



Unraveling the political economy of coal: Insights from Vietnam

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ABSTRACT

To meet its rapidly growing electricity demand, Vietnam envisages ramping up its coal-fired generation capacity substantially. Realizing all coal-fired capacity additions that are planned globally would undermine international climate targets. This paper systematically analyzes the political economy shaping climate and energy policies in Vietnam, and finds that the country's coal developments are primarily motivated by political rather than economic considerations. Based on extensive data collected in semi-structured interviews, we identify the relevant actor groups and how their objectives influence energy policy formulation. This allows us to unravel the complex political channels that link Vietnam's move to coal to four overarching energy goals, which are, in turn, closely entangled with the Communist Party's strategy to legitimize its power: affordability, security of supply, promoting the domestic energy industry, and environmental sustainability. We show why Vietnam's tightly regulated electricity market, dominated by state-owned enterprises and vested interests, favors large-scale coal investments and weakens renewable energy regulations. While environmental and health concerns are becoming politically more relevant on the provincial level, silo mentalities within the administration and among international organizations result in weakly integrated environmental strategies. These in-depth insights from Vietnam have wider implications for understanding the adoption of coal in other country contexts.

1. Introduction

In order to comply with international climate targets, coal-fired power plants across the globe need to be closed by mid-century and new coal power investments reduced to a minimum (IPCC, 2018; Luderer et al., 2018). The goal to limit mean global warming to well below 2 °C (UNFCCC, 2015) is likely jeopardized by the commissioning of any additional fossil energy infrastructure (Tong et al., 2019). Nevertheless, as of March 2020, globally 499 GW of coal-fired power plants are under construction or planned (Shearer et al., 2020).

Vietnam is among the countries that envisage a substantial ramp-up of coal-fired electricity generation capacity to fuel its economic growth based on energy-intensive production (Tang et al., 2016). Internationally, Vietnam ranks fifth in terms of planned additional coal capacity, only surpassed by China, India, Turkey, and Indonesia (Shearer et al., 2020). With a projected installed capacity of more than 49 GW by 2030, coal capacity would more than quadruple from 2015 levels (c.f. Fig. 1). If all plants are built, and operated until the end of their expected lifetime, the resulting greenhouse gas (GHG) emissions will likely challenge

Vietnam's GHG and energy intensity reduction targets, stated in its nationally determined contribution (NDC) under the Paris Agreement of the United Nations Framework Convention on Climate Change (UNFCCC, 2015).

In this case study, we aim to understand why Vietnam focuses on coal. This choice of coal is far from obvious from an environmental or a purely techno-economic perspective, despite possible positive aspects. Coal-fired power generation constitutes a well-established technology, which played an important role in the process of industrialization in many countries. Apart from energy production, coal can be conducive to economic activities because of positive spillover effects such as the build-up of infrastructure and institutions (Kalkuhl et al., 2019). Yet, existing and planned coal power plants threaten Vietnam's local environment, air quality and livelihoods, and entail substantial public health costs (Koplitz et al., 2017). In addition, since 2015 coal-fired generation has become increasingly dependent on imports at fluctuating international prices (c.f. Nangia, 2019). By contrast, technical reports have identified a large domestic potential for renewable wind, solar, and biomass energy at declining costs (ADB, 2015b; UNDP, 2019), and

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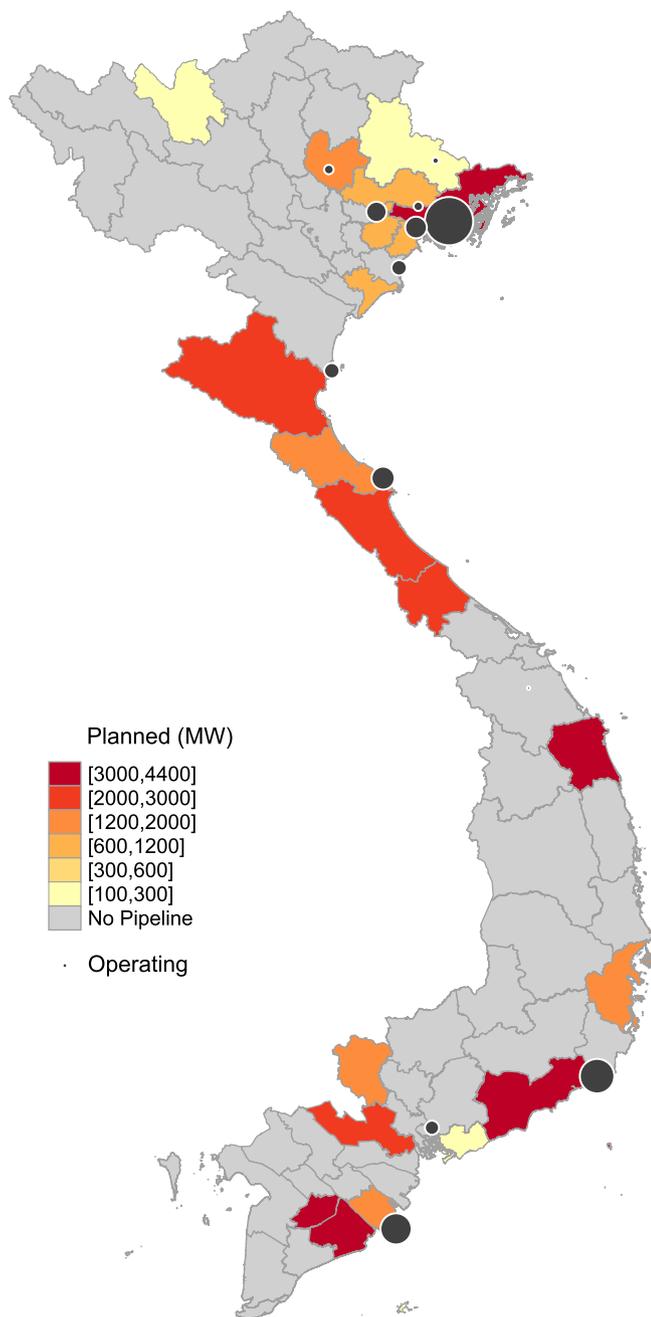


