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RESEARCH ARTICLE



Transforming the governance of energy systems: the politics of ideas in low-carbon infrastructure development in Mexico and Vietnam

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ABSTRACT

Transforming energy systems is increasingly recognized as a societal response to mitigating climate change, with potential to catalyse a paradigmatic shift towards decarbonization. The article looks at the diversity of claims presented to ascribe meaning to policy problems (i.e. structural conditions, contextual technical or ideational appeals to values), and framed within wider institutional perspectives for reform, development, and strategies for addressing climate change in Mexico and Vietnam. The findings suggest both governments maintain a more exclusive than inclusive form of energy governance and retain centralized power over renewable energy and climate change mitigation responses. This is not only because of technological infrastructural lock-ins, but also because they maintain a more exclusive than inclusive form of energy governance that is justified and legitimized by the need for energy supply and access security, and green growth as a source of continuous economic growth. Framing broader energy reforms as part of climate change mitigation goals allow for incumbent actors to further legitimise a conservative neoliberal agenda. These two cases offer insights into how newly emerging economies are facing energy sector reforms while being confronted with energy sector transformations dictated by the climate change mitigation agenda.

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KEYWORDS

Low-carbon electricity infrastructure; development discourse; energy systems; transformational change; discursive institutionalism

Introduction

Investments in energy infrastructure are crucial to achieving the Sustainable Development Goals (UNGA, 2015), and the transformation of energy systems is necessary to mitigate climate change and catalyse a paradigmatic shift towards decarbonization (Pelling, O'Brien, & Matyas, 2015; UNEP, 2016). In line with a wide range of long-term changes envisioned by national governments, civil society and economic institutions, newly emerging market economies are rapidly transforming their energy systems (UNFCCC, 2016), presenting a unique governance challenge. This raises questions over who will steer the transformation, what institutions will govern transformation and how agreements on what to transform will be made (Scoones, Newell, & Leach, 2015). Contemporaneously, the reframing of the energy policy agenda is driving institutional and policy changes in newly emerging economies. There is a need for improved understanding of how diverse development agendas can be made compatible with climate change mitigation (CCM) targets, balancing the need for large-scale infrastructure with local contextualized solutions. More nuanced politically informed analyses of system transformations are required (Goldthau & Sovacool, 2012; Lawhon & Murphy, 2012; Newell & Phillips, 2016).

Decisions over how to construct and finance low-carbon development (LCD) agendas are politically embedded in multiple policy arenas, involving a wide range of actors. The 'exercise' of power in transformations, especially in newly emerging markets, is relevant to understanding limitations, which may favour existing power structures in political and economic domains (Furlong, 2014), potentially reinforcing existing conflicts among different actors (Hansen & Nygaard, 2013). A number of scholars have suggested frameworks incorporating the concept of power (Gillard, Gouldson, Paavola, & Van Alstine, 2016), yet power and agency are still overlooked in the literature on energy system transitions (Heiskanen, Apajalahti, Matschoss, & Lovio, 2018; Scoones et al., 2015). While political economy analyses are increasingly used to understand the national political context of energy systems transitions (Routley & Hulme, 2013), policy-makers and analysts often fail to acknowledge and address background ideas informing policy choices and their impact on development pathways.

This article follows recent discursive institutionalist efforts to hypothesize how fundamental philosophies translate into policy transitions (Carstensen & Schmidt, 2016; Kornprobst & Senn, 2017). It examines policy decisions for infrastructure development and how they are rooted both in local interests

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and material circumstances in which they take place, and wider conceptualisations of what development means. The research focuses on concepts of low-carbon transformation in the electricity sector, considering three key themes in energy system transitions in Mexico and Vietnam: (i) institutional arrangements, (ii) embedded visions of societal transitions and (iii) wider discourses mobilized by multi-scale actors. Transitions are seen here as agent-centred and dynamic, rather than static and path-dependent. We investigate energy transitions through processes of norm setting, and explore the concepts of low-carbon transformation and development¹ in two contexts: (i) development as framed within the socialist ideology and state-driven command economy in Vietnam, where investment in energy infrastructure is considered both a vital national development project and international strategy; and (ii) energy reform and the role of CCM ‘opportunities’ in Mexico, in light of historical widespread neoliberal political reforms and market liberalization of the electricity sector. Although these cases differ geographically, economically and politically, they illustrate similar challenges in the adoption of LCD and CCM strategies, where overarching visions of what low-carbon development means frame institutional change to facilitate energy systems transformation.

This paper presents two contributions. First, it uses the concepts of power through and over ideas as explanatory variables in testing the analytical utility of the ideational lens. Secondly, the analysis contributes empirically to a deeper understanding of each country’s position in energy sector transformation processes. The discussion highlights how both governments’ retention of centralized power over energy systems and CCM responses is justified and legitimized by the need for energy security and populist appeals to maintaining socio-economic stability and green growth (GG) as sources of continuous economic growth. This offers insights into electricity sector development within wider historical political economy, ideological grounds and national development aspirations, which other countries may also experience as they progress. In terms of policy debates, while both countries are bound within unique national contexts, the analysis may benefit other countries also attempting to identify and resolve developmental contradictions.

Background

In emerging market economies, the energy sector is often a state-led, vertically integrated monopoly driven by the needs of the national economy. Infrastructure is embedded within wider institutional contexts that encompass public and private sectors, international markets, industries, regulatory agreements. Infrastructure systems, such as electricity and gas, are often characterized as technological lock-ins (i.e. predominant systems of energy production and distribution based on increasing returns to scale), path-dependent and resistant to change (Markard, 2011). This overly deterministic perspective plays on a techno-economic vision of energy systems, where the introduction of the right technologies and economic incentives will produce the desired futures (Verbong & Geels, 2012).

