, the tax is designed to be revenue-neutral, causing no tax increase, and impacts incurred through the cost increase are supposed to be mitigated by returning the revenues or reducing other taxes. For discussion, see also Jenn et al., “Policy Progress in Mitigation”, supra, note 14, at 1120.

**Box 2: Overview of the Draft GHG Reduction Act**

<b>Provision</b>	<b>Content and Measures</b>
General ( <i>Articles 1–5</i> )	Objectives Targets Terms Competent authorities
Competent Authorities ( <i>Articles 6–11</i> )	Form interagency GHG reduction task force Develop national GHG reduction plan Establish GHG inventory Assist the industries with inventory, registration and voluntary reduction Review and modification of energy, industry and environmental policies Local competent authorities
Reduction Measures ( <i>Articles 12–19</i> )	Inventory, registration and verification of designated sources Establish GHG emission standards Conditions for implementing cap-and-trade schemes Regulation of new sources or expansion of existing sources Verification
Education and Promotion ( <i>Articles 20–22</i> )	Education and public participation Green procurement Responsibilities of energy suppliers Responsibilities of citizens
Penalties ( <i>Articles 23–30</i> )	Penalties for failure to establish inventory and report Penalties for false reporting Penalties for non-compliance with cap or emission standards Date of entry into effect <sup>1</sup>

- a Regulation on Carbon Tax (under legislative review);<sup>37</sup>
- the Air Pollution Control Act.<sup>38</sup>

On 4 February 2008, moreover, the executive branch passed a draft of the so-called “Greenhouse Gas

Reduction Act”, which was then submitted to the legislature for deliberation. After sending it back to the executive for review, the bill passed the first reading on 6 April 2012. Although it has yet to receive final approval, the GHG Reduction Act establishes a framework to regulate GHG emissions through standards on the emissions intensity of existing and new sources, and by imposing penalties for non-compliance. Once enacted, it will incorporate provisions relevant to greenhouse gas mitigation from various other acts and regulations on pollution control, renewable energy and energy efficiency as well as energy taxation, thereby creating a harmonized legal basis for Taiwan’s climate change strategy.<sup>39</sup> The bill consists of five chapters, starting with a chapter outlining general principles, followed by chapters detailing government agency responsibilities, emission reduction measures, education measures and incentives, and penalties as well as supplementary provisions (see Box 2 below).

<sup>37</sup> See Section III below.

<sup>38</sup> According to the EPA, all GHG regulatory tasks exercised pursuant to the Air Pollution Control Act will be processed under the GHG Reduction Act. On 9 May 2012, the EPA announced that carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride would all be classified as air pollutants, and thus fall under the control regime for emissions from local industries. Acting on an authority included in the Air Pollution Control Act, the EPA drafted rules that require certain emissions-intensive industries (including power, cement, steel, and electronics), installations emitting more than 25 kilotonnes of CO<sub>2</sub> in the petroleum refining and petrochemical, man-made fiber, and pulp and paper products industries as well as public or private facilities whose fuel heat input value of combustion equipment is more than 7.5 million BTU per hour to register and report their emissions. Reporting of air pollutant emissions is required on a seasonal basis before the end of April, July and October each year, and annual emissions for the entire preceding year have to be reported by the end of January of each year. About 280 public and private facilities and 90% of direct CO<sub>2</sub> emissions from industry are estimated to fall within the scope of these rules.

<sup>39</sup> EPA, “Taiwan’s Policies and Measures”, *supra*, note 25, at 1 et seq.

Until the bill is passed, voluntary agreements with industries and incentives for early action are being promoted.<sup>40</sup> When the Act comes into effect, it will establish an emission inventory covering designated emission sources, as well as a platform maintained by the EPA calling for mandatory registration and reporting by emission sources (Stage I). Existing, new or modified emission sources exceeding certain emission thresholds will additionally be required to apply for an emission permit from the EPA, and monitor and report emissions in accordance with the conditions set out in the permit. Specified sources will also be subject to performance standards based on output-related GHG emission benchmarks, defined by the EPA in consultation with agencies responsible for affected industries, notably the Bureau of Energy and the Industrial Development Bureau (Stage II). In the final stage (III) of setting up a framework for GHG mitigation, Taiwan is expected to adopt a national emissions target and implement a domestic emissions trading system, reflecting the progress of international climate negotiations both in terms of timing and ambition.<sup>41</sup> As yet, however, there is no set deadline for implementing said cap-and-trade system.<sup>42</sup>

### 3. Use of Market-based Instruments: Current Status

---

#### 3.1. Domestic Level

Achieving emission reduction by establishing a carbon market is a possibility the Taiwanese government has already envisioned in the GHG Reduction Act.<sup>43</sup> To facilitate the implementation of a system for carbon trading, Taiwan has already made progress with the establishment of a national emissions registration platform. Already as early as 2007, the EPA launched a GHG inventory management system based on international standards,<sup>44</sup> and began providing advice to Taiwanese industry on voluntary GHG reporting and inventory generation.<sup>45</sup> A number of guidelines and

---

<sup>40</sup> Environmental Protection Administration, *supra*, note 17.

<sup>41</sup> See generally Jenn, "Policy Review", *supra*, note 22, at 1400.

<sup>42</sup> See chapter III below.

<sup>43</sup> See chapter II above.

<sup>44</sup> Specifically, the EPA has drawn on the CNS/ISO 14604-1 and the Greenhouse Gas Protocol (GHG Protocol) to establish the domestic greenhouse gas inventory management system, enabling industries in Taiwan to fully understand their own emission status and discover potential areas for reductions; see EPA, "Voluntary Reduction Strategies", *supra*, note 27.

<sup>45</sup> EPA, "Taiwan's Policies and Measures", *supra*, note 25, at 4; EPA, "Mitigation Actions", *supra*, note 21, at 9.

principles adopted by the EPA since 2007 have provided a framework for emissions registration and inventory generation as well as independent verification.<sup>46</sup> By the end of April 2011, 341 factories had voluntarily registered emissions data, accounting for approximately 84% of greenhouse gas emissions from industry and energy sectors.<sup>47</sup>

In addition to creating an infrastructure for emissions data, the EPA has also adopted a framework for GHG pilot and offset projects to promote installation-level reduction initiatives.<sup>48</sup> Based on emission intensity benchmarks adopted by the EPA for key sectors and activities,<sup>49</sup> entities may engage in voluntary early action and apply for issuance of emission reduction credits pending a review of the underlying project. Additionally, a project cycle has been defined for GHG offset projects, adopting the same procedural stages already applied under the Clean Development Mechanism (CDM) of the Kyoto Protocol to the UNFCCC.<sup>50</sup> Credits may be traded and retired under the domestic registration platform. Additionally, the EPA has provided guidance on carbon neutrality, enabling entities to voluntarily purchase credits issued under the Verified Carbon Standard (VCS), an option that has already been exercised by a number of installations.<sup>51</sup>

Since Taiwan's industrial sector accounts for approximately 50% of total energy demand, and the 100 largest energy users account for almost half of

---

<sup>46</sup> These include the Greenhouse Gas Inventory and Registration Guidelines, issued in 2009, the Greenhouse Gas Inventory and Registration Management Principles, issued on 10 September 2010, the Working Principles for Managing Greenhouse Gas Inspection Organizations, promulgated on 6 November 2009, and the Greenhouse Gas Inspection Guidelines; see *ibid*.

<sup>47</sup> *Ibid*.

<sup>48</sup> See the Principles for Promoting Greenhouse Gas Pilot and Offset Projects, promulgated on 10 September 2010, following years of negotiation with industry and government stakeholders; *ibid*.

<sup>49</sup> Such benchmarks are defined by the EPA for emission sources, material inputs and fuels, and products, based on emissions data from each sector as well as international data; emissions intensity benchmarks have been drafted for the electricity, steel, cement, optoelectronic and semiconductor sectors, and are being drafted for other energy intensive industries such as paper production, petrochemical processing and oil refinement; see *ibid*.

<sup>50</sup> Under the required steps for offset projects, applicants must compile a report for review by a competent agency and an accredited inspection organization; after verification, applicants can register with the EPA and begin implementation of the reduction project. After implementation, the applying entity must submit a monitoring report and pass inspection by an accredited inspection organization, upon which – if successful – the project can obtain reduction credits; see *ibid*.

<sup>51</sup> See project proponents listed in the Verified Carbon Standard (VCS) "Project Database", available on the Internet at <<http://www.vcsprojectdatabase.org>> (last accessed on 14 January 2013); several enterprises have used voluntary credits from VCS projects carried out in Taiwan and in various third countries, including Brazil, India, and China.

this demand, setting up an emissions trading system that initially focuses on those large emitters would already tap a high carbon reduction potential.<sup>52</sup> Accordingly, the EPA is focusing on five sectors with high emissions intensity for likely inclusion in an emission trading system: the electricity sector, cement sector, steel sector, semiconductor sectors and thin film transistor liquid crystal display sector.<sup>53</sup> The Office of Greenhouse Gas Reduction Management at the EPA will be the agency charged with designing and implementing the system. As mentioned earlier, the trading system would be complemented by GHG emission performance standards applied to the transport sector and the residential and commercial sector as well as the agriculture and forestry sectors.

### 3.2. International Level

Because it is not a party to the UNFCCC and the Kyoto Protocol, Taiwan is not formally eligible to participate in the flexible mechanisms established by the Protocol, namely Joint Implementation (JI), the Clean Development Mechanism (CDM) and International Emissions Trading (IET).<sup>54</sup> It is not, however, excluded from all involvement in the international carbon market. In a 2009 paper on Taiwan's voluntary GHG reduction program,<sup>55</sup> the EPA concluded that the most feasible option to make foreign offset credits available to Taiwanese entities

would be to acquire Certified Emissions Reductions (CER) under the CDM by choosing one or more Annex I parties as an operational base and establishing accounts in their National Registries.<sup>56</sup> For that to occur, a public-private-partnership – a “Carbon Management Strategic Partnership” – between the Taiwanese government and domestic emitters would establish a public or private entity in an Annex I party, and use that entity to open a Holding Account in the party's National Registry. Selection of suitable Annex I parties would occur based on a number of criteria, accounting for potential differences in the demand for, and in the treatment of, CERs.<sup>57</sup> Once registered, such an entity could obtain CERs either by registering and implementing a new CDM project, or by acquiring CERs on the secondary spot or derivatives market.<sup>58</sup> Under both options, the CERs thus obtained would be canceled from the National Registry of the Annex I party, and an equivalent amount of credits issued on the Taiwanese registration platform on behalf of the purchasing emitter.<sup>59</sup> A cooperation agreement or memorandum of understanding concluded with the Annex I country through the Taiwanese Ministry of Foreign Affairs could ensure transparency and cooperation.