Fig. 1. Operating and planned coal-fired electricity generation capacity in Vietnam until 2030; Note: total operating 18 GW; ‘planned’ subsumes announced, pre-permitted, permitted, and plants under construction (Source: Shearer et al., 2020).

estimated existing grid integration capacities of at least 20 percent in Vietnam. As we demonstrate in this paper, Vietnam’s climate and energy policies are to a large part determined by political economy factors, such as the Communist Party’s urge to assert its power and the influence of incumbent interest groups.

Since Vietnam’s reunification in 1976, the Communist Party of Vietnam (CPV) has been ruling in a one-party regime. During the past three decades of fast and energy-intensive economic growth, Vietnam passed the middle-income country threshold in 2011 (World Bank, 2019b), while electricity demand grew by 10–11 percent per year on average. Despite continued privatization and reform efforts, industrial sectors, including the electricity market, remain largely government-controlled. The type and location of new power plants

included in the five-year power development plans (PDPs) are centrally decided by the Ministry of Industry and Trade (‘Energy Ministry’ ff.) and its provincial counterparts. The state-owned monopoly utility Vietnam Electricity (EVN) under the Energy Ministry functions as a single buyer of electricity and controls most of the transmission; together with two other state-owned enterprises (SOEs) in the energy sector, it controls 90 percent of generation capacity (ADB, 2015a). The Supplementary Information provides a detailed country background.

Identifying the political factors that influence the formulation of energy policies is crucial for a transition to a low-carbon economy. Our case study is the first to provide an in-depth, theory-guided analysis of the political economy factors which drive Vietnam’s intended ramp-up of coal-fired electricity generation. Based on the theoretic framework developed by Jakob et al., n.d., we address three key research questions: which objectives - socio-economic, institutional or personal - are present in Vietnam’s climate and energy domain? Which actors represent them? How does the socio-economic, political and institutional context shape the actors’ objectives as well as their bargaining power in the political decision-making process? This comprehensive analysis provides important insights on possible entry points and obstacles to low-carbon energy transitions, and serves to derive policy implications also for other countries facing similar challenges.

To identify the competing objectives, actor groups and context factors which shape Vietnam’s climate and energy policies, we draw on expert interviews with representatives from ministries and political institutions, businesses, investors, civil society and from international organizations. The extensive interview data allow us to shed light on otherwise hidden interrelations, such as vested interests, informal processes and underlying power struggles behind Vietnam’s decision to make coal the main source of electricity generation. We explain how the four general goals of energy policy – i.e. affordability, security of supply, (environmental) sustainability, and energy industry promotion – translate into the choice for coal in Vietnam.

In the remainder of the paper, we identify determinants of energy policy from the previous literature, describe the political economy framework used in this paper, and elaborate on the method of semi-structured expert interviews. We then present our results, structured along the four general objectives. Finally, we discuss the results in view of policy implications for a sustained energy transition in Vietnam, and beyond.

2. Literature review

Our study builds on a broad body of literature on drivers of energy policy and transitions, including theoretical frameworks, empirical country case studies, and few previous studies on Vietnam. The literature identifies three high-level political goals which are primarily guiding national energy policy, namely affordability, security of supply, and (environmental) sustainability (c.f. Joas et al., 2016; Johnstone et al., 2017; Schmidt et al., 2019), as well as, fourth, the promotion of the domestic energy industry (Jenkins, 2014; Schmidt et al., 2019). A variety of theoretical frameworks provide different ‘lenses’ to analyze why these general goals translate into different policy decisions across countries (c.f. Cherp et al., 2018). Our analysis focuses on the political perspective.

Several country case studies highlight the importance of political factors, emphasizing that techno-economic factors possess only limited power to explain energy transitions (Baker et al., 2014; Dubash, 2018; Edwards, 2019; Gürtler et al., 2019; Helm, 2010; Shidore and Busby, 2019): energy sector decisions are often influenced by an incumbent network of large, often state-owned, enterprises and political elites who rely on the sector as a source of political or economic rent (Chatterjee, 2018; Chayes, 2017; Healy and Barry, 2017). The network promotes the branches of industry which it has vested interests in and hampers policies promoting others, e.g. the coal sector in Indonesia (Atteridge, A. et al., 2018) and Tanzania (Jacob, 2017). However, Johnstone et al.

(2017) note that due to the systemic nature of such incumbencies and patronage networks, which are deeply rooted in a polity's institutions, the ways in which they influence energy policy outcomes might not be as neatly separable. Based on the example of Japan, Valentine (2017) show that incumbent networks and respective political and technological lock-ins emerge particularly when energy sectors are subject to state-led long-term planning. Private sector engagement remains low when sector structures are monopolistic and government-related enterprises tend to receive preferential treatment (e.g. subsidies, state guarantees, tax exemptions) (Nicolli and Vona, 2019). In a cross-country analysis of coal sector transitions, Spencer et al. (2018) show stranded coal assets to be a major transition challenge as they are important for regional employment and fiscal revenue.