Socio-technological change does not emerge from a political vacuum and greater awareness of background and

programmatic ideas behind energy politics and how they re-focus governance and redefine the role of institutions is crucial. Institutional analyses and studies of norms, visions and discourses, seek a better understanding of how ideas permeate decision-making venues and how powerful actors define their interests and justify actions in relation to them as fundamental to understanding how they evolve over time. Notably, Avelino and Rotmans (2009) investigated the role of power in bringing about structural change and catalysing transitions, exploring the applicability of concepts of power to study those. Socio-technical transitions research has made strides in incorporating expectations (Borup, Brown, Konrad, & Van Lente, 2006), interests, ideas and institutions within analyses of policy and what it means when certain energy sources are prioritized, under which conditions and by whom (Kern, 2011). However, it has traditionally been focused on the northern perspective (Newell & Phillips, 2016; Winkler & Marquand, 2009), paying little attention to developing countries and overlooking institutions that govern change of socio-technological regimes.

Policy or regulatory reforms not only reshape technologies, material production and the economy, but also the political organization of energy production, distribution, and consumption. Whereas infrastructure ‘co-evolves with institutions forming socio-technical systems that change in conjunction with changes in society and the economy’ (Goldthau, 2014), institutional context influences trajectories of transformation (Coenen, Hansen, & Rekers, 2015; Kuzemko, Lockwood, Mitchell, & Hoggett, 2016). Recent studies have called for focused analyses and accounts of the politics of contending energy pathways (Lockwood, Kuzemko, Mitchell, & Hoggett, 2017; Scoones et al., 2015;), in specific contexts in order to explain spatially uneven processes of development trajectories (Lawhon & Murphy, 2012). The way low-carbon transformations are envisioned is shaped by ideas, which can instigate change, maintain continuity of change or become a source of inertia (Schmidt, 2015), which can result in a re-focusing of governance according to the ability ‘to influence normative and cognitive beliefs’ (Carstensen & Schmidt, 2016, p. 4). Ideas play a fundamental role in shaping these perceived interests of policymakers in periods of change (Blyth, 2002). Within this perspective, the role of ideas offers an approach to understanding the wider framework in which political responses and strategies for CCM emerge, including the integration of discursive institutionalist accounts of energy system transformation (Kern, Kuzemko, & Mitchell, 2014; Lauber & Schenner, 2011).

Framework for analysis

The ‘transformative power of ideas’ is a useful concept for unpacking various actors’ power and influence in a multilevel governance perspective. Conceptually, it refers to how certain issues emerge and are framed as problems, how they are defined (and by whom) and which solutions are therefore considered appropriate (Carstensen & Schmidt, 2016; Schmidt, 2012). Ideational processes shape institutional arrangements and assumptions that affect the construction of policy problems, content of policy proposals and influence the political agenda of present policies and reform imperatives (Béland, 2016; Parsons, 2016).

Ideational power as ‘the capacity of actors (whether individual or collective) to influence actors’ normative and cognitive beliefs’ (Carstensen & Schmidt, 2016, p. 4). How ideational power affects policy outcomes can be approached by examining: (i) ‘power through ideas’, i.e. the capacity of powerful actors, in terms of their institutional positions, to persuade others of the validity of their arguments by appealing to arguments ‘that make sense’ (e.g. proposing electricity infrastructure development as part of energy security); (ii) examining ‘power over ideas’, i.e. the ability of actors to set the agenda, ignore inconvenient ideas, exclude alternatives from the overall acceptable discourse; (iii) acknowledging ‘power in ideas’, i.e. the authority certain ideas enjoy over others by focusing on discursive and institutional setups, hegemonic conceptions of what ideas are appropriate and thinkable to govern policy action (Carstensen & Schmidt, 2016). Ideas in political processes are different understandings of expectations, depending on the theoretical perspective and level of scale considered (Borup et al., 2006). Such meso- or macro-level ideas can be described using the concept of discourses, i.e. ensembles of ‘ideas, concepts and categories through which meaning is given to phenomena’ (Hajer, 1993, p. 45), to explore links between the interests and agency of institutional actors and specific interventions on the ground. We borrow definition of political ideas as ‘a web of related elements of meaning’ (Carstensen, 2011, p. 600), and manifested through discourse.

This research adapts an ideational approach to the analysis of energy and low-carbon transformations using concepts derived from discursive institutionalism to explore the various dimensions of ideas, politics and political economy surrounding LCD and CCM strategies in Vietnam and Mexico, respectively. Within this perspective, ideas are important to understanding the wider structural frameworks of power and position in which agents act (Schmidt, 2015), and in which political responses and strategies emerge. Such an interpretation reiterates an understanding of ideas as constituting the structural setting in which agents execute their ideational power. Energy transformations are dynamic, rather than static and path-dependent. We see energy system transformation as part of a wider process of norm setting, where policy choices result from the interplay of various actors’ interests, ‘but also from the battle of ideas through discourses and deliberation’ (Schmidt, 2009, p. 541). A constructivist framework aids investigation of how the governance of sustainable energy innovations depends on a broader discursive consensus among multi-level political institutions and actors. It expands beyond analyses of power relations and interests alone as it allows for inquiries in the dynamics of energy system governance (as opposed to goal-oriented, rational choice perspectives) and considers the complex milieu and interdependence of material and ideational elements in energy politics and governance.

Methods

This is a qualitative case study, a ‘detailed examination of an aspect of a historical episode to develop or test historical explanations that may be generalizable to other events’ (George & Bennett, 2005, p. 5). Using a method of systematic review we examined two national policy environments, their alignment

with national LCD and GG discourses and the wider context of CCM and political agenda for reform and traced the problematisation of energy reforms.² Sources, including policy documents, strategic papers and grey literature, were identified through open access search engines and Science Direct. Expert consultations with stakeholders from national governmental agencies and donor agencies ($n = 12$ in Mexico (2012–2013) and $n = 14$ in Vietnam (2013–2015)) guided the identification of secondary sources. Documents up to the period of 2017 were collected and coded according to a set of identified dominant policy logics, key rationalities for energy reform and pursuance of CCM strategies, focusing on two aspects of ideational power: ‘power over’ and ‘power in’ ideas to show how low-carbon energy infrastructure systems are envisioned, planned, assembled and made meaningful through the mobilization of wider ideas in which they are embedded.

