Economic Instruments to Combat Climate Change in Asian Countries

Energy and Environmental Law & Policy Series Supranational and Comparative Aspects

VOLUME 29

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Economic Instruments to Combat Climate Change in Asian Countries

Edited by

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Published by:
Kluwer Law International
PO Box 316
2400 AH Alphen aan den Rijn
The Netherlands
Website: www.kluwerlaw.com

Sold and distributed in North, Central and South America by:
Aspen Publishers, Inc.
7201 McKinney Circle
Frederick, MD 21704
United States of America
Email: customer.service@aspenpublishers.com

Sold and distributed in all other countries by:
Turpin Distribution Services Ltd
Stratton Business Park
Pegasus Drive, Biggleswade
Bedfordshire SG18 8TQ
United Kingdom
Email: kluwerlaw@turpin-distribution.com

Printed on acid-free paper.

ISBN 978-90-411-5408-8

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Printed and Bound by CPI Group (UK) Ltd, Croydon, CR0 4YY.

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Recent Development of an Emissions Trading Scheme in Thailand

Robert Brian Smith, Nucharee Nuchkoom Smith & Darryl Robert Smith[*]

§8.01 INTRODUCTION

[A] Overview

Thailand has been an active participant in the movement to reduce greenhouse gas (GHG) emissions over the last two decades. It ratified the United Nations Framework Convention on Climate Change (UNFCCC) on 28 December 1994 and the Kyoto Protocol on 28 August 2002.[1] 'As a Non-Annex I country, Thailand promotes the implementation of the Clean Development Mechanisms (CDM) under the Kyoto Protocol in order to encourage GHG limitation and reduction in the country, as well as to promote the sustainable development business in developing countries.'[2]

[B] Policy Framework

Thailand has, over the years, initiated a number of energy conservation measures including measures for energy conservation in buildings[3] and factories.[4]

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1. Committee for the Study of Emission Factor for Electricity Generation of Thailand, *Summary Report: The Study of Emission Factor for Electricity Generation of Thailand in Year 2010*, (2010), 1, http://www.tgo.or.th/english/download/publication/GEF/2010/GEFReport_ENrevise4.pdf (accessed 20 September 2014).
2. *Ibid*.
3. The Royal Decree on Designated Building, BE 2538 (1993).
4. The Royal Decree on Designated Factory, BE 2540 (1995).

The Energy Efficiency Development Plan 2011-2030 has a target to reduce energy intensity by 25% in 2030 compared with that in 2005.[5] The Alternative Energy Development Plan 2012-2021 acknowledges the impact of global warming due to GHG emissions.[6] The Plan acknowledges that Thailand should conduct renewable energy development and promotion as a measure to reduce the release of GHG as 'this would be an initial point to step into the Low Carbon Society and be exemplary for the world society to cite Thailand as the country with strong intent in using renewable energy'.[7]

[C] The Establishment of National Committee on Climate Change

Established in 2007, the National Committee on Climate Change is chaired by the Prime Minister and comprises experts and high-level officials. The committee formulates and oversees major climate change policies. It also provides advice on the national position in relation to international texts and forums.[8] Under the Committee there were originally three Sub-Committees:[9]

- Climate Change Negotiation Sub-Committee;
- Climate Change Technical Sub-Committee; and
- Secretariat from Ministry of Natural Resources and Environment.

By 2014 there was a Sub-Committee on Adaptation as well as a Sub-Committee on Nationally Appropriate Mitigation Action (NAMAs) and Measurement Reporting & Verification (MRV).[10] In addition, there was a Climate Change Coordinator responsible for coordinating thirty Agencies under 19 Ministries.[11]

[D] Thailand's Response to Climate Change

The Eleventh National Economic and Social Development Plan (2012-2016)[12] sets out Thailand's policy response to climate change. It noted that in 2004 GHG emissions

5. Ministry of Energy, *Thailand Energy Efficiency Development Plan (2011-2030)* (Bangkok, 2011).
6. *DEDE AEDP 2012-2021* presented on DEDE Website, http://www.dede.go.th/dede/images/stories/aedp25.pdf in Thai version. English by Dr. Renu Cheokul (April 2012) (accessed 1 May 2013).
7. *Ibid*.
8. Office of Natural Resources and Environmental Policy and Planning *Thailand's National Capacity Self-Assessment, United Nations Framework Convention on Climate Change* (Bangkok: Office of Natural Resources and Environmental Policy and Planning, Bangkok, 2010), 9.
9. Office of Natural Resources and Environmental Policy and Planning (2010) *Thailand's Second National Communication under the United Nations Framework Convention on Climate Change* (Bangkok: Ministry of Natural Resources and Environment, 2010), 36.
10. N. Wayuparb, *Thailand's Overview of National Policies, Laws and Arrangements on Climate Change* (PowerPoint presentation), Technical Workshop on 'Laws, Regulations, Institutional Arrangement and Technical Aspects on GHG Reporting and Emissions Trading Scheme (ETS)/Initiatives Sharing Experiences in China and Thailand', 27-28 March 2014, 10, http://conference.tgo.or.th/download/tgo_or_th/seminar/presentation/2014/Mar/2728/01_TH_Overview_27_March_2014.pdf (accessed 23 November 2014).
11. *Ibid*.
12. National Economic and Social Development Board. Office of the Prime Minister. *The Eleventh National Economic and Social Development Plan (2012-2016)* (Bangkok, 2011).

were 265.9 million tons. This included emissions from land use and forests. Between 2003 and the time of the Plan preparation in 2011, emissions had risen by 6.3%.[13] Industry and energy generating sectors contributed 63% with agricultural, industrial, and waste sectors contributing 17%, 7%, and 4%, respectively of total GHG emissions. Among the key objectives of the plan were the need for Thailand 'to promote production and consumption that is environmentally sound in order to redirect the country toward a low carbon emission society' and '[t]o create resilience so as to be prepared to deal with impacts from climate change and worldwide environmental issues'[14] in order to 'improve the efficiency of GHG mitigation in Thailand'.[15]

Finally, the plan proposes a number of management measures to mitigate the effects of climate change.[16] These include:

- Supporting preparation of long term plans to manage the economic and social effects of climate change, including a plan to reduce GHG emissions;
- Developing databases and reporting systems to measure GHG emissions;
- Using fiscal measures as tools in environmental management such as pollution taxes,[17] product fees, risk insurance, and emission quotas;
- Setting targets for GHG reduction and developing medium- and long-term action plans for voluntary mitigation of GHG;
- Conducting market research to identify revenue opportunities through selling carbon credits on both a voluntary and regulated basis, including standards that link to international markets: and
- Establishing a carbon fund as a domestic buying source for carbon credits and offsets and supporting a feasibility study on establishing a carbon market for the ASEAN Economic Community.