Environmental and health concerns, often represented by the local public or by international financial institutions, exert weak influence on the energy sector (Rosewarne, 2016; e.g. Zaman et al., 2018). While financing for low-carbon energy technologies from multilateral development banks has increased considerably throughout the past decade, the total amount of financing for conventional technologies, including coal, has remained stable (Steffen and Schmidt, 2017). Additionally, energy infrastructure investments increasingly come from South-South financial institutions, dominated by Chinese state banks (and equipment suppliers) with a focus on coal (Hannam et al., 2015). Donor agencies' interventions are motivated by their own 'informal' interests (Rahman and Giessen, 2017) such as the competition for export markets or political influence which can obstruct the coordination of their efforts (Fuchs et al., 2015). Finally, particularly multilateral donors often continue aid, even if funds are misappropriated or funding conditions violated (Swedlund, 2017). This paper largely confirms these findings for the case of Vietnam and explains how they hamper environmental reforms.

There are some studies analyzing climate and energy policies in Vietnam, and some studies examining the political economy of coal in other countries. However, to our knowledge, there is no systematic analysis of how the complex entanglement of domestic and international interests and stakeholders affects the coal pipeline in Vietnam. In interview-based analyses, Urban et al. (2018) identify the legislative shortcomings of the various existing sustainability- and energy-related strategies from an environmental justice perspective; however, the paper does not identify the underlying political determinants. Examining the drivers for passing these strategies, Zimmer et al. (2015) emphasize the role of international agencies, and briefly discuss how close ties and potential vested interests between ruling elites and energy SOEs might hamper the strategies' implementation. In a detailed analysis of Vietnamese energy sector developments, Neeffes & Thi Thu Hoai (2017) find that the Energy Ministry and fossil energy SOEs together have the greatest agency in promoting coal. They also point out that civil society organizations exert weak influence. Our study is the first to systematically tease out the underlying objectives of domestic and international actors, the way in which Vietnam's governance context allows them to influence policy-making, and how this constellation results in the increasing use of coal in Vietnam's power sector.

3. Method

In order to make our approach as transparent as possible, we follow the best practice for qualitative data collection (c.f. Bogner et al., 2018), and build our analysis on a theoretical framework for political economy analyses of climate and energy policy (Jakob et al., n.d.). The framework allows our approach to be comprehensive and to incorporate the large set of factors and settings that determine low-carbon energy transitions, identified in the reviewed literature. This section first revisits the key components of the framework. It then describes how the research questions derived are operationalized in an interview guideline and how interviewees are chosen.

The generalized theoretical framework understands climate and

energy policy outcomes in a given country to be determined by the interplay of demand for policies from interest groups and supply by policy makers. Hence, energy and climate policies are regarded to emerge from a complex interplay of a diverse set of actors that have different objectives as well as different means for influencing policy-making. This actor-centered perspective is built on the assumption that those policies are implemented which best meet the objectives of actors who have the greatest influence on policy decisions. It rests on three central building blocks: first, the political and societal *actors*, such as influential individuals, key ministries, industry groups, unions, voters, etc., who have a direct or indirect influence on a given policy domain; second, the underlying *objectives* these actors pursue, such as political power, private profits, employment, energy security or environmental integrity; third, the structural and institutional *context* which determines the importance of certain objectives for specific actors as well as their leverage in the political negotiation process (Jakob et al., n.d.). Such context factors include economic structure, the political system, public opinion, endowment with coal as well as renewable energy sources etc.

Even though many frameworks for the analysis of socio-technical transitions exist (Sovacool and Hess, 2017), there are only very few that are sufficiently flexible to capture the political economy of energy and climate policy for a large spectrum of different countries. We hence rely on the generic framework by Jakob et al., n.d., which does not intend to explain policy outcomes, but rather acts as a tool to structure the analyses in a coherent manner. This will permit the comparison with results of other case studies for countries facing very different situations, which will be undertaken in the future based on the same framework.

For the purpose of empirical data collection in Vietnam, we operationalized this theoretical framework in qualitative semi-structured expert interviews, following the approach described by Bogner et al. (2018): we first translated our research questions into an interview guideline of questions that interviewees can relate to. Following the common guideline in all interviews ensures the comparability of information collected in different settings across interviews. The paraphrased questions explicitly ask which key actors influence energy policy formulation in Vietnam and which goals they may be pursuing. We further included several questions to tease out how the socio-economic, political and institutional context affects the interplay of different interests (refer to the Supplementary Information for the interview guideline). Then, we identified the relevant stakeholders in Vietnam based on desk research and pre-interviews, which also served to test and improve the interview guideline. In April 2018, we interviewed 30 stakeholders in 25 semi-structured interviews in Hanoi and Ho Chi Minh City. Very few institutions declined our invitation, so, with the exception of two SOEs, we gathered data across a broad sample of stakeholders (refer to Appendix for Table A 1 of interviews by sector). Finally, we distilled and synthesized the key insights informing our research questions from the interview transcripts and notes.¹ To ensure transparency, we coded all major statements of each interviewee, and classified them into related arguments, which we then clustered into four high-level strategic objectives. We structure our analysis along these broader climate- and energy-related objectives and explain how the current political economy translates these general goals into the coal-focused power development in Vietnam.