Case studies

Although not a comparative analysis, our post-hoc analysis found overwhelming similarities in the various dimensions of the political economy behind low-carbon and energy agendas in Mexico and Vietnam, which were comparable and compatible. The cases were selected for the following reasons. Mexico and Vietnam (i) are newly emerging economies demonstrating consistent macroeconomic growth over recent years while undergoing reforms of governance regimes; (ii) experience high increase in demand for electricity and have to invest heavily in energy supply expansion; (iii) energy expansion is supported by conventional fossil-fuel-based infrastructures and technologies; (iv) both have invested politically in mainstreaming low-carbon development in their developmental agenda and declared high-level commitment to respond to climate change threat, while renewable electricity sources are still considered additional rather than replacing the conventional ones (Benedikter & Nguyen, 2018; Boyd et al., 2018; Díaz & Gutiérrez, 2018; Eckardt, Demombynes, & Chandrasekharan Behr, 2016; NDC, 2015a, 2015b; WB, 2016).

Mexico

National context

Mexico is the world’s 14th largest economy and the 6th largest oil producer; the economy, and energy supply more generally, remain highly dependent on fossil fuels (Alemán-Nava et al., 2014). Energy use and GHG emissions have grown rapidly, driven by economic growth, a growing population and rising standards of living (IEA, 2017). Energy consumption is expected to double from 2009 by 2050 (OECD, 2012, p. 60). Electricity coverage is targeted to increase from 98.4% of the population in 2014 to 99.8% by 2024 (OECD, 2012).

Government officials and industry leaders promote liberalization of electricity generation and distribution markets as catalysts for economic growth and key to establishing the country as a leader in global energy markets. In 2013, large-scale energy reform legislation and a constitutional amendment were passed by the Mexican congress, ending 75 years of state-run oil, gas and electricity monopolies, establishing an electricity market and opening the door for renewable energy sources to become

competitive. Mexico's energy reform radically shifted the electricity sector and catalysed the transition from a vertically integrated, state-owned utility into a decentralized system, regarded as more efficient, lower cost and able to use a larger share of renewables in the energy mix by involving small-scale, local producers (Alpizar-Castro & Rodríguez-Monroy, 2016; Ibarra-Yunez, 2015). The reform imposed large-scale changes along the entire electricity supply chain to make power generation fully competitive and run by an independent system operator for the wholesale electricity market. This also sought to improve the competitiveness of low-carbon generation and encourage the development of new capacity with goals for clean energy sources (renewables, nuclear power, efficient cogeneration, and carbon-capture technologies are considered as such) at 35% of the electricity generation mix by 2024, 40% by 2035, and 50% by 2050 (Robles, 2016).

With the opening of the market to private and public companies, wholesale and retail market competition was introduced to reduce electricity generation costs, allowing for gradual phasing out of subsidies and avoidance of steep price increases. In addition, mechanisms to encourage investment in line with rapidly growing demand were introduced to assure an increasing share of clean electricity sources (IEA, 2017). The reform of the state-owned monopolies *Petróleos Mexicanos* (PEMEX) and Federal Electricity Commission (CFE) created a paradigmatic shift by opening the energy market to private investment. Long-term support for the controversial reform is essential to energy security, boosting economic growth and benefits for consumers through lowered electricity rates, and legitimizing the reform in the public view.

The energy sector, and particularly electricity, is a significant contributor to national GHG emissions (85%) heavily relying on fossil fuel electricity production (IEA, 2017). The vision for 2020 is to achieve 40% of electricity from clean energy sources according to Mexico's Climate Change Mid-century Strategy (SEMARNAT, 2016, p. 22). Meeting a 50% target reduction of GHG emissions by 2050 would require cutting emissions from electricity generation. Coal use is expected to decline from 5500 MW (2014) to 4000 MW (2029), natural gas will continue to dominate the electricity mix accounting for almost half of all generating capacity in 2029. Despite ambitious targets, large potential and widespread policy support, little increase in the use of renewable energies has been observed since 2000 (CEL market+). The depletion of domestic supplies is a threat to future economic growth and energy security and Mexico is increasingly dependent on imports of petrol, natural gas and other high-value secondary energy sources.

Institutional framework

Mexico has been acknowledged as an early-mover and progressive example for climate change response and the commitment to LCD by the international community, positioning itself as a key actor committed to addressing climate change (Fekete, Mersmann, & Vieweg, 2013; Fransen et al., 2015; SEMARNAT, 2016, p. 29; Veysey et al., 2016). The Mexican government set the ambitious, unconditional economy-wide GHG emission reduction target of 30% against the business-as-usual (BAU) baseline scenario by 2020, and 50% versus 2000 by 2050

(NDC, 2015b, p. 1). Mexico aims to assimilate a minimum of 50% clean electricity production by 2020, in line with the Energy Transition Law. Yet, ambitions for energy reforms are incoherent with their rise as a frontrunner in combatting climate change because of tensions between the need to maintain energy security and economic growth, while also meeting political promises for more competitive energy prices (Valenzuela & Studer, 2016).

By 2012, Mexico had already defined the transition process for achieving low-carbon growth with the General Law on Climate Change (GCCL), considered fundamental to LCD and CCM, establishing long-term GHG emission reductions reflected in the NDC and national commitments pledged under the UNFCCC. This is one of the strengths of the Mexican climate change policy. Transition towards low-carbon growth is a consensual objective in the political arena, whose key point of discussion is only on the ways and means to reach lower carbon growth. The GCCL and the Law on the Use of Renewable Energy and Financing of Energy Transition set goals for the development of tax policies and economic and financial instruments to spark investment in renewable energy projects and achieve the goals for GHG emissions reductions, in addition to the *Programa Nacional para el Aprovechamiento Sustentable de la Energía* 2014–2018 (PRONASE).

