

# The New (Fragmented) Geography of Carbon Market Mechanisms: Governance Challenges from Thailand and Vietnam

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## Abstract

Countries in the Global South—which are contributing an increasing share of global greenhouse gas emissions—are actively developing carbon market mechanisms, including emissions trading systems and (voluntary) offset mechanisms. This article analyzes past and emerging experiments with carbon market mechanisms in Thailand and Vietnam, in the context of their domestic political economies and the shifting dynamics of the global climate governance regime. Drawing from thirty-three in-depth interviews and document analysis, I show the changing roles of government, the private sector, civil society, and donor and multilateral actors in these countries. Moreover, the article identifies key factors that may play roles in the further—and more synergistic—development of carbon market mechanisms: the generation of domestic demand for carbon credits; building and keeping human capacity and adequate data; creating space for civil society; ensuring coordination within the government and between sectors, notably the energy sector; and establishing further linkages with regional (Asian) and global carbon market mechanisms, such as those in China, Japan, and South Korea. These findings suggest that market-based mechanisms with high social and environmental integrity are one of the options that countries in the Global South have to achieve low-carbon development in the post-Paris climate change regime.

In the last few decades, the challenges of climate change mitigation have triggered a suite of new policy instruments. Market-based instruments are proliferating across the world at various scales (Newell et al. 2013; Redmond and Convery 2015; World Bank et al. 2016) and play an increasingly important, yet controversial, role. This article analyzes past and emerging experiments with carbon market mechanisms in Thailand and Vietnam in the context of the domestic political economies of these countries and the dynamics of global climate governance. In this article, the term “carbon market mechanisms” is employed to cover a range of market-based climate mitigation policies, including

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(voluntary) emissions trading systems (ETSs) and offset mechanisms (such as the Clean Development Mechanism [CDM]).

The geography of carbon market mechanisms is changing in the wake of the 2015 Paris Agreement (Kinley 2017; UNFCCC 2015a; Viñuales et al. 2017). Initially, OECD countries were leading in the development of ETSs—for example, through the European Union’s ETS (2005), the ETS in New Zealand (2008), and the Regional Greenhouse Gas Initiative in the United States (2009) (Newell et al. 2013). The first engagement with carbon market mechanisms of countries in the Global South (under the Kyoto Protocol, known as *non-Annex I countries*) was through the CDM, with over 8,400 registered projects (UNEP DTU 2017a). More recently, ETSs have also come into force in South Korea (since 2015) and China (pilots since 2013, and a planned national ETS in 2017), and ETSs are under development in Brazil, Chile, Kazakhstan, Mexico, Thailand, Turkey, Ukraine, and Vietnam (ICAP 2016a). Besides these initiatives—which aim to contribute to the Nationally Determined Contributions (NDCs) under the Paris Agreement—the agreement itself includes the possibility of new carbon market mechanisms, notably a ‘sustainable development mechanism’ and the possibility to trade internationally transferred mitigation outcomes.

Although global climate governance receives a lot of scrutiny, there has been less attention to intracountry dynamics in the Global South. Moreover, where most research has focused on emerging economies with high emissions, notably China (Huang and Bailis 2015; Lo and Howes 2013), India (Benecke 2009), and Brazil (Friberg 2009), this article analyzes Thailand and Vietnam as two underresearched, climate-vulnerable (ADB 2016), middle-income countries in Southeast Asia with high economic growth rates and past and current experiments with carbon market mechanisms. Although there has been ample gray literature on climate change mitigation in Southeast Asia (CCWG 2013; Priambodo et al. 2013; Selin and Theeralerttham 2014), few reports have focused specifically on carbon market mechanisms. Studies of carbon markets have mainly focused on the CDM in Vietnam (Belis and Kerremans 2015; several chapters in Bruyninckx et al. 2013; Smits and Middleton 2014; Tuyen and Michaelowa 2006) and Thailand (Adhikari et al. 2008; Parnphumeesup and Kerr 2011; Weiss et al. 2008). In addition, some books and articles have discussed the drivers of climate change politics in Vietnam (Fortier 2010; Zimmer et al. 2015; Zink 2013) and Thailand (Marks 2011), which can provide insight into their domestic political economies of climate change.

## Analyzing the Changing Geography of Carbon Market Mechanisms

This article aims to tackle a number of theoretical and empirical challenges. The first is the observation that carbon market mechanisms do not operate in a vacuum, but depend and respond to the interests of governmental, private sector, and civil society actors (Mol 2012). The changing geography of carbon markets

therefore requires an understanding of the domestic political economies and socio-economic development trajectories of specific countries (Newell 2011).

A further challenge is to ensure the legitimacy and accountability of carbon market mechanisms, in particular because many of these developed outside the direct influence of the UNFCCC (Okereke et al. 2009; Schreurs 2008). Therefore, in addition to governments, the roles of the private sector, civil society organizations, and donors and multilateral actors are all important (Bäckstrand et al. 2010; Lund 2012), particularly in the context of (semi-)authoritarian regimes in Southeast Asia (cf. Lo and Howes 2013). Where the private sector has been influential in shaping CDM and voluntary market mechanisms, civil society actors can ensure that carbon market mechanisms do not exacerbate inequalities and extant power relations (Böhm and Dabhi 2009; Lohmann 2008; Mathur et al. 2014).<sup>1</sup>

The final challenge is whether and how the new multitude of multiscalar carbon market mechanisms will be linked and networked, or whether they will continue to function in parallel (Green et al. 2014; Jevnaker and Wettestad 2016; Ranson and Stavins 2016; Tuerk et al. 2009).

Synthesizing the discussion above, the objective of the article is to analyze the past experience and emergence of carbon market mechanisms in Thailand and Vietnam in the context of global climate governance and intracountry dynamics, so as to improve the understanding and use of market-based instruments as climate change mitigation options in the Global South. Specifically, this article is based on the following questions: What are the past, current, and emerging carbon market mechanisms in Vietnam and Thailand? How are the roles of the state, donors and banks, the private sector, and civil society changing in the new geography of carbon markets? What governance factors could contribute to the development of (networked) carbon markets in (Southeast) Asia?

Before I expand on the framework underpinning these questions, I will briefly elaborate the methodology.

## Methodology

This article draws upon data from interviews and gray literature. Semistructured interviews were conducted with key stakeholders in Thailand and Vietnam, from the government, research organizations, the private sector, NGOs and civil society, and multilateral organizations. The interviews were conducted in April 2015, with some follow-up interviews in May 2016. Throughout the article, the interviews are referred to by their level (I, T, or V), followed by the sector (GOV, RES, etc.) and a number—for instance, IGOV2 (see the Appendix). Most of the gray literature analyzed was available online, although some sources were obtained through interviewees.

1. For a critical response to these arguments, see Michaelowa (2011a).

## Framework for Analyzing the Governance of (Regional) Carbon Markets

This article brings together the governance architecture and political economy literatures to develop a framework for the analysis of emerging carbon markets in Thailand and Vietnam.

The proliferation of (global) environmental treaties and organizations, notably in the field of climate change, has led to an important debate about “global governance architectures” (Zelli 2011). The starting point is an understanding that environmental governance requires looking at the regimes<sup>2</sup> involved in a certain issue as a whole, rather than individual treaties, organizations, and rules. It is widely acknowledged that most, if not all, of these regimes—for instance, the climate and energy regimes—are fragmented; that is, they do not form an internally coherent whole, but their shapes reflect path dependency and the conflicting interests of different stakeholders (Biermann et al. 2009; Keohane and Victor 2011; van Asselt and Zelli 2014). Discussions of the nature and degree of this fragmentation and what could be done to increase synergies and effectiveness are relevant to understanding emerging carbon market mechanisms as part of the “climate governance regime” (Michaelowa 2011b).

The governance architecture literature also has some limitations. Notably, it is strongly focused on the positions of global governance dynamics and the roles of the EU, the US, and the UNFCCC (Abbott 2012), and less on smaller countries, nonstate actors, and intracountry dynamics. Although some authors have paid attention to nonstate actors (Keohane and Victor 2011), this has often been limited to those operating in a global framework, such as public-private partnerships under the WSSD (Pattberg 2010) or transnational civil society (Derman 2014). Regional climate governance regimes also get scant attention, although Keohane and Victor have argued that “much emissions reduction could be achieved through a linked set of national and regional trading systems, in which offset would help generate incentive for laggards to raise their own standards in order to benefit from these financial flows” (p. 19).

Another perspective on the environmental governance of emerging carbon market mechanisms comes from authors stressing the politics and political economy of carbon markets (Newell and Paterson 2010; Paterson 2011; Stephan and Paterson 2012). This literature looks at the (underlying) dynamics, context, and coalitions around carbon market mechanisms. According to Newell (2009), “[i]t is impossible politically, and unhelpful conceptually, to attempt to understand carbon and clean development governance without reference to the broader political-economic context in which it is embedded and which it seeks to transform” (p. 425). As compared to the governance architecture literature, these authors pay less attention to the theoretical advantages or disadvantages

2. “Regimes” can be defined as the “sets of implicit or explicit principles, norms, rules, and decision-making procedures around which actors’ expectations converge in a given area of international relations” (Krasner 1983, quoted in Biermann et al. 2009).

of fragmentation (Paterson 2011), but emphasize how such a regime is supported by, sometimes unlikely, coalitions of states, businesses, scientists, and NGOs (Newell and Paterson 2010).

This article argues that these two sets of literatures can fruitfully be combined to analyze the fragmented nature and politics of emerging carbon market mechanisms in Vietnam and Thailand.<sup>3</sup> The political economy perspective emphasizes the changing roles of different actors and power relations, as well as the importance of the domestic political economy, while the global governance perspective allows for insights into how the climate, energy, and development cooperation regimes are changing and what the consequences of these shifts are for the emergence of carbon market mechanisms.

On the basis of these perspectives, the starting point of analysis for this research is to analyze the changing roles of the different types of actors involved in the development of carbon market mechanisms: the state (including multi-lateral organizations), the market (private sector), donors and multilateral banks, and civil society. Besides the focus on these different stakeholders, this article also develops a number of governance factors that would enable more “synergistic fragmentation”—as opposed to “conflictive fragmentation” (Biermann et al. 2009)—of carbon market mechanisms in Southeast Asia. Before these points are developed, the next section provides an overview of the history of carbon market mechanisms in Thailand and Vietnam.

## Carbon Market Mechanisms in Thailand and Vietnam

This section describes the past, present, and developing carbon market mechanisms in Thailand and Vietnam, as a basis for the analysis in the following sections.

### *Thailand*

Thailand is an upper-middle-income country and the second largest economy in Southeast Asia. According to its NDC (ONEP 2015), the business-as-usual (BAU) emissions for 2030 are 550 million tons of CO<sub>2</sub> equivalents (MtCO<sub>2</sub>e), as compared to 331.4 Mt in 2009 (ICAP 2016b). Thailand plans to reduce its greenhouse gas (GHG) emissions by 20 percent from the projected BAU level by 2030, and 25 percent with international support (ONEP 2015). Thailand’s National Socio-economic Development Plan 2012–2016 makes many references to climate change mitigation and the development of economic instruments, such as a domestic carbon market, nationally appropriate mitigation actions (NAMAs), and payment for ecosystem services (NESDB 2011). The Office of Natural Resources and Environmental Policy and Planning (ONEP) coordinates

3. See also Bulkeley and Newell (2015) and Dyer (2014).

Thailand's climate policy and is responsible for the Climate Change Master Plan 2015–2050.

In terms of carbon market mechanisms, Thailand has been actively experimenting with various instruments (Table 1), and its NDC expresses that it “will continue to explore the potentials of bilateral, regional and international market mechanisms” (ONEP 2015). After an initial slow start—due to a complex CDM approval procedure—the private sector in Thailand was successful in developing 154 CDM projects and seven programs of activities (PoAs; UNEP DTU 2017a).

**Table 1**

Overview of Market-Based Climate Mitigation Instruments in Thailand

<i>Mechanisms/Policy</i>	<i>Potential Buyers of Carbon Credits</i>	<i>Status (in 2016)</i>
CDM, UNFCCC offset mechanism	Actors in compliance regime (mainly EU)	154 projects registered, few issuing <sup>a</sup> Seven PoAs registered <sup>b</sup>
Voluntary market for project-based emission reductions	Private sector (various)	Thirty-five VCS projects <sup>c</sup> Fifty-seven Gold Standard <sup>d</sup>
JCM, Japanese bilateral offset mechanism	Japanese government, to be used in its NDC	Signed agreement in 2015
Thailand Voluntary Emission Reduction Scheme (T-VER), set up by Thailand Greenhouse Gas Organization (TGO)	Government bodies Thai companies	Launched Oct 2013 Twelve projects in 2015
Thailand Carbon Offsetting Program (by TGO)	Individuals Organizations	Launched March 2013 Two companies, four products, 259 individuals, and one seminar & event registered in 2014 <sup>e</sup>
Thailand Voluntary ETS (by TGO, under PMR)	Trading among involved entities	Pilot trading period 2015–17, involving eleven power plants and seven petrochemical companies
Low-carbon city projects (by TGO, under PMR)	To be used in T-VER	

<sup>a</sup>UNEP DTU (2017a), <sup>b</sup>UNEP DTU (2017b), <sup>c</sup>VCS (2016), <sup>d</sup>Markit (2015), <sup>e</sup>TGO (2014).

Moreover, Thailand had thirty-five voluntary projects registered in the VCS Database, as well as fifty-seven under the Gold Standard in May 2016.

After the “crash” of the CDM market, the Thailand Greenhouse Gas Organization (TGO)—an independent public organization set up by the Thai government—developed a number of new domestic carbon market mechanisms. One of these is the Thailand Voluntary Emission Reduction Scheme (T-VER), launched in 2013. It is a voluntary, project-based instrument, focusing on the additionality of various types of projects—renewable energy, energy efficiency, and forestry—using simplified CDM methodologies and relying on domestic companies for verification and validation. However, with only twenty projects in 2016, this voluntary mechanism is struggling to gain traction in Thailand (ICAP 2016b). In addition, TGO has set up the Thailand Carbon Offsetting Program, in which individuals, organizations, or events can offset their own footprint by buying credits from the voluntary market. By 2014 there were 250 registrations, mainly from individuals (TGO 2014). Another important activity is the introduction of the Thailand Voluntary Emissions Trading Scheme (T-VETS). A pilot for this scheme was launched in October 2014 in the power sector and the petrochemical sector. The first pilot “trading period” (2015–2017) only involved eleven of the biggest power plants and seven big petrochemical plants. A cap was set, but companies were not penalized in the case of noncompliance (TGOV1).

In addition to these instruments, Thailand is a member of the World Bank’s Partnership for Market Readiness (PMR), which provides a platform for sharing experiences and building knowledge and capacity related to market-based mitigation instruments. The partnership is funded by twelve “Annex I” countries and the EU, and covers eighteen “implementing countries”, which are emerging economies (PMR 2016). Thailand uses this platform to support some of the above policy experiments and also their Energy Performance Scheme and Low-Carbon City Pricing and Fund, in which local urban GHG mitigation projects are linked to the T-VER program.

Another mechanism relevant to Thailand is Japan’s Joint Crediting Mechanism (JCM), a project-based bilateral mechanism. Through this CDM-like mechanism, countries can receive Japanese technologies and technical support from Japanese consultants, and the carbon credits generated are used to fulfill Japanese GHG emission targets under its NDC. As of August 2016, Japan had signed individual agreements with sixteen different countries, including Vietnam and Thailand (TRES4) (Government of Japan 2016b).

### *Vietnam*

Vietnam is a rapidly growing lower-middle-income country that is experiencing increasing pressure on its environmental and economic resources. Its reported GHG emissions in 2010 were 247 MtCO<sub>2</sub>e, as compared to 151 Mt in 2000 and 103 Mt in 1994 (MONRE 2010; UNFCCC n.d.). Vietnam’s NDC expressed the

**Table 2**

Overview of Market-Based Climate Mitigation Instruments in Vietnam

<i>Mechanisms/Policy</i>	<i>Potential Buyers of Carbon Credits</i>	<i>Status (in 2016)</i>
CDM, UNFCCC offset mechanism	Actors in compliance regime (mainly EU)	257 projects registered, few issuing <sup>a</sup> Nine PoAs registered <sup>b</sup>
Voluntary market for project-based emission reductions	Private sector (various)	Fifteen VCS projects <sup>c</sup> Thirteen Gold Standard <sup>d</sup>
JCM, Japanese bilateral offset mechanism	Japanese government, to be used in its NDC	Signed agreement in 2013 Four projects in pipeline <sup>e</sup>
Domestic ETS	Unclear	Mentioned in PM Decision 1775, <sup>f</sup> no concrete activities

<sup>a</sup>UNEP DTU (2017a), <sup>b</sup>UNEP DTU (2017b), <sup>c</sup>VCS (2016), <sup>d</sup>Markit (2015), <sup>e</sup>Government of Japan (2016a), <sup>f</sup>Government of Vietnam (2012a).

goal of reducing GHG emissions by 8 percent by 2030 as compared to the BAU scenario, and 25 percent with international support (MONRE 2015).

Because Vietnam is one of the countries most vulnerable to climate change, its government has been active in the formulation of mitigation and adaptation policy, which includes carbon market mechanisms (Table 2). It has been involved in numerous international projects and has released two high-level policy documents, the National Strategy on Climate Change (Government of Vietnam 2011) and the Green Growth Strategy (Government of Vietnam 2012b). The latter also set GHG reduction targets: a reduction of 8–10 percent by 2020 (versus a 2010 baseline) and at least 1.5–2 percent annually from 2020 onward. However, as some interviewees commented, the implementation of these policies is not a given (VMUL1, VMUL4).

Between 2005 and 2016, the country saw the development of 257 CDM projects (UNEP DTU 2017a) and nine PoAs (UNEP DTU 2017b). As in many other countries, the low price of certified emission reductions meant that very few projects were actually issuing credits in 2016, and most of the CDM consultants had been laid off (Smits and Middleton 2014).

As in Thailand, the Ministry of Natural Resources and Environment (MONRE) is hoping to continue the success of CDM by getting involved in JCM (VGOV2, VMUL4). However, despite Vietnam having signed the agreement in 2013, only four projects were registered as of August 2016.<sup>4</sup>

4. With average reductions of 0.3–0.6 ktCO<sub>2</sub>e per year (Government of Japan 2016a), the JCM projects are also much smaller than the 70.3 ktCO<sub>2</sub>e per year for the average registered Vietnamese CDM project.

Vietnam also had a number of voluntary carbon projects, albeit fewer than Thailand. In May 2016, fifteen projects were registered in the VCS Database and thirteen under the Gold Standard. Because Vietnam is not a least developed country anymore, it has become difficult to sell credits from such projects (VNGO3).

Finally, Vietnam also has indicated some (long-term) ambitions to develop a domestic ETS. A prime minister decision from 2012 mentions “[f]orming the domestic carbon market and participating in the international carbon market” (Government of Vietnam 2012a). However, few concrete steps have been taken toward this goal. Vietnam’s activities under the World Bank’s PMR have focused on support for NAMAs and other carbon pricing options, which could evolve into a domestic ETS in “selected sectors” (only the steel sector is mentioned by name) after 2020 (MONRE 2014). Beyond the PMR activities and the stated ambition in the Green Growth Strategy to link with international carbon markets (MONRE 2015), there are no concrete policy references to a domestic Vietnamese ETS.

## Shifting Governance of Carbon Market Mechanisms in Thailand and Vietnam

Now that the different carbon market mechanisms have been identified, this section focuses on how the roles of different key actors in Thailand and Vietnam are changing in response to the shifting climate regime and domestic factors.

### *Government More in the Driving Seat*

In the post-Paris climate regime, national governments play a more important role than before, including those in Thailand and Vietnam. Under the CDM, the role of implementing governments was relatively small. In theory, the designated national authority dealt with the definition of sustainable development, but most countries had little control over the procedures and methodologies developed under the UNFCCC. As compared to Brazil (Friberg 2009), China (Bluemling and Mol 2013; Schroeder 2009), and India (Benecke 2009; Fuhr and Lederer 2009), Thailand and Vietnam were less successful in steering the CDM to fit their domestic agenda. As seen above, there were many CDM projects, but their limited coordination has resulted in a fragmented domestic landscape.

Notwithstanding the preceding paragraph, both Thailand and Vietnam did try to control the CDM approval process for rent-seeking purposes—for example, by asking for “approval fees” (Nguyen et al. 2011). Indeed, rent-seeking behavior and the desire for control can be seen as reasons for the governments of Vietnam and Thailand to be more active in the preparations and implementation of new carbon market mechanisms (cf. Zink 2013). Since some domestic mechanisms require government regulations and institutions, the private sector

cannot step in without government support, as was the case with the CDM (VGOV1, VNGO1, VRES3). This situation, in which the government takes the lead, may lead to decreasing domestic fragmentation, but it is yet unclear whether governments can provide strong economic incentives in the partly liberalized political economies of Thailand and Vietnam.

### *Private Sector: In the Waiting Room?*

The private sector has played a key role in the development of carbon market mechanisms in Thailand and Vietnam so far, mainly through the CDM and the voluntary market. While the CDM has attracted a lot of criticism for often failing to clearly fulfill the additionality and sustainable development criteria (Michaelowa 2009; Schneider 2009), some interviewees stressed that it did mobilize great amounts of finance. One interviewee claimed that it changed the clean technology sector from one that relied on one-off donor projects into one that has generated thousands of projects (IPRI3). In that sense, additionality was not so much the point, because the “underlying conditions”—more actors, more sources of funding, and more appreciation for clean technology—were changing (cf. Benecke 2009; Newell and Paterson 2010).

The decreasing importance of the CDM means that the role of the private sector in the new geography of carbon market mechanisms is not immediately clear. While governments are setting up registries and developing new domestic carbon market mechanisms, most developers and consultancy companies that were previously involved in CDM are waiting for new opportunities to emerge. Some consultants are involved in the policy process and in developing proposals, while others have shifted to projects with broader “co-benefits.” They hope that the emergence of new carbon market mechanisms will lead to new investment opportunities. Local consultancy companies could also play a role in monitoring, reporting, and verification, because the Thai government is seeking to reduce the high fees of international consultancy and accounting firms (TGOV1, VGOV2). These developments show some attempt to move away from the international climate accountancy and consultancy regime—which dominated in the first compliance period after Kyoto—but this move may thereby increase fragmentation and decrease transparency and accountability.

### *Changing Roles of Donors and Multilateral Banks*

The shift to more domestic policies and instruments has partly been influenced by the changing roles and priorities of donors and multilateral banks in emerging economies. Traditionally, official development aid from multilateral organizations (the World Bank and ADB) was important for allowing countries like Thailand and Vietnam to fund infrastructure and rural development and to reduce the risks of private-sector investment (Newell 2009). Since both countries have “graduated” from their low-income status, however, these flows have

become more limited and the conditions stricter (VMUL4). Therefore, these countries are keen to seek new types of international finance and support—for example, through carbon market mechanisms.

These shifts in priorities and types of funding fit into a broader global shift in the development aid regime, which is challenged by the “new” climate finance regime. Halimanjaya (2015) has shown that climate finance is making up an increasing share of official development aid worldwide, displacing traditional aid in countries such as Thailand and Vietnam. Furthermore, the role of multilateral banks has been shifting from the provision of finance to that of knowledge broker on green economic policy (cf. Goldman 2005). A key example is the PMR, which aims to achieve ambitious goals with the relatively small budget of around US\$ 3 million per country (IGOV1).

### *Limited Role Civil Society*

Civil society’s influence on the development of carbon market mechanism has been limited in Thailand and Vietnam. This is partly due to the general political situation. Vietnam has been a one-party socialist country since 1975 and has provided few opportunities for NGOs as critical voices (Wells-Dang 2013), although some NGOs claim that it has been getting better recently (VNGO4). The situation in Thailand used to be more open, until the 2014 military coup, which restricted freedom of gathering and of the media, and thereby also the space for civil society (TNGO4; see Baker 2016; Chachavalpongpun 2014).

Because of these political circumstances, most local and international NGOs have focused on climate change adaptation, because this is often seen as less political (VNGO2). However, a few civil society organizations have also been active in the field of mitigation.

In Thailand, the Thai Climate Justice network, consisting of around ten Thai civil society groups, was set up in 2008 to work on mitigation in the agriculture, energy, and forestry sectors. It generally adopts a critical stance toward climate change policy and sees market-based instruments as “false solutions” (TNGO1 and TNGO3).

In Vietnam, the Climate Change Working Group is dominated by international NGOs such as CARE, Plan International, and Oxfam, but it also includes local NGOs working on adaptation, mitigation, and awareness raising and behavior change (VNGO2). Whereas the Thai Climate Justice network has mainly opposed Thai government institutions, the Climate Change Working Group has tried to influence and collaborate with the government (VNGO4).

Despite these activities, a clearly defined role for civil society organizations in the field of climate mitigation is lacking in Thailand and Vietnam. While many stakeholders pay lip service to the importance of involving civil society and participatory processes, the practice is often unclear (VNGO4). Where there is a role for civil society, governments and other actors tend to focus on their

ability to transfer knowledge and raise awareness rather than actively including them in decision-making (VRES3).

### *Increasing Regional Cooperation and Initiatives*

At present, there is limited regional cooperation—knowledge exchange or linking—between Thailand, Vietnam, and other countries in (Southeast) Asia related to carbon market mechanisms. Moreover, there has been very little initiative for such a purpose from the Association of Southeast Asian Nations (ASEAN), the key regional platform. Although the “Singapore Declaration on Climate Change, Energy and the Environment” (ASEAN 2007) states the ambitions of the signatory countries to cooperate in this field, this has hardly been put in practice. For instance, ASEAN’s Working Group on Climate Change mainly facilitates technical and scientific cooperation, without engaging in strategic discussions that could reduce fragmentation and develop regional cooperation (VGOV1).

Outside Southeast Asia, Japan has been the country most proactive in the region, through its JCM and capacity-building projects. As of 2016, the JCM had not been very successful in terms of the numbers of registered projects and of GHGs mitigated. China’s carbon market mechanisms are also being followed closely in Thailand and Vietnam, as a potential opportunity for Thai and Vietnamese companies to generate China-certified emission reductions—a domestic project-based offset mechanism—which may be used in the voluntary market and for compliance in China’s national ETS (Liu et al. 2015). Furthermore, South Korea has already started its first ETS trading period (2015–2017) and plans to include international offsets from 2020.

Finally, there are a number of platforms and networks to exchange information, develop MRV methodologies, and exchange best practices between countries, such as the International Carbon Action Partnership (ICAP), the International Emissions Trading Association (IETA), the Asia-Pacific Roundtable, and the World Bank’s PMR and Networked Carbon Markets Initiative. These international efforts, however, remain highly fragmented and often dependent on bilateral relations. To further develop carbon market mechanisms in Thailand and Vietnam, these international efforts will need to be complemented by (domestic) governance factors.

## **Governance Factors Contributing to the Development of Carbon Market Mechanisms**

Building on the two previous sections, the last part of this article discusses factors that contribute to the further development of carbon market mechanisms in Vietnam and Thailand. These follow the three key themes: demand and capacity, policy coordination and integration, and legitimacy and equity.

### *Generating Domestic Demand for Carbon Credits*

A key issue for the governance of carbon markets in Thailand and Vietnam is to generate sufficient demand for carbon credits. The demand for CDM credits was strongly dependent on the link to the EU ETS and on demand from Japan. For new carbon market mechanisms in Thailand and Vietnam, there is often the assumption that future demand will also come from these countries, which is unlikely to happen, according to many interviewees. This problem is very clear in the voluntary market, in which many organizations try to sell carbon credits, but the number of buyers is limited (IPRI1, VNGO1, VNGO3). While the Paris Agreement has the potential to increase demand through ambitious NDCs and by building on or fully integrating the experiences of the CDM under the sustainable development mechanism, there is still a lot of uncertainty about whether these goals will be realized.

Decreasing international demand means that Vietnam and Thailand will need to seek demand within their own country or region, which has proved to be difficult at present. In Vietnam, the Netherlands Development Organization SNV has had very limited success in selling voluntary credits from their biogas program to Vietnamese companies (VNGO1). The domestic carbon market mechanisms in Thailand (discussed above) all face a shortage of demand for credits (TGOV1). The pilot projects of the Thai Environment Institute can be seen as an exception, although they sell only small quantities of carbon credits from rural energy projects for corporate social responsibility purposes (TGOV2).

These developments show that generating sufficient demand for many of the new carbon market mechanisms is a critical challenge in Thailand and Vietnam. Without mandatory caps under an ETS, this can only be changed by encouraging emission reductions in everyday business and consumer practices (Spaargaren and Mol 2013).

### *Building and Keeping Human Capacity and Data Availability*

For the development and linkage of carbon market mechanisms, good and transparent data, registries, and human capacity are critical to avoid double-counting and integrity problems (VRES3, VMUL4).

Data collection and sharing are key problems in Vietnam and Thailand. A Vietnamese NAMA on the waste sector, for example, was based on data from only one-fifth of the roughly 490 landfills in the country, and data on waste composition were missing altogether (VMUL4). Good baselines and targets for GHG emission reductions are also difficult to obtain (Tuyen and Michaelowa 2006); a World Bank expert in Vietnam mentioned that the Vietnamese targets for GHG emission reductions are based on simple non-peer-reviewed models (VMUL4). Sharing of data is also a big problem, since different government and international organizations often refuse to cooperate (VMUL2). This shows domestic fragmentation as well as rent-seeking behavior.

Human capacity is another problem that emerged from the interviews. ONEP in Thailand has only thirty staff members, putting great limitations on what they can do (TGOV4). An official from MONRE, in Vietnam, mentioned that they have sufficient people, but only few possess the required skills and knowledge to participate in complex issues such as climate change negotiations (VGOV1).

Furthermore, rapid changes in the field of carbon market mechanisms sometimes lead to the “destruction” of capacity. In Vietnam, for example, over thirty consultancy companies were involved in developing CDM projects before 2013 (Smits and Middleton 2014), but in 2015 only a few companies were left, each with just one or two employees working on CDM projects (VGOV2). Most consultants had moved elsewhere, undoing a lot of the donor-funded capacity-building work.

### *Ensuring Coordination Among Government Departments and Donors*

The governance of climate change requires good coordination between parties within and outside the government if fragmentation is to be reduced. This is known to be a problem in Thailand and Vietnam, in particular when international funding is involved.<sup>5</sup> At best, there is a lack of cooperation, such as TGO failing to mobilize the Thai Ministry of Interior for their low-carbon city program (TGOV1). Similarly, in Vietnam, the Japan International Cooperation Agency and MONRE had to develop their GHG baselines almost from scratch, because other ministries were unwilling to share data or asked for money for doing so (VMUL2). Moreover, many interviewees mentioned that it is hard to keep an overview of all climate change mitigation projects, since they are implemented by different ministries and funded by different donors (VGOV1).

In addition to coordination problems, there is also outright competition between ministries, such as the tug of war between MONRE and the Ministry of Planning and Investment (MPI) in Vietnam. When climate change mitigation emerged as a topic, both ministries got involved in overlapping and competing activities. MONRE—the focal point for CDM—developed their Climate Change Strategy (Government of Vietnam 2011), while MPI—focal point for the Green Climate Fund—developed their Green Growth Strategy (Government of Vietnam 2012b). Some of the prime minister decisions supported by these ministries even included conflicting emission reduction targets (VMUL1, VMUL2, VMUL4, VRES1).<sup>6</sup>

These turf wars between different government departments and the resulting fragmentation reflect the persistence of domestic power relations and rent-seeking behavior. To move away from this type of conflictive domestic fragmentation,

5. As was mentioned by one interviewee, participating in international projects means “trips, going abroad, getting hotels paid, day money, all of which boost the salary” (VMUL4).

6. Similar issues have been found in Thailand (Marks 2011).

agreeing on clear responsibilities between actors, as well as the sharing of data within and between governments and other actors, will be important. International donors also bear responsibility, since they are often too eager to “plant their flags” on certain initiatives.

### *Integrating Climate and Energy Policy*

One of the key governance challenges for carbon market mechanisms—and climate change policies more generally—is to align them with other policies and sectors (energy, transport, agriculture, and industry), which are often dominated by closed policy networks and vested interests (Carter 2007). The politics of electricity generation and fossil fuel subsidies in Thailand and Vietnam are examples in which the political economy has trumped the development of carbon market mechanisms, leading to fragmented and weak outcomes.

In Thailand, there is limited integration of the Power Development Plan (PDP) with the Climate Change Master Plan and other mitigation activities. One of the interviewees mentioned that “sectoral policy, like the PDP [Power Development Plan], is much stronger than the climate change policy like NAMA. So this [the Plan] is the determining factor, and NAMA is the receiving factor” (TNGO2). This shows that ONEP does not have the same power and capacity as a ministry or utility (TNGO3). Moreover, a domestic ETS functions best under a liberalized energy structure in which individual companies can make decisions about their fuel mix and implementation of low-carbon technologies. This is one of the bottlenecks that TGO encountered in negotiations regarding its domestic ETS; electricity production companies were reluctant to get involved, because the state-owned utility EGAT effectively regulates demand (TGOV1). In Vietnam, energy policy is also “quite powerful,” and its perspective is driven by business rather than climate change concerns, according to a MONRE official (VGOV1).

Another problem is the prevalence of conflicting policies, such as fossil fuel subsidies. Vietnam has one of the lowest energy prices in the world, mainly due to (in)direct subsidies for state-owned enterprises, such as low-interest credit and low-cost inputs (e.g., land and coal). The price of electricity is suppressed by the government, leading to large debts for these companies and limited incentives to reduce consumption (UNDP 2014). According to one of the interviewees, talking about carbon market mechanisms is “perverse” without addressing this issue first (VMUL1). While reform is flagged as a priority in Vietnam’s Green Growth Strategy (Government of Vietnam 2012b) and its PMR activities (MONRE 2014), the steps toward reform are slow and highly political (VMUL1).

### *Creating Space for Civil Society Organizations*

At present, experiments with carbon market mechanisms in Thailand and Vietnam are dominated by state and private actors, with civil society playing

a very limited role. As was shown above, some civil society groups are engaged in climate change mitigation, but their numbers are small, their level of knowledge of carbon market mechanisms is low, and there is limited space for civil society due to political circumstances.

One of the factors for long-term success of carbon market mechanisms would be to open up carbon market mechanism discourses to more civil society input. This would, on the one hand, increase the accountability of these systems (Newell 2008), which has gained importance under the pledge-and-review system of the Paris Agreement (Jacquet and Jamieson 2016). On the other hand, it would help ground carbon market mechanisms in the everyday political economies of Thailand and Vietnam. A well-informed and engaged civil society could ensure that local practices are connected to the realm of carbon market mechanisms (Spaargaren and Mol 2013), which could ultimately support the generation of domestic demand for carbon credits and produce a range of other co-benefits.

## Conclusions

This article has analyzed the past, present, and emerging experiments with carbon market mechanisms in Thailand and Vietnam in the context of their domestic political economies and the “post-Paris” climate governance dynamics. A number of key findings are highlighted. First, positive experiences with the CDM triggered these countries to develop new carbon market experiments at different scales, with Thailand being particularly active. However—although it is difficult to find reliable figures—the overall GHG mitigation from these mechanisms can be said to be limited, since most projects have been small and have not always provided additionality, and mandatory ETS systems are not yet in place. Second, and relatedly, the many changes in the international climate regime—with the Paris Agreement being the most recent one—have led to uncertainty and loss of capacity in Thailand and Vietnam, especially in the private sector. Third, civil society has been and largely remains sidelined in the illiberal political contexts of both countries, and their participation in the development of carbon market mechanisms is often reduced to technical input. Fourth, the modest progress of carbon market mechanisms in Thailand and Vietnam cannot be understood outside the realities of their domestic political economies, such as the fragmentation of climate policy in relation to other sectors, limited domestic demand, and a continued reliance on international (donor) support.

While the Thai and Vietnamese case studies do show country-specific challenges and trajectories resulting from their geographical, political, and economic histories, there are also clear similarities. Therefore, careful generalization of some findings to other countries in the Global South is possible, such as uncertainty about the climate governance regime in the private sector, the limited and underappreciated role of civil society, challenges and shortcomings related to

domestic demand, and a reliance on donors and multilateral banks to provide capacity building.

These findings show that the study of carbon market mechanisms can benefit from more research connecting the global environmental governance literature with domestic political economy approaches to understanding the complexities of carbon market mechanisms in the Global South. Moreover, the interview methodology reveals data beyond those available from official policy discourses and emission reduction figures.

The key policy implications are that (1) more efforts are needed to support carbon market experiments and to try to retain capacity from previous mechanisms; (2) donors should not develop projects without proper coordination and clear rooting in the domestic political economies of target countries; (3) clear frameworks and leadership from the UNFCCC and ASEAN could facilitate learning and future linkages of carbon market mechanisms; and (4) countries in the Global South should seize the opportunities in the post-Paris climate change regime to develop low-carbon economies in which market-based mechanisms—with high social and environmental integrity—could offer new potential for GHG mitigation.

## References

- Abbott, Kenneth W. 2012. The Transnational Regime Complex for Climate Change. *Environment and Planning C: Government and Policy* 30 (4): 571–590.
- ADB. 2016. *Southeast Asia and the Economics of Global Climate Stabilization*. Manila: Asian Development Bank.
- Adhikari, S., N. Mithulananthan, A. Dutta, and A. J. Mathias. 2008. Potential of Sustainable Energy Technologies Under CDM in Thailand: Opportunities and Barriers. *Renewable Energy* 33 (9): 2122–2133.
- ASEAN. 2007. *Singapore Declaration on Climate Change, Energy and the Environment*. Singapore: ASEAN.
- Bäckstrand, Karin, Jamil Khan, Annica Kronsell, and Eva Lövbrand, eds. 2010. *Environmental Politics and Deliberative Democracy: Examining the Promise of New Modes of Governance*. Cheltenham, UK: Edward Elgar.
- Baker, Chris. 2016. The 2014 Thai Coup and Some Roots of Authoritarianism. *Journal of Contemporary Asia* 46 (3): 388–404.
- Belis, David, and Bart Kerremans. 2015. The Socialization Potential of the CDM in EU–Vietnam Climate Relations. *Climate Policy* 16 (8): 1048–1064.
- Benecke, Gudrun. 2009. Varieties of Carbon Governance: Taking Stock of the Local Carbon Market in India. *Journal of Environment and Development* 18 (4): 346–370.
- Biermann, Frank, Philipp Pattberg, Harro Van Asselt, and Fariborz Zelli. 2009. The Fragmentation of Global Governance Architectures: A Framework for Analysis. *Global Environmental Politics* 9 (4): 14–40.
- Bluemling, Bettina, and Arthur P. J. Mol. 2013. Clean Development Mechanism Implementation and Additionality in China: An Institutional Analysis. In *China & Brazil: Challenges and Opportunities*, edited by Leila da Costa Ferreira and José-Augusto Guilhon-Albuquerque, 141–165. São Paulo: Annablume.

- Böhm, Steffen, and Siddhartha Dabhi, eds. 2009. *Upsetting the Offset: The Political Economy of Carbon Markets*. London: MayFlyBooks.
- Bruyninckx, Hans, Qi Ye, Nguyen Quang Thuan, and David Belis, eds. 2013. *The Governance of Climate Relations Between Europe and Asia*. Cheltenham, UK: Edward Elgar.
- Bulkeley, Harriet, and Peter Newell. 2015. *Governing Climate Change*. London: Routledge.
- Carter, Neil. 2007. *The Politics of the Environment: Ideas, Activism, Policy*. 2nd edition. Cambridge: Cambridge University Press.
- CCWG. 2013. *Who's Counting? Issues and Options for Climate Finance in Vietnam*. Hanoi: Oxfam, CARE on behalf of Climate Change Working Group.
- Chachavalponpun, Pavin. 2014. The Politics of International Sanctions: The 2014 Coup in Thailand. *Journal of International Affairs* 68 (1): 169–185.
- Derman, Brandon B. 2014. Climate Governance, Justice, and Transnational Civil Society. *Climate Policy* 14 (1): 23–41.
- Dyer, Hugh C. 2014. Climate Anarchy: Creative Disorder in World Politics. *International Political Sociology* 8 (2): 182–200.
- Fortier, François. 2010. Taking a Climate Chance: A Procedural Critique of Vietnam's Climate Change Strategy. *Asia Pacific Viewpoint* 51 (3): 229–247.
- Friberg, Lars. 2009. Varieties of Carbon Governance: The Clean Development Mechanism in Brazil—A Success Story Challenged. *Journal of Environment and Development* 18 (4): 395–424.
- Fuhr, Harald, and Markus Lederer. 2009. Varieties of Carbon Governance in Newly Industrializing Countries. *Journal of Environment and Development* 18 (4): 327–345.
- Goldman, Michael. 2005. *Imperial Nature: The World Bank and Struggles for Social Justice in the Age of Globalization*. New Haven, CT: Yale University Press.
- Government of Japan. 2016a. JCM Vietnam-Japan—Project Cycle Search. Tokyo: Ministry of Economy, Trade and Industry, Japan (METI) and Ministry of the Environment, Japan (MOEJ).
- Government of Japan. 2016b. *Recent Development of the Joint Crediting Mechanism (JCM)*. Tokyo: Government of Japan.
- Government of Vietnam. 2011. *National Strategy on Climate Change*. Hanoi: Prime Minister, Government of Vietnam.
- Government of Vietnam. 2012a. Decision 1775: Approval of Project of Greenhouse Gas Emission Management; Management of Carbon Credit Business Activities to One World Market. Hanoi: Government of Vietnam.
- Government of Vietnam. 2012b. *Vietnam National Green Growth Strategy*. Hanoi: Government of Vietnam, based on proposal of Ministry of Planning and Investment.
- Green, Jessica F., Thomas Sterner, and Gernot Wagner. 2014. A Balance of Bottom-Up and Top-Down in Linking Climate Policies. *Nature Climate Change* 4 (12): 1064–1067.
- Halimanjaya, Aidy. 2015. Climate Mitigation Finance Across Developing Countries: What Are the Major Determinants? *Climate Policy* 15 (2): 223–252.
- Huang, Yitian, and Rob Bailis. 2015. Foreign Policy “Trilemmas”: Understanding China's Stance on International Cap-and-Trade. *Climate Policy* 15 (4): 494–516.
- ICAP. 2016a. *Emissions Trading Worldwide: Status Report 2016*. Berlin: International Carbon Action Partnership.
- ICAP. 2016b. *ETS Detailed Information: Thailand*. Berlin: International Carbon Action Partnership.

- Jacquet, Jennifer, and Dale Jamieson. 2016. Soft but Significant Power in the Paris Agreement. *Nature Climate Change* 6 (7): 643–646.
- Jevnaker, Torbjørg, and Jørgen Wettestad. 2016. Linked Carbon Markets: Silver Bullet, or Castle in the Air? *Climate Law* 6 (1–2): 142–151.
- Keohane, Robert O., and David G. Victor. 2011. The Regime Complex for Climate Change. *Perspectives on Politics* 9 (1): 7–23.
- Kinley, Richard. 2017. Climate Change After Paris: From Turning Point to Transformation. *Climate Policy* 17 (1): 9–15.
- Liu, Liwei, Chuxiang Chen, Yufei Zhao, and Erdong Zhao. 2015. China's Carbon-Emissions Trading: Overview, Challenges and Future. *Renewable and Sustainable Energy Reviews* 49: 254–266.
- Lo, Alex Y., and Michael Howes. 2013. Powered by the State or Finance? The Organization of China's Carbon Markets. *Eurasian Geography and Economics* 54 (4):380–408.
- Lohmann, Larry. 2008. Carbon Trading, Climate Justice and the Production of Ignorance: Ten Examples. *Development* 51 (3): 359–365.
- Lund, Emma. 2012. Environmental Diplomacy: Comparing the Influence of Business and Environmental NGOs in Negotiations on Reform of the Clean Development Mechanism. *Environmental Politics* 22 (5): 739–759.
- Markit. 2015. Gold Standard Registry. London: Markit.
- Marks, Danny. 2011. Climate Change and Thailand: Impact and Response. *Contemporary Southeast Asia* 33 (2): 229–258.
- Mathur, Vivek N., Stavros Afionis, Jouni Paavola, Andrew J. Dougill, and Lindsay C. Stringer. 2014. Experiences of Host Communities with Carbon Market Projects: Towards Multi-Level Climate Justice. *Climate Policy* 14 (1): 42–62.
- Michaelowa, Axel. 2009. Interpreting the Additionality of CDM Projects: Changes in Additionality Definitions and Regulatory Practices over Time. In *Legal Aspects of Carbon Trading: Kyoto, Copenhagen, and Beyond*, edited by David Freestone and Charlotte Streck, 248–271. Oxford: Oxford University Press.
- Michaelowa, Axel. 2011a. Failures of Global Carbon Markets and CDM? Book review. *Climate Policy* 11 (1): 839–841.
- Michaelowa, Axel. 2011b. Fragmentation of International Climate Policy—Doom or Boon for Carbon Markets? in *Progressing Towards Post-2012 Carbon Markets*, ed. UNEP RISOE, 13–23. Roskilde: UNEP RISOE.
- Mol, Arthur P. J. 2012. Carbon Flows, Financial Markets and Climate Change Mitigation. *Environmental Development* 1 (1): 10–24.
- MONRE. 2010. *Viet Nam's Second National Communication Under the United Nations Framework Convention on Climate Change*. Ha Noi: Ministry of Natural Resources and Environment.
- MONRE. 2014. *Final Market Readiness Proposal Vietnam*. Hanoi: Ministry of Natural Resources and Environment (MONRE) and others, prepared for Partnership for Market Readiness.
- MONRE. 2015. *Intended Nationally Determined Contribution of Viet Nam*. Hanoi: Ministry of Natural Resources and Environment.
- NESDB. 2011. *The Eleventh National Economic and Social Development Plan 2012–2016*. Bangkok: National Economic and Social Development Board, Office of the Prime Minister.
- Newell, Peter. 2008. Civil Society, Corporate Accountability and the Politics of Climate Change. *Global Environmental Politics* 8 (3): 122–153.
- Newell, Peter. 2009. Varieties of CDM Governance: Some Reflections. *Journal of Environment & Development* 18 (4): 425–435.

- Newell, Peter. 2011. The Political Economy of Carbon Markets: The CDM and Other Stories. *Climate Policy* 12 (1): 135–139.
- Newell, Peter, and Matthew Paterson. 2010. *Climate Capitalism: Global Warming and the Transformation of the Global Economy*. New York: Cambridge University Press.
- Newell, Richard G., William A. Pizer, and Daniel Raimi. 2013. Carbon Markets 15 Years after Kyoto: Lessons Learned, New Challenges. *Journal of Economic Perspectives* 27 (1): 123–146.
- Nguyen, Nhan Than, Minh Ha-Duong, Sandra Greiner, and Michael Mehling. 2011. Implementing the Clean Development Mechanism in Vietnam: Potential and Limitations. In *Improving the Clean Development Mechanism: Options and Challenges Post-2012*, edited by Michael Mehling, Amy Merrill, and Karl Upston-Hooper, 221–246. Berlin: Lexxion.
- Okereke, Chukwumerije, Harriet Bulkeley, and Heike Schroeder. 2009. Conceptualizing Climate Governance Beyond the International Regime. *Global Environmental Politics* 9 (1): 58–78.
- ONEP. 2015. Thailand's Intended Nationally Determined Contribution (INDC). Bangkok: Office of Natural Resources and Environmental Policy and Planning.
- Parnphumeesup, Piya, and Sandy A. Kerr. 2011. Stakeholder Preferences Towards the Sustainable Development of CDM Projects: Lessons from Biomass (rice husk) CDM Project in Thailand. *Energy Policy* 39 (6): 3591–3601.
- Paterson, Matthew. 2011. Who and What Are Carbon Markets For? Politics and the Development of Climate Policy. *Climate Policy* 12 (1): 82–97.
- Pattberg, Philipp. 2010. Public–Private Partnerships in Global Climate Governance. *Wiley Interdisciplinary Reviews: Climate Change* 1 (2): 279–287.
- PMR. 2016. About Partnership for Market Readiness. Partnership for Market Readiness.
- Priambodo, Chitra, Verena Streiferdt, Dennis Tänzler, and Else Semmling. 2013. *Status of Climate Finance in Vietnam: Country Assessment Report*. Singapore: Climate Development Knowledge Network.
- Ranson, Matthew, and Robert N. Stavins. 2016. Linkage of Greenhouse Gas Emissions Trading Systems: Learning from Experience. *Climate Policy* 16 (3): 284–300.
- Redmond, Luke, and Frank Convery. 2015. The Global Carbon Market-Mechanism Landscape: Pre and Post 2020 Perspectives. *Climate Policy* 15 (5): 647–669.
- Schneider, Lambert. 2009. Assessing the Additionality of CDM Projects: Practical Experiences and Lessons Learned. *Climate Policy* 9 (3): 242–254.
- Schreurs, Miranda A. 2008. From the Bottom Up: Local and Subnational Climate Change Politics. *Journal of Environment and Development* 17 (4): 343–355.
- Schroeder, Miriam. 2009. Varieties of Carbon Governance: Utilizing the Clean Development Mechanism for Chinese Priorities. *Journal of Environment & Development* 18 (4): 371–394.
- Selin, Tove, and Nattawat Theeralerttham. 2014. Climate Mitigation Effort Sharing in Mekong: In Pursuit of Greenhouse Gas Reductions in Vietnam and Thailand. *Kepa's Working Papers*, No 40. Helsinki: Kepa.
- Smits, Mattijs, and Carl Middleton. 2014. New Arenas of Engagement at the Water Governance–Climate Finance Nexus? An Analysis of Boom and Bust of Hydro-power CDM in Vietnam. *Water Alternatives* 7 (3): 561–583.
- Spaargaren, Gert, and Arthur P. J. Mol. 2013. Carbon Flows, Carbon Markets, and Low-Carbon Lifestyles: Reflecting on the Role of Markets in Climate Governance. *Environmental Politics* 22 (1): 174–193.

- Stephan, B., and M. Paterson. 2012. The Politics of Carbon Markets: An Introduction. *Environmental Politics* 21 (4): 545–562.
- TGO. 2014. *Thailand's Market Readiness Proposal (MRP)*. Bangkok: Thailand Greenhouse Gas Organisation, for the Partnership for Market Readiness.
- Tuerk, Andreas, Michael Mehling, Christian Flachsland, and Wolfgang Sterk. 2009. Linking Carbon Markets: Concepts, Case Studies and Pathways. *Climate Policy* 9 (4): 341–357.
- Tuyen, Tran Minh, and Axel Michaelowa. 2006. UNFCCC Kyoto Protocol Clean Development Mechanism Baseline Construction for Vietnam National Electricity Grid. *Mitigation and Adaptation Strategies for Global Change* 11 (3): 723–740.
- UNDP. 2014. Green Growth and Fossil Fuel Fiscal Policies in Viet Nam: Recommendations on a Roadmap for Policy Reform. Hanoi: United Nations Development Programme.
- UNEP DTU. 2017a. CDM Pipeline Overview. December 2016 Edition. Copenhagen: UNEP DTU Partnership.
- UNEP DTU. 2017b. PoA Pipeline Overview. December 2016 Edition. Copenhagen: UNEP DTU Partnership.
- UNFCCC. 2015a. Paris Agreement. Paris: United Nations Conference on Climate Change.
- UNFCCC. n.d. *Emissions Summary for Viet Nam*. Bonn: United Nations Framework Convention on Climate Change.
- van Asselt, Harro, and Fariborz Zelli. 2014. Connect the Dots: Managing the Fragmentation of Global Climate Governance. *Environmental Economics and Policy Studies* 16 (2): 137–155.
- VCS. 2016. VCS Project Database. Washington DC: Verified Carbon Standard.
- Viñuales, Jorge E., Joanna Depledge, David M. Reiner, and Emma Lees. 2017. Climate policy after the Paris 2015 climate conference. *Climate Policy* 17 (1): 1–8.
- Weiss, Philipp, Thierry Lefèvre, and Dominik Möst. 2008. Modelling the Impacts of CDM Incentives for the Thai Electricity Sector. *Energy Policy* 36 (3): 1134–1147.
- Wells-Dang, Andrew. 2013. Civil Society Networks in Cambodia and Vietnam—A Comparative Analysis. In *Southeast Asia and the Civil Society Gaze: Scoping a Contested Concept in Cambodia and Vietnam*, edited by Gabi Waibel, Judith Ehlert, and Hart N. Feuer, 61–76. Abingdon: Routledge.
- World Bank, Ecofys, and Vivid Economics. 2016. State and Trends of Carbon Pricing 2016. Washington, DC: World Bank Group.
- Zelli, Fariborz. 2011. The Fragmentation of the Global Climate Governance Architecture. *Wiley Interdisciplinary Reviews: Climate Change* 2 (2): 255–270.
- Zimmer, Anne, Michael Jakob, and Jan Christoph Steckel. 2015. What Motivates Vietnam to Strive for a Low-Carbon Economy?—On the Drivers of Climate Policy in a Developing Country. *Energy for Sustainable Development* 24: 19–32.
- Zink, Eren. 2013. *Hot Science, High Water: Assembling Nature, Society and Environmental Policy in Contemporary Vietnam*. Copenhagen: NIAS.

**Appendix: Interview List**

Code	Function
IPRI1	Portfolio manager, global consultancy company
IPRI2	Managing director, consultancy company in Southeast Asia
IGOV1	Government official, Netherlands
IGOV2	Employee, Dutch Emission Authority
IRES1	PhD researcher on Vietnam
IPRI3	Consultant, global consultancy company
IRES2	Researcher from Finland
IPRI4	Partner in a global consultancy company
TRES1	Researcher for international research institute
TGOV1	Government official, TGO
TNGO1	Director, small international NGO
TRES2	Climate change researcher, Thai University
TGOV2	Director of Thai research institute
TRES4	Senior vice president, Thai university
TRES4	Associate professor, Thai university
TGOV3	(Retired) Vice-director at DEDE
TNGO2	Director, small Thai NGO
TGOV4	Senior official at ONEP
TNGO3	Employee at Thai NGO and TCJ
VNGO1	Senior employee, international NGO
VMUL1	Senior employee, UNDP
VRES1	Professor at Vietnamese university
VMUL2	Project coordinator, multilateral organization
VGOV1	Government official, MONRE
VGOV2	Government official, MONRE
VPRI1	Program analyst, international NGO
VNGO2	Employee at Vietnamese NGO and CCWG
VRES2	Director, Vietnamese research institute
VNGO3	Employee, international NGO
VMUL3	Project coordinator at donor organization
VMUL4	Senior official, World Bank
VRES3	Deputy director general at Vietnamese research institute
VNGO4	Director, Vietnamese NGO

I = International, T = Thailand, V = Vietnam, GOV = Government, RES = Research/academia, PRI = Private sector, NGO = NGO/civil society organization, MUL = Multilateral/donors