



Could baseline establishment be counterproductive for emissions reduction? Insights from Vietnam's building sector

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May baseline establishment be counterproductive for emissions reduction? Insights from Vietnam's building sector.

1. Introduction

According to the most recent IPCC report, 'greenhouse gas (GHG) emissions from the building sector have more than doubled since 1970 to reach 9.18 GtCO₂eq in 2010' or 25 percent of the world's greenhouse gas emissions (Lucon et al., 2014). Numerous studies have shown that increasing the electricity and thermal efficiency of buildings is one of the cheapest and cleanest ways to reduce carbon emissions (IEA, International Energy Agency, 2013; 2014; Lucon et al., 2014; UNEP, 2007). Nationally Appropriate Mitigation Actions (NAMAs), as broadly defined by the 2007 Bali Action Plan resulting from the UNFCCC climate change negotiations, may serve as a framework for implementing measures for 'fast emissions reductions' from the sector while at the same time yielding long-term sustainable development benefits.¹ From a climate change mitigation perspective, Vietnam's fast-growing GHG emissions call for mitigation action. Various NAMAs may be part of the response, including for the building sector in Vietnam, through the adoption of readily available energy-efficiency measures and technologies.

The building sector is already challenged by conflicts that are impeding the political ambition of reducing energy consumption – or GHG emissions. These conflicts lie within the policy arena defined by a variety of institutional processes, market structures and technology characteristics. There is ample evidence in the literature of sector-specific barriers such as institutional, technological, regulatory, behavioural and financial (Lucon et al., 2014; Tuominen, Klobut,

¹ CP13/1: 1. Decides to launch a comprehensive process to enable the full, effective and sustained implementation of the Convention through long-term cooperative action, now, up to and beyond 2012, in order to reach an agreed outcome and adopt a decision at its fifteenth session, by addressing, inter alia: (a) A shared vision for long-term cooperative action, including a long-term global goal for emission reductions, to achieve the ultimate objective of the Convention, in accordance with the provisions and principles of the Convention, in particular the principle of common but differentiated responsibilities and respective capabilities, and taking into account social and economic conditions and other relevant factors; (b) Enhanced national/international action on mitigation of climate change, including, inter alia, consideration of: (i) Measurable, reportable and verifiable nationally appropriate mitigation commitments or actions, including quantified emission limitation and reduction objectives, by all developed country Parties, while ensuring the comparability of efforts among them, taking into account differences in their national circumstances; (ii) Nationally appropriate mitigation actions by developing country Parties in the context of sustainable development, supported and enabled by technology, financing and capacity-building, in a measurable, reportable and verifiable manner.

Tolman, Adjei, & de Best-Waldhober, 2012; Ürge-Vorsatz, Koepfel, & Mirasgedis, 2007) that are hindering the adoption of available technologies, as well as the diffusion of architectural and engineering knowledge that would allow the construction of highly energy-efficient buildings (Rygghaug & Sørensen, 2009). NAMAs may help introduce mechanisms to provide resolutions to some of the conflicts in the sector, including, collection or exchange of energy efficiency data and standards.

NAMAs most commonly refer to policies or programmes, the general form and principles of which are already known. Thus, NAMAs in the building sector – or in any other sector – do not refer to new *types* of activity (understood as policy and programme development and formulation); instead, what NAMAs do is add an emissions reduction dimension to already existing national policies and programmes that are normally motivated only by either energy efficiency or quality of the building stock. The international recognition of mitigation efforts brings prospects for accessing additional sources of finance, technology and technical assistance through the international climate change agreement architectures. Predictably such international opportunities come with strings attached. Baseline establishment is often presented as the initial step in developing NAMAs within the national context in order to demonstrate a deviation from such baselines. The problem with this is that it requires data collection. Data collection standards and data availability represent a major hindrance on the development of national baselines for nearly all sectors (Puig et al., 2013). This is where, rather than offering solutions, the NAMA may impose a new set of obstacles.

Responses to the changing climate are recurrently framed as questions of technological expertise (Lövbrand & Stripple, 2011; Lövbrand, Rindorf, & Nordqvist, 2009) and climate policies are laden with planning informed by technical exercises, such as GHG emissions accounting. The baseline requirement is institutionalized through the UNFCCC process, particularly the Kyoto Protocol, the principles governing the Clean Development Mechanism (CDM) and, for NAMAs specifically, the Cancun agreements (UNFCCC, 2011a). The latter stipulate that, in the context of their social and economic development priorities, ‘developing country Parties will take nationally appropriate mitigation actions ... aimed at achieving a deviation in emissions relative to ‘business as usual’ emissions in 2020’ (UNFCCC, 2011b).

Probably for that reason, baseline requirements are traditionally not questioned by policy practitioners. Thus, significant development resources are allocated to the establishment of baselines and the bridging of data gaps, often without consideration as to whether it is a necessary instrument for NAMA implementation (Sharma & Desgain, 2013).

Limited attention is paid to the institutional barriers that hinder the design of baselines, which in reality could be a multitude of baselines based on different scenarios. Such baselines have to be based on specific projections, although experience shows that back-of-the-envelope estimates of baselines are not necessarily further from reality than very complicated models. The issue is commonly discussed more willingly from the technocratic-administrative perspective (IPCC, 2006) than as a product of complex sociotechnical interactions between diverse actors operating at the intersections of industry and market structures, institutions of governance, innovation systems, evaluation practices, supplier-user chains, designer and engineering practices, etc. Indeed, there is already rich and growing literature on policy and political discourses regarding multi-actor governance of the environment (Biermann et al., 2012; Newell, Pattberg, & Schroeder, 2012). Yet both scholars and practitioners have neglected the potential impacts on domestic policies of an increased internationalization of mitigation policy and knowledge regimes. At the same time, a significant effort has been placed into developing common approaches to measuring and setting baseline GHG emissions and reporting sectoral contributions to their reduction, while a political need to establish a common 'language of baselines' has been expressed (UNEP, 2009).

This paper focuses on the seemingly very fundamental idea that NAMAs should 'deviate from a development baseline'. Baseline setting is discussed as part of the knowledge arrangement within the examined policy arena. The study combines document analysis and a desk review of the available literature, followed by semi-structured elite interviews (Aberbach & Rockman, 2002; Harvey, 2011), supplemented by participatory observations and expert's consultations. The policy arrangement approach to interpret the data collected is used. The ultimate objective is to question if the optimal balance between cost and benefit of baseline setting is being practiced and if not to suggest abandoning the rigorous baseline requirements for NAMAs in favour of a nuanced approach that prevents data availability and data collection

and exchange from becoming a barrier to action. The aim of this paper to unpack the issues that NAMA development is facing related to necessity of establishing the baseline and to show that NAMAs developers need to get away from the development of baselines since it requires something more challenging than it is worth in terms of what access to funding, technology and etc. it will bring.