The National Strategy on Climate Change (NCC, 2011), prepared by Ministry of Environment and Natural Resources (SEMARNAT), with the National Institute of Ecology and Climate Change (INECC) and the Climate Change Council, and approved by the Inter-ministerial Climate Change Commission (ICCC), is a plan governing policy in the medium- to long-term. The Special Programme on Climate Change (PECC) 2014–2018 is a short-term implementation plan for federal policies (six-year horizon), developed by SEMARNAT with ICCC, approved by the ICCC. Some 62% of the mitigation commitments of PECC are in the energy sector (not only CO₂, but also CH₄ and black carbon) and PECC summarizes 23 quantified mitigation-relevant policy measures that could lead to a reduction of some 8% of the forecast emissions by 2018. PECC also covers state and municipal climate change programmes – implementation plans for state and municipal policies must agree with the NCCS and the SPCC. PECC introduced new instruments, one of which is a carbon tax on production and import of fuels imposed since 2014, but only on fuels with a higher CO₂ content than natural gas.

The clean electricity target became a more concrete legal obligation in 2015 with the Energy Transition Law (LTE), superseding any previous legislation related to energy and sustainable electricity production (Elizondo, Pérez-Cirera, Strapasson, Fernández, & Cruz-Cano, 2017). It aims to promote sustainable and efficient use of energy and gradually increase targets for the share of clean energy in electricity generation by 2024 (at least 35% electricity generation from non-fossil sources), and introduces an obligation for SENER to prepare a national strategy and programme on energy transition to promote cleaner energy sources and technologies. Mexico's long-term Energy Transition Strategy establishes a goal of 50% clean electricity by 2050. The design and operation of the new Clean Energy Certificates (CEC) market is fundamental to meeting this target, and clean energy targets for qualified

electricity suppliers. With the Carbon Tax set in 2014 and the Geothermal Law, former President Peña Nieto prioritized wind and solar energy in new programmes to support energy access, such as the *Bandera Blanca* project (to electrify rural communities with solar energy systems) and the *Isolated Communities Electrification* project (to provide solar energy and wind turbine systems to rural households) (IRENA, 2015). The CEC system is expected to attract investments of more than USD 62.5 billion in the next two years, having already gained USD 4 billion in investments in the renewable energy sector in 2015 alone, an increase of 105% over previous year (BNEF, 2016).

It is still unclear whether the government expects a full decarbonization of the electricity sector and, therefore, alternative mitigation options to complement this goal are openly discussed beyond the timeline of 2050 (SEMARNAT, 2016, p. 78). More generally, the government targets GG and structural reforms as the foundations for economic growth and employment, improvements to accessing international finance, enhancing food security, and mitigating climate change (G20, 2016a). The 'fair and ambitious' NDC will be achieved through mitigation and adaptation measures to moderate emission levels and achieve zero deforestation by 2030 (NDC, 2015a, p. 3). These ambitions are inconsistent with energy sector development projections and goals, and challenged by national energy demand and consumption and GHG emission trends.

Actors

In 2012, Mexico created an institutional framework with the GLCC and the National Climate Change Policy that created the following instruments and institutions. The National Climate Change System (SINACC) is coordinated among three levels of government, public, private and social sectors, including federal government entities, representatives of national associations of local authorities and of the Congress of the Union (IEA, 2017),

Figure 1 shows the interactions among government actors, private sector and international development agencies that are involved in the CCM and electricity sector policy arenas. The Inter-Secretariat Commission on Climate Change (CICCC) of 14 ministries, and Council on Climate Change act as the permanent consultative body supporting climate change policy (IEA, 2017). The electricity sector falls under the Ministry of Energy (SENER) and the *Centro Nacional de Control de Energía* (CENACE) designed as an Independent System Operator (ISO) in 2014 to act as an autonomous public entity responsible for electricity dispatch, open access to the transmission and distribution networks. Even though CENACE is in charge of coordinating and monitoring the energy grid, under the energy reform, CFE, a state-owned company competing with other electricity generators, continues to own all transmission and distribution infrastructure.

A number of international financial institutions, such as the UN Global Environment Facility (GEF), World Bank (WB) and