Going forward, such indirect linkage with the international market for CERs could enable domestic emission sources in Taiwan subject to a compliance obligation under the GHG Reduction Act to offset up to 50% of their excess emissions. Access to low-cost abatement opportunities can help limit the overall cost of a domestic emissions trading system in Taiwan. Once such a system is implemented, Taiwan also will have another option to become engaged in international carbon transactions: direct linkage with foreign emissions trading systems. Conditions and implications of such linkages are outlined in the next section.

---

<sup>52</sup> Chea et al. “Review of Taiwan's Climate Policy”, supra, note 20, citing David Yih-Liang Chan et al., “Current Situation of Energy Conservation in High Energy-consuming Industries in Taiwan”, 35 Energy Policy (2007), 202.

<sup>53</sup> Reuters, “Factbox: Carbon Trading Schemes Around the World”, 26. September 2012, available on the Internet at <<http://www.reuters.com/article/2012/09/26/us-carbon-trading-idUSBRE88P0ZN20120926>> (last accessed on 14 January 2013).

<sup>54</sup> Environmental Protection Administration, “Towards UNFCCC”, supra, note 17; all three mechanisms presuppose formal accession to the Kyoto Protocol, see Article 6 (1): “For the purpose of meeting its commitments under Article 3, any Party included in Annex I may transfer to, or acquire from, any other such Party emission reduction units resulting from projects aimed at reducing anthropogenic emissions by sources or enhancing anthropogenic removals by sinks of greenhouse gases in any sector of the economy”; Article 12 (3): “Under the clean development mechanism: (a) Parties not included in Annex I will benefit from project activities resulting in certified emission reductions; and (b) Parties included in Annex I may use the certified emission reductions accruing from such project activities to contribute to compliance with part of their quantified emission limitation and reduction commitments”; and Article 16: “The Parties included in Annex B may participate in emissions trading for the purposes of fulfilling their commitments under Article 3” (emphasis added).

<sup>55</sup> Environmental Protection Administration, “Taiwan's Voluntary GHG Reduction Program: Strategies for Assisting Domestic Emission Sources to Acquire Foreign CDM Credits to Offset GHG Emissions”, November 2009, available on the Internet at [http://unfccc.epa.gov.tw/unfccc/english/\\_uploads/Taiwans\\_Voluntary\\_GHG\\_Reduction\\_Program.pdf](http://unfccc.epa.gov.tw/unfccc/english/_uploads/Taiwans_Voluntary_GHG_Reduction_Program.pdf) (last accessed on 15 January 2013).

---

<sup>56</sup> *Ibid.*, at 8 sqq.

<sup>57</sup> *Ibid.*, at 9: “[W]e should consider establishing the Holding Account in a country that meets the following criteria: a) An Annex I country that, although not meeting its target, would not intervene in the carbon credits management of corporate entities, such as Japan. b) An Annex I country that has been allowed to increase its emission under the Kyoto Protocol, such as Australia, Norway and Iceland. c) An Annex I country that is already meeting its reduction target, such as the UK, Sweden and Poland.”

<sup>58</sup> *Ibid.*, at 10.

<sup>59</sup> To ensure that the CERs are not used for compliance with the commitments of the Annex 1 party, the credits to the cancellation account, thus ensuring that the CERs do not count toward meeting the commitments of the Annex I party, but are instead effectively taken out of the market.

## 4. Participation in the International Carbon Market

### 4.1. Access Conditions and Pathways

#### 4.1.1. Formal Conditions: Eligibility

As described in the foregoing section, Taiwan has an active interest in providing domestic entities access to international carbon markets as a way to increase the diversity of abatement options and thereby lower the cost of compliance with domestic or international climate change mitigation commitments. Participation in carbon markets across political boundaries is generally conditional on specific eligibility requirements, however, such as accession to and ratification of an international treaty, conclusion of an agreement with the jurisdiction administering the carbon market, or ability to meet certain material conditions, such as the creation of particular institutional structures (such as a designated national authority) or performance of certain activities (such as the compilation of a national inventory).

In this context, it is helpful to first distinguish the main types of carbon markets to which access may be sought, including by, but not limited to, the following market characteristics:

##### *Nature of the Market:*

- Compliance carbon markets: markets in which participation is mandatory for covered entities, and failure to comply subject to regulatory penalties;
- Voluntary carbon markets: markets in which participation is optional, and driven by motivations such as corporate social responsibility or preparation for a future compliance market.

##### *Level of Participation and Point of Regulation:*

- Jurisdiction-level carbon market: carbon trading occurs between jurisdictions, such as states, municipalities or other territorial units, and is not open to private parties, such as individual installations
- Installation-level carbon market: carbon trading occurs between private entities

##### *Geographic Scope and Level of Governance:*

- Carbon markets at the international level: markets based on multilateral cooperative

arrangements, such as the UNFCCC, Kyoto Protocol, and decision adopted thereunder, specifying the rules of the market and creating structures for its administration;

- Carbon markets at the domestic level: sub-national, national or regional markets established by a domestic jurisdiction, such as a local or national government or cooperation among them.

Because the conditions for market access vary between carbon markets and can only be ascertained on the basis of the detailed provisions underlying the respective market, only limited general statements on formal eligibility can be made here. Generally speaking, compliance markets will set out more stringent conditions for market access because the consequences of a failure to ensure market integrity are graver, including, for instance, a possible violation of domestic or international mitigation commitments. Voluntary markets, in turn, depend on voluntary participation and are therefore usually designed with lower entry barriers to attract – rather than deter – participation.

As far as the geographic scope of markets is concerned, no distinct tendency in terms of market access is evident: both domestic and international carbon markets tend to carefully define the conditions of eligibility to participate. Where participation in a carbon market depends on formal accession to an international arrangement such as the UNFCCC or a future agreement on multilateral climate cooperation, however, the specific status of Taiwan (as outlined in Section 2.2) may pose a formal obstacle to the extent that it currently is not a party to the UNFCCC or Kyoto Protocol, and may be unable to accede to a climate change agreement for the period beyond 2020 currently in negotiation and due to be adopted by the end of 2015. As is currently the case with the CDM (see Section 3.2), it would remain to be seen whether Taiwan can nonetheless seek indirect participation through public or private entities active in the territory of parties to such an agreement.

Formal eligibility requirements for a number of current and emerging carbon markets are assessed in more detail below, in Section 4.2. Overall, however, it will serve the interest of Taiwan to participate – directly or indirectly – in decision making processes underlying the elaboration of conditions for market access at the international and domestic level, and argue against inclusion of narrow eligibility conditions which render it difficult for Taiwan to become engaged in the carbon market (such as a

limitation to “parties” in the case of international carbon markets based on a formal international treaty).

From the perspective of climate change economics, expanded participation in carbon markets is usually considered desirable because it increases the size and liquidity of the market, thereby reducing the likelihood of market manipulation and price volatility, and increasing the heterogeneity of abatement options, thereby increasing the efficiency of the market. With low carbon prices in a number of markets currently posing major challenges, moreover, integrating an additional source of demand for allowances or credits would be advantageous and help support prices. Potential concerns that expanded market access might undermine the environmental integrity of the emissions trading system or offset mechanism can be addressed by affording unidirectional access, that is, facilitating the export of allowances or credits, but not allowing their import into the system.

#### 4.1.2. Substantive Conditions: Market Readiness

Participation in international carbon markets will also place material demands on Taiwan, that is, demands which are not related to formal eligibility requirements, but to the material ability to engage in and administer carbon market transactions. Such material demands or, to use a term that has become widely used, market readiness requirements<sup>60</sup> relate to a broad range of issues faced in the design and implementation of a carbon market. Already before it endeavors to participate in a carbon market, for instance, a jurisdiction must be able to assess the mitigation potential and cost in different sectors and determine the feasibility of including these sectors in the carbon market. At the technical level, it needs to create arrangements *inter alia* for the measurement, reporting and verification (MRV) of emissions as well as the tracking of allowances and market transactions. And at the institutional level, it needs to set up structures and assign responsibilities for the collection of data, allocation of allowances, and monitoring or – where necessary – enforcing compliance.

Taiwan has already made significant progress in ensuring market readiness for carbon trading. Regarding measurement, reporting and verification of GHG emissions, it has introduced a national GHG

registration platform and implemented a framework for emitting installations to create emissions inventories and report emissions data. Institutionally, Taiwan has established an Office of Greenhouse Gas Reduction Management at the EPA to administer activities related to voluntary emissions reductions and offset crediting, and adopted a number of guidelines and principles to govern emissions measurement and reporting, independent verification and verifier accreditation, offset activities, as well as account management (see Box 3). In developing these rules, Taiwan has adhered to international codes and best practices. Since adoption of these guidelines and principles, the private sector has brought forth a number of verification and inspection organizations that have been positively reviewed by the EPA. Overall, hence, Taiwan is well positioned to meet the material conditions of carbon market participation.