The Eleventh National Economic and Social Development Plan is to be supported by a Climate Change Master Plan. The Plan has been in draft form since 2011[18] and has still not been finalized. It is proposed to cover the period from the present up to 2050.

The draft Plan identifies three key underlying strategies for coping with the effects of climate change: adaptation to cope with the negative effects of climate change, mitigation of GHG emissions and increase GHG sinks, and strengthen the capacity of personnel and institutions to manage the risks from the effects of climate

13. *Ibid*., 111.
14. *Ibid*.
15. *Ibid*.
16. *Ibid*., 124-125.
17. At this time there has been no action to develop a carbon tax with the emphasis placed on the development of an ETS.
18. N. Pipitsombat, *Thailand Climate Policy: Perspectives beyond 2012* (PowerPoint presentation) Post 2012 Climate Policy: Perspectives from Thailand and the European Union, Bangkok, 6 September 2012, http://eeas.europa.eu/delegations/thailand/documents/thailande_eu_coop/environment_energy/onep_climate_policy_en.pdf (accessed 23 November 2014).

change.[19] The strategy for mitigation measures to reduce emissions and increase GHG sinks had the following objectives: participation from every sector and level; efficient use of energy and resources; and creating a body of knowledge on environmentally friendly solutions.[20] Among the approaches proposed to be adopted were:[21]

- Developing a system for imposing a carbon tax and other environmental taxes based on the polluter-pay principle (PPP) in a fair manner; and
- Promoting and supporting cities and communities towards an efficient and sustainable low carbon society.

At the UNFCCC COP18 Thailand stated that it had voluntarily implemented measures to reduce GHG emissions in the energy sector such as adopting the Energy Efficiency and Conservation Plan and the Renewable and Alternative Energy Development Plan in order to 'effectively undertake our mitigation measures both by public and private sectors' and was defining NAMAs for the energy sector and finalizing its Climate Change Master Plan.[22] Thailand also sought assistance for developing countries in coping with the impacts of climate change, especially in the agriculture sector because of its 'crucial role in food security and poverty eradication'.[23]

Thailand's response at COP19 was to reiterate that it is time to make the adoption of the Second Commitment Period of the Kyoto Protocol a reality.[24] Thailand reaffirmed its commitment towards low carbon growth and climate resilience and called on the developed countries to 'likewise fulfill their commitments under the Convention, and raise their ambition in providing the wherewithal for their developing counterparts, to pursue low-carbon growth and adapt themselves to the adverse impact of climate change'.[25] Thailand considered that strengthening the common resolve and cooperation will help achieve a meaningful agreement to be adopted in the next two years.[26]

In 2012, Thailand released a comprehensive Technology Needs Assessment Report for Climate Change Mitigation.[27]

19. *Ibid*., 18.
20. *Ibid*., 21.
21. *Ibid*., 23.
22. C. Trachu (2013) *Statement, High-Level Segment of the UNFCCC COP 18 and CMP 8, Doha, Qatar, 21 November 2013,* http://unfccc.int/resource/docs/cop18_cmp8_hl_statements/Statement%20by%20Thailand%20%28COP%29.pdf (accessed 5 October 2014).
23. *Ibid*.
24. P. Pookaman, *Statement, Joint High-Level Segment of the 19th Session of the Conference of the Parties to the UNFCCC and the 9th Session of the Conference of the Parties Serving as the Meeting of the Parties to the Kyoto Protocol (COP19/CMP9) Warsaw, Poland, 21 November 2013*, http://unfccc.int/files/meetings/warsaw_nov_2013/statements/application/pdf/cop19_hls_thailand.pdf (accessed 5 October 2014).
25. *Ibid*., 3.
26. *Ibid*., 4.
27. National Science Technology and Innovation Policy Office, *Thailand Technology Needs Assessment Report for Climate Change Mitigation, July 2012* (Bangkok, 2012).

[E] CDM

The Thailand Greenhouse Gas Management Organization (TGO) was established by Royal Decree in 2007.[28] It is a public organization under the Ministry of Natural Resources and Environment and is Thailand's Designated National Authority for the Clean Development Mechanism (Thai DNA), and is the implementing agency on GHG emission reduction in Thailand.[29] At establishment its objectives were to assess [CDM (Clean Development Mechanism)] projects for approval as well as assessing performance; advance the development of GHG trading; act as an information centre on GHG operations; develop an information base on approved projects and quantity of GHG traded; advise public and private organizations on GHG emissions; disseminate information on GHG management; and to promote and support the [Government's] climate change operations.[30]

[F] Role of an Emissions Trading Scheme (ETS) in Thailand's Response

In its Draft Market Readiness Proposal, in October 2013, Thailand noted that in recent years there has been a lack of clarity on new market mechanisms under UNFCCC.[31] As a result, Thailand considered that a 'domestic carbon market becomes an important instrument to reduce GHG emissions in developing countries' and that a 'mandatory ETS is one of the cost-effective tools for reducing GHG emissions'.[32]

Thailand's initial response was to set up a 'Voluntary Domestic Carbon Market' (VDCM) with the aim of supporting voluntary GHG reduction activities to achieve cost-effective GHG reduction.[33] This will provide the opportunity for the participating organizations to gain experience in how to manage domestic emissions trading/carbon offsetting whilst providing an economic incentive to private companies to voluntarily reduce their GHG emissions.[34] The voluntary market-based instruments are designed to align with national priorities in the areas of energy efficiency, renewable energy and low carbon society plans.[35] The instruments will be the foundation for establishing the future ETS.[36]