In order for this analysis to be comprehensive and to minimize research bias in selection, emphasis, or interpretation, our compilation of key findings in section 4 is informed and complemented by results from the theoretical and empirical literature on energy transition

¹ We transcribe all but five of the interviews in which we refrained from recording because the interviewees either refused or seemed reluctant to speak openly due to the inherently political nature of the topic. To warrant their anonymity we ensured to all interview partners to publish their statements only in an aggregated and processed form.

drivers. We exclude normative or opinion-based statements if they are only brought forward by one interviewee and could not be supported by secondary sources, such as news articles or grey literature reports. However, distinguishing between opinion- and fact-based information is partially based on the authors' judgement because 'objective' information on many aspects of Vietnam's energy sector and climate policy remains scarce due to the lack of transparency and disclosure – which in itself is part of the motivation for this interview-based case study.

4. Results: Political economy determinants of coal use

Vietnam's focus on coal as the main source of electricity generation is driven by a complex web of actors and institutions with different objectives and means of political influence, embedded in the overall socio-economic and political context. In the following, we analyze how the choice for coal is determined by the interplay between the key actors shaping Vietnam's climate and energy policies. These include ministries and political institutions (political (p)), businesses and investors (business (b)), domestic civil society (societal national (sn)) and international organizations (societal international (si)) (c.f. Table A 1). In our interviews, these actor groups mentioned a variety of objectives influencing Vietnam's electricity policy. We cluster these into four high-level strategic objectives: affordability, security of supply, the promotion of the domestic energy industry and personal interests, as well as climate and environmental considerations.

Fig. 2 depicts the share of interviewees in each group who mentioned the respective high-level energy policy objective to strongly influence energy decisions in Vietnam. These do not necessarily coincide with their own priorities. Even though this simple counting does not allow for directly inferring the true importance of a certain objective, it is useful in order to systematically structure the main insights from the interviews.² Affordability was mentioned by most actors, emphasized most strongly by business actors. Security of supply was highlighted most strongly by political and international actors. A substantial share of the national civil society and business representatives discussed the goal to promote the national energy industry, which was rarely mentioned by political representatives. Finally, climate and environmental goals (or their weakness) were most frequently put forward by domestic civil society, but also by half of the political actors interviewed. Table A 2 in the Appendix splits up the number of mentions in further detail.

4.1. Affordability

Keeping electricity prices low for citizens and energy-intensive, especially state-owned, industries was often mentioned as the single most important objective in the sector and as a pivotal strategic interest of the CPV to preserve its power (b1, b2, b4, b6, si1, p5, p6). According to the communist heritage, providing affordable basic utilities to the people is a major factor for the Party's legitimization of power (si1).

Electricity tariffs are regulated by the government at a rate below cost-recovery (c.f. Gerner et al., 2018; Maweni and Bisbey, 2016) and differentiated by consumer type. Industry and residential users together account for around 90 percent of electricity consumption in Vietnam (EVN, 2018; IEA, 2017). Tariffs are lowest for the manufacturing industry, including the SOE-dominated energy-intensive steel, fertilizer and cement sectors, and for public administration institutions, and highest for commercial businesses (EVN, 2019). Even though nominal tariffs were increased in 2017 (b2) and 2019, the raise was outpaced by inflation and rising generation costs (Gerner et al., 2018) (b1, b5). Thus, in the period 2012–2017, indirect subsidies effectively rose from about US¢ 1.3 to 2 per kWh (i.e. 25 percent of the average 2019 tariff of US¢ 8

² Note that we count each interviewee mentioning a specific objective as one mention, irrespective of how many times during the interview the objective was mentioned.

per kWh (VND 1860) (Vu, 2019)) (si5, b5). In 2017, the total subsidy was roughly USD 3.5 billion (based on EVN, 2018). The government does not show any commitment to a clear tariff reform roadmap, beyond correcting for inflation, while indirect subsidies are likely to rise further as Vietnam's cheap hydro power sources have mostly been exploited (b1, p 4). The political goal of low electricity prices is influencing decisions concerning the electricity generation mix in several ways.

4.1.1. Lack of systematic cost analyses of capacity additions

Constrained price setting results in a bias toward capacity additions with the lowest perceived cost. The Law on Bidding, issued by the Ministry of Finance ('Finance Ministry' ff.) mandates that the bid chosen has the lowest levelized electricity cost (LCOE). However, the Energy Ministry does not practice competitive tendering, but chooses this lowest price from mostly unsolicited bids (sn1). In 2014, when the current five-year power development plan, PDP VII Revised, was initially drafted, the LCOE of coal was indeed lower than that of alternative fuels (si1). However, the reported LCOE might not even reflect the economic costs of coal-fired generation in a narrow sense (i.e. disregarding the adverse environmental and public health effects). Operation and maintenance costs, such as coal imports at increasing international prices as well as repair services, are often not considered. Furthermore, the Energy Ministry does not test the bids' compliance with minimum environmental standards (p8). As a consequence, subcritical coal facilities,³ fueled with lower-quality domestic coal, and often using cheaper, but less durable, Chinese equipment, may appear to decision-makers to be the most cost-effective capacity additions (si4, b4) (GreenID, 2018). This is one reason why coal-fired power plants are preferred over technologies that face higher upfront but low operation costs, such as renewables.

4.1.2. Credit-constrained energy SOEs, subsidies and public debt

Because electricity tariffs are regulated below cost-recovery, both the monopoly state-utility EVN and the state coal extraction and import firm Vietnam National Coal and Mineral Industries Group (Vinacomin) completely rely on government capital, which significantly contributes to Vietnam's increasing public debt (b1, b2). The SOEs' financial risks mainly originate from operational inefficiencies, high levels of debt financing, and related exchange rate risks (primarily to the Japanese Yen, the Chinese RMB, and the USD) (Maweni and Bisbey, 2016). EVN's capital expenditure has typically been as much as 95 percent debt financed; however, its debt servicing requirements are not reflected in electricity tariffs (Gerner et al., 2018). As a result, state capital injections of approximately USD 3–4 billion were needed for EVN and USD 1.5 billion for Vinacomin (News VietNamNet, 2016).