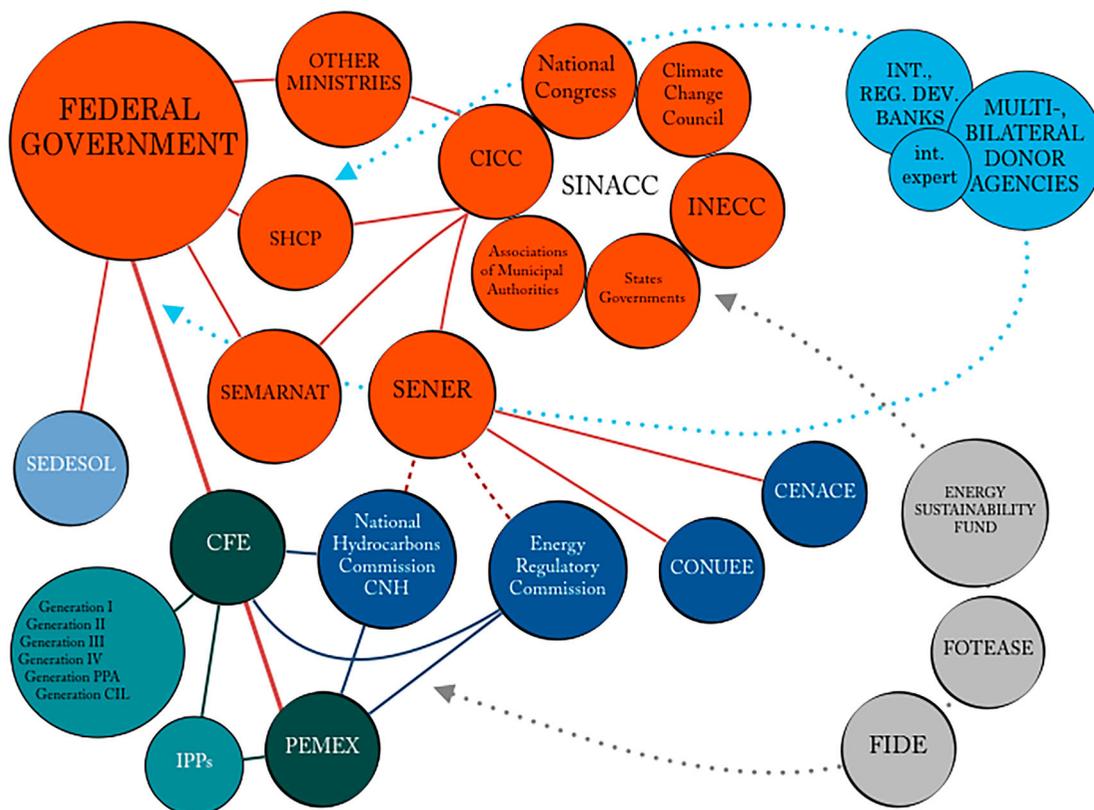


Figure 1. Actors in Mexico's Climate Change Mitigation and Electricity Sector Policy Arena. CCC Climate Change Council; CICCC Inter-ministerial Commission on Climate Change; CENACE National Energy Control centre; CFE Federal Electricity Commission; CONUEE National Committee for Efficient Energy Use; FIDE Trust Fund for Electricity Savings; FOTEASE Fund for Energy Transition and Sustainable Energy Use; INECC National Institute of Ecology and Climate Change; INT., REG. DEV. Banks International, Regional Development Banks; Int. experts International experts; IPPs Independent Power Producers; PEMEX Petróleos Mexicanos; SHCP Ministry of Finance; SINACC National Climate Change System; SEDESOL Secretariat of Social Development; SEMARNAT Ministry of Environment and Natural Resources; SENER Ministry of Energy.

donor agencies are contributing to the promotion of, technical assistance for and financing of renewable energy projects. The Inter-American Development Bank and the European Investment Bank also financed the issuance of Green Bonds, loans and investments in the Mexican renewable energy market (IADB, 2015), and supported GHG reduction projects. Various governments have partnerships on funding mechanisms and reforms of renewable energy markets (GoM, 2016), and for renewable energy, providing technical assistance, capacity development and financial aid.

Vietnam

National context

Widespread economic and political liberalization reforms of *DoiMoi* initiated in 1986 by the Government of Vietnam (GoV) are credited as the primary drivers of Vietnam's transformation into a middle-income economy (WB/MPI, 2016). Economic growth and development, including changes in electricity infrastructure, significantly improved rural access, powered by fossil fuels and resulted in the rapid increase of the Vietnamese economy's carbon intensity. Vietnam's CO₂ emissions tripled over the past decade, growing at the fastest rate in the region, and are among the highest worldwide due to a rising share of coal-fired generation (Audinet, Singh, & Kexel, 2016). Coal-dependent electricity and heat are responsible for 28% of national emissions (MONRE, 2010).

Industrialization and electrification projects are strongly influenced by political leaders who align technological transformations with economic reforms as part of a transition towards a 'socialist-oriented market economy' (Han & Baumgarte, 2000), with significant implications for energy sector restructuring and CCM interventions. Electrification was a cornerstone of earlier socioeconomic reforms to support industrialization and rural poverty alleviation and electricity sector reform is highly ideological. Rural electrification is considered the most successful in the world in recent years (Audinet et al., 2016), and GoV touts its reform as an achievement of liberalization. Key to industrialization and socio-economic development, the electricity sector has historical economic importance as a state monopoly, protected against competition and outside influences, and characterized by central planning and state management (ADB, 2015; Luong, 2015).

Institutional framework

The latest Socio-economic Development Plan (2016–2020³) outlines strategies for GG development (VGGs, 2012⁴), and CCM (NCCS, 2011⁵) with priorities for infrastructure development and ambitious declarations for GHG emissions reductions. The LCD vision and country's international role in CCM focuses on increasing renewable energy's share of electricity to meet growing (and projected) demand: low-carbon electricity is envisioned as a sustainable source for development and growth that can increase electricity capacity and attract foreign capital and foster technology transfer.

However, the country's high dependence on coal, reflected in the latest Power Master Plan VII⁶, sends a contradictory message. Under the BAU scenario, coal is expected to provide 56% of all power generated in Vietnam by 2030. Regardless of

high-level commitments to CCM in the NDC, LCD goals are at odds with recent national energy and emission trends: a greater share of renewable energy and wide range of possible GHG emission reductions from 8 to 25% (GoV, 2015), contingent on international support, are coupled with increased electricity production from coal (49.3% 2020), (55% 2025).

Power sector reforms aim at gradually dismantling the vertical monopoly, commercialization of sector enterprises, establishment of supportive legal and regulatory frameworks (including cost-reflective electricity prices ensuring the sector's financial viability) and mobilization of resources to address capacity shortages in power generation. According to an ADB analysis, the sector is moving towards a competitive generation market (with a single buyer), a fully competitive wholesale market and competitive retail market, introducing competition to the monopolistic market structure (2015).

The planning and implementation of CCM and governance of the energy sector are controlled by strategies and regulations with differing goals and mandates but united by a common, however vague, vision of GG. The GoV's National Climate Change Strategy (NCCS, 2011⁵) and Green Growth Strategy (VGGs, 2012⁴) are both central to the climate change response, but neither has socio-economic or implementation programmes. In the NCCS, climate change is defined as the 'biggest challenge', emphasizing vulnerability regarding '(climate change) as a threat to (sustainable development)', including actions to mitigate GHG emissions. The VGGs specifically addresses LCD, including technological innovation, where GG implies 'efficient energy production and consumption' (VGGs, 2012, p. 3), both serving as 'principles in achieving sustainable development', delivering modernization and industrialization of economy (VGGs, 2012, p. 2). Electricity sector liberalization outlined in the VGGs is considered a crucial step towards facilitating technology transfer and market-based mechanisms for CCM both by the GoV and donor agencies.