#### Box 3: Rulemaking for Market Readiness in Taiwan

Greenhouse Gas Inventory and Registration Guidelines (2009)
Greenhouse Gas Inventory and Registration Management Principles (2010)
Working Principles for Managing Greenhouse Gas Inspection Organizations (2009)
Greenhouse Gas Inspection Guidelines
Principles for Promoting Greenhouse Gas Pilot and Offset Projects (2010)
Greenhouse Gas Reduction Credit Account Management Guidelines (2011)

A further and important step to strengthen market readiness is the adoption of a credible, ambitious greenhouse gas limitation or reduction objective. For some jurisdictions with operational carbon markets, cooperation with foreign emissions trading systems will be conditional on the partnering systems having absolute and mandatory mitigation targets, illustrating why Taiwan is likely to increase prospects for future carbon market cooperation and integration – rather than limiting these – if it adopts and implements a robust domestic greenhouse gas emissions reduction target. Concerns that this will reduce the ability to participate in baseline-and-credit or project based crediting mechanisms such as the CDM can be countered with the argument that few systems are currently allowing the introduction of

<sup>60</sup> André Aasrud, Richard Baron and Katia Karousakis, Market Readiness: Building Blocks for Market Approaches, OECD Doc. COM/ENV/EPOC/IEA/SLT(2010)3 (Paris: OECD, 2010).

corresponding units if these come from middle- or high-income countries such as Taiwan. Hence, adoption of a robust target is unlikely to curtail opportunities for carbon market cooperation, but rather will open previously unavailable cooperation pathways.

#### **4.1.3. Conventional Pathways: Accession and Linkage**

Participation in international carbon markets can take different forms. Put simply, the fullest participation will be possible if Taiwan accedes to a carbon market by becoming an integral party to it. At the international level, this will typically involve acceding to the international arrangement establishing the carbon market, for instance by ratifying an international treaty and becoming a party to it; at the domestic level, this will involve closely coordinating and adopting identical regulations and creating comparable institutional structures to those found in the jurisdiction with the carbon market, so that transactions can occur between both jurisdictions entirely unhindered.<sup>61</sup>

Where such a level of deep integration cannot be achieved, participation may occur through a link between otherwise independent systems. For that to be possible, however, each jurisdiction must establish a carbon market that can subsequently be linked. Conceptually, such links are either indirect via acceptance of a common offset credit, or direct links conditional on an explicit decision by at least one of the linked jurisdictions. Direct links can be distinguished by whether they allow trading in one or more directions. Under a unilateral link, entities in one system can purchase and use trading units from another system for compliance, but not vice versa. Administrators of a system can establish such a unilateral link by agreeing to accept allowances or credits issued by another system for compliance purposes. In a full bilateral link, by contrast, allowances can be freely traded between both systems, and allowances from each system are equally valid for compliance in both systems. A hybrid solution, finally, consists of reciprocal unilateral links, where each system unilaterally accepts allowances from the other, without however rendering the ability for bilateral trade a condition of that link.<sup>62</sup>

Although not as deep a level of integration as full accession, such a link between emissions trading systems promises a number of benefits, notably by lowering the cost of achieving specified emission mitigation objectives. In theory, the more systems link, the larger the potential efficiency gains. First and foremost, linking promises a wider range of abatement costs by expanding the range of available mitigation options. To the extent that this promise is fulfilled, greenhouse gas mitigation can hence be achieved more cost-effectively as emissions are reduced where reductions are least expensive. Another important benefit of linking can be its ability to lessen pressures on the competitiveness of sectors impacted through the convergence of carbon prices in the linked systems. The degree of economic efficiency gained from international or interregional allowance trading is correlated to the divergence in mitigation cost within each trading system prior to their linkage, but can potentially be significant. The greater the difference, the greater the potential gain in economic efficiency. Furthermore, a trading link also creates a larger, more liquid carbon market, thereby reducing volatility and the likelihood of market manipulation. At the same time, however, linking can also propagate volatility in one system to other systems, and generally will reduce the amount of control administrators have over their own system.<sup>63</sup> Compatibility between systems is therefore important, affecting some design features of the trading systems more than others. Design features where mutual compatibility is essential include:

- Nature, stringency and definition of emissions reduction objectives (“cap”): are the required mitigation efforts roughly comparable, and are targets framed in absolute metrics or intensity-based? Under what conditions can the cap be modified? Is the cap defined through an international agreement, or set unilaterally?
- Cost containment through price intervention, borrowing and offset provisions: can rules on the eligibility of offsets, borrowing and other mechanisms to influence price formation – such as price ceilings – be reconciled? What types of offsets are eligible for compliance in each trading system, and subject to what qualitative and quantitative restrictions?

---

<sup>61</sup> That is how Norway, Iceland and Liechtenstein acceded to the European Union emissions trading system (EU ETS).

<sup>62</sup> Michael Mehling and Erik Haites, “Mechanisms for Linking Emissions Trading Schemes”, 9 *Climate Policy* (2009), 169-184.

---

<sup>63</sup> On these aspects, see generally Michael Mehling et al., *Prospects for a Transatlantic Carbon Market: What Next after the US Midterm Elections?* Climate Strategies Working Paper (Cambridge: Climate Strategies, 2011).

Under what conditions does price intervention or borrowing become possible?

- Governance and enforcement: are monitoring, reporting and verification rules similarly robust, and will sanctions prove effective as deterrents? Are sufficient administrative capacities in place to monitor and enforce compliance with emissions reduction commitments?<sup>64</sup>

Design features where mutual compatibility is desirable – but not essential – include:

- Scope of coverage, point of regulation, and allocation methodologies: what sectors are covered by emissions trading, and does the trading system opt for an upstream, downstream or hybrid approach? How are new entrants and installation closures addressed? Is allocation based on grandfathering, a benchmark, or auctioning – or a combination of these? Does the allocation method prevent non-competitive or collusive behaviour by bidders? Are procedures in place, such as a market monitor, to oversee the auction qualification process and the conduct of the auction itself?
- Registries: does each system possess an allowance tracking system to manage accounts and emissions data of regulated participants, and to track the issuance, transfer and cancellation of allowances or credits? What registry software and technology is used by each trading system? Can registries be linked to ensure that only valid allowances or credits are accepted into the respective markets, and that these are not reused after having been applied for compliance?
- Fungibility of units: are allowances and credits directly interchangeable, that is, do they represent the same absolute quantity of greenhouse gas emissions (for instance, 1 metric tonne of CO<sub>2</sub> equivalent)? Do these units count towards compliance with an overarching international regime such as the Kyoto Protocol? If not, can technical

solutions – such as conversion rates or a “gateway” – help address differences?

- Decisions on timing, including banking and compliance periods: should it be possible for allowances to be banked from compliance period to compliance period, tempering volatility, but potentially increasing future allowance supplies? Should multiple vintage years of allowances be made available at the outset, and should compliance true-ups occur annually, biannually, or at some greater interval?

#### **4.1.4. Alternative Pathways: Informal Cooperation**

Both possibilities for carbon market integration described above, accession and linking, require some form of domestic rulemaking and ideally cooperation between affected jurisdictions. Where such formal measures are not feasible for political or other reasons, a country or entity may also participate in a foreign carbon market through less formal pathways, depending on the precise nature and design of the affected carbon market. Currently, carbon markets will often allow private entities to create holding accounts for allowances or credits even if they are not covered entities with compliance obligations. As soon as an entity can thus purchase allowances or credits from in the foreign carbon market, opportunities for transboundary recognition of such carbon transactions arise, for instance if the home jurisdiction counts the foreign units towards compliance with domestic commitments. The example mentioned in Section 3.2 of Taiwan participating in the CDM illustrates how such informal access might be implemented.

## **4.2. Access Points**

### **4.2.1. Flexible Mechanisms of the Kyoto Protocol**

As elaborated above (see Section 3.2.), Taiwan is not a party to the UNFCCC and the Kyoto Protocol and therefore not formally eligible to participate in the flexible mechanisms established by the Protocol. Measures such as Joint Implementation (JI), Clean Development Mechanisms (CDM) and International Emissions Trading (IET) can therefore not be implemented by Taiwan under its official regime. However, as the Taiwanese EPA concluded in 2009,

---

<sup>64</sup> See Michael Mehling, “Linking of Emissions Trading Schemes”, in David Freestone and Charlotte Streck (eds.), *Legal Aspects of Carbon Trading: Kyoto, Copenhagen and Beyond* (Oxford: Oxford University Press, 2009), 108-133.

Taiwan could participate in international carbon reduction schemes by acquiring Certified Emissions Reductions (CER) under the CDM by establishing a public-private-partnership entity in cooperation with domestic emitters which would then register in one or more Annex-I countries establishing accounts in their national registries. Once registered, the entity could obtain CERs either by registering and implementing a new CDM project, or by acquiring CERs on the secondary spot or derivatives market. The credits earned would be canceled from the Annex-I countries national registry and transferred to the Taiwanese registration platform on behalf of the purchasing emitter (see Section 3.2.). This procedure could lead to a – at least partial – *de facto* participation of Taiwan in the Flexible Mechanisms set forth in the Kyoto Protocol.

#### **4.2.2. New Market Mechanism (NMM) and Framework for Various Approaches (FVA)**

##### **4.2.2.1. Brief Overview**

So far, the Clean Development Mechanism (4.3.1) has not fully met the expectations parties to the Kyoto Protocol had invested in it, namely that it would assist industrialized parties with quantified mitigation targets to achieve these at lower cost while simultaneously helping developing countries to develop in sustainable ways. A number of studies have claimed that the CDM has been bureaucratically cumbersome, resulted in an uneven geographic distribution of project, created perverse incentives to pollute or postpone domestic mitigation efforts, and most importantly not always resulted in truly emissions reductions that were additional to what would have been the situation absent the CDM project. With rapidly growing economies in many developing countries and the ensuing rise in emissions of greenhouse gases, it is moreover increasingly evident that meeting the global climate challenge will require scaled-up efforts by these developing countries that are significantly more ambitious and far-reaching than the CDM. Thus, the European Union as well as other jurisdictions have made a case for stronger commitments by developing countries to GHG reductions. As a result, COP17 in Durban (2011) decided to involve all countries in a future climate change agreement. This decision has been affirmed by the follow-up conference in Doha in 2012.