The Party's efforts to keep tariffs low have furthermore resulted in a substantial increase in indirect subsidies for coal from USD 37 million in 2015 to USD 160 million in 2017 (excluding externalities) (IEA, 2018). The price of thermal coal paid by coal-consuming SOEs is subject to negotiations with the Energy Ministry and Vinacomin (b3). As a result, domestic coal prices for thermal power, steel and cement production are artificially low (b1, p3), around 30 percent lower than import prices in 2015 (GreenID, 2018). One interviewee estimated subsidies to the power sector as a whole to amount to 5.5 percent of GDP, i.e. roughly USD 10 billion in 2017 (excluding externalities) (b4). The subsidized price gap is likely to grow due to increasing extraction costs of domestic reserves, and fluctuating international prices of coal imports (b4, b3, p3). These SOE liabilities translate into implicit fiscal costs and have decisively contributed to the government reaching its self-imposed debt

³ Subcritical boilers are the least efficient available technology. Compared to more efficient supercritical plants, subcritical coal facilities emit up to 20 percent more CO₂ per unit of electricity produced. The majority of Chinese-built coal plants in Indonesia, Pakistan, Vietnam and Cambodia are subcritical (Li et al., 2020).

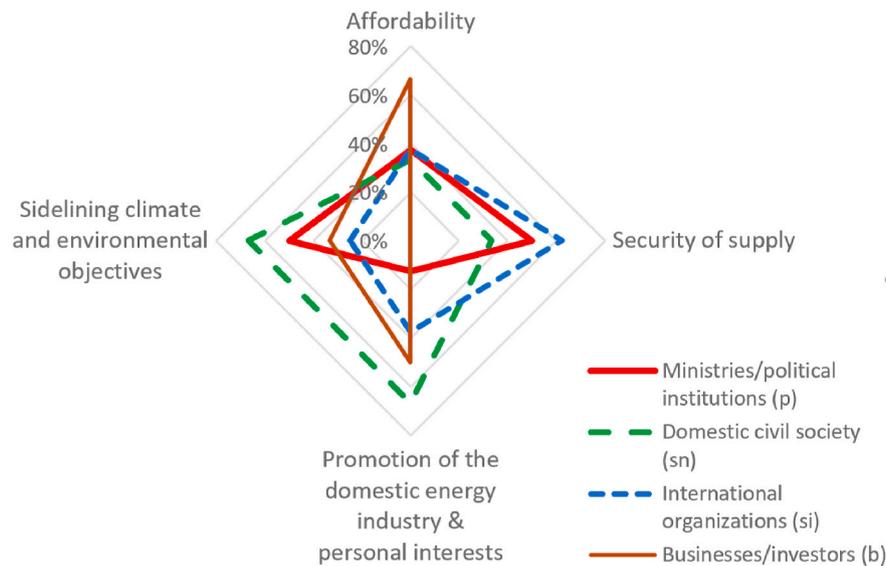


Fig. 2. Strategic objectives affecting Vietnam's energy policy. Shares of interviewees by category highlighting the respective objectives to be very influential for energy sector decisions in Vietnam.

ceiling of 65 percent of GDP in 2017 (b1).

4.1.3. Slow progress on electricity sector reform

In order to reduce the losses by state-owned power producers (and the associated budget deficit), there is increasing pressure to follow the Roadmap of Power Sector Reforms.⁴ The Finance and the Planning Ministries strongly support the liberalization of the electricity market (si3, si4). Despite reform plans, EVN's three generation companies, together with the SOEs Vinacomin and Vietnam Oil and Gas Group (PVN), control 90 percent of the generation (ADB, 2015a). The first initial public offering of a generation company was largely unsuccessful, selling only a fraction of the offered shares due to the company's high indebtedness and the fact that EVN remains the majority shareholder with equitization capped at 49 percent (si3, sn3). Due to the cap, generation companies have limited access to international capital markets even after the offering.

While the unsuccessful equitization process is also due to a lack of human capacity in the government (p 7, si4), several interviewees emphasized that an underlying reason might be that some parts of the CPV actually oppose liberalizing the power sector to maintain EVN's monopoly status (b4, b1, si1, si5, b6). Referring to the Reform Roadmap, a government-related interview partner said, "In the paper [sic], the government wants to open the energy market, but only in paper [sic]" (p8). This opposition might be driven by vested interests in connection with the SOEs (see Section 4.3). Another reason is the regime's communist heritage whereby the Party takes responsibility for providing affordable electricity to the population and maintaining regulatory superiority over vital infrastructure (si1, si8). Hence, the CPV's reluctance to increase electricity prices and its related concerns about public opposition impedes power market reform. Yet conversely, the population opposes price or tax increases mostly because they distrust the government and EVN due to the operational inefficiencies and the lack of transparency on how revenues are spent (si5, si6) (UNDP, 2019).

4.1.4. Tighter requirements for limited government guarantees

Budget consolidation efforts and increasing pressure to restructure the energy SOEs decisively affect investments in electricity generation

⁴ The 2006 Road Map of Power Sector Reforms (revised in 2013, Prime Minister Decision 63/2013/QĐ-TTg) and the 2004 Law on Electricity envisage a fully competitive wholesale market by 2021 and retail market by 2023.