The 2005 Electricity Law intended to liberalize the sector by supporting programmes and action plans, setting targets for renewable electricity generation, introducing measures like FIT, import tax exemptions, land lease waivers, corporate tax exemptions and reductions, higher depreciation rates and improved environment for PPPs. The National Energy Development Strategy 2020 (NEDS⁷) outlines principles guiding energy sector development and aims to ensure energy security and supply, diversify energy investments and business models, develop new energy resources and introduce a competitive energy market. The Renewable Energy Development Strategy⁸ (RES, 2015⁸) aims to ensure energy security and access, reduce GHG emissions, setting targets for scaling-up renewables, incentivized market-based measures and subsidies. Despite regulatory instruments and legal advancements for renewable energy development, institutional arrangements, regulations and legislation are geared towards centralized infrastructure. Competitive and monopoly platforms remain integrated in the wholesale market, government regulation is fundamental and the state acts as regulator to ensure real and non-discriminatory access to transmission and distribution networks for generators and suppliers (Jamasp, Mota, Newbery, & Pollitt, 2005). Contradictions between co-existing policies, the lack of

a broad target-oriented sustainable energy strategy and ‘provision for any form of government guarantee, assurance or support to enhance the creditworthiness’ of state owned enterprises (SOE) as the sole developer and purchaser of renewable energy, further inhibit growth in renewables and infra-structural development because private investors are cautious (McKenzie, 2017).

Actors

The central government, through the Prime Minister’s Office, is directly involved in aligning CCM and GG strategies. The National Committee on Climate Change is mandated to make decisions on cross-sectoral issues in policy formulation related to both CCM and GG. The Ministry of Environment and Natural resources (MONRE) is a focal point for NCCS implementation and oversees CCM, voluntary commitments, obligations and cross-sectorial CCM actions.

The power sector is under jurisdiction and management of the Ministry of Industry and Trade (MOIT), coordinating relevant governmental ministries, agencies and key stakeholders (producers, consumers, R&D, international donors) in renewable energy policy formulation and implementation processes. However, MOIT has limited power over wider agenda setting, supporting renewable energy and electricity sector reform, in-

line with donor recommendations on market liberalization reforms, with the government setting and revising overall targets. Ministries of Planning and Investment (MPI) and Finance (MOF) mandate the national budget, and centralized control over energy sector planning is exclusively held by the government. Figure 2 shows the concentration of management within government oversight in terms of regulation and financing for CCM and electricity sector reform.

MONRE uses discursive argumentation in implying finance and technology transfer opportunities, conditioned by adherence to international climate change regime monitoring and verification (MRV) principles and sectorial mainstreaming of the CCM agenda. Appealing to moral responsibility principles might give weight to MONRE’s arguments and the GoV, whilst negotiating finance, knowledge and technology transfer with donors, gaining international recognition for ‘voluntary’ mitigation actions and benefitting from these transfers in lieu of dwindling development aid and foreign direct investments. These are supporting arguments justifying the need to undertake mitigation actions despite having no formal obligations within the global climate regime. Domestically, MONRE, like MOIT, appeals to economic arguments for cost-efficiency and development, e.g. rural electrification benefits and food security.

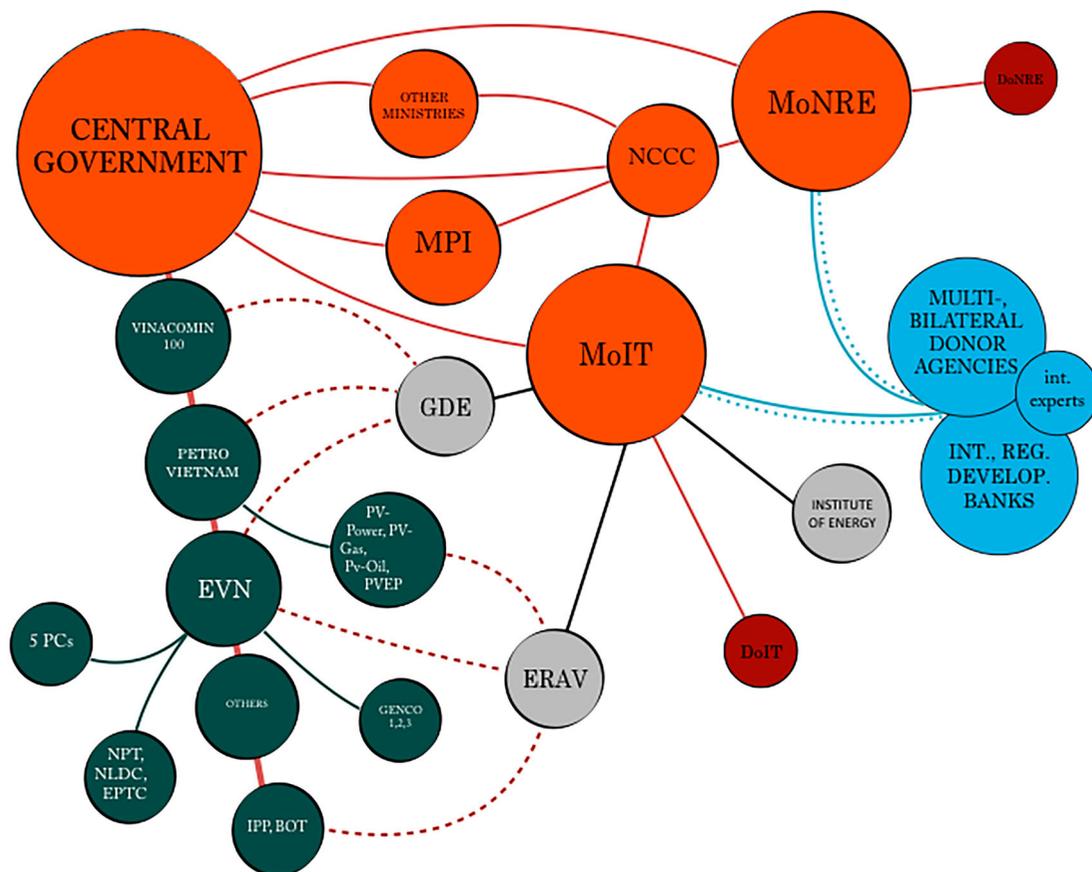


Figure 2. Actors in Vietnam’s Climate Change Mitigation and Electricity Sector Policy Arena. Natural Resources and Environment; EPTC Electric Power Trading Company; ERAV Electricity Regulatory Authority of Vietnam; EVN Vietnam Electricity; GENCO Power Generation Corporation; GDE General Directorate of Energy; INT., REG. DEV. Banks International, Regional Development Banks; Int. experts International experts; IPPs Independent Power Producers; MoIT Ministry of Industry and Trade; MoNRE Ministry of Natural Resources and Environment; NCCC National Coordinating Committee on Climate Change; NLDC National Load Dispatch Center; NPT National Power Transmission Corporation; PCs Power Corporations (North Power Corporation, Central Power Corporation, South Power Corporation, Hanoi Power Corporation, and Ho Chi Minh City Power Corporation); PV-EP PetroVietnam Exploration Production Corporation; PV-Gas PetroVietnam Gas Corporation; PV-Oil PetroVietnam Oil Corporation; PV-Power PetroVietnam Power Corporation; VINACOMIN 100 Vietnam National Coal Mineral Industries Holding Corporation. *Source:* authors’ compilation.