New mechanisms to achieve domestic mitigation objectives are currently under negotiation under the

heading of “New Market Mechanisms” (NMMs) and, with somewhat vaguer boundaries, the “Framework for Various Approaches” (FVA). NMMs, as intended by the EU, can be described as a sectoral reduction mechanism covering one or more sectors of one’s nation national economy, e.g., energy production or cement with total or flexible emission caps and establishing a threshold overseen by a Implementing Committee installed at UNFCCC level. Two major alternatives are currently under discussion: sectoral trading, in which a defined amount of GHG emission units is allocated to entities within an economic sector, and these can sell units if they are able to reduce emissions below the initial allocation; and sectoral crediting, in which entities in a sector receive credits (“New Reduction Unit” as proposed by the EU) for lower their emissions under a benchmark adopted for the sector.

The FVA is a more general framework for a variety of climate protection measures on a national level which may include market based mechanisms. The basic decision to add these new tools to global carbon reduction efforts was made at COP18 in Doha. NMMs and the FVA are not designed to replace e.g. CDM, but should rather be seen as complementary to existing mechanisms.

##### **4.2.2.2. Legal Texts**

#### **Draft -/CP18 “Agreed Outcome pursuant to the Bali Action Plan”**

*“The Conference of the Parties*

*Decides that the work programme referred to in paragraph 44 above shall address*

*the following elements, inter alia:*

*(a) The purposes of the framework;*

*(b) The scope of approaches to be included under the framework;*

*(c) A set of criteria and procedures to ensure the environmental integrity of approaches in accordance with decision 2/CP.17, paragraph 79;*

*(d) Technical specifications to avoid double counting through the accurate and consistent recording and tracking of mitigation outcomes;*

*(e) The institutional arrangements for the framework;*

*[...]*

*Also requests that the work programme consider possible elements of the*

*mechanism referred to in paragraph 50 above, for example the following:*

*(a) Its operation under the guidance and authority of the Conference of the Parties;*

*Parties;*

*(b) The voluntary participation of Parties in the mechanism;*

*(c) Standards that deliver real, permanent, additional, and verified mitigation outcomes, avoid double counting of effort and achieve a net decrease and/or avoidance of greenhouse gas emissions;*

*(d) Requirements for the accurate measurement, reporting and verification of emission reductions, emission removals and/or avoided emissions;*

*(e) Means to stimulate mitigation across broad segments of the economy, which are defined by the participating Parties and may be on a sectoral and/or project-specific basis;*

*(f) Criteria, including the application of conservative methods, for the establishment, approval and periodic adjustment of ambitious reference levels (crediting thresholds and/or trading caps) and for the periodic issuance of units based on mitigation below a crediting threshold or based on a trading cap;*

*(g) Criteria for the accurate and consistent recording and tracking of units;*

*(h) Supplementation;*

*(i) A share of proceeds to cover administrative expenses and assist developing country Parties that are particularly vulnerable to the adverse effects of climate change to meet the costs of adaptation;*

*(j) The promotion of sustainable development;*

*(k) The facilitation of the effective participation of private and public entities;*

*(l) The facilitation of the prompt start of the mechanism;"*

#### **4.2.2.3. Analysis**

At this point, the framework outlining NMMs and FVA is quite unspecific. However, what is clear so far is that the text only refers to countries being "Parties" to the UNFCCC and the Kyoto Protocol. Since Taiwan is neither a party to the UNFCCC nor the Kyoto Protocol, the current negotiating text would preclude it from formally participating in NMMs or the FVA. It is in Taiwan's interest, therefore, to exert soft power to expand the scope of eligibility; if that remains unsuccessful, Taiwan can still implement similar mechanisms at the domestic level, and seek bi- or plurilateral cooperation with UNFCCC parties as described in Sections 4.1.3 and 4.1.4.

#### **4.2.3. National and Regional Carbon Markets**

In recent years, emissions trading systems (ETS) have emerged in various parts of the world. Being different in nature, size and approach, most ETS initially focus on consolidating their own operation before considering integration with other systems. As

markets mature, a second phase sets in in which market administrators are able to consider the advantages and disadvantages of possible linking with other systems. The following section shall give a quick overview over the different systems, their legal or administrative background, and provide an analysis of possible links to Taiwan's emissions reduction enterprises.

#### **4.2.3.1. European Union Emissions Trading System (EU ETS)**

##### **4.2.3.1.1. Brief Overview**

Currently, the EU ETS operates in 30 countries – all 27 EU Member States as well as Iceland, Liechtenstein and Norway – and covers CO<sub>2</sub> emissions from emitters in the power sector, combustion plants, oil refineries and iron and steel works, as well as installations producing cement, glass, lime, bricks, ceramics, pulp, paper, and board. More than 10 000 covered entities account for around 2 Gigatonnes or 40% of EU greenhouse gas emissions, a figure that has recently expanded further as additional sectors – notably petrochemicals, ammonia and aluminum – and additional gases are included in the trading system in its third trading phase starting in 2013 and continuing to 2020.

In 2011, the total transaction value in the European Union Emissions Trading Scheme (EU ETS) rose 11 percent year on year (yoy) to US\$ 171.0 billion (€ 122.3 billion). The primary catalyst was a steep increase in the trading volume of European Union Allowances (EUAs), secondary Certified Emission Reductions (sCERs), and Emission Reduction Units (ERUs), which collectively rose 20% to 9.7 billion tons. EUA volumes represented 81% of all EU ETS transactions during the year. This growth in overall transaction value occurred in 2011 despite annual average prices falling substantially for all three asset classes. The annual average EUA (European Union Allowances) price declined 4% yoy (year on year) to US\$ 18.8/ton (€ 13.5/ton). Similarly, the annual average secondary CER (Certified Emission Reductions) and ERU (Emission Reduction Units) combined price declined 21% yoy to US\$12.8/ton (€ 9.2/ton).<sup>65</sup>

<sup>65</sup> Carbon Finance at the World Bank, "State and Trends of the Carbon Market 2012", Washington DC 2012, available on the Internet at <  
[http://siteresources.worldbank.org/INTCARBONFINANCE/Resources/State\\_and\\_Trends\\_2012\\_](http://siteresources.worldbank.org/INTCARBONFINANCE/Resources/State_and_Trends_2012_)

#### 4.2.3.1.2. Legal Texts

#### Directive 2003/87/EC amended by Directive 2009/29/EC

##### Article 25

##### *Links with other greenhouse gas emissions trading schemes*

1. Agreements should be concluded with third countries listed in Annex B to the Kyoto Protocol which have ratified the Protocol to provide for the mutual recognition of allowances between the Community scheme and other greenhouse gas emissions trading schemes in accordance with the rules set out in Article 300 of the Treaty.

1a. Agreements may be made to provide for the recognition of allowances between the Community scheme and compatible mandatory greenhouse gas emissions trading systems with absolute emissions caps established in any other country or in sub-federal or regional entities.

1b. Non-binding arrangements may be made with third countries or with sub-federal or regional entities to provide for administrative and technical coordination in relation to allowances in the Community scheme or other mandatory greenhouse gas emissions trading systems with absolute emissions caps.

2. Where an agreement referred to in paragraph 1 has been concluded, the Commission shall draw up any necessary provisions relating to the mutual recognition of allowances under that agreement in accordance with the procedure referred to in Article 23(2).

#### 4.2.3.1.3. Analysis

Article 25 para. 1 of Directive 2003/87/EC clearly states that agreements should be concluded with third countries listed in annex B of the Kyoto Protocol to provide for the mutual recognition of allowances between the Community scheme and other trading schemes. Since Taiwan is not an Annex B-Country, paragraph 1 does not apply.

Under article 25 para. 1a<sup>66</sup>, the directive expresses the possibility that agreements may be made to provide for the recognition of allowances between the Community scheme and other GHG reduction trading systems. The use of the phrase “may” instead of “should” clearly illustrates that the Community is not obliged to establish such agreements but is entirely free in its decision to do so. This margin of discretion only becomes relevant, however, if certain material requirements are met by the foreign ETS: firstly, the system has to be mandatory. Voluntary reduction

---

Web\_Optimized\_19035\_Cvr&Txt\_LR.pdf> (last accessed on 23 Januar 2013), at 17.  
66 Amended by Directive 2009/29/EC.

schemes such as the Japanese (JVETS)<sup>67</sup> do not meet the requirements set forth in article 25. Secondly, the trading system has to have absolute emission caps in contrast to relative emission targets which are defined as emissions per unit of output or activity, such as gross domestic product (GDP) or energy consumption. Hence, only systems with an absolute number as a reduction target would be eligible to enter into such an agreement. Thirdly, the system has to be “compatible” to the Community scheme meaning that it would have to match the existing trading scheme of the EU ETS; while this “compatibility” is not defined in the legal text itself, Section 4.1.3 outlined elements that can constitute such compatibility. Article 25 of the directive does not envision mutual convergence: the foreign scheme would have to fully adapt the requirements of the EU ETS.

Furthermore, article 25 para. 1a provides linkage possibilities only to countries, sub-federal or regional entities. Since the European Union does not recognize the statehood of Taiwan, it is questionable whether Taiwan would qualify under article 25 as a sub-federal entity or a country. Engaging at working level with the carbon market unit at Directorate-General Climate Action of the European Commission would likely allow obtaining a definitive – or at least more reliable – answer to this question.

#### 4.2.3.2. Regional Greenhouse Gas Initiative (RGGI)

##### 4.2.3.2.1. Brief Overview

In operation since 1 January 2009, the Regional Greenhouse Gas Initiative (RGGI) is a joint effort by a group of states in the U.S. Northeast and Mid-Atlantic to implement a regional cap-and-trade system including Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, and Vermont. Although it represents the first mandatory emissions trading system for greenhouse gases and has been mostly received with approval, RGGI has lately been beset by a number of challenges, including weak allowance prices, a drop in trading activity, and political setbacks. Following the conservative surge in the 2010 midterm elections, several participating states threatened to abandon RGGI, and the governor of New Jersey formally withdrew his state effective 1

---

<sup>67</sup> See below at Brief Overview.

January 2012.<sup>68</sup> While this has reduced the overall scope and impact of the system, an independent analysis of the system recently still considered it a success, and a review process that has started this year is addressing major features currently undermining its environmental effectiveness.