(si6). As loss-making entities, the SOEs depend on government guarantees to access foreign investment loans (sn1). In mid-2018, the Law on Public Debt Management introduced a cap on the overall value of government-guaranteed foreign loans and increased the equity requirements (si3). As a consequence, EVN is itself no longer able to invest in capacity additions (b4). As part of the restructuring process, Vinacomin and PVN are encouraged to focus on their core business activities, which do not necessarily include power plants – of which they owned 14 percent of capacity in 2015 (Maweni and Bisbey, 2016). Consequently, the substantial increase in generation capacity envisaged in the PDP VII Rev. relies largely on investments by (international) independent power producers.

4.1.5. Dependence on independent power producers and high investment risks

Due to the described financial and structural constraints, most generation capacity additions are expected to come from, primarily international, independent power producers (IPPs) (si4, p2, si5). Independent producers can, however, face high investment risks (si3). While IPPs control only 7 percent of the current fleet of power plants, the PDP VII Rev. expects them to account for 60 percent of the roughly USD 90 billion total investment needs in capacity additions until 2030 (Gerner et al., 2018).

Investment risks in the electricity sector remain high and attractive only for certain investors (si8): IPPs depend on EVN for power purchase agreements (PPAs), grid connection⁵ and payments for electricity sold (sn3, si5, sn1). Thermal power producers additionally depend on Vinacomin for coal supplies – which have recently fallen short of demand (VnExpress, 2018). EVN and Vinacomin remain highly indebted and have an interest in prioritizing their own generation facilities. The risk of non-payment can only be mitigated by the government underwritings (si1). Most importantly, PPAs remain weak and non-bankable, due to curtailment, termination and arbitration clauses (si3, sn3). For example, while the relatively generous 20-year solar feed-in tariff (FiT) of approximately US¢ 9.35/kWh is considered sufficiently high to attract investors, the associated PPA includes neither protection against

⁵ EVN's distribution companies have to provide the connection to the close-by substation while developers themselves are responsible for the immediate electricity line to such a station. This can be especially costly for remote renewables and wind.

retroactive changes in policy, nor hedging options for longer than one year. Additionally, its legal backing and arbitration clauses are weak (b1, b4, si3, sn3).

Existing guarantees for renewables investments are insufficient to enable most international banks or private lenders to provide project finance (b4, si3). The unstable regulatory framework thus contributes to the investment gap to realize renewable energy projects as intended under PDP VII Rev. (si8, b1, p 8). While Vietnamese banks have found the PPAs sufficient for financing, albeit at interest rates of 8–9 percent with additional informal charges, local investors often lack adequate equity capacity (b1, b4, si2). Joint ventures of international and domestic firms with financing from Vietnamese banks might provide a feasible option for renewable energy development (si3). Indeed, as of June 2019, 4.5 GW of solar capacity had been completed (Viet Nam News, 2019b), and as of November 2018 at least 12 GW of solar projects had received some type of official approval, mainly developed by domestic investors with some international participation.⁶

4.1.6. Regulatory bias of investment risk reduction toward thermal power plants

Renewable projects thus face high investment risks while certain larger thermal power projects are categorized as public-private-partnership projects with additional build-operate-transfer (BOT) (b1, si1). Up until mid-2018, these 20- to 25-year BOT contracts were completely underwritten by government guarantees (si1). Because large power projects are considered strategic infrastructure (si8, si1), the Prime Minister included many of them in the list of priority projects for which he raised the limit of foreign loan guarantees (Vietnam Investment Review, 2018). Thus, BOT contracts represent the only reliable proof of investment for independent producers (si2, si1). The resulting investment climate seems to be suitable especially for government-backed investors and financiers from China, Japan and South Korea (sn1, sn3).

4.1.7. Fiscal consolidation through environmental tax increases

In order to reduce the debt burden and environmental pollution, the Finance Ministry has, in the past, advocated to increase the existing environmental protection taxes on fossil fuels (b1, si4, p 3).⁷ Increasing the environmental tax levels for coal could potentially shift cost competitiveness towards less polluting energy sources. The environmental tax revenues accounted for more than 4 percent of the total budget revenues in 2016 (up from 2.7 percent in 2015), but only 2 percent of the revenues were from the coal tax (Government of Vietnam, 2017). Despite marginal increases, the tax levels of USD 1.3 (VND 30,000) per ton of anthracite and US\$ 60 (VND 15,000) per ton of lignite (p 3) do not impact electricity sector decisions (si5).

Meaningful tax levels would clash with the Party's strife for low electricity tariffs. The government voiced concerns that tax increases might negatively affect industrial competitiveness and raise consumer prices and inflation (p 3, p 4, p 2, p 6, b2). Referring to the carbon tax considered (World Bank, 2019a), an Environment Ministry representative told us that "Vietnam is not ready" and that "due to the low income of the population, subsidies are necessary". An increase in the coal tax (or the removal of indirect subsidies) is, thus, unlikely in the near future (p 5, si3, p 2).

⁶ This number has to be treated with some caution as many projects have merely received land licenses, but not started construction, waiting until the solar FiT and PPA for projects which enter into commercial operation after 30 June 2019 are finalized (si6).

⁷ Also, the introduction of a carbon price is discussed among Environment, Finance and Planning Ministries under the World Bank's Market Readiness Programme. However, it would more likely be introduced as a type of emissions trading system, covering specific sectors and firms only (refer to section 4.4 on environmental objectives and donors).