Three SOEs dominate, directly operate and manage the energy sector: EVN, PetroVietnam, and Vinacomin. Directly under the Prime Minister's authority, EVN is the largest producer and buyer of electricity, holding a monopoly on electricity transmission, distribution and sales and, with its joint-stock companies, owns 61% of installed capacity; independent domestic power producers and foreign investors (with build-operate-transfer arrangements) own the rest (Audinet et al., 2016).

GoV plays a strong role in subsidies and ownership, beleaguering a slow and uneasy reform process ripe with institutional controversies, i.e. they have not, nor ever intended to, fully carry out energy sector reforms (ADB, 2015; Audinet et al., 2016). The government and its agencies recognize LCD and sectorial reform ambitions as dependent on financial loans and investment, international cooperation in transnational agencies' knowledge and technology transfer and policy expertise. The resource-, knowledge-, expertise- and finance-intensive renewable sector highly depends on transnational investments and, similar to many developing countries, is willing to accept WB loans to expand capacity, with electricity market liberalization as a lending pre-condition (Hall, Thomas, & Corral, 2009).

Discussion

Both Vietnam and Mexico are implementing electricity sector reforms, parallel to CCM and GG development agendas and within complex contexts of slow political and economic liberalization. Electricity sector reform in Mexico is embedded within a wider set of political economic gradual changes that seek to preserve and maintain key components of an old clientelist and corporatist system (Payan & Correa-Cabrera, 2016), where the once tightly controlled energy industry is slowly being opened to outside competition. The government is attempting to simultaneously modernize political processes, liberalize large sectors of its economy and set national CCM priorities, often contradicting one another. Mexico's image abroad of climate leader directly contrasts with the domestic preservation of old frameworks to maintain the status quo, riddled with corruption (Payan & Correa-Cabrera, 2016). The CCM agenda is framed as a means to show the strength of its economy and, at the same time, progressive development approach, where CCM can be an engine for growth and economic and rural development (Fekete et al., 2013). In Mexico, targeting GG and structural reforms plays into wider modernization discourse (conveniently helping access to international financing) to build the power sector as the foundation for longer-term economic growth, while also mitigating climate change (G20, 2016b).

In Vietnam, the electricity supply is considered a public service provided and secured by the state to maintain development and advance social welfare. Investment in energy infrastructure is framed as a vital national GG developmental project with international importance. Yet, the ability of climate policy to transform energy systems is limited. Many emerging trends in the energy sector have little to do with CCM, even if associated with low-carbon energy. State narratives link electricity sector development to modernity, energy security, GG and industrialization, while normalizing the 'temporal necessity of coal', creating a lock-in reinforcing fossil fuel-based

infrastructure, as newly planned coal plants go online (VGGs, 2012, p. 2). These are justified by discourse around national energy security as crucial to achieving the GG agenda, while the energy sector development plan contradicts declared mitigation targets, state-led direct management of the LCD transition. Liberalization of the electricity market and centralized governance of the energy sector seem capable of resolving tensions between these seemingly opposing goals when framed cohesively within large-scale plans energy sector transformation. National CCM responses and sectorial mainstreaming of climate change considerations, through centralized planning and coordination strategies, are envisioned to mobilize a coalition of diverse actors around the concept of GG and overcome established views of infrastructure development. However, significant power imbalance across actor coalitions – and long-established (normative) ideas of development as fuelled by energy development – raise questions of whether the state-led centralized management model is capable of resolving short-term policy targets while also establishing strong narratives of LCD within existing electricity sector transformation pathways. The centrality of the electricity sector to development creates implications for liberalization reforms, infrastructure planning and integration of CCM priorities in sector development, while regime legitimacy also rests (at least in part) on commitments for continued economic growth and socio-economic reforms aimed at, poverty alleviation, universal welfare benefits and international recognition, among others.

The institutionalization of CCM in Vietnam and Mexico is primarily framed as an economic issue to be addressed through energy efficiency technologies, improvements in infrastructure and regulatory advancements reinforcing the need for market liberalization. In Mexico, this helped advance the proliferation of market-based climate solutions (e.g. the energy certificate system) and development of market mechanisms in Vietnam (e.g. avoided-cost tariffs and wind, biomass and solar feed-in tariffs). International agendas set by actors drove, in part, the promotion of a CCM agenda. At times, CCM targets may be at odds with national sectoral development priorities, but the two have been gradually incorporated under the guise of a wider set of neoliberal policy solutions for energy security and economic growth to deliver additional benefits through, e.g. technology finance and GHG reductions, in both contexts.

Furthermore, the emergence of CCM in national energy policy arenas can also be considered strategically timed, framed as a moral obligation internationally but also as a threat to development. Ideas behind certain development pathways necessitate further deployment of technologies to aid poverty alleviation in both countries and justify each state's involvement and ownership of key infrastructure, either directly in the energy sector control or in terms of 'softer' power through price reforms and regulation. The CCM agenda draws on ideas of moral responsibility as a pre-requisite for public support and legitimacy of energy reforms and subsequent policies in Mexico, and justified and beneficial for the public in Vietnam. GG legitimizes the development agenda and growing state influence, especially in terms of boosting national budgets and gaining access to technology and knowledge transfer. Politically, it is beneficial to mobilize claims regarding energy reforms as contributing to food and energy supply and access security.