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28. *Royal Decree: Establishment of Greenhouse Gas Management Organization (Public Organization), B.E. 2550 (2007)* (Translation), http://www.ThaiLaws.com (accessed 10 October 2014).
29. Committee for the Study of Emission Factor for Electricity Generation of Thailand in the Year 2010, *supra* n. 1.
30. *Ibid*., 7.
31. Thailand Greenhouse Gas Management Organization, *Draft Market Readiness Proposal [Thailand]. October 2013*, (PowerPoint Presentation), 20, http://www.thepmr.org/system/files/documents/Thailand%20Draft%20MRP%20presentation%20(PA7).pdf (accessed 23 October 2013).
32. *Ibid*.
33. P. Sansayavichai & T. Somnam, *Climate Change Mitigation Using Innovative Assessment Tools and Techniques*, Regional Workshop on Strengthening Policies and Practices for Low Carbon Green Growth in Asia 17 July 2013 Tokyo, Japan. (PowerPoint Presentation), http://www.adbi.org/files/2013.07.17.cpp.d2.s4.2.4.country.ppt.thailand.pdf (accessed 4 October 2014).
34. *Ibid*.
35. Thailand Greenhouse Gas Management Organization, *supra* n. 31.
36. *Ibid*.

In its Final Market Readiness Proposal Thailand was highly positive in the suggested outcomes from implementing an ETS. 'The use of market-based instruments to drive low-carbon development are expected to not only result in enhanced energy efficiency, increased renewable energy share and GHG emission reductions, but also create an environment that fosters competitiveness, technology transfer, institutional capabilities, research and development, and inclusive growth in the economy'.[37] It considered that 'innovative measures are required in addition to the existing voluntary measures and input-based approaches used in the past which may have exhausted their potential to incentivize energy savings. Measures which are more market-oriented and output-based are needed to harvest large potential of energy efficiency improvement particularly in the industrial sector which saw little improvement in energy intensity in the last decade.'[38] It also estimated that 'the use of market-based instruments can lead to energy savings for selective sectors above and beyond the national goal in the same period'.[39]

[G] Outline of Article

Section §8.02 initially outlines Thailand's legal regime and administrative oversight for the development of CDM projects in its role as a Non-Annex I country under the Kyoto Protocol. It then looks at the development of CDM projects, the lessons learnt, and the next steps for Thailand to meet its objective of being a Low Carbon Society.

Section §8.03 describes Thailand's proposed ETS which is being developed with the assistance of the Partnership for Market Readiness. The potential impact of the proposed ETS is discussed in section §8.04.

It is clear even from its existing energy conservation programmes that Thailand will face major challenges in establishing an ETS. Key challenges are discussed in section §8.05.

Finally, section §8.06 concludes that, provided there is a clear focus, government will and a streamlined and transparent process, Thailand will meet the challenge and will, indeed, achieve its goal of being a low carbon society.

§8.02 DEVELOPMENT AND IMPLEMENTATION OF CDM PROJECTS IN THAILAND

The TGO is the CDM DNA for Thailand. The Office of Natural Resources and Environmental Policy and Planning (ONEP) under the Ministry of Natural Resources

37. Thailand Greenhouse Gas Management Organization, *Thailand's Market Readiness Proposal, 7 February 2014*, Partnership for Market Readiness (PMR) (2014) 10, https://www.thepmr.org/system/files/documents/Final%20MRP_Thailand_07022014.pdf (accessed 24 October 2014).
38. *Ibid*.
39. *Ibid*.

and Environment is the National focal point of UNFCCC, and holds the co-secretariat with TGO for National Committee on Climate Change.[40]

[A] Legal Framework

[1] CDM Specific Laws

There are no specific laws applicable to CDM projects in Thailand.[41] Projects must, therefore, be operated under the applicable business laws governing their underlying projects.[42]

This also means that CDM projects can receive any benefits and concessions that apply to the industry sector in which they are operating.[43]

[2] Foreign Business Laws

Foreign businesses must operate in accordance with the current Thai regulatory regime.[44,45] Section 4 of the Foreign Business Act[46] identifies a foreigner as a natural person who is not of Thai nationality; a juristic person which is not registered in Thailand; and a juristic person which is registered in Thailand and in which 50% or more of the shares are held by a non-Thai or by a juristic person which is not registered in Thailand or 50% or more of the capital was similarly invested. Finally, it is a foreign business if it is a limited partnership or partnership which has as its registered manager a natural person who is not of Thai nationality.

The Act includes a number of restrictions on business operation.[47] Businesses in Annex One of the Act are reserved for Thai people only. Foreigners are excluded from these categories of business for what the Thai law calls a 'special reason'.[48] The

40. P. Petchsri, *Example of Requirements for Issuance of LoAs for PoAs*, 3 (PowerPoint presentation), UNFCCC DNA Training, Bonn 20-21 March 2012, http://unfccc4.meta-fusion.com/kongresse/dna13/pdf/DNA%20Training_Day%202_1145_Thailand_Penpron_Issuance%20of%20LoA%20for%20PoA.pdf (accessed 22 October 2014).
41. *Legal Handbook for CDM Project Development in Thailand* (Bangkok: Thailand Greenhouse Gas Management Organization (Public Organization)), 96.
42. *Ibid*.
43. S. Pairoj-Boriboon. *Current Status of CDM in Thailand, Feb 2010* (PowerPoint presentation) Facilitation Workshop under the SETatWork project: Matchmaking between CDM project owners & EU stakeholders and other forms for business cooperation in the field of Energy Efficiency and Renewable energy, 18-19 February 2010, Bangkok 13, http://www.setatwork.eu/events/thailand/1002Day1Pres1-3/1.3%20-%20Opening%20-%20Mr.%20Sirithan%20-%20CDM-CEERD%2018-2-10.pdf (accessed 22 October 2014).
44. N.N. Smith, *Thai and Australian Foreign Business Law and the Impact of the Thailand Australia FTA*, 381-395, in 'Information Ethics and Security: Future of International World Time', (S. Kierkegaard (ed.), International Association of IT Lawyers, 2014).
45. Legal Handbook for CDM Project Development in Thailand, *supra* n. 41, 28-63.
46. *Ibid*.
47. *Foreign Business Act* also called *Alien Business Act BE 2542 (1999)*, http://www.thailawonline.com/en/thai-laws/laws-of-thailand/96-foreign-business-act-1999.html (accessed 15 October 2011).
48. *Ibid*., at business list annexes.

schedule includes amongst many other activities farming and forestry. This leaves CDM projects in energy, waste and industry as the primary areas for foreign business operation.[49] Unless, of course, the foreign business is prepared to hold a minority shareholding in the Thai operation.