Under this system, emissions from fossil-fuel electricity generators larger than 25 MW are covered, with the aim of stabilizing these emissions at 188 million short tons of CO<sub>2</sub> per year between 2009 and 2014, and subsequently reducing them by 10 percent until 2019.<sup>69</sup> Each participating state receives an emissions budget and is free to determine how to allocate 75 percent of the corresponding allowances among covered participants. At least 25 percent of the allocated allowances must be assigned to consumer benefit or strategic energy purposes, such as advanced energy technologies, yet in practice most of the allowances are auctioned. Five types of offsets are eligible for compliance, including carbon sequestration from afforestation projects, with limits on the percentage of offset credits that covered entities may use to meet their compliance obligations. Specifically, if the 12-month rolling average price for RGGI allowances exceeds 7 USD per short ton, entities may use offset credits to meet up to 5 percent of their obligation; if the 12-month rolling average exceeds 10 USD, entities may offset up to 10 percent of emissions. In the latter case, participants may also use credits from any “governmental mandatory carbon constraining program that places a specific tonnage limit on greenhouse gas emissions” – which would include the EU ETS – as well as certified emission reduction credits issued under the UNFCCC or any subsequent protocol, such as the Kyoto Protocol.<sup>70</sup>

Over the course of the first compliance period, emissions across the 10 participating states remained relatively stable in 2011, declining only 2.7

---

<sup>68</sup> Additionally, legislators in New Hampshire voted to withdraw from RGGI, but their vote was overridden by the governor. Likewise, legislation introduced in Delaware to end its participation never passed the committee with jurisdiction. In New York, participation in RGGI is currently the subject of a challenge before the State Supreme Court for representing a hidden tax, which would require legislative rather than merely executive approval.

<sup>69</sup> Sections 1 and 2 of the Regional Greenhouse Gas Initiative Memorandum of Understanding (MoU), 20 December 2005, available on the Internet at [http://www.rggi.org/docs/mou\\_12\\_20\\_05.pdf](http://www.rggi.org/docs/mou_12_20_05.pdf) (last accessed on 23 January 2013).

<sup>70</sup> See Section XX-10.3(b)(1) of the Regional Greenhouse Gas Initiative Model Rule, 15 August 2006, revised on 31 December 2008, available on the Internet at <http://rggi.org/docs/Model%20Rule%20Revised%2012.31.08.pdf> (last accessed on 23 January 2013).

million short tons of CO<sub>2</sub>e (stCO<sub>2</sub>e) 199 from 123.7 million stCO<sub>2</sub>e (MstCO<sub>2</sub>e) to 121 MstCO<sub>2</sub>e. This is 36% lower than the annual cap, which was set at 188 MstCO<sub>2</sub>e, based on an analysis of 2000-2004 emissions.<sup>71</sup>

#### 4.2.3.2.2. Legal Texts

#### Regional Greenhouse Gas Initiative Model Rule

##### *Section XX-10.3(b)*

*Eligible CO<sub>2</sub> emissions credit retirements.*

*The Regulatory Agency may award CO<sub>2</sub> offset allowances to the sponsor of a CO<sub>2</sub> emissions credit retirement that has satisfied all the applicable requirements of this Subpart.*

*(1) CO<sub>2</sub> emissions credit retirements include the permanent retirement of greenhouse gas allowances or credits issued pursuant to any governmental mandatory carbon constraining program outside the United States that places a specific tonnage limit on greenhouse gas emissions, or certified greenhouse gas emissions reduction credits issued pursuant to the United Nations Framework Convention on Climate Change (UNFCCC) or protocols adopted through the UNFCCC process.*

*(2) The Regulatory Agency may award CO<sub>2</sub> offset allowances for CO<sub>2</sub> emissions credit retirements only after the occurrence of a stage two trigger event.*

*[...]*

*(4) CO<sub>2</sub> emissions offset allowances shall not be awarded to an offset project or CO<sub>2</sub> emissions credit retirement that is awarded credits or allowances under any other mandatory or voluntary greenhouse gas program.<sup>72</sup>*

#### 4.2.3.2.3. Analysis

Section XX-10.3 of the RGGI Model Rule provides the possibility of a unilateral link to other carbon constraining programs outside the United States. Similar as article 25 of Directive 2003/87/EC, the Model Rule gives a certain margin of appreciation to the Regulatory Authority (“may”). Linking is therefore not mandatory even if the substantial requirements of the rule are being met.

The Rule demands for a mandatory scheme that places a specific tonnage limit of GHG emissions or emissions reduction credits. Systems with flexible caps are therefore not eligible. Another requirement is that the Rule calls for a mandatory governmental reduction scheme. Since the term governmental can be interpreted in a broad sense, it could cover not only federal or state authorities but also entities on a municipal level. However, since the rule refers to the

---

<sup>71</sup> Carbon Finance at the World Bank, above 65, at 82.

<sup>72</sup> Regional Greenhouse Gas Initiative Model Rule, supra 70.

UNFCCC and protocols adopted through the UNFCCC process, it has to be assumed that municipal entities have not been the original target when the Rule was drafted. Furthermore, the term “governmental” leaves room for interpretation as to whether Taiwan would be eligible under the Model Rule to participate in a common carbon reduction scheme under the rules of section XX-10.3. It has to be stated that the term “governmental” applied in a formal manner would - with a certain probability – exclude Taiwan from participation given the political background. However, this likely remains more of a political than a legal question.

#### **4.2.3.3. Western Climate Initiative (WCI)**

##### **4.2.3.3.1. Brief Overview**

The WCI is comprised of Western US states and Canadian provinces that have developed a comprehensive strategy for reducing global warming pollution 15% below 2005 levels by 2020, including a regional carbon market set to begin in 2012. To achieve this goal a cap-and-trade mechanism will be central for reaching mitigation targets accompanied by additional policies for specific sectors and activities.

The cap-and-trade program will establish diverse autonomous systems that can then be linked together, creating one cross-border program. Originally, the system was supposed to be up and running in 2012 but since most participating states and provinces do not have the required regulations in place yet or withdrew from cap-and-trade, the launch had to be postponed. From the seven US states and four Canadian provinces originally involved in the venture, only California and Quebec have passed cap-and-trade regulations so far stating that they'd like to launch their trading programs in 2013. WCI basically is a decentralized cap-and-trade program in which the different stakeholders cooperate in designing autonomous systems that can be linked to create one single market. However, each participant is responsible for setting its own cap in light of the regional aim of a 15% reduction of 2005 GHG levels by 2020. Some general guidelines for establishing jurisdiction-specific caps were agreed upon, but these guidelines were extremely broad in the hopes that flexibility in this regard would facilitate greater participation. However, prior to linking one participant's system to another, each would have the

opportunity to review the others jurisdiction's program to assess its consistency with the program design to create some sort of cross-checking.

##### **4.2.3.3.2. Legal Texts**

#### **Detailed Design for the WCI Regional Program**

##### *9. Linking to Other Programs.<sup>73</sup> [...]*

##### *9.2 Establishing a bilateral link to another program*

*Once a Partner jurisdiction determines that another program meets the criteria in section 9.1, the Partner jurisdiction and the other jurisdiction will mutually acknowledge that their programs are compatible and will:*

*9.2.1. Allow the mutual recognition of compliance instruments issued to meet compliance obligations;*

*9.2.2. Provide that after any compliance instrument is used to meet an obligation to surrender compliance instruments, it shall be disqualified for subsequent use under any system, whether such use is a sale, exchange, or submission to meet an obligation to surrender compliance instruments under a cap-and-trade program; and*

*9.2.3. Ensure that the tracking system (or systems) permits the transfer of compliance instruments from one jurisdiction to another, that a jurisdiction will record when a compliance instrument is transferred out of its tracking system, and that the system can be counted on to sever the linking relationship should severance be necessary.*

##### *9.3 Establishing a unilateral link to another program*

*9.3.1 In the absence of mutual recognition of compliance instruments between a Partner jurisdiction and another trading program, unilateral linking can be accomplished by allowing sources with a compliance obligation to surrender compliance instruments from an approved trading program. The same criteria can be applied in determining whether to approve the external trading program. In the case of a unilateral link to an external program that generates offsets but is otherwise not a cap-and-trade program, the Partner jurisdiction will apply only those criteria that are relevant to offset programs.*

*9.3.2 In the case of unilateral links, the Partner jurisdictions will develop a suitable mechanism to ensure the validity of external compliance units and to make sure those units can only be used once for compliance in any program.*

##### **4.2.3.3.3. Analysis**

The Detailed Design for the WCI Regional Program contains explicit provisions for possible links to other ETS. Since the WCI system itself consists of multiple

---

<sup>73</sup> WCI, “Detailed Design for the WCI Regional Program”, 27 July 2010, available on the Internet at <<http://www.westernclimateinitiative.org/document-archives/general/program-design/Detailed-Design/>> (last accessed on 24 January 2013), at 44 sqq.

state- or province wide systems, it is inherent to the system to be open for links to other regional, national or international ETS. As a result, when it comes to dealing with external links, the Program refers in wide parts to the general rules for Partner jurisdictions. Therefore, any applying external program must ensure that, e.g., it has a binding and annually declining aggregate GHG emissions cap, that allowances are being allocated in a transparent manner, that it entails provisions avoiding double counting measures<sup>74</sup>, etc. However, some specific guidelines for external programs can be found under 9.2. and 9.3.:

The Program deals both with unilateral programs<sup>75</sup> and bilateral enterprises<sup>76</sup>.

Establishing a bilateral link to WCI requires the external program to meet the criteria mentioned above (9.1. of the Program). Furthermore, the applying program must ensure that any compliance instrument is used shall be disqualified for subsequent use under any system. A tracking system permitting the transfer of compliance instruments from one program to the other has to be installed.

Similar presets are required for unilateral links. If the external program is generating offsets but is not a cap-and-trade program, the Partner jurisdiction within WCI will apply only those criteria in the process of approval relevant to the offset program. Once the external program is approved by a Partner jurisdiction, the Partner has to ensure that external compliance units are valid and can only be used once for compliance in any program. The burden (and the risk) of linking an external program to WCI is therefore on the side of the Partner jurisdiction which brings the external program into the WCI. The inherent open structure of WCI should, in principle, allow Taiwan to apply for a linkage to the WCI cap-and-trade. The Detailed Designs refer only to "Non-WCI programs", therefore not requiring statehood or sovereignty. Under this premise, Taiwan could participate in the WCI provided that it is meeting the requirements set forth on 9.1.-9.3. of the Detailed Design.