4.2. Security of supply

"Keeping the lights on" (si1) for citizens, and providing sufficient electricity to sustain high economic growth rates was generally voiced as an important pillar of the CPV's energy policy, and as pivotal for the Party's strategy to legitimize and maintain its power (si1, si3, p5, p1). The narrative that high levels of energy supply growth constitute a necessary prerequisite, if not a main driver, for economic growth (e.g. World Economic Forum, 2012) is widely adopted among government officials (p8). The importance of this goal is most visible in the symptomatic overestimation of electricity demand growth, mostly due to overestimated economic growth expectations and conservative energy conservation assumptions. While the PDPVII Revised adjusted the total annual generation by 2030 downward by 18 percent, it is still likely to overestimate demand growth (sn1) (Neeffjes & Thi Thu Hoai, 2017). Anecdotal evidence from the development process of the PDPVII indicates that political interventions, especially by the Prime Minister, are the main reason for continued overestimations (si8); allegedly, requesting to raise expected year-to-year demand growth from 12 to 20 percent due to higher expected GDP growth (p1). The political goal to supply sufficient electricity is influencing developments in the generation mix in several ways.

4.2.1. Coal perceived as stable and well known

Apart from hydropower, which has traditionally supplied the bulk of electricity, coal is the single most trusted source of electricity generation (p2, si1, si5), despite concerns related to increasing dependence on imports. At EVN, in the Energy Ministry, and even the Environment Ministry, "most experienced experts want coal" (p1), saying "the solution to [electricity supply] issues is clean coal" (p8). They know the technology well, and are comforted by its proven track record of ensuring stable electricity supply in Vietnam's (seasonally fluctuating) hydro-based system (sn1). At the same time, the Party's Committee on Economics has acknowledged energy security in terms of dependence on coal imports as a strategic concern (sn1, p 8). This is especially relevant as the Energy Ministry, for the first time in six years, warned of power shortages as early as 2019. Vinacomin's inability to keep pace with the growing demand for coal supply has forced some facilities to run at lower load factors (VnExpress, 2018). Structural supply bottlenecks are expected after 2021/2022 due to delays in the construction of several strategic power plants, as well as insufficient transport capacity for coal imports (si8, si1, b4, si6). This has to some degree contributed to renewable energy being viewed as relevant in order to diversify the generation mix and relieve the pressure on coal supply (p2).

4.2.2. Uncertainty about renewables' grid integration potential

The same circle of senior experts advocating for coal in the Energy Ministry and EVN is quite outspoken in their concerns regarding intermittent renewables. In their opinion, more than 10 percent renewable electricity generation, as planned in the PDPVII by 2030, could destabilize the transmission system and interrupt supply (p5, sn1). This sentiment partly owes to the centralized five- to ten-year plans governing the electricity sector; forward planning of regionally balanced supply between North, South and Central Vietnam is easier if serviced by a few large power stations rather than multiple fluctuating small installations (p1). Independent experts, however, expect that problems of system load, ancillary services, and, in particular, a lack of human capacity for grid management would only arise at renewables shares well above 20 percent (si8, si7). There is, however, a lack of information

disclosure by EVN.⁸ This means that independent analyses are hampered by information asymmetries and uncertainty about technical parameters and data (p1). Even the CPV and its advisory committees, which constitute the highest decision-making bodies, are not well informed, as they also rely on judgement from experts within the Energy Ministry and EVN (b4, sn2).

4.3. Promotion of the domestic energy industry and personal interests

The strong incumbent resistance to transition is the implicitly underlying reason behind many of the above-described regulatory biases in favor of fossil energy carriers. Yet, this goal to promote the existing domestic energy enterprises is less explicitly articulated because it is often linked to incumbent vested interests and personal benefits (b4, b3, b1, si1, si5, si6, sn1).

4.3.1. 'Revolving door' with EVN and weak regulation

The main cause for the weak regulation and protracted reform of EVN, Vinacomin and PVN is the "revolving door" (si1), i.e. the frequent exchange of senior personnel, between the Energy Ministry, its SOEs and their subsidiaries along the electricity supply chain (si5, b3, b1) (c.f. also Heger, 2017). Thus, due to close personal ties, the regulating and regulated entities share strong, also personal, interests. Interviewees described this network as a "group of beneficiaries" (si5) or "invested group" (sn1), built around fossil fuels with an interest in maintaining the status quo (b1). Within this group, EVN is the most powerful player and "barrier of the country" to energy sector reform (si5, b4). Due to its strong influence on the Energy Ministry, representatives of the Ministry's renewables department and the - officially independent - Institute of Energy are reluctant to mandate policies that might contradict EVN's interests, even if they personally do not have direct ties to SOEs (si5).

Several interviewees highlighted that one of the major streams of (mostly personal) revenue originates from the intransparencies along the coal supply chain (si1, b1, b3, b5). For example, EVN or Vinacomin might import coal at more beneficial conditions, i.e. lower prices or higher exchange rates or at lower quantities than actually reported (b1, b3). In another example, Vinacomin's provincial mines do not have to report deals of up to USD 1 million to higher levels (b3). The SOEs' deficits from such intransparent practices are eventually covered by the government. Some of these funds are channeled to high-ranking officials in the Energy Ministry as well as to members of the Party's Central Committee. These 'invested' actors hence have little incentive to enforce transparent information disclosure (as required by the government-issued Decree 81/2015/ND-CP) or to reform the electricity sector (p8, si5, b1, sn1, si6).