The Land Code essentially precludes foreigners from owning land but does not preclude the leasing of land for commercial purposes.[50] If a project such as a CDM project receives investment promotion approval from the Board of Investment of Thailand one of the benefits is the ownership of land.[51]

[3] Electricity Industry Laws

The energy industry in Thailand operates under a mix of legislative and administrative requirements.[52] It is primarily governed by the Energy Industry Act BE 2550 (2007) which was enacted to apply to the operation of the energy industry throughout the Kingdom (section [4]) and its application is restricted to electricity and natural gas (section [5]).[53] It is important to note that in order to obtain a license to operate an energy business the licensee must be of Thai nationality, have sufficient financial and technical potential, and have rights over the land or property proposed for use by the energy business.[54]

The legislative and administrative framework has been described in detail by Smith et al.[55]

[4] Uncertainty Operating without CDM Specific Taxation Laws

The major uncertainty in relation to CDM projects in Thailand is their Value Added Tax (VAT) status in relation to trading of Certified Emission Reductions (CERs).[56] The sale of CERs in Thailand can be considered to be the sale of intangible assets and subject to VAT.[57] An argument could be made, however, that as the CERs are not registered in Thailand but rather registered and issued abroad through a registration system outside of Thailand and, as a result, they should not be considered as products sold in Thailand.[58] If a company is registered outside of Thailand and generates CERs from a

49. Legal Handbook for CDM Project Development in Thailand, *supra* n. 41, 28.
50. *Ibid*., 29.
51. *Ibid*.
52. R.B. Smith, N.N. Smith & D.R. Smith, *Chapter 6 FiT and Its Implementation in Thailand: Legal Measures, Implementation, Challenges and Solutions*, 127-146, in 'Legal Issues of Renewable Electricity in Asia Region: Recent Development at a Post-Fukushima and Post-Kyoto Protocol Era', (A.M-Z. Gao & C-T. Fan (eds), The Netherlands: Kluwer Law International.
53. *Energy Industry Act 2550 (2007)* (Unofficial Translation), http://www.eppo.go.th/admin/cab/law/energy_industry_act-2007.pdf (accessed 23 June 2013).
54. Legal Handbook for CDM Project Development in Thailand, *supra* n. 41, 50.
55. Smith et al., *supra* n. 52.
56. Legal Handbook for CDM Project Development in Thailand, *supra* n. 41, 52.
57. *Ibid*.
58. *Ibid*.

CDM project in Thailand they should not be treated as Thai products since they are registered outside of Thailand and are recorded on the asset account of a foreign company.[59] This means that the consumption would be outside of Thailand.[60]

A quirk of the Thai Law is that whilst a VAT rate of 0% applies to the export of goods from Thailand, the Thai Revenue Department has interpreted this to mean that the goods must pass export Customs clearance to obtain the 0% rate.[61] As CERs are intangible assets they cannot pass through Customs, although they are not used or consumed in Thailand, and are deemed to be a domestic sale and subject to VAT.[62] Clearly this matter needs to be resolved.

[B] Evaluation Procedure for CDM-Program of Activities (PoAs) in Thailand

[1] Qualifications of the Coordinating/Managing Entity (CME)

The CME must be a Governmental Agency/University/Agency under supervision of the Government, or a Thai Juristic Person or Foreign Juristic Person established under Thai Law, or a Foreign Juristic Person established under Foreign Law with its branch located in Thailand.[63]

There must be at least two experts with at least three years related experience in the CME.[64] Both the entity and the experts must have related experience in four areas including development of CDM projects; coordinating and managing projects under the programme/group of projects; providing training on CDM projects; and have experience in operating a project of the same type as the proposed project.[65]

[2] Sustainability and Environmental Impact of CDM-PoAs

The Sustainable Development Criteria for CDM projects cover environmental and natural resources; social; technology development and/or technology transfer indicators; and economic indicators (see Table 8.1).[66]

Detailed scores are provided on each of the indicators.[67] In essence, a score of -1 indicates a negative impact to the area, a score of 0 indicates no impact and is equivalent to the baseline scenario whilst a score of +1 or + 2 indicates a positive

59. *Ibid*.
60. *Ibid*., 53.
61. *Ibid*.
62. *Ibid*.
63. *Ibid*., 11.
64. *Ibid*., 12.
65. *Ibid*.
66. Notification of the Board of Directors of Thailand Greenhouse Gas Management Organization on Sustainable Development Criteria for Clean Development Mechanism Project BE 2553 (2010) No 1/2553 (English Translation), http://www.tgo.or.th/download/Announce/CDM/ApprovalNotification_2010_EN.pdf (accessed 22 October 2014).
67. *Ibid*., 3-12.

impact.[68] To be accepted the CDM project must contribute to sustainability in Thailand i.e. the score for each category and hence the total score must be positive.[69]

Table 8.1 Sustainability and Environmental Impact Indicators

The Environmental Indicators and Natural Resources Indicators are:[70] – Reduction of GHGs under the Kyoto Protocol; – Air pollution; – Noise pollution; – Odour; – Waste management; – Soil contamination; – Underground water contamination; – Hazardous waste management; – Water demand and utilization efficiency; – Soil/coastal/river bank erosion. – Green Areas; and – Other indicators that have significant impact.
The Social Indicators are:[71] – Public participation; – Support of social, cultural, and sufficiency economy development activities; and – Health of workers and nearby communities.
The Technology Development and/or Technology Transfer Indicators are:[72] – Technology development; – End of project life plan or end of crediting period plan that the project activity has adopted; and – Capacity building for personnel.
The Economic Indicators are:[73] – Employment; – Additional stakeholder income; – Renewable energy utilization; – Energy efficiency; and – Local content.