---

<sup>74</sup> WCI, above 73, at 9.1

<sup>75</sup> Under a unilateral link, entities in one system can purchase and use trading units from another system for compliance, but not vice versa.

<sup>76</sup> In a full bilateral link, allowances can be freely traded between both systems and allowances from each system are equally valid for compliance in both systems.

#### **4.2.3.4. New Zealand Emissions Trading System (NZ ETS)**

##### **4.2.3.4.1. Brief Overview**

The purpose of the New Zealand Emissions Trading Scheme (NZ ETS) is to bring in all sectors of the economy in the system over a seven-year period.<sup>77</sup> The first sector to enter the scheme was forestry in 1 January 2008 followed by liquid fossil fuels, stationary energy and industrial processes in July 2010. Waste industry and the synthetic greenhouse gas sector joined in January 2013 and the agricultural sector will complete the scheme in January 2015. At that point, the ETS will cover virtually all GHG and all direct sources of those emissions.<sup>78</sup> In contrast to other systems, the NZ ETS does not provide a specific cap but operates within the national 2012 Kyoto target (New Zealand agreed to reduce net emissions down to the 1990 level over the 2008-2012 period). A New Zealand Unit (NZU) is the primary domestic unit of trade, which is issued by free allocation to emitters, with no auctions intended in the short term. There is no set limit on the use of international Kyoto credits.

Several transitional measures are being provided by the scheme: the sectors stationary energy, liquid fossil fuels and industrial processes will have to surrender a one tonne unit for every two tonnes of emissions. Instead of trading, the scheme provides a fixed-price option allowing sectors facing obligations to pay \$25/tonne instead of trading. However, this option expires in 2013 as its main purpose was to promote stability in the set-up period of the system. Free allocation of NZU is provided on an intensity basis. The higher one participant's output, the more will he benefit from allocation. This mechanism was installed to protect high-issuers as well as trade-exposed businesses against disadvantages in global markets by a loss of competitiveness. For agriculture, all activities are presumed to be emissions intensive and trade exposed, and will therefore initially receive a level of assistance covering 90% of an emissions baseline<sup>79</sup>. When it comes to the industrial sector, the scheme differentiates between activities meeting the criteria lined out in the legislation and thus being

---

<sup>77</sup> Climate Change Information New Zealand, "The New Zealand Emissions Trading Scheme, 2011, available on the Internet at <<http://www.climatechange.govt.nz/emissions-trading-scheme>> (last accessed on 23 January 2013).

<sup>78</sup> Ibid.

<sup>79</sup> Ibid.

eligible for allocation and those not covered by the act.<sup>80</sup> Eligible industrial activities initially receive a level of assistance covering either 60% or 90% of an emissions baseline depending on whether the activity is moderately or highly emissions intensive. The act sets out thresholds for moderately and highly emissions-intensive activities. It is worth mentioning that NZ ETS is the first scheme to include emissions from deforestation under the cap, rather than via offsets.

As of 2011, New Zealand's Emissions Trading Scheme closely tracked international markets given low international offset prices. A government appointed review of the scheme was also completed; it recommended that the scheme continue, but at a slower pace. This recommendation was on the basis that New Zealand is on track to meet its Kyoto Protocol obligations (emissions to remain at 1990 levels) as well as its conditional 10-20% reduction target by 2020 and 50% reduction target by 2050.<sup>81</sup>

#### **4.2.3.4.2. Legal Texts**

##### **Climate Change (Unit Register) Regulations 2008<sup>82</sup>**

*New Zealand units may only be transferred to certain overseas registries*

*New Zealand units may not be transferred from the unit register to an overseas registry unless the overseas registry is a registry prescribed in regulations made under the Act.*

#### **4.2.3.4.3. Analysis**

The New Zealand Emissions Trading System is designed to link with other trading systems. Currently, there are various attempts, to link NZ ETS to the Australian carbon Pricing Mechanism as well as to the EU ETS. This venture can be described as a political process finding only very limited legal expression so far. Therefore, in order to link any Taiwanese carbon trading scheme with NZ ETS, Taiwan would have to pursue and focus on the political level.

### **4.2.3.5. Australian Carbon Pricing Mechanism (CPM)**

#### **4.2.3.5.1. Brief Overview**

About 60% of Australia's carbon emissions are covered by the Carbon Pricing Mechanism (CPM), including pollution from electricity generation, stationary energy, some business transport, waste, industrial processes, and fugitive emissions. Emitters of more than 25,000 tonnes of CO<sub>2</sub> per year need to acquire permits. Emissions from about 500 entities will be covered under the CPM. The Australian legislator introduced a carbon tax in July 2012 with an initial three-year fixed-price period. The base tax amounts to A\$23, rising by 2.5% per year for the following two years. During this period so called Australian Carbon Credit Units (ACCU) created by the Carbon Farming Initiative (CFI) may be used to max. 5% of participant's liability. The CFI is a carbon offsets scheme aiming at farmers, foresters and land managers providing them incentives to reduce GHG while at the same time creating new economic opportunities. Carbon credits created through the CFI originate from carbon reduction measures such as carbon storage in soil or trees or reduction or avoidance of landfill or livestock manure emissions. After the introductory period with fixed prices ends, the system will switch to a floating carbon price in 2015. A price collar was planned to ensure that the price will not decrease under A\$15 floor rising annually by 4% in real terms and below a ceiling of A\$20 above the international carbon price for 2015-16. When the floating price is established, unlimited ACCUs can be acquired.

In August 2012 the Australian government and the European Commission announced their plans to link to the two schemes no later than 1 July 2018. To enable linking the Australian government abandoned the minimum price for carbon permits and made also changes regarding the use of international credits. Entities under the scheme will still be able to meet up to 50% of their liabilities through purchasing eligible international units during the flexible price period, however, only 12.5% of their liabilities will be able to be met by Kyoto units<sup>83</sup>.

<sup>80</sup> Ibid.

<sup>81</sup> Carbon Finance at the World Bank, above 65, at 78 et sq.

<sup>82</sup> New Zealand Legislation, "Climate Change (Unit Register) Regulations 2008", available on the Internet at <<http://www.legislation.govt.nz/regulation/public/2008/0357/20.0/whole.html>> (last accessed on 24 January 2013).

<sup>83</sup> European Commission, "Climate Action Newsroom – Australia and European Commission Agree on Pathway Towards Fully Linking Emissions Trading System", 28 August 2012, available on the Internet at <[http://ec.europa.eu/clima/news/articles/news\\_2012082801\\_en.htm](http://ec.europa.eu/clima/news/articles/news_2012082801_en.htm)> (last accessed on 23 January 2013).

#### 4.2.3.5.2. Legal Texts

##### Clean Energy Act 2011

###### 123 Surrender restrictions<sup>84</sup>

*(1) The regulations may make provision for, or in relation to, prohibiting the surrender of specified eligible international emissions units.*

*(1A) In making a recommendation to the Governor-General about regulations to be made for the purposes of subsection (1), the Minister must have regard to any relevant report given to the Minister by the Climate Change Authority under Part 22.*

*(2) In making a recommendation to the Governor-General about regulations to be made for the purposes of subsection (1), the Minister may have regard to:*

*(a) Australia's international objectives; and*

*(b) Australia's international obligations (including obligations under international climate change agreements); and*

*(c) the environmental integrity of this Act and the associated provisions; and*

*(e) the extent to which eligible international emissions units may be surrendered, accepted or used for the purposes of:*

*(i) the Climate Change Response Act 2002 of New Zealand; or*

*(ii) the European Union emissions trading scheme; and*

*(ea) the extent to which the regulations would facilitate linking of the scheme embodied in this Act and the associated provisions with other emissions trading schemes; and*

*(f) such other matters (if any) as the Minister considers relevant.*

*(3) If:*

*(a) regulations are made for the purposes of subsection (1); and*

*(b) the regulations are registered under the Legislative Instruments Act 2003 during an eligible financial year; the regulations do not apply to the surrender of eligible international emissions units in relation to the eligible financial year.*

#### 4.2.3.5.3. Analysis

Section 123(2) of the Australian Clean Energy Act is the parent act for further regulations dealing with linking the Australian Carbon Pricing Mechanism (CPM) to New Zealand's Emissions Trading System (NZ ETS), the European Union Emissions Trading System (EU ETS) or "other emissions trading

schemes". The act itself does not state substantial requirements for such a link. Details are being left to further regulations. Since the act does not – as opposed to article 25 of Directive 2003/87/EC – require statehood but merely speaks of "other [...] schemes", Taiwan is not per se excluded from linking its trading system with Australia's CPM. Therefore, regardless of whether Australian authorities will attach substantial conditions (e.g. absolute caps) on a link to the CPM or not, the main question would remain a political one.

#### 4.2.3.6. Japan

##### 4.2.3.6.1. Brief Overview

There has been discussion going on in Japan about the introduction of a national mandatory Emissions Trading System (ETS) for the last ten years. However, no decision to introduce mandatory national ETS has taken place so far. The plan to implement such a system in 2013 has been put on hold at least until 2014. Instead, when it comes to the national level, Japan has a voluntary trading scheme (JVETS) with only very limited efficacy so far since only a small number of entities engaged in the system.

Similar to the United States, there are several regional level trading schemes up and running or forthcoming, e.g., in Tokyo, Saitama or Kyoto.

##### 4.2.3.6.2. The Tokyo ETS

In 2011, the Prefecture of Tokyo started a regional emissions trading scheme targeting energy related CO<sub>2</sub> requiring 1,300 of Tokyo's most energy and carbon intensive organisations to meet legally binding emission targets. Currently, there are about 1,100 commercial and institutional entities and about 200 industrial facilities covered consuming 1,500kl or more (crude oil equivalent) energy annually. This represents app. 40% of all commercial and industrial emissions combined.<sup>85</sup> The ETS is the main mechanism of the Tokyo Metropolitan Governments (TMG) effort to achieve a reduction in carbon emissions of 25% until 2020 with the 2000 level as a baseline.