The Planning and the Finance Ministries openly criticize the low quality of reporting by the SOEs to the government. They claim that, because information disclosure duties are not enforced, financial reporting is insufficient to assess the transparency of SOEs (U.S. Department of State, 2018). Yet, the Planning and the Finance Ministries are not in a position to promote meaningful change in the energy sector, which could only be initiated by the CPV (p8, sn1, si5, si4). Thus, the institutional and personal interests in maintaining the status quo not only conflict with the main goals of ensuring reliable and affordable electricity supply, but these interests directly promote fossil, mostly coal-based, generation additions.

⁸ EVN does not disclose key data, e.g. on actual demand, production costs or system data. For example, the Institute of Energy, which is mandated with electricity system modelling and drafting the PDPs, is required to schedule interviews with EVN representatives in order to receive relevant sector data, e.g. on actual demand, production costs or system data, according to an interviewed expert from the Institute.

4.3.2. Complex permitting process and favoritism

The complex, costly and time-consuming permitting and approval process for new generation facilities further hampers investments in Vietnam's generation capacity (si2, b1). Apart from financing bottlenecks, bureaucratic delays throughout the permitting process are one of the reasons for the current delays in the construction of at least ten coal-fired power plants (b4, p8, si3). Those delays cause additional stress on Vietnam's power supply starting in 2022 (b4). Obtaining all necessary licenses normally takes between 6 and 10 years. New power projects first need approval by the respective provincial administration. They are then incorporated in the Provincial Power Development Plan by the provincial Energy Ministries to receive a construction license and grid connection. Generation facilities larger than 50 MW require additional approval on the national level (p1, p8, si5).

Public procurement in Vietnam's natural resources sector, which all energy SOEs are directly or indirectly involved in, bears especially high risk of corruption, diversion of funds and favoritism and respectively a lack of accountability in the licensing regime (b4, si2) (Bertelsmann Stiftung, 2018). The Provincial Competitiveness Index consistently finds that in order to secure government contracts the majority of companies expect to provide 'gifts' to officials and that strong ties to provincial governments are necessary. Additionally, private sector firms face less favorable terms than SOEs regarding access to, for example, land and capital (VCCI, 2017).

Apart from the investment risks described, the corruption-prone process poses an additional hurdle for smaller, non-fossil IPPs, but gives an advantage to, particularly state-affiliated, investors in thermal coal (sn1). Local renewable energy investors with limited equity often struggle to afford additional (informal) upfront charges (sn3). International firms interested in tapping Vietnam's renewables potential are often prohibited to pay such charges according to their corporate MOUs (b1). However, Chinese state-owned, and Korean and Japanese enterprises and banks successfully conduct business in Vietnam. Having established good ties with Party representatives at local and national levels, they provide one of the few available sources of capital in the described context of favoritism and political uncertainty (si6, si2, sn1, b4) (c.f. Hannam et al., 2015). A 2014 National Assembly report found that over 90 percent of public procurement went to Chinese firms (U.S. Department of State, 2017) and nine out of ten renewable energy installations in Vietnam reportedly use Chinese equipment (si1). Hence, for the period of the PDPVII Revised (2016–2020/2030) the majority of foreign direct investment in the electricity sector is targeted at thermal coal power plants. For example, the latest 25-year thermal build-operate-transfer contract with EVN was signed by a consortium of the Japan Bank for International Cooperation (JBIC), the Oversea-Chinese Banking Corporation Limited and the Bank of China in April 2019 (JBIC, 2019). Negotiations for this USD 2 billion coal plant investment initially started in 2011.

4.4. Climate and environmental objectives

Vietnam's various policy plans and strategies related to climate change mitigation have curbed neither GHG emissions growth nor the pipeline of additional coal-fired capacity. Local environmental and health concerns, in contrast, have effectively deterred the construction of a few coal power plants in some provinces. Yet, environmental and climate considerations exerts little influence on electricity sector planning.

4.4.1. Vague, inconsistent and weakly implemented emission reduction targets

Vietnam's several strategies relating to sustainable development have been largely detached from electricity sector planning, lack consistency and implementation, and are thus unlikely to curb the coal pipeline. There is a lack of integration between sectoral planning documents, which owes to an institutional separation between the line

ministries, described as a "silo mentality" (si8, b3). The Climate Change Strategy (CCS) (Government of Vietnam, 2011b) and the NDC (MONRE, 2015) are with the Environment Ministry, the Green Growth Strategy (GGS) (Government of Vietnam, 2012) with the Planning Ministry, and the Renewable Energy Development Strategy (REDS) (Government of Vietnam, 2015) is with the Energy Ministry. These strategies formulate targets differently with regard to GHG emission reductions or to intensity improvements. Moreover, they refer to varying business-as-usual (BAU) assumptions which are subject to controversies between different government agencies (p 2, si6).

For the electricity sector, the formulated supply-side goals are to diversify the generation mix to reduce import dependency rather than to reduce emissions or the coal pipeline (p2, si8, si5). The aim is to increase renewables and reduce coal exports and imports (c.f. REDS, GGS). Instead "the most important [mitigation] options are [seen] on the demand side" (p2). These include energy efficiency measures and fuel switching in the industry and transport sectors, as well as land-use change (b2, p5, p6). However, efforts on the electricity demand side, especially industrial energy efficiency improvements, are undermined by electricity sector policies. Most prominently the regulated, extremely low electricity and coal prices provide little incentive for energy saving (p 2, si8, si3, b4). According to a financial sector expert, the indirect subsidies for fossil fuels of several billion USD annually are an important reason why energy and environment plans are not consistent.

Finally, weak implementation and enforcement render many strategies and plans rather ineffective (si4, p5) or, as one interviewee put it, there is "no correlation" between plans and reality (b1).⁹ Even