[C] Crown Standard

Thailand has developed a benchmark for high quality Thai CDM projects.[74] A project that meets the benchmark is awarded the Crown Standard. To achieve the Crown Standard projects must achieve a total score from the evaluation of its CDM-PoA of

68. Petchsri, *supra* n. 40, 15.
69. *Ibid*.
70. *Ibid*., 3-9.
71. *Ibid*., 9-10.
72. *Ibid*., 10-11.
73. *Ibid*., 11-12.
74. Pairoj-Boriboon, *supra* n. 43, 7.

greater than 50% and meet a threshold level of public participation and public contribution from CER income.[75] The project will be monitored annually by the TGO monitoring network.

Thailand's Crown Standard was recognized by the Gold Standard Foundation (GSF) with a Memorandum of Understanding being signed between TGO and GSF in December 1992 making TGO the first Gold Standard DNA.[76] Thai CDM projects that earn the Crown Standard take a shorter time and at less expense to claim Gold Standard.[77]

[D] The Implementation of CDM: An Overview of CDM Projects

As of October 2013, 191 CDM projects had received Letter of Approval (LoA) status.[78] The projects covered:

- Biogas from anaerobic digestion:
  - Treating wastewater from starch production, palm oil extraction, ethanol plants, and pig slurry;
  - Landfill sites with gas collecting system;
- Energy from biogas;
- Heat recovered from cement plants;
- Wind and solar farms;
- Small hydro-power schemes;
- Nitrous oxide (N_2O) reduction schemes;
- Organic fertilizer produced from digestate and residues;
- Transportation projects; and
- Energy saving projects relating to shifting fuel modes and improving processes.[79]

The expected CER was estimated to be 12.71 $MtCO_2e$/year with biogas contributing 53%, biomass contributing 22% and all other projects contributing 25%.[80]

As at the same date, a total amount of 148 projects had been registered, with an expected annual CER estimated to be 6.88 $MtCO_2e$.[81] Approximately 59% were energy generation projects using biogas, 17% were energy generation projects using biomass. The remainder were energy generation through renewable energy sources.[82]

Thailand considered that there is a strong rational 'to consider adopting market-based instruments to implement cost-effective emission reductions nation-wide in the

75. *Ibid*.
76. *Ibid*., 8.
77. *Ibid*.
78. Thailand Greenhouse Gas Management Organization, *supra* n. 37, 24.
79. Sansayavichai & Somnam, *supra* n. 33, 10.
80. Thailand Greenhouse Gas Management Organization, *supra* n. 37, 24.
81. Thailand Greenhouse Gas Management Organization, *supra* n. 37, 25.
82. *Ibid*.

long-run'.[83] Therefore they considered it vital 'to prepare the market players in both private and public sectors to build technical knowledge, lay down institutional and legal infrastructure, and gain broad-based public acceptance before launching full-fledged mandatory schemes in the future'.[84] In the short-term this will help to 'incubate and develop voluntary local markets'[85] which will be elaborated shortly.

§8.03 DESIGN OF PROPOSED ETS

[A] Institutional Design

[1] Current Status

Thailand is dependent on funding received from the Partnership for Market Readiness (PMR) to develop its ETS. This funding was approved in March 2014.[86] This means that the scheme is very much a work in progress and there could be significant changes before its implementation.

The current details were presented by Thailand in its final market readiness proposal to the PMR Partnership Assembly in March 2014.[87] The objective[88] of interest for this paper is the development of a domestic market mechanism to reduce energy consumption and GHG with a view to moving to a mandatory ETS in the future.[89] Phase I includes designing the Energy Performance Certificate (EPC) Scheme; preparing the infrastructure including the required databases; and the MRV system. It also includes a study on the legal framework for an ETS.[90] Phase II includes preparation of the legal framework and the operation of the EPC demonstration.

The EPC scheme will focus on energy intensive industrial units and commercial buildings.[91] It will include verification and improvement of energy consumption data and GHG emission data for all Designated Factories[92] & Buildings[93] (DF&B) which are estimated at around 7,000 installations. This will need to be supported by the development of data collection and management tools as well as strengthening of the MRV system. A capacity building programme is required for Personnel Responsible for

83. Thailand Greenhouse Gas Management Organization, *supra* n. 37, 30.
84. *Ibid*.
85. *Ibid*.
86. Partnership for Market Readiness (PMR), *Resolution No. PA8/2014-2: Allocation of the Implementation Phase Funding to Thailand*, Eight Partnership Assembly Meeting, Mexico City, 3-5 March 2014, http://www.thepmr.org/system/files/documents/PMR%20Resolution%20PA%202014_2_Allocation_Implementation%20Funding_Thailand.pdf (accessed 1 October 2014).
87. Thailand Greenhouse Gas Management Organization, *supra* n. 37.
88. In addition Thailand proposes to introduce a Low Carbon City Program to support local municipalities and communities to implement GHG mitigation actions.
89. Thailand Greenhouse Gas Management Organization, *supra* n. 37, 28.
90. *Ibid*.
91. Thailand Greenhouse Gas Management Organization, *supra* n. 37, 4.
92. The Royal Decree on Designated Factory, BE 2540 (1995).
93. The Royal Decree on Designated Building, BE 2538 (1993).

Energy and verifiers. Finally, a study is required on incentives for voluntary participation in the scheme and the source of funds.[94]

At that stage the PMR was scheduled to start in the fourth quarter of 2014.[95] The programme saw EPC preparation being undertaken from 2014 to 2016 with the EPC demonstration being undertaken from 2017 to 2019. Preparation of the legal framework and for other components for an ETS was scheduled for 2014-2019.