In Vietnam, this provides the state with an opportunity to politically frame CCM discourse to further reinforce national priorities, while also preserving incumbent energy frameworks. Individual agencies view CCM as a way to attract international finance and knowledge and technology transfer, which reinforces them with even more authority in their role as the implementers of CCM. This results in incoherent and at times conflicting pledges, policy targets and understandings of the role of electrification in development. On one hand, Vietnam and Mexico opened their power sectors to outside competition as they transition from state-led monopolies towards liberalized energy markets while, on the other hand, they also maintain a discursive re-nationalisation of the renewable energy electricity market, playing to the hegemonic conception and image of responsible leaders for CCM abroad, while providing subsidies and creating unclear roles for domestic private actors (and SOEs in Vietnam).

Our examples confirm the continuity of a more exclusive than inclusive form of energy governance with mixed signals about how energy markets should change. Present interpretations of development, sectorial innovations and 'liberalization' narrow down the range of acceptable policy options in response to climate change. These narrow set of views of decarbonization as a replacement of fuels exclude considerations of systematic change (from centralized to decentralized systems, ownership, access issues), and ignore the institutional complexity behind what that change requires. Instead, system transformation becomes a question of substituting technologies, where the shift required is simply seen as an adjustment to institutions that manage materials.

Undoubtedly, national institutions are still (and will likely remain) central to the transformation of the electricity sector, whether as large-scale producers and consumers or as market watchdogs and regulators. The assumptions upon which future development scenarios will be based are constrained, as pointed out by Goldthau (2014, p. 136) by 'initial regulatory settings and policy choices (that) solidify into lasting arrangements, favouring one technology over the other', including off-grid and national grid networks which may function independently of other scales. The role of national institutions should be more closely examined, not only in terms of its role for policy development, but also, and especially, in framing the rules of any future energy sector reform.

Some types of renewable energy production may require more flexible governance models that are fitted to local and contextual factors, and different economic models that can be transferable across different contexts. Maintaining large-scale electric power generation and distribution in the context of new evolving forms of governance involves even more institutional actors and regulatory measures, and a wider variety and scale of large-scale, up-front investment, infrastructure, pricing mechanisms and ownership structures.

Yet, in Mexico and Vietnam, despite continued efforts towards energy sector reforms that introduce more inclusive forms of energy governance, centralized, traditional models of fossil-fuel based energy supplies continue to dominate the energy supply landscape. While Vietnam shows consistency in implementing stages of the power sector reform roadmap (Gerner et al., 2019) with the recent election of President

López Obrador in 2019, the future of Mexico's energy reform is unclear. However, regardless of the new administration's rhetoric, a dramatic reversal of the energy reform is highly unlikely (c.f. Cunningham, 2019).

Conclusion

This research illustrated the broader context of challenges economies face when attempting to steer towards longer-term low-carbon development gains when short-term economic and political benefits from fossil fuel resources are still more competitive. It revealed political agendas underlying present policies and reform imperatives in the meanings that are ascribed in framing frame policy issues (structural conditions, contextual, technical or ideational appeals to values), and seen within wider institutional landscapes. Similar infrastructure development, policy approaches and development trajectories are observed in both cases, while a resoundingly familiar idea of LCD is grounded in (and bounded by) each country's own institutional and political context. Incumbent governmental actors, SOEs, and international donors and lenders, share a similar approach and conceptualisation of LCD, which is part of a wider neoliberal agenda necessary to support and finance 'cleaner' energy.

Ideational processes are at play in constructing policy problems and resulting institutional arrangements that emerge, shaping the context of policy agendas, policies and reform imperatives (Béland, 2016). Support and expectations for socio-technological innovations to lead both energy system transformation and pathways for CCM are evident in both cases; despite starkly different socio-political and economic contexts, similar ideas, interests and institutional arrangements can be found in the mobilization, prioritization and framing of energy as an engine for green economic growth, CCM and LCD. Renewable energy sources, and electricity supplies in particular, are framed as political priorities of public (including wider global) interests but they also serve as a means to justify wider sectoral reforms and legitimize government and private interests, especially as the power sector transitions from state-led monopoly to liberalized markets.

The institutional approach taken here draws attention to how low-carbon development agenda is informed not only by power over ideas that define which energy sector options are discussed, but also in their ability to restrict the range of solutions available and the degree of transformation imaginable, by excluding potential alternative options. We reiterate calls for future research to further enhance the analytical depth and reflexivity in policy making by uncovering the background ideation of programmatic responses and policy choices, which provide tools for systematic exploration of possible transition pathways, policy goals and policy strategies to go beyond explanations of governance failures and limited access to resources.

Despite rhetoric surrounding energy reforms in both Vietnam and Mexico, governments retain centralized power over renewable energy and CCM policies and programmes de facto, not only because of infrastructure lock-ins but also because of centralized institutional and strategic ideation. Trade-offs and required institutional arrangements for energy transition and CCM need to be reworked within a

comprehensive institutional restructuring that considers diverse conceptualisations and views of decentralization at various levels, including in climate policy institutions and the broader power sector. These measures can only be achieved if the ideas and assumptions behind the commitment to LCD and CCM are resolved with those within the larger infrastructure ecosystems.

Notes

1. We distinguish between 'low-carbon development' and 'transformation' concepts. The term transformation refers to the 'altering of fundamental attributes of a system (value systems; regulatory, legislative, or bureaucratic regimes; financial institutions; and technological or biological systems)' (IPCC, 2012). The term low-emission development strategies, also known as low-carbon development strategies or low-carbon growth plans, are national economic development plans/strategies that encompass low-emission and/or climate-resilient economic growth (IEA/OECD, 2015). The low-carbon development term refers to a concept introduced and developed under the UNFCCC umbrella.
2. For complete list of revised material, refer to Table 1 in Annex I.
3. Resolution No: 01/NQ-CP, GoV
4. Decision 1393/QD-TTg, The Prime Minister of Vietnam
5. Decision No: 2139/QD-TTg The Prime Minister of Vietnam
6. Decision No.: 428/QD-TTg, The Prime Minister of Vietnam
7. Decision No. 1855/QD/TTg, GoV
8. Decision No: 2068/QD-TTg, GoV

Disclosure statement

No potential conflict of interest was reported by the author(s).

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