<sup>84</sup> Clean Energy Act, No. 131 of 2011 as amended, available on the Internet at <<http://www.comlaw.gov.au/Details/C2013C00058/Download>> (last accessed on 25 January 2013).

<sup>85</sup> Toshiko Chiba, "The Development Toward the Introduction of Tokyo Cap and Trade Program", presentation held at the Bureau of Environment Tokyo Metropolitan Government, Tokyo, 27 May 2011.

The first phase of the scheme running until 2014, participants have to cut their carbon emissions by 6%, followed by a 14% reduction in the second phase from 2015-2019.<sup>86</sup> Emission allowances are being allocated based on a grandfathering mechanism. If participants do not meet their reduction targets, they are being fined by a heightened reduction target of 1.3% of the shortfall plus a monetary fine. Moreover, their failure will be announced publicly.<sup>87</sup> Banking is allowed in the Tokyo scheme but borrowing is not.

#### **4.2.3.6.3. The Saitama and the Kyoto Emissions Trading Systems**

There are two other regional emissions trading schemes, the Saitama cap-and-trade Program and Kyoto's ETS that started in 2011.

##### *The Saitama Emissions Trading System*

The Saitama ETS targets owners of large facilities (office buildings and factories) whose consumption of fuels, heat and electricity in the previous fiscal year (FY) is 1,500kl or larger (crude oil equivalent).<sup>88</sup> The number of covered facilities is about 600. The covered entities face an absolute emissions cap with grandfathering as allocation method. The allocated allowances are the base year emissions (average emission of consecutive 3 years between FY2002 and FY2007) x Compliance factor (6% or 8%) x Compliance period.<sup>89</sup>

Amongst the tradable allowances are reduction surpluses certified by the Prefecture (reduction exceeding the yearly obligation by covered facilities) as well as emissions reduction credits from small and midsize facilities in Saitama (achieved by energy saving measures) and last, forest sink credits.<sup>90</sup>

##### *The Kyoto Emissions Trading System*

The Kyoto system is part of a strategy to reduce GHG emissions to 25% below the 1990 levels by 2020. In a next step, the goal is a reduction of 40% by 2040.<sup>91</sup> About 280 entities covered by the scheme have to submit a three-year emission reduction plan, however, participation in the scheme is not mandatory but

---

<sup>86</sup> Ibid.

<sup>87</sup> Ibid.

<sup>88</sup> Yasuharu Ueda, "Considerations of Emission Trading Schemes in Japan", presentation held at the "Emission Trading Seminar", Tokyo, 11 March 2011, available on the Internet at <<http://www.iges.or.jp/en/cdm/pdf/regional/20110311/Ueda.pdf>> (last accessed on 23 January 2013).

<sup>89</sup> Ibid.

<sup>90</sup> Ibid.

<sup>91</sup> Point Carbon, "Third Japanese Region Launches CO2 Trading Scheme, 21 October 2011, available on the Internet at <<http://www.pointcarbon.com/news/1.1632356>> (last accessed on 23 January 2013).

voluntary. Participants, who are struggling to reach their reduction targets have the possibility to fund reduction measures at small and medium-sized facilities in the prefecture. In return, they are given so called kKyo-VERs usable to prove compliance with the scheme. Another way to earn said Kyo-VERs is participation in forest conservation projects.<sup>92</sup> The scheme also allows offset credits from small voluntary schemes run by the federal government, but has ruled out the use of U.N.-issued credits because they don't contribute to local emission cuts.<sup>93</sup>

#### **4.2.3.7. Bilateral Offset Initiatives**

##### **4.2.3.7.1. Brief Overview**

Since 2010, Japan is developing a system called Bilateral Offset Crediting Mechanism (BOCM). It shall be operationalized in 2013. Given Japan's energy supply structure and the recent backlash against nuclear power, the Japanese Government believes that offsets will play an important role in helping the country to reduce GHG emissions reduction and thus meeting its 2020 targets under the Kyoto Protocol.

The mechanism is designed to provide low-carbon technologies, products, and services to other countries. Being used by the partner countries to reduce GHG emissions, credits earned for this reduction then flow back to Japan as offset credits. Japan is planning to establish this mechanism on a country-to-country-basis (focusing on East Asia) through bilateral negotiations.<sup>94</sup> Compared to the Clean Development Mechanism (CDM), the advantage of BOCM is seen in a simplified procedure due to its bilateral approach rather than the installment of a supranational administrative body. Furthermore, the scope of low-carbon technologies compared to CDM is wider; no technology (e.g. atomic energy) is a priori excluded. For the moment, BOCM credits are purely supposed to be used in helping Japan achieve its own reduction targets. Whether BOCM credits are intended to be traded internationally is unclear at this point. Another possible problem the BOCM might face is double-counting.<sup>95</sup>

---

<sup>92</sup> Ibid.

<sup>93</sup> Ibid.

<sup>94</sup> Takashi Hongo, "Bilateral Offset Credit Mechanism by Japan (BOCM)", presentation held at The Third High-Level Policy Roundtable on International Investment, Shanghai, 7-9 May 2011, available on the Internet at <http://www.adbi.org/files/2012.05.08.cpp.sess3.2.hongo.bilateral.credit.japan.pdf> (last accessed on 25 January 2013).

<sup>95</sup> CDC Climate Brief, "Japan's Bilateral Offset Crediting Mechanism: a bilateral solution to a Global Issue?", January

#### 4.2.3.7.2. Analysis

Since BOCM is *expressis verbis* designed in a bilateral fashion, joining the mechanism could be a cheap and effective way for Taiwan to lower its carbon emissions since technology and services would be supplied by the Japanese Government. However, the reduction credits earned would flow back to Japan, instead of mitigating Taiwan's pollution count. A *de facto* mitigation of carbon emissions in Taiwan would therefore not express itself in statistics but would benefit the Japanese performance.

### 5. Outlook and Recommendations for Action

---

Overall, this case study has identified a number of pathways for Taiwanese participation in international carbon markets. In many cases, however, the pending design details for the carbon market still prevent an informed assessment of the prospects and conditions for future carbon market access. In other cases, ambiguities in the mandate for cooperation across jurisdictions make it difficult to formulate definitive recommendations, and only an authoritative interpretation of the relevant rules by the system administrators of the respective system will be able to provide certainty. Generally, however, a number of specific recommendations for action can be identified to improve the prospects of future participation in bi- or multilateral trade in greenhouse gas emission units. These recommendations can be summarized as follows:

- To the extent possible, Taiwan should actively participate in decision-making processes at the regional and international level related to the creation of carbon markets, and also engage bilaterally with other jurisdictions operating or looking to introduce a carbon market, and use soft power to influence the definition of eligibility requirements and market access in its favor;
- formal restrictions on eligibility, for instance to "parties" to an international treaty, would pose a serious obstacle for Taiwanese

participation in affected markets, yet such restrictions are not generally justified on environmental grounds. If other jurisdictions express concern that Taiwanese participation in the market might undermine the environmental integrity of the market or negatively affect carbon price levels, technical provisions can ensure that trade is either unidirectional, or does not exceed certain volumes;

- Taiwan can improve the political prospects of better market integration by demonstrating to potential partners that it has achieved full market readiness. Accurate emissions data and provisions and processes for the measurement, reporting and verification of emissions as well as reliable institutional structures are all important indicators for market readiness, and will enable Taiwan to make a stronger case for the benefits of carbon market cooperation.
- As a way of preparation for eventual integration effort, it is therefore already advisable to develop an active strategy of public diplomacy and outreach, using documents, audiovisual material, presentations, social media and other channels to communicate the existence and high level of sophistication of existing regulatory and administrative structures for market readiness in Taiwan;
- carbon market integration can be further facilitated if Taiwan has implemented a robust, enforceable greenhouse gas mitigation target. Existing emissions trading systems generally impose qualitative conditions and restrictions on integration of carbon markets. The EU ETS, for instance, only allows linking to other emissions trading systems if these are subject to a mandatory and absolute greenhouse gas emissions limitation or reduction target, and even while it remains unclear whether the formal linking provision in the EU ETS directive preclude a formal link with Taiwan due to lacking recognition of statehood, the lack of an absolute and mandatory target is in every case going to preclude linking;
- ultimately, active integration of carbon markets will presuppose a process of engagement and, depending on the type of market integration, on formal negotiations. In order for all sides to be able and willing to proceed, the conditions and consequences of market integration need to be analyzed, for

instance distributional and economic impacts in each system. Likewise, regulators in each jurisdiction will probably expect a certain degree of harmonization of rules, principles and objectives;

- even where integration of carbon markets has been achieved, sustained, long-term and deep integration – for instance through full bilateral linking of emissions trading systems – will require continuous engagement between systems. It would be advisable for Taiwan to endorse the creation of a process or forum to facilitate regular technical dialogue and exchange.

Given the unique status of Taiwan in international relations, some of the recommendations may be more difficult to follow than others. Where formal membership in international bodies and organizations is a precondition for active participation, Taiwan will be limited to using soft power and public diplomacy. In the short term, therefore, bi- and plurilateral cooperation with other

countries may offer more favorable prospects for carbon market integration than seeking participation in multilateral carbon trading initiatives, such as the New Market Mechanism currently under negotiation within the UNFCCC. Such bi- and plurilateral – occasionally also described as “transnational” – carbon market cooperation through direct or indirect, bi- or unilateral carbon market linkage will call for a process of continuous engagement and exchange at the technical level, and domestic carbon trading structures which are as compatible as possible. Early harmonization of domestic carbon trading initiatives in Taiwan and voluntary application of international best practices will help ensure future compatibility of trading systems. And in this regard, Taiwan is already making progress by applying a number of international rules and guidelines.

## References

---

### Documents Cited

- Atomic Energy Council, "Status of Nuclear Programs in Taiwan", available on the Internet at <<http://www.aec.gov.tw/www/english/whatsnew/article.php?n=64>> (last accessed on 11 January 2013).
- Carbon Finance at the World Bank, "State and Trends of the Carbon Market 2012", Washington DC 2012, available on the Internet at <[http://siteresources.worldbank.org/INTCARBONFINANCE/Resources/State\\_and\\_Trends\\_2012\\_Web\\_Optimized\\_19035\\_Cvr&Txt\\_LR.pdf](http://siteresources.worldbank.org/INTCARBONFINANCE/Resources/State_and_Trends_2012_Web_Optimized_19035_Cvr&Txt_LR.pdf)> (last accessed on 23 January 2013).
- CDC Climate Brief, "Japan's Bilateral Offset Crediting Mechanism: A Bilateral Solution to a Global Issue?", January 2012, available on the Internet at [http://www.cdcclimat.com/IMG/pdf/12-01\\_climate\\_brief\\_11-\\_japan\\_s\\_bilateral\\_offset\\_crediting\\_mechanism.pdf](http://www.cdcclimat.com/IMG/pdf/12-01_climate_brief_11-_japan_s_bilateral_offset_crediting_mechanism.pdf) (last accessed on 25 January 2013).
- Chiba, Toshiko "The Development Toward the Introduction of Tokyo Cap and Trade Program", presentation held at the Bureau of Environment Tokyo Metropolitan Government, Tokyo, 27 May 2011.
- CIA, "The World Factbook Taiwan", 20 December 2012, available on the Internet at <<https://www.cia.gov/library/publications/the-world-factbook/geos/tw.html>> (last accessed on 11 January 2013).
- Clean Energy Act, No. 131 of 2011 as amended, available on the Internet at <<http://www.comlaw.gov.au/Details/C2013C00058/Download>> (last accessed on 25 January 2013).
- Climate Change Information New Zealand, "The New Zealand Emissions Trading Scheme, 2011, available on the Internet at <<http://www.climatechange.govt.nz/emissions-trading-scheme>> (last accessed on 23 January 2013).
- Council for Economic Planning and Development, "Taiwan Statistical Data Book 2012", July 2012, available on the Internet at <<http://www.cepd.gov.tw/encontent/m1.aspx?sNo=0017349>> (last accessed on 11 January 2013),
- Environmental Protection Administration, "Towards UNFCCC", 4. November 2011, available on the Internet at <http://unfccc.epa.gov.tw/unfccc/english/index.html> (last accessed on 11 January 2013).
- Environmental Protection Administration, "Taiwan's Voluntary GHG Reduction Program: Strategies for Assisting Domestic Emission Sources to Acquire Foreign CDM Credits to Offset GHG Emissions", November 2009, available on the Internet at [http://unfccc.epa.gov.tw/unfccc/english/\\_uploads/Taiwans\\_Voluntary\\_GHG\\_Reduction\\_Program.pdf](http://unfccc.epa.gov.tw/unfccc/english/_uploads/Taiwans_Voluntary_GHG_Reduction_Program.pdf) (last accessed on 15 January 2013).
- Environmental Protection Administration, "Taiwan Initiates Nationally Appropriate Mitigation Actions", available on the Internet at <[http://unfccc.epa.gov.tw/unfccc/english/\\_uploads/20100901/B5-NAMAs\\_en.pdf](http://unfccc.epa.gov.tw/unfccc/english/_uploads/20100901/B5-NAMAs_en.pdf)> (last accessed on 16 January 2013).
- Environmental Protection Administration, "Taiwan's Policies and Measures for Energy Conservation and Carbon Reduction", available on the Internet at <[http://unfccc.epa.gov.tw/unfccc/english/\\_uploads/policy\\_en.pdf](http://unfccc.epa.gov.tw/unfccc/english/_uploads/policy_en.pdf)> (last accessed on 16 January 2013).
- Environmental Protection Administration, "Promoting Industry Greenhouse Gas Voluntary Reduction Strategies", available on the Internet at <<http://www.epa.gov.tw/en/NewsContent.aspx?path=426&NewsID=2602>> (last accessed on 10 January 2013).
- European Commission, "Climate Action Newsroom – Australia and European Commission Agree on Pathway Towards Fully Linking Emissions Trading System", 28 August 2012, available on the Internet at <[http://ec.europa.eu/clima/news/articles/news\\_2012082801\\_en.htm](http://ec.europa.eu/clima/news/articles/news_2012082801_en.htm)> (last accessed on 23 January 2013).
- GO-MOEA, "About GO-MOEA", available on the Internet at <<http://www.go-moea.tw/en/index.html>> (last accessed on 10 January 2013).

- Hongo, Takashi, “Bilateral Offset Credit Mechanism by Japan (BOCM)”, presentation held at The Third High-Level Policy Roundtable on International Investment, Shanghai, 7-9 May 2011, available on the Internet at <http://www.adbi.org/files/2012.05.08.cpp.sess3.2.hongo.bilateral.credit.japan.pdf> (last accessed on 25 January 2013).
- International Emissions Trading Association (IETA), “Asia and Beyond: The Roadmap to Global Carbon & Energy Markets”, Greenhouse Gas Market 2011.
- New Zealand Legislation, “Climate Change (Unit Register) Regulations 2008”, available on the Internet at <http://www.legislation.govt.nz/regulation/public/2008/0357/20.0/whole.html> (last accessed on 24 January 2013).
- Point Carbon, “Third Japanese Region Launches CO2 Trading Scheme, 21 October 2011, available on the Internet at <http://www.pointcarbon.com/news/1.1632356> (last accessed on 23 January 2013).
- Regional Greenhouse Gas Initiative Model Rule, 15 August 2006, revised on 31 December 2008, available on the Internet at <http://rggi.org/docs/Model%20Rule%20Revised%2012.31.08.pdf> (last accessed on 23 January 2013).
- Reuters, “Factbox: Carbon Trading Schemes Around the World”, 26 September 2012, available on the Internet at <http://www.reuters.com/article/2012/09/26/us-carbon-trading-idUSBRE88POZN20120926> (last accessed on 14 January 2013).
- Taipei Times, “Taiwanese Independence More Popular, Survey Says”, 11 August 2012, available on the Internet at <http://www.taipetimes.com/News/taiwan/archives/2012/08/11/2003540007> (last accessed on 15 January 2013).
- Taiwan GHG Emissions Registry, “Actions to Reduce GHG”, available on the Internet at [http://estc10.estc.tw/ghgenglish/reduction\\_ghg.asp](http://estc10.estc.tw/ghgenglish/reduction_ghg.asp) (last accessed on 11 January 2013).
- Ueda, Yasuharu, “Considerations of Emission Trading Schemes in Japan”, presentation held at the “Emission Trading Seminar”, Tokyo, 11 March 2011, available on the Internet at [http://www.iges.or.jp/en/cdm/pdf/regional/2011\\_0311/Ueda.pdf](http://www.iges.or.jp/en/cdm/pdf/regional/2011_0311/Ueda.pdf) (last accessed on 23 January 2013).
- United Nations Framework Convention on Climate Change (UNFCCC), New York, 9 May 1992, in force 21 March 1994, 31 *International Legal Materials* (1992), 849.
- United Nations, Resolution 2758 - Restoration of the Lawful Rights of the People’s Republic of China in the United Nations, United Nations General Assembly XXVI<sup>th</sup> Session, 1976<sup>th</sup> Plenary Meeting, 25 October 1971.
- Verified Carbon Standard (VCS) “Project Database”, available on the Internet at <http://www.vcsprojectdatabase.org> (last accessed on 14 January 2013).
- WCI, “Detailed Design for the WCI Regional Program”, 27 July 2010, available on the Internet at <http://www.westernclimateinitiative.org/document-archives/general/program-design/Detailed-Design/> (last accessed on 24 January 2013).

## Literature Cited

- André Aasrud, Richard Baron and Katia Karousakis, *Market Readiness: Building Blocks for Market Approaches*, OECD Doc. COM/ENV/EPOC/IEA/SLT(2010)3 (Paris: OECD, 2010).
- Brownlie, Ian, *Principles of International Law*, 7<sup>th</sup> ed. (Oxford: Oxford University Press, 2008).
- Chan, David Yih-Linag et al., “Current Situation of Energy Conservation in High Energy-consuming Industries in Taiwan”, 35 *Energy Policy* (2007), 202.
- Gao, Anton Ming-Zhi, “Taiwan’s Recent Efforts to Promote Renewable Energy Development: Policy Measures, Legal Measures, Challenges, and Solutions in the Post-Fukushima Era”, 4 *Renewable Energy Law and Policy Review* (2013) - forthcoming.
- Hwang, Jenn Jiang “Policy Review of Greenhouse Gas Emission Reduction in Taiwan”, 15 *Renewable and Sustainable Energy Reviews* (2011), 1392.
- Hwang, Jenn Jiang and Chang, Wei Ru, “Policy Progress in Mitigation of Climate Change in Taiwan”, 39 *Energy Policy* (2011), 1113.

- 
- Michael Mehling, "Linking of Emissions Trading Schemes", in David Freestone and Charlotte Streck (eds.), *Legal Aspects of Carbon Trading: Kyoto, Copenhagen and Beyond* (Oxford: Oxford University Press, 2009), 108-133.
- Michael Mehling et al., *Prospects for a Transatlantic Carbon Market: What Next after the US Midterm Elections?* Climate Strategies Working Paper (Cambridge: Climate Strategies, 2011).
- Michael Mehling and Erik Haites, "Mechanisms for Linking Emissions Trading Schemes", 9 *Climate Policy* (2009), 169-184.
- Young, Chea Yuan and Huang, Wei Ming, "Review of Taiwan's Climate Policy after Copenhagen", 16 *Renewable and Sustainable Energy Reviews* (2012), 20.



Climate  
Strategies

[www.climatestrategies.org](http://www.climatestrategies.org)

Climate Strategies is a leading independent, international research organisation based in the UK. Through our network of global experts, we assist governments and industrial stakeholders around the world in developing climate change and energy policies. We are a not-for-profit organisation with all our activities funded through a broad spectrum of governments, businesses and foundations.

Companies House Number 05796323.

[www.climatestrategies.org](http://www.climatestrategies.org)