The first meeting of the National Energy Policy Council in over a year, was held on 15 August 2014. The Nation newspaper reported that the 'National Council for Peace and Order chief General Prayuth Chan-ocha, who chaired the NEPC meeting, said the May 22 coup put the country back at Square 1 in terms of energy policy. All such policies the junta considers "proper" will be kept, but everything else will be revised.'[96] The impact, if any, of this statement on the future of an ETS is unknown at the time of preparing this paper.

[2] Institutional Design of EPC Scheme[97]

As energy policy instruments in Thailand are established as a promotional policy TGO considers that the establishment of EPC scheme would not only work well with other policy instruments such as the Energy Efficiency Development Plan and the Energy Conservation Act but would also 'enhance and fill in the implementation gaps of the existing instruments'.[98] TGO considers that some changes may be required to the regulatory framework for the operation of the EPC scheme.[99] They consider that the Energy Conservation Act (2001) should be amended to cover small-scale buildings/factories and business facilities other than buildings and factories.[100] Rules need to be established for trading of allowances and dispute resolution.[101]

The Department of Alternative Energy Development and Energy Efficiency will advise on the EPC scheme, allocate budgets, and provide regulatory provisions as stipulated in the Energy Conservation Act.[102]

TGO will be the scheme administrator and will set efficiency targets, publish protocols and procedures and allocate allowances.[103] It appears likely that the TGO will also act as the registry of the scheme.[104]

It is likely that the EPC participants will receive two main incentives when participating in the EPC scheme. Grants could be provided as compensation for the

94. *Ibid.*
95. *Ibid.*, 3.
96. Anon., *NEPC Orders PTT to Spin Off Gas Pipeline Arm to New Subsidiary*, Nation (Published: 16/08/2014 at 01:00 AM), http://www.nationmultimedia.com/business/NEPC-orders-PTT-to-spin-off-gas-pipelinearm-to-ne-30241036.html (accessed 1 October 2014).
97. Thailand Greenhouse Gas Management Organization, *supra* n. 37.
98. *Ibid.*, 41.
99. *Ibid.*, 63.
100. *Ibid.*
101. *Ibid.*, 64.
102. Thailand Greenhouse Gas Management Organization, *supra* n. 37, 65.
103. Thailand Greenhouse Gas Management Organization, *supra* n. 37, 66.
104. *Ibid.*

transaction costs and EPC participants will be supported with technical assistance, energy audits, and MRV.[105] In addition, there is likely to be a guaranteed floor price to sell the surplus allowance.[106] Participants would also be able to benefit from existing tax incentives and funding streams.[107]

As there will be no penalty 'all participants, including potential underperformers, would have nothing to lose but instead to at least gain knowledge and experience in building their capacity to be ready in moving forward to the mandatory scheme in the future'.[108]

[B] Method

The EPC scheme is essentially a cap and trade scheme in which the surplus of the allowance will be sold to the sinking fund.[109]

[C] Target

[1] Schedule

Once the EPC scheme is operational the voluntary participants will have three years to achieve their targets.[110]

[2] Baseline and Emission Reduction Target

Thailand is using both a top-down and bottom-up approach to establish its sectoral targets.[111] As mentioned earlier the Energy Efficiency Development Plan 2011-2030 has set a target to reduce energy intensity by 25% in 2030 compared with that in 2005.[112] To achieve this target a reduction of 11,300 ktoe is anticipated from the manufacturing sector and 2,300 ktoe from the commercial building sector by 2030.[113]

The National policy goal in the Energy Efficiency Development Plan has to be translated into national goals for selected sectors.[114] TGO proposes to use a bottom-up approach based on existing data, baseline studies of Specific Energy Consumption, benchmarking of Thai and International industries and the like to arrive at typical energy saving potential in a particular sub-sector.[115]

105. Thailand Greenhouse Gas Management Organization, *supra* n. 37, 69.
106. *Ibid*.
107. *Ibid*.
108. *Ibid*.
109. Thailand Greenhouse Gas Management Organization, *supra* n. 37, 57.
110. Thailand Greenhouse Gas Management Organization, *supra* n. 37, 53.
111. *Ibid*.
112. Ministry of Energy (2011) Thailand Energy Efficiency Development Plan (2011-2030), Bangkok.
113. Thailand Greenhouse Gas Management Organization, *supra* n. 37, 53.
114. *Ibid*.
115. *Ibid*.

[3] Type of Gases Covered

As the EPC scheme is based on Specific Energy Consumption, Thailand has decided to denominate energy savings in terms of ton of oil equivalent (toe) rather ton of carbon dioxide equivalent (tCO_2e).[116] Type of gas is therefore irrelevant.

The types of gases to be covered by the final ETS are still to be determined.[117]

[D] Participants

TGO has developed a set of criteria to select participants in the EPC scheme.[118] The first step is to select the economic sector based on its contribution to the Gross Domestic Product (GDP) and its share of energy consumption. Step 2 is to select the category in each of the industry, building and power (supply side) sectors. Selection in the industry and power sectors will be based on the share of energy consumption per year. For the building sector they must be designated buildings and factories. The TGO sees the building sector as having good potential savings with the added benefit that the performance is comparatively easy to verify and the owners should be receptive to participation.[119] The results of the initial analysis is provided in Table 8.2.

Table 8.2 Selection of Target Sectors: Summary of Analysis[120]

Sector	*No. of Probable Designated Factories & Buildings*	*Estimated Annual Energy Consumption (ktoe)*
Cement	39	1,744
Ceramic	23	290
Iron & Steel	97	844
Petrochemical	10	231
Paper	125	1,579
Commercial Buildings (Department Store, Hospitals, Hotels)	861	1,397
Demand Side Sub-Total	*1,155*	*6,086*

116. Thailand Greenhouse Gas Management Organization, *supra* n. 37, 58.
117. International Carbon Action Partnership, *ETS Detailed Information Thailand,* 24 September 2014, https://icapcarbonaction.com/index.php?option=com_etsmap&task=export&format=pdf&layout=list&systems%5B%5D=81 (accessed 23 October 2014).
118. Thailand Greenhouse Gas Management Organization, *supra* n. 37, 47-51.
119. Thailand Greenhouse Gas Management Organization, *Update: Thailand Market Readiness Proposal (MRP), PA 6 – Barcelona, 27-28th May 2013*, (PowerPoint Presentation), 15, https://www.thepmr.org/system/files/documents/PA6_Thailand%20Update%20on%20MRP.pdf (accessed 1 October 2014).
120. Extracted from Thailand Greenhouse Gas Management Organization, *supra* n. 119, 18.

Sector	*No. of Probable Designated Factories & Buildings*	*Estimated Annual Energy Consumption (ktoe)*
Thermal Power Plant (Supply Side)	86	15,500
Total	*1,241*	*21,586*

[E] Rule of Emission Permits Allocation

[1] Allocation Method

Participation in the EPC scheme will be voluntary.[121]

Thailand's EPC scheme will be allowance based.[122] The programme administrator will fix the energy consumption allowance for each participant based on the annualized Specific Energy Consumption target with allowances being given annually.[123] At year end the participants will have to surrender the allowance depending on actual performance during the year. If the energy consumption is less than the permissible allowance the surplus allowance can be sold to the sinking fund.[124]

The procedure for allocation of the allowance will be finalized during the EPC preparation phase (2014-2016).[125] At that stage it will be determined whether the allowances will be issued by free distribution and/or auctioning.[126] The method for setting the minimum price, if any, will also be determined at that time.

The design of the allocation methodology for the ETS will be developed based on the lessons learnt from EPC allocation.[127]

[F] Rules of Trading

Under the EPC scheme which is cap and trade scheme, if the energy consumption is less than the permissible allowance, the surplus allowance can be sold to the sinking fund.[128] There appear to be no other trading options.

The outcome from the implementation of the EPC scheme will be the basis of the design of the future domestic ETS.[129]

Thailand has not made a decision at this stage on banking and borrowing and will undertake an in depth study before making a decision.[130] If banking of the allowance is allowed, TGO considers that this may lead to the implementation of medium and

121. Thailand Greenhouse Gas Management Organization, *supra* n. 37, 66.
122. Thailand Greenhouse Gas Management Organization, *supra* n. 37, 57.
123. *Ibid*.
124. *Ibid*.
125. *Ibid*.
126. *Ibid*.
127. *Ibid*.
128. *Ibid*.
129. Thailand Greenhouse Gas Management Organization, *supra* n. 37, 41.
130. Thailand Greenhouse Gas Management Organization, *supra* n. 37, 59.

high cost options. It would allow flexibility to participants to sell allowances and provide price assurance in case of oversupply. The disadvantage is seen as the possibility of foul play and price manipulation.[131]

Borrowing and carrying forward of shortfall is seen by TGO as providing flexibility to participants to manage price volatility. On the other hand, borrowing may result in delayed implementation.[132]

If penalties are included, TGO considers that this has the advantage of being more binding on the participants and may results in more conscious actions by the participants.[133] As the scheme is voluntary, the imposition of penalties may, however, deter participation.[134] TGO also considers that the target setting process may 'become more cumbersome as industry may push for comfortable targets'.[135]

In order to establish a simple and independent system, Thailand has decided that the EPC scheme will not allow the use of offsets and will not link with any other energy efficiency trading or ETS.[136] What will apply in the final ETS is unknown.

No border adjustment mechanism is proposed in the EPC scheme. What will apply in the final ETS is unknown.

[G] International Context

As noted above, Thailand has decided that the EPC scheme will not link with any other energy efficiency trading or ETS.[137] What will apply in the final ETS is unknown.

§8.04 IMPLEMENTATION: THE POTENTIAL EFFECTS OF ETS

The proposed EPC scheme has been developed to operate under the existing regulatory, policy and administrative regime and is, therefore, based on energy output rather than damage as GHG emissions. This means that the system could be ineffectual as an environmental measure, and is more a measure to improve fuel security and conserve energy reserves. GHG emissions such as N_2O (dental use and car racing), CH_4 (imperfect combustion and land fill) and SF_6 (high voltage switchgear) have high multipliers and may not be covered. If they are covered their calculated impact under the EPC scheme will be at least twenty times less than their actual impact.

One of the potential drawbacks of the EPC scheme is that it is voluntary. This was acknowledged in Thailand's MRP which stated that 'international experience suggests that ETS should be mandatory to ensure participation and achieve the objective'.[138] As the concept of emissions trading was not yet familiar to industries, consultations with government agencies and industries emphasized that the current institutional,

131. *Ibid*.
132. *Ibid*.
133. *Ibid*.
134. *Ibid*.
135. *Ibid*.
136. Thailand Greenhouse Gas Management Organization, *supra* n. 37, 66.
137. *Ibid*.
138. Thailand Greenhouse Gas Management Organization, *supra* n. 37, 41.

regulatory, and administrative regime made the introduction of a mandatory extremely difficult.[139] The EPC was proposed as the first step to the ETS.

The introduction and operation of the EPC has great potential as a learning experience for all of the participants as they move towards a mandatory ETS. At issue, however, is whether the lessons learnt will result in harmonization of laws and a streamlined administration or will it result in more bureaucracy and more opaque management procedures similar to those that accompanied Thailand's introduction of its Feed-in-Tariff scheme (FiT).[140]

§8.05 CHALLENGE AND IMPROVEMENT

[A] CDM

It is considered by the authors that there should be CDM specific laws for Thailand. They can harmonize with the existing laws but introduction of such laws would ensure that the legislative and administrative regime under which CDM schemes operate are clear. Tax treatment of transfer of CERs must be clarified and as they are only traded outside of Thailand they should be deemed to be VAT exempt.

Consideration should also be given to allowing majority ownership of CDM forestry and farming projects which are currently excluded under the Foreign Business Act.[141] Such projects would be of value to Thailand and would offer significant employment opportunities. The enabling legislation could put restrictions on employment of foreign labour rather than the current restriction on foreign ownership.

The TGO has identified three major issues with the CDM approval process.[142]

For the cross-border PoA in which the initial Component Project Activity (CPA) is not located in Thailand, the information in the PoA Design Document (PoA-DD) and initial CPA Design Document (CPA-DD) located in the other host country is not sufficient to evaluate the environmental impact and sustainability of PoA in Thailand. In this case, they suggested that it may be required to submit the Environmental and Sustainable Development (E&SD) Framework of the PoA and/or have the initial CPA in the host country.[143]

The PoA may cover many technologies but only one technology is submitted for the initial CPA making it very difficult to evaluate the environmental impact and sustainability of the PoA and first CPA. To overcome this problem, the TGO, which is the Thai DNA, has determined that E&SD Framework must cover all of the technologies proposed in the PoA. This action was implemented to ensure sustainability of the PoA and give DNA more confidence to issue the LoA. In addition, they proposed to develop the examples of E&SD Framework for biogas, biomass, solar power, and hydro power projects.[144]

139. Ibid.
140. Smith et al., *supra* n. 52.
141. *Foreign Business Act also called Alien Business Act BE 2542 (1999)*, http://www.thailawonline.com/en/thai-laws/laws-of-thailand/96-foreign-business-act-1999.html (accessed 15 October 2011).
142. Petchsri, *supra* n. 40, 23-24.
143. *Ibid.*, 23.
144. *Ibid*.

Finally, where the CME falsifies data or discontinues the PoA, the Thai DNA maintains the right to revoke the permission of CME or change the CME for that registered PoA, respectively.[145]

[B] Emissions Trading Scheme

Danny Marks is of the view that Thailand's low level of institutional capacity will limit its ability to both adapt to and mitigate climate change and will only improve incrementally over the long term.[146] In this scenario, 'Thailand's hope of becoming a "green economy" will be unfounded and that the country will increasingly succumb to the impacts of climate change'.[147]

This is echoed by Spitzley and Brückmann who undertook a review of the Thai solar panel programme and concluded that 'a series of challenges exist, which are not necessarily specific to a single development step, but apply to the general development process as such. The challenges include the structure of the relevant laws and regulations and the inherent differing competencies of a high number of governmental authorities. In addition, it also comprises the general concern regarding the influence of dominant or influential stakeholders and the existence of accelerating and extra-administrative payments'.[148]

The situation that Smith et al. described in relation to Thailand's FiT scheme could also eventuate with the ETS scheme.[149] Thailand started out with a relatively simple scheme that has evolved into complex one as additional administrative requirements are placed on potential suppliers. The process also involves a significant number of different ministries there is also a duplication of roles within the various Departments within the Ministry of Energy.

Ideally, there should be a thorough review and harmonization of the current energy laws and regulations as part of the development of the ETS legal framework. A solid legal foundation would remove some of the current bureaucratic interference in the development process and should specifically avoid duplication in policy development. There is a major issue here that also effects the legal framework of the ETS. Based on current experience of the legislation process, it may take at least three to five years to enact the law after submitting draft legislation.[150]

Thailand's response to the challenges of reducing GHG emissions has been bipartisan and there is nothing to suggest that this has changed under the current

145. *Ibid*., 24.
146. D. Marks, *Climate Change and Thailand: Impact and Response*, Contemporary Southeast Asia Vol. 33, No. 2, 2011, 229.
147. *Ibid*., 251.
148. J-B. Spitzley & R. Brückmann, *PV Rooftop Development in Thailand: Analysis of Regulations and Challenges, March 2014*, 26, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, http://www.thai-german-cooperation.info/download/20140408_pdp_th_report_pv_regulations.pdf (accessed 1 October 2014).
149. Smith et al., *supra* n. 52.
150. Thailand Greenhouse Gas Management Organization, *supra* n. 37, 42.

non-elected administration but nothing is certain. Thailand has a vision of a Low Carbon Society and sees that there is a market benefit in such an approach.[151]

The authors consider that one area of activity that must be improved is that of communication. Thai Government entities in the energy sector appear reluctant to openly share information with stakeholders. It is important that the government be as frank and open as possible with all its stakeholders. This should include discussion of ideas during the development process so that the outcome reflects best practice rather than consulting the parties when decisions have been made. Industry has to see economic benefits in participating and consumers have to see the long term benefits as energy costs potentially rise.

§8.06 CONCLUSION

Thailand has been very active on the world stage in promoting action on climate change and has developed effective responses domestically. One of the challenges is the time-lag between developing a draft policy and the promulgation of the required Acts and the development of an effective, efficient, and transparent administrative system. This is due in part to the overlap in responsibilities in various areas of the bureaucracy. It is unclear, for instance, why the Climate Change Master Plan has been 'draft' since 2011.

A clear and comprehensive legal framework is preferred for both the current programmes and the future ETS rather than using current laws with administrative rules and regulations. The latter has been shown to impede the approval process.

The proposed ETS framework of voluntary participation with a focus on high energy industries is a sound approach. A key need is an extensive education programme to outline the benefits of a low carbon society and to show that the benefits accrue to all strata of society. The big concern is inertia due to the current political situation in Thailand with the focus on the machinery of government. Thailand is still a major agricultural economy and as such is subject to the vagaries of the weather. This will tend to keep climate change mitigation high in the consciousness of much of the population including those urban dwellers who are subject to flooding.

Thailand has successfully implemented an electricity FiT scheme and has also successfully participated in the CDM scheme so it is also likely to develop an effective EPC scheme and apply the lessons learnt to the introduction of an ETS. The challenges lie in the development of the legal and administrative framework and the political will to implement a compulsory ETS.

Thailand is more than capable of meeting these challenges. The issue is likely to be the development of an efficient and effective ETS and GHG emission reduction goals within the planned timeframe. The challenge is to overcome all of the legislative and bureaucratic impediments to develop a coherent framework for moving from policy to implementation. That will remain the challenge over the next few years.

151. *Ibid*.