Intrinsically the issue of NAMA policy development needs to be understood as a complex, dynamic system. There are many potential sources of failure, and the challenges in providing a comprehensive analysis of the policy arena and dynamics among the relevant stakeholders are numerous. In the following sections, we analyse the institutional dynamics and the increasing 'global power of knowledge' in order to provide a more detailed understanding of why the 'baseline obstacle' exists and how it might be eliminated within the context of NAMA development. First, we situate baseline setting within the framework of global climate governance, introduce the main concepts and finally describe the methodology and analytical approach for the case study which demonstrates the impact of the global knowledge regime on the Vietnamese building sector in the context of baseline setting.

The analysis reveals that, in addition to domestic factors, international approaches to establishing baselines and the power of international discourses in national low-carbon development policy arenas are significant factors in decisions whether or not to initiate energy-efficiency actions, in this case in Vietnam's building sector. Our findings suggest that emissions reduction policies and measures are not only driven by a cost-efficiency or developmental rationale, but are also influenced by the feasibility of baseline setting. The dominance of the international discourse in the development over national low-carbon development policy and techno-managerial approaches to policy development, as manifested in baseline requirements, are adding to already existing challenges. We suggest omitting the lengthy and resource-consuming practice of establishing baselines and recommend proceeding forthwith to the planning and implementation of mitigation and energy efficiency policies. Instead, as conditions vary significantly in different contexts, it would be more appropriate to measure the initial situation (the 'base point') and monitor development from that point.

2. Background, concepts and framework for analysis

2.1 Nationally Appropriate Mitigation Actions

Within the framework of the international climate negotiations, the term ‘Nationally Appropriate Mitigation Action’ refers to any action that reduces GHG emissions in developing countries and that has been drawn up under the umbrella of a national governmental initiative (Hinostroza, Sharma, & Karavai, 2014; Sharma & Desgain, 2013; UNFCCC, 2011a). There has been continuous discussion on what constitutes a NAMA since it was introduced as part of the Bali Action Plan in 2007 (UNFCCC, 2008). Consequently, the NAMA and its operational definition remain broad, vague and open to interpretation by sovereign entities. NAMAs are not legally binding, but constitute voluntary commitments by a developing country. Most common definitions refer to NAMAs as a set of policies and actions that countries undertake as a part of a commitment to reduce their GHG emissions.

Internationally supported NAMAs are subject to international measuring, reporting and verification requirements (MRV) (Sharma & Desgain, 2013). Emissions reductions measurement methodologies must include parameters to track the GHG emissions impact of NAMA implementation (compared to a baseline) and set out a method for measuring this parameter, but unlike CDM, NAMAs have no requirement of additionality. However, when a baseline, or a deviation from a baseline, is introduced, it can be argued that this is a de facto additionality requirement, which in principle could be refused by NAMA host countries. This is especially the case because the deviation from a baseline is commonly presented as a requirement before international NAMA financing can be accessed. Conversely, unilateral NAMAs are mitigation actions carried out on the basis of the NAMA host country's own financing, and therefore they might be implemented without a baseline or on the basis of alternative approaches. In this way, there is a link between baseline setting and (perceived) access to international climate finance.

2.2 Approaches to baseline setting

Greenhouse gas emissions scenarios (hereinafter ‘scenarios’) have been defined as coherent, internally consistent and plausible descriptions of possible future states of the world given a pre-established set of assumptions (Puig et al., 2013). A baseline scenario is ‘a scenario that describes future greenhouse gas emissions levels in the absence of future, additional mitigation efforts and policies’. Baseline scenarios are used as counterfactual descriptions of the

system of interest, against which the expected performance of so-called 'mitigation scenarios' can be investigated. Baseline and mitigation scenarios can be constructed in different ways, depending on their intended use (Puig & Malyshev, 2015).

Use of scenarios was originally introduced by the private sector, but in the late 1960s public policy has likewise relied on scenarios to support policy-planning processes in a wide range of sectors (Wright & Cairns, 2011). In the area of climate change the use of scenarios was first formalized at the project level with the CDM that allowed the export of 'certified emissions reductions' (CERs) generated as the result of the difference between a baseline and the project scenario. This necessitated the development of sector and project specific methodologies for the preparation of baseline scenarios in a multitude of emissions reduction actions.² These are comprehensive methodologies that prescribe most aspects of the baseline development process. These scenarios are also linked to the much debated additionality concept for the national GHG emissions projections.

At the policy planning level the *Special Report on Emission Scenarios* by the Intergovernmental Panel on Climate Change (Nakicenovic et al., 2000), published in 2000 and the requirement by the UNFCCC for the Parties to the Convention to prepare so-called national communications (UNFCCC, 2007) both paved the way for a generalised use of scenarios in the policy area of climate change mitigation.³ In contrast to the project based baseline scenario setting, the guidelines for the preparation of national communications permit the user a high degree of latitude when it comes to methods for preparing baseline or mitigation scenarios: the most stringent requirements (affecting Annex I parties only) relate to ensuring consistency with the national inventory of greenhouse gas emissions and to documenting the methods used, and the assumptions made, in calculating the scenarios. Such a non-prescriptive approach was believed to increase parties' acceptance of reporting requirements by the climate convention,

² Article XII of the Kyoto Protocol (UNFCCC, 1998) 'defines' the Protocol's so-called clean development mechanism (CDM). It states, 'under the clean development mechanism [...] reductions in emissions [have to be] additional to any that would occur in the absence of the certified project activity'. This requirement, which has been dubbed 'additionality', has become a central element of the CDM. To make additionality operational, a baseline has to be prepared for each project, against which estimated emission reductions resulting from the certified project activity can be compared. Hence, the CDM has prompted the development of a large number of sector-specific methodologies for calculating project baselines.

³ Decisions 17/CP.8 and 18/CP.8 of the Eighth Conference of the Parties to the Climate Convention, held in 2003, formally adopted guidelines for the preparation of national communications by, respectively, Annex I and non-Annex I parties. The guidelines require Annex I parties to provide mitigation scenarios, but only 'encourage' these same parties to provide baseline scenarios. Conversely, non-Annex I parties are not required to provide either. Nonetheless, most parties, whether Annex non-Annex or I I, routinely provide both types of scenarios in their national communications. Effectively, national communications have become the key source of official national projections on greenhouse gas emissions – both baseline and mitigation scenario projections.

as well as to make it possible for least-developed country parties to respond to these requirements (Puig et al., 2013).

NAMAs are non-binding in nature. Partly because of this, it has been argued that a non-prescriptive model such as that of national communications may be more fitting for NAMA baselines (Hinostroza et al., 2014).⁴ Proponents of this approach argue that developing countries lack the expertise and resources required to apply methods other than basic methodologies. They further contend that, as long as a nationally appropriate mitigation action reduces emissions by some amount (that is, as long as it does represent a 'mitigation action'), the extent to which such reductions depart from some uncertain baseline level is irrelevant, not least because such mitigation actions have to be seen in the context of development priorities (Sharma & Desgain, 2013).

Arguably, the above claims may be less compatible with basic accountability principles. Funding, whether from domestic, bilateral or multilateral sources, goes into NAMA development and implementation, and good governance considerations entail that the government agency in charge of a NAMA should be able to prove to its constituency and any foreign donors that it is allocating and administering the funding appropriately and that the policy measures that have been introduced are actually resulting in GHG emissions reductions.

2.3 The Policy Arrangement Approach

The Policy Arrangement Approach (PAA) employed by this study is a method of policy analysis developed to interpret changes to policy practices (Liefferink, 2006). The PAA makes it possible to describe the dynamics of changes in a policy process within a given policy arena.

The starting point of the PAA is the interplay between daily policy-making processes and more structural societal and political processes (Arts & Leroy, 2006; Arts, Leroy, & Tatenhove, 2006). As such, the research focus is on how actors and their coalitions have influenced the discourse and structural processes of the policy-making and how those processes have an impact on policy content and organization, leading to the dynamic representation of the policy arena. A policy arrangement can be defined as 'the temporary stabilization of the content and organization of a particular policy domain' (van Tatenhove & Leroy, 2000). It incorporates

⁴ As opposed to the prescriptive model represented by the CDM's strict requirements for baseline development.

structures resulting from the processes as well as the interactions between policy actors and the formal and informal rules (Arts et al., 2006). These four interwoven dimensions – actors, discourses, and resources and rules of the game - are considered to be the most relevant for analysing politics and policy (Arts & van Tatenhove, 2004).

This approach argues that neither actors nor policy field structures or organizations should be studied separately, as they are intertwined and influence each other constantly. In order to understand a policy arena, all four dimensions must be included in the analysis. It is therefore the dynamics of the interaction of those aspects that should be analysed. The discursive dimension within the PAA refers to the policy's substance (Liefferink, 2006) and to the ideas that shape policy, while the other three dimensions refer to the organizational aspects of policy. Policy arrangements encompass a multitude of discourses, which may exist in parallel, overlap and be in dispute. Policy discourses are interpretive schemes, ideas concepts and categorizations (Arts & Buizer, 2009; Arts et al., 2010) They range from formal policy concepts and texts to popular narratives and story lines, which give meaning to a policy domain (Dryzek, 1997).

These varying and competing discourses inspire actors to establish coalitions to strengthen certain discourses and restrain others. Thus the actors can also be referred to as 'discourse coalitions' (Hajer, 1995; 2006). The power of actors and actor coalitions is based on their access to resources, including knowledge and finance, which determines their ability to translate and exercise the norms of the discourse within which they are positioned. The rules of the game define the way the political game should be played and within which boundaries, as well as how issues should be framed, which agendas should be communicated and how, and how policies are formulated and decisions made (van Tatenhove & Leroy, 2000). The rules dimension also includes practices of policy-making such as knowledge management. Actors and their coalitions have to adhere to rule-making procedures, ways of allocating resources and the present division of authority and competencies. The final dimension – resources – is linked to the concept of power (Giddens, 1984) that is regarded as the ability of actors or actor coalitions to mobilise resources in order to pursue their goals.

Below we will apply the PAA framework for the analysis of NAMA development as a particular policy arena of mitigation policies relevant for the buildings sector in Vietnam. The primary focus of the analysis is the NAMA development process (as opposed to implementation).

3. Methodology

In order to analyse the complex policy arrangements and policy processes in the real-life context, the analysis is based on a case study (Yin, 2011) of the baseline requirement for the development of NAMAs in the Vietnamese buildings sector. To increase validity, methods and data sources were triangulated (Flick, 2008). Initial document analysis and a literature review were followed by 39 semi-structured elite interviews (Aberbach & Rockman, 2002; Harvey, 2010; 2011) and participatory observations conducted in two separate periods between May 2013 and April 2014.

Documentation, such as national policy documents, international and bilateral agency reports, organizational and program records, official publications, reports and meetings proceedings etc. from 2004-2014 were collected and analysed. Interview data were gathered with the assurance of anonymity, in order to ensure candid responses. Therefore, the study does not directly cite participants, and the results presented are based on a synthesis of the points made. The details of the interviews are summarised in Table 1. The data collected were categorized according to the four dimensions of PAA discussed above. As data are limited to the buildings sector, they cannot necessarily be generalized to other sectors in Vietnam, nor to other developing countries.

4. The case study

The case study elicits 'storylines' that emerge from the interviews and policy responses. Generally, the analysis of policy documents and interviews showed recurring narratives relating to knowledge management and baseline setting within the international discourse on climate change as translated by a coalition of transnational actors and national entities.

4.1 The context of energy efficiency in the buildings sector policy arrangement in Vietnam

With the transition from a centrally planned economy to what the government refers to as a 'socialist-oriented market economy', Vietnam's total emissions and per capita emissions have

almost tripled in the past ten years, while the carbon intensity of GDP has increased by 48% (World Bank, 2014) due to rapid industrialization and urbanization. Even though Vietnam signed the UNFCCC in 1992 and ratified it on 16 November 1994, and climate change issues have been on the national agenda since the beginning of the 2000s, climate change only explicitly entered the national policy-making agenda with the National Target Program to Respond to Climate Change (NTP-RCC) approved in 2008 (Zink, 2012). Recognition of emissions reductions and the energy-saving potential within the sector is growing, serving as an argument for designing a sector-specific NAMA. Under the NTP-RCC, NAMAs are to be developed to respond to the National Climate Change Strategy (2011)⁵ and the National Green Growth Strategy (2012).

Urbanization is projected to increase by 45% by 2020 and already 37% of total electricity consumption in Vietnam is attributed to the residential and commercial sector (ADB, 2015). The building surveys⁶ conducted in 2012 shows that the combined electricity consumption of the residential and commercial sector accounted for about 43% of the total annual electricity consumption or about 45,000 GWh, corresponding to 25.7 mln. tons of CO₂eq emissions. According to the Vietnam's second national communication to the UNFCCC the GHG emissions from the commercial and residential buildings are estimated to be 19.6, 36.0 and 67.3 mln. tons of CO₂eq respectively (MONRE, 2010) Although the sector is not the largest sector in terms of GHG emissions it is projected to be the fastest growing sector in Vietnam (Ibid.).

Since Energy Efficiency and Conservation Decree No. 102/2003/ND-CP was introduced, a number of decrees, national laws and standards developed by MOC and national government have mentioned or legalized the narratives with which we are concerned in this paper. There are three key energy related policies in Vietnam: (a) National Energy Goals of Vietnam, (b) National Energy Efficiency Policies and, (c) National Target Programme on Energy Efficiency and Conservation 2012 – 2015. They are supplemented with the National Technical Regulation on Energy Efficiency Buildings (QCVN 09:2013/BXD), Building Code 2014, Electricity Law No. 28/2004/QH11, and the Law on Energy Efficiency and Conservation No. 50/2010/QH12⁷. MONRE is an agency appointed to coordinate NAMA activities and development of the

⁵ The National Climate Change Strategy (approved by Prime Minister's Decision 2139/QĐ-TTg from, 2011). Available at: <http://chinhphu.vn/portal/page/portal/English/strategies/strategiesdetails%3FcategoryId=30%26articleId=10051283>

⁶ Building Survey Report, Green Building Program in Viet Nam, IFC, 2012

⁷ Available at Legal Normative Document Portal, Ministry of Justice, Vietnam: <http://www.moj.gov.vn/vbpbq/en/pages/vbpbq.aspx>

institutional framework for the integration of NAMA into national and subnational strategies, programs, plans for sustainable development of other agencies. Regardless of certain regulatory and executive progress energy-efficient construction in Vietnam has been significantly constrained by interrelated problems, namely deficiencies in public policy to stimulate energy efficiency and limited governmental efforts to actively enforce regulation in the building industry.

4.2 The Policy Arrangement Approach applied to the case of NAMA development for the buildings sector in Vietnam

The policy arena of energy efficiency in the buildings has been established under the influence of three separate discourses: energy security through differentiation of power generation; energy efficiency as a means to reduce investment costs in differentiation of generation capacity, and international narratives of climate change. The issue of data management and baseline setting is predominantly originating in the latter where it is penetrating the two other discourses. These are shared themes in scientific and technical discussions around energy efficiency and approaches to climate change mitigation in Vietnam. As most of the interviewees stated, ‘the lack of baselines is a key barrier to energy efficiency in the buildings sector’, thus suggesting a connection between domestic policy-making and the narratives of the wider discourse on climate change and knowledge management. Challenges associated with baseline setting have been a recurring theme in conversations with interviewees and are addressed by a number of programmatic documents and policy briefs; meanwhile, a majority of stakeholders express a ‘need to develop some solutions to calculate the actual GHG reduction’, and importance of ‘good quality data’ and a ‘comprehensive national database’ prior to initiating action. Stakeholders predominantly believe that ‘you can not save what you can not measure’. Similar arguments and indications of hindrances to baseline setting, among key barriers to policy development, have influenced the focus of our analysis.

4.2.1 Policy discourses

The climate change agenda is similarly used as vehicle for other agendas by stakeholders that consider it a lever for promoting their adjacent interests. Transfer of technologies, the design of political and economic instruments are always based on ideas, discourses and

ideologies, as well as on particular interests and motivation. In that way, narratives and their affiliated concepts generally influence agenda setting. Among other things, prominent global narratives of climate change include emissions reductions, sustainable development, institutional transformation, capacity development and technology transfer.

In Vietnam the National Climate Change Strategy (NCCS) reflects the global climate change discourse, while the Green Growth Strategy (GGS) has more prominent developmental angles and defines the targets for emissions reductions in the energy sector (NCCS, 2011; VGGG, 2012). Both are largely influenced by the participation of transnational actors, run in parallel and consider 'low-carbon economy and green growth as principles in achieving sustainable development' (NCCS, 2011). Increased 'international cooperation to address climate change effectively' is among the strategic objectives of the NCCS, thus placing national mitigation measures, including those that are motivated by other objectives, in the global context. As for the energy sector and built environment, the discourse on energy efficiency has influenced the development of the emergent regulatory base. The narratives of 'technological progress' and the 'economic and efficient use of energy' inform policy processes in the buildings sector. Although the climate change discourse is relatively new to this sector, its introduction, together with the concept of NAMAs and its promotion by transnational actors in Vietnam, have inspired a number of policy initiatives and projects. Nevertheless these mainly have remained theoretical exercises with little tangible implementation and enforcement. They have avoided the discussion of additionality compared to the already existing, but not enforced legislation, in keeping with the absent 'additionality requirement' for NAMAs.

Actors draw on different discourses in order to legitimize their claims to the development of energy efficiency policy and can be grouped around two discourse coalitions, namely climate change mitigation and energy efficiency, which nevertheless share the view that data and knowledge management are central to the ecological modernization discourse⁸.

⁸ Ecological modernization (EM) is a social theory depicting prevailing discourses in environmental governance. Research following this tradition view environmental problems as being caused either by policy failures (McAfee, 1999) or by failures in economically accounting. Ultimately EM treats environmental externalities, climate change included, as imperfections that can be eliminated via better design. Ecological modernization (Bäckstrand and Lövbrand, 2006) promotes technical solutions, market-based approaches and privatization of conservation activities to solve the global ecological crisis. It encourages the use of more eco-efficient technology as well as the redesign of economic and political institutions to create incentives that will effectively decouple economic growth from raw material use, waste and environmental damage (Berger 2001; Dryzek 2005; Howes 2005).

4.2.2 *Actors and their coalitions*

A number of national Vietnamese actors are prominent in the overlapping policy arenas of energy efficiency and climate change mitigation. The issue of energy efficiency framed in the context of climate change mitigation falls within the responsibility of the Ministry of the Environment (MONRE). Energy efficiency is also a policy responsibility of the Ministry of Industry and Trade (MOIT) and in the case of the built environment of the Ministry of Construction (MOC). Due to the limited institutional capacity and limited human capital, transnational actors complement and often replace the policy functions of national institutions and agencies. Thus, the low national capacity for, e.g., baseline setting, leaves the responsibility for selecting methodological approaches, defining data requirements and even policy design to international actors (experts, donor agencies, consultants, UN agencies). These introduce norms from the international dominant discourse of climate change, and hence 'normalize' emissions data requirements and representation characteristics of the ecological modernization discourse.

A number of respondents stated that an inherently hierarchical government structure exists and that the level of involvement of line ministries and cooperation among them is rigid, vertical and obstructs information-sharing and coordination. Interviewees also noted that ministerial boundaries, overlapping mandates, insufficiently clearly defined roles within the policy arrangement and different degrees of influence over policy development have frequently caused friction between the Ministry of the Environment and the respective sector ministries. The development of a sector-specific NAMA requires strong cooperation in knowledge and data-sharing. However, rather than enhancing coordination across actors, the policy arena is becoming further fragmented, as there is competition for the resources that can be accessed in cooperation with transnational actors. MONRE is in a difficult position when it comes to fulfilling its mandate for climate change policy and sectoral NAMA policy development, as other actors expect it to act as a coordinating agency, providing the overall framework and creating a space for knowledge- and data-sharing. Although the institutional arrangements are designed to perform these functions, they fail at implementation. For the MOC, on the other hand, the NAMA issue is new, and energy efficiency is not central to its function, even though it is codified

and established on the regulatory level, and although the narratives are present in daily practice. Policy enhancements for purposes of energy efficiency are driven and advocated by the policy entrepreneurs, who, however, regardless of their strong motivations, lack the resources for policy action. However policy entrepreneurs are not involved in the preparation and planning stage of a NAMA proposal, which is led instead by agencies of MONRE. The possibilities for MOC and other representatives from the construction sector to familiarize themselves with NAMA particularities have only existed through cooperation with international agencies. The low level of the national technical capacity and proficiency required for baseline setting and scenario development is often cited, and data allegedly aggregation only happens because of the activities of a limited pool of national experts. Conversely, existing national sectoral competence appears not to be utilized fully, and the lack (or perceived lack) of national expertise is to some extent replaced by expertise arising out of international cooperation.

{INSERT TABLE.1}

4.2.3 Rules of the game shaping the policy arena

Knowledge management practices are not mere technologies-of-representation: they co-construct and co-shape how policy issues are framed. Mitigation policies are often very precise when referring to emission reduction targets, but very imprecise when referring to the data practices of specific sectorial activities. Rules and procedures of national GHG emissions accounting and baseline setting are based on national approaches to data handling and strive to adhere to international standards. While national decision-makers' acceptance of international norms is facilitated through coalitions with transnational actors, the translation is limited by institutional arrangements, regulatory and enforcement gaps and the lack of technical and managerial capacity among personnel. Overlapping and competitive rule systems, parallel non-transparent data-collection systems and proprietary attitudes towards data are a challenge for national institutions and a burden on institutional arrangements.

The practices of data collection and aggregation shape the understanding of what constitutes baseline data. As for data management within the buildings sector, Vietnam's building code covers a substantial yet feasible range of energy efficiency data. It includes several aspects, such as requiring periodic energy audits after a building has been completed. But there

is no central depository to consolidate the data aggregated by the provincial authorities, and therefore no knowledge of the energy consumption of national buildings stock. As a result, it is 'impossible to establish emissions trends' or to 'retrieve any input for energy models' and etc. When data exists, their quality is disputable and rarely adheres to international standards of data collection and handling, nor there is any benchmarking of energy efficiency among buildings. Various respondents repeatedly referred to very poor data reliability and argued that the establishment of a robust and trustworthy baseline at the sectoral level is currently not possible within present institutional arrangements. Also, they referred to different sets of data needs, indicating that there is no clear, common understanding of what data can be gather and what are required. As the actors participating in the NAMA development often bring with them their experience of CDM project development, it is often the CDM legacy in planning practices that influences expectations of how policy-making should be approached. The practices and methodologies for establishing baselines and baseline scenarios have their roots in the familiar CDM project development cycle.

4.2.4 Division of resources, leading to differences in power and influence

Discourses or narratives on climate change mitigation and energy efficiency are important sources of power for stakeholders within the multi-sited resource arena of NAMA policy development. The national regulations have delegated authority over climate change issues to MONRE, 'which acts as a mini-MPI'⁹ when it comes to international assistance. MONRE operates in the international arena, negotiating international policy on climate change, and thus it communicates directly with foreign donors and transnational actors, who bring in a significant portfolio of international assistance targeting climate change mitigation in the domains of other national ministries as well. Sectorial differences in access to knowledge and finance in the climate change mitigation policy arena has allowed MONRE to gain significant weight, but its influence over the details of sectorial policy is limited nevertheless.

Almost every respondent, national and international, emphasized the lack of technical expertise and of national knowledge of GHG emissions reduction methodologies and baseline setting. There is an inadequate pool of greenhouse gas inventory technical experts in the

⁹ The Ministry of Planning and Investment is allegedly the most powerful ministry in Vietnam, as it has the final say over the distribution of financial resources and thus defines policy and development priorities.

relevant ministries and agencies. The technical capacity to apply models (such as MARKAL, LEAP, etc.) for the development and assessment of mitigation options and projects remains limited. Therefore, transnational agents with access to knowledge and human resources on a scale that is not available to national governments have significant leverage to influence national policy-making.

5. Discussion

The above analysis raises three central issues in a causality that may work counter to the objective of engaging developing countries actively in internationally supported emissions reduction actions: the forceful role of international norms in national policy-making; donor-driven narratives and the affiliated roles of international actors; and the role of data conceptualization in the techno-managerial practices in policy-making conveyed through policy advice.

The results of the document analysis and interviews indicate that current practices of NAMA development in Vietnam fall into the language of the ecological modernization discourse, as well as adhering to technocratic carbon accounting practices. National decision-makers have taken a pragmatic approach, accepting donor responses and donor-driven practices in addressing the challenges of limited national capacities in the climate change mitigation policy arena. However, international procedures of climate change policy-making, which require strong measuring and verification systems based on extensive data collection and established GHG emissions baseline scenarios, cannot be appropriated effectively by the national government within the current governance system and in the conditions of limited or insufficient national institutional capacities. In Vietnam most climate change mitigation initiatives have been supported by international technical expertise. Energy-efficiency policy initiatives, from the first buildings code to the NAMA proposal in the building sector, are drafted and prepared with a variety of transnational actors and are strongly influenced by the international policy narratives within their modes of the operationalization of practices and expert, donor-driven framing of methodological and technological approaches.

The international discourse on climate change framed in the context of the UNFCCC has brought in the norms that are shaping the policy arena, including how policy-making is

grounded in data; how emissions can be conceptualised in terms of their relation to data, and thus what constitutes data. Emissions in the form of tons of CO₂eq are the units that inform the discourse of climate change and the low-carbon economy. However, there is no clear understanding among stakeholders of the link between the interpretation of data requirements and how that translates into policies aimed at reducing GHG emissions caused by the usage of buildings.

International agreements have institutionalized the responsibility of industrialized countries for technology transfers as part of the 'common-but-differentiated-responsibilities' narratives of the UNFCCC (UNFCCC, 1999; 2011b). This not only legitimizes, but also requires technical cooperation, donor support and international expertise. The common discourse in development assistance by industrialized countries (but interestingly not necessarily in their domestic policy-making), requiring baseline scenarios and measurement in order to justify the obvious benefits of energy-efficiency measures, carries a significant risk of diverting attention from implementation to the prior determination of 'documentability'. The lack of such 'documentability' might prevent evidently beneficial actions from taking place until such a data system can be established.

The legitimacy of policy-making relies on technical and scientific arguments. In climate change mitigation, scientific knowledge is an evident driver of policy making. Knowledge production in the global climate change policy arena is dominated by northern experts (Lövbrand et al., 2009) and hence scientific knowledge and technical expertise unsurprisingly emerge as 'a key site of political bargaining' (Lövbrand et al., 2009). Ergo the scientifically based necessity also for developing countries to deviate from their baseline emission trajectory and the accompanying requirement. That being so, to evidence such deviation becomes the point of departure for the provision of support.

Reaching consensus on the scientific knowledge is about 'burden sharing'. As the 'common but differentiated responsibilities' approach is already established with the UNFCCC any burden on developing countries must be accompanied by finance. As finance comes with requirements for documenting a deviation from a baseline, accepting data requirements becomes part of the bargain for access to international financial support. While not uncontroversial this stems from

a sovereignty principle rather than from a practical feasibility perspective, and practical feasibility, or lack of the same, hence becomes another bargaining chip for access to finance for capacity building. On that basis, within the established routes of international cooperation, national decision-makers are persuaded by the appropriateness of the norm and accept the practices of the global climate change discourse. That being the case, GHG emissions accounting requires practices of standardization carried out by various scientific experts (A. Gupta, Lövbrand, Turnhout, & Vijge, 2012; J. Gupta & Ivanova, 2009; Lovell & Liverman, 2010). Turning climate change mitigation into an issue of accounting is therefore not unexpected (Lovell & MacKenzie, 2011).

Accountability of donor support is essential, ultimately to justify - with a common phrasing - 'the prudent usage of taxpayers' money'. Data requirements and resulting efforts to establish data management systems is thus ultimately a reflection of donor norms and systems that are to justify the donor's own achievements, for example through elaborate indicator systems adopted in logical framework approaches. The question is whether the right balance is being struck, and whether the current self-sustaining and self-serving practices of knowledge management require more resources than are necessary, thus drawing away critical resources that could be used to deliver actual emissions reductions. It has already been mentioned that baselines using back-of-the-envelope estimates are not necessarily further from reality than very complicated models. The flipside of that argument is the possibility of reckless, unplanned and undocumentable emissions reductions, the effects of which cannot be established. There is a need to ensure that the emission reductions achieved by any one nationally appropriate mitigation action are commensurate with the entire funding spent on it, both in absolute terms and relative to other - potential - alternative nationally appropriate mitigation actions, which is in fact a motivation for establishing baselines.

The production of such baselines, which in reality could be a number of baselines based on different scenarios, is however hampered in no insignificant way by the existing institutional environment. National rules, existing regulatory frameworks and data management practices are to be adjusted accordingly. The process of institutional change to ensure these adjustments are made is lengthy, occurs over unpredictable amounts of time and has to do with more

fundamental issues of national governance. It can well be argued that such changes should not be part of a NAMA because a NAMA should result in mitigation actions first of all, and that striving for institutional progress is – or should be – an ‘institutional co-benefit’.

While this could be a rationale for not spending too much effort on establishing baselines, it can also be an argument – and has been an argument in relation to the CDM – to avoid complicated baseline calculations and establish standardized baselines instead. Hence, with CDM there is already evidence in the operationalization of the international climate change agenda that a deviation from an *artificially* established baseline, which may or may not reflect exactly the actual emissions is acceptable. Although NAMAs are commonly thought to differ from CDM projects in being actions at the policy or programme level, they both require a deviation from a baseline or ‘business as usual’ situation. CDM can benefit from a standardized baseline as a result of its ‘project by project’ nature, where a standardized baseline can be adopted by many similar projects. A NAMA, on the other hand, typically in the form of a policy or regulation, will commonly shift an entire sector, or a large part of it, on to a low-carbon trajectory. It will need to determine the deviation from the baseline, but this exercise will obviously not need to be repeated if the entire sector has already been addressed. Standardization of the baseline therefore seems unnecessary, unless ‘international baselines’ that cover a sector regardless of the host country can be identified, so that countries could access an internationally established standardized baseline. However, being somewhat akin to an international benchmark - which in early climate negotiations was clearly rejected by countries - that seems an insurmountable task. Another important difference between NAMAs and the CDM is that the latter allows the offsetting of emissions through certified emissions reductions (CERs). This requires a high degree of accountability. The calculation of the baseline, as well as the deviation from it, is therefore central. NAMAs are not intended to generate offsets, and financing is not likely to be tied to exact emissions reductions results. To adopt the level of detail in accounting from the CDM seems therefore to be shooting over the target: less rigidity seems to be warranted.

Based on our findings, we argue that limited national capacity, together with the pervasiveness of the international discourse, is creating path-dependent, lock-in situations that

make it difficult to deliver necessary and timely policy responses. The power dynamic within current institutional frameworks, influenced by the dominant discourse on knowledge management and baseline setting in academia, among climate change advisers and among international institutional stakeholders often obstructs policy action. Instead of dealing with realities on the ground in the prospective NAMA host countries, the focus is on squeezing those realities into the technocratic 'baseline discourse', which mainly serves purposes of donor accountability, creating new challenges, but rarely providing any solutions. The plausible effect is an increasing diversion of attention away from the overarching purpose of the NAMA towards a narrow focus on data, data collection, data quality, data comparability, data reporting and data verification. This ultimately paralyzes the NAMA host, or else has the host accept all these data-related exercises as a genuine short-term objective that must be fulfilled before actual climate change mitigation action can take place.

This analysis suggests omitting the lengthy and resource-consuming practice of establishing baselines and replication of the CDM practices, and recommends proceeding forthwith to the planning and implementation of mitigation and energy efficiency policies. Instead, as conditions vary significantly in different contexts, it would be more appropriate to measure the initial situation (the 'base point') and monitor development from that point. This, of course, corresponds to basic monitoring, but it has the built-in advantage that a monitoring system can be established alongside implementation without having to depend on earlier monitoring and data recording that either was not performed at all, did not follow consistent standards or was executed by institutions that may have been reformed, restructured or abolished. Monitoring systems may also be incremental in the sense that their establishment can follow in parallel with institutional development. It may be adapted to observations of contemporary factors that influence development over and above the (emissions reduction) initiative that is the intended object for monitoring. Such systems will eventually produce a basis for forecasting development that will be more reliable than constructs based on sketchy data. A middle-ground approach (or an ex-ante baseline scenario) has greater chances to develop a shared discourse among all the stakeholders within the sector, thus strengthening

accountability and creating what is needed for the successful implementation of policy measures with a sense of ownership.

Table 1. Interviews details.

Institution	Number of valid interviews	Position	Response rate
<p>Response rate total 39 out of 58 (70%) Number of valid interviews total: 35</p>			
<p>National Government: Ministry of Natural Resources and Environment of Vietnam (MONRE), Division of GHG Emission Monitoring and Low-Carbon Economy Center of Data and Information for Natural Disaster Prevention; Division of Climate Change Mitigation Technologies; Center for Technology Responding to Climate Change (CliTech); Department of Meteorology, Hydrology and Climate Change (DMHCC), NAMA Office; Ministry of Construction (MOC), Department of Science Technology and Environment; Department of Investment Economics and Projects; Ministry of Finance, Legal Department; Ministry of Industry and Trade (MOIT) Industrial Safety Techniques and Environment Agency; Ministry of Planning and Investment (MPI), Department of Foreign Economic Relation, Climate Financing Task Force.</p>	9/14	Officials (Deputy Director General, Division Director, Vice Director, Deputy Director, Assistant Director, Senior Researcher, Office Manager)	14/21 (67%)
<p>National non-governmental: Vietnam Energy Conservation and Energy Efficiency Association, E4G; Vietnam Green Building Council; Energy Conservation Center, Hanoi Department of Industry and Trade; Hanoi's Energy Efficiency Center; Ho Chi Minh City Energy Conservation Center (ECC-HCMC).</p>	4/4	Director, Engineer	4/7 (57%)
<p>Project developers and private consultants: Indochine Engineering; NIRAS Vietnam; Energy and Environment Consultancy, JSC; Bach Koa EE Consultants.</p>	2/2	Director, Executive Director, Engineer	2/5 (40%)
<p>International agencies and donor agencies: Danish Embassy Climate Change Programme, Embassy of Finland REDD and Climate Change Programme, German Federal Enterprise for International Cooperation (GIZ), FAO Office Vietnam, International Finance Corporation (IFC) World Bank Group Investment Climate; The SNV Netherlands Development Organization; World Bank, Social Development Unit; World Bank, LEDS Partnership; USAID Vietnam Clean Energy Program; UNDP Office</p>	13/13	Programme Officer, Team Assistant, National Coordinator, Deputy Chief of Party, Programme Manager, Programme Leader Renewable Energy, technical Advisor	13/13 (100%)

Vietnam.

Academia and Research Institutions: Energy Conservation Center, Hanoi Department of Industry and Trade; Ho Chi Minh City Energy Conservation Center (ECC-HCMC); Academy of Policy and Development, ISPONRE Institute of Strategy and Policy on Natural Resources and Environment; MOIT Institute of Energy; Vietnam Association of Architects.	6/6	Head Department of Integrated Research; Head Division of Climate Change, Marine and Islands; Head of Division	6/10 (60%)
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References

- Aberbach, J. D., & Rockman, B. A. (2002). Conducting and Coding Elite Interviews. *Political Science & Politics*, 35(04), 673–676.
- ADB, A. D. B. (2015). *Assessment of Power Sector Reforms in Viet Nam*. (pp. 1–58). Mandaluyong City.
- Arts, B., & Buizer, M. (2009). Forests, Discourses, Institutions. A Discursive-institutional Analysis of Global Forest Governance. *Forest Policy and Economics*, 11(5-6), 340–347.
- Arts, B., & Leroy, P. (2006). Institutional Dynamics in Environmental Governance. (B. Arts & P. Leroy, Eds.). Dordrecht, The Netherlands.
- Arts, B., & van Tatenhove, J. (2004). Policy and Power: A Conceptual Framework Between the ‘Old’ and ‘New’ policy Idioms. *Policy Sciences*, 37(3-4), 339–356.
- Arts, B., Appelstrand, M., Kleinschmit, D., Pulzl, H., Visseren-Hamakers, I., Atyi, R. E., et al. (2010). 4 Discourses, Actors and Instruments in International Forest Governance, 1–18.
- Arts, B., Leroy, P., & Tatenhove, J. (2006). Political Modernisation and Policy Arrangements: A Framework for Understanding Environmental Policy Change. *Public Organization Review*, 6(2), 93–106.
- Biermann, F., Abbott, K., Andresen, S., Bäckstrand, K., Bernstein, S., Betsill, M. M., et al. (2012). Transforming Governance and Institutions for Global Sustainability: Key Insights from the Earth System Governance Project. *Current Opinion in Environmental Sustainability*, 4(1), 51–60.
- Dryzek, J. S. (1997). *The Politics of Earth*. Oxford. Oxford University Press.
- Flick, U. (2008). Triangulation in Qualitative Research. *A Companion to Qualitative Research*, 178–183.
- Giddens, A. (1984). *The Constitution of Society*. Polity Press, Cambridge .
- Gupta, A., Lövbrand, E., Turnhout, E., & Vijge, M. J. (2012). In Pursuit of Carbon Accountability:

- the Politics of REDD+. Measuring, Reporting and Verification systems. *Current Opinion in Environmental Sustainability*, 4(6), 726–731.
- Gupta, J., & Ivanova, A. (2009). Global Energy Efficiency Governance in the Context of Climate Politics. *Energy Efficiency*, 2(4), 339–352.
- Hajer, M. (1995). *The Politics of Environmental Discourse: Ecological Modernization and the Policy Process*. Oxford: Clarendon Press.
- Hajer, M. (2006). Doing Discourse Analysis: Coalitions, Practices, Meaning. (Vol. 344, pp. 65–74). Koninklijk Nederlands Aardrijkskundig Genootschap.
- Harvey, W. S. (2010). Methodological Approaches for Interviewing Elites. *Geography Compass*, 4(3), 193–205.
- Harvey, W. S. (2011). Strategies for Conducting Elite Interviews. *Qualitative Research*, 11(4), 431–441.
- Hinostroza, M. L., Sharma, S., & Karavai, M. (2014). Institutional Aspects of NAMA Development and Implementation. (pp. 1–56), UNEP DTU, Copenhagen.
- IEA, International Energy Agency. (2013). *Technology Roadmap*, 1–68.
- IEA, International Energy Agency. (2014). *Regional Energy Efficiency Policy Recommendations*, 1–12. IEA, Vienna.
- IPCC. (2006). *IPCC Guidelines for National Greenhouse Gas Inventories, Prepared by the National Greenhouse Gas Inventories Programme*. (E. H. S, B. L, M. K, N. T, & T. K, Eds.) (pp. 1–24).
- Liefferink, D. (2006). The Dynamics of Policy Arrangements: Turning Round the Tetrahedron, 45–68.
- Lovell, H., & Liverman, D. (2010). Understanding Carbon Offset Technologies. *New Political Economy*, 15:2, 255–273.
- Lovell, H., & MacKenzie, D. (2011). Accounting for Carbon: The Role of Accounting Professional Organizations in Governing Climate Change. *Antipode*, 43-3, 704–730.
- Lövbrand, E., & Stripple, J. (2011). Making Climate Change Governable: Accounting for Carbon as Sinks, Credits and Personal budgets. *Critical Policy Studies*, 5(2), 187–200.
- Lövbrand, E., Rindelfj a ll, T., & Nordqvist, J. (2009). Closing the Legitimacy Gap in Global Environmental Governance? Lessons from the Emerging CDM Market. *Global Environmental Politics*, 9:2.
- Lucon, O., Urge-Vorsatz, D., Ahmed, A. Z., Akbari, H., Bertoldi, P., Cabeza, L. F., et al. (2014). *Buildings. Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. (2014 ed.). (R. Edenhofer, R. Pichs-Madruga, Y. Sokona, E. Farahani, S. Kadner, K. Seyboth, et al., Eds.) (pp. 1–68). Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.
- MONRE. (2010). *Viet Nam's Second National Communication to the United Nations Framework Convention on Climate Change* (pp. 1–154). Socialist Republic of Vietnam Ministry of Natural Resources and Environment, Hanoi.
- Nakicenovic, N., Alcamo, J., Davis, G., de Vries, B., Fenhann, J., Gaffin, S., et al. (2000). *Special Report on Emission Scenarios*. (N. Nakicenovic & R. Swart, Eds.) (p. 570). Cambridge University Press.
- NCCS. (2011). *The National Climate Change Strategy*. Retrieved from <http://chinhphu.vn/portal/page/portal/English/strategies/strategiesdetails%3FcategoryId=3>

0%26articleId=10051283

- Newell, P., Pattberg, P., & Schroeder, H. (2012). Multiactor Governance and the Environment. *Annual Review of Environment and Resources*, 37(1), 365.
- Puig, D., & Malyshev, T. (2015). *Analysing Our Energy Future. Some Pointers for Policy-makers. DTU Orbit (210415)* (pp. 1–1). United Nations Environment Programme.
- Puig, D., Søbysgaard, J. K., Larsen, P., Holm, S. R., Bendtsen, U. B., & Prag, A. (2013). National Greenhouse Gas Emissions Baseline Scenarios (pp. 1–156). Danish Energy Agency, the Organisation for Economic Co-operation and Development and the UNEP Risø Centre. Retrieved from http://mitigationpartnership.net/sites/default/files/national_greenhouse_gas_emissions_baseline_scenarios_-_web.pdf
- Ryghaug, M., & Sørensen, K. H. (2009). How energy efficiency fails in the building industry. *Energy Policy*, 37(3), 984–991.
- Sharma, S., & Desgain, D. (2013). Understanding the Concept of Nationally Appropriate Mitigation Action, 1–32.
- Tuominen, P., Klobut, K., Tolman, A., Adjei, A., & de Best-Waldhober, M. (2012). Energy Savings Potential in Buildings and Overcoming Market Barriers in Member States of the European Union. *Energy & Buildings*, 51, 48–55.
- UNEP. (2007). UNEP Handbook for Drafting Laws on Energy Efficiency and Renewable Energy Resources (pp. 1–246). UNEP/Earthprint.
- UNEP. (2009). *Common Carbon Metric for Measuring Energy Use and Reporting Greenhouse Gas Emissions from Building Operations* (pp. 1–28). UNEP.
- UNFCCC, U. N. F. C. O. C. C. (1999). United Nations Framework Convention on Climate Change (pp. 1–33).
- UNFCCC, U. N. F. C. O. C. C. FCCC/CP/2002/7/Add.2 (2007).
- UNFCCC, U. N. F. C. O. C. C. (2008). FCCC/CP/2007/6/Add.1, 1–60.
- UNFCCC, U. N. F. C. O. C. C. (2011a). FCCC/CP/2010/7/Add.1, 1–31.
- UNFCCC, U. N. F. C. O. C. C. (2011b). FCCC/CP/2010/7/Add.1, 1–31.
- Ürge-Vorsatz, D., Koepfel, S., & Mirasgedis, S. (2007). Appraisal of Policy Instruments for Reducing Buildings' CO₂ emissions. *Building Research & Information*, 35(4), 458–477.
- Van Tatenhove, J., & Leroy, P. (2000). Political Modernization Theory and Environmental Politics. (pp. 187–208). Sage Publications.
- VGGs. VGGs (2012): Decision on the approval of the National Green Growth Strategy. Socialist Republic of Vietnam, No. 1393/QĐ-TTg, Hanoi, Vietnam.
- World Bank, W. B. (2014). *Vietnam - Third Climate Change Development Policy Operation Program*. Washington, DC; World Bank Group.
- Wright, G., & Cairns, G. (2011). Scenario thinking: Practical approaches to the future. London: Palgrave Macmillan.
- Yin, R. K. (2011). *Qualitative Research from Start to Finish*. Guilford Press.
- Zink, E. (2012). Hot Science, High Water: Assembling Nature, Society and Environmental Policy in Contemporary Vietnam, 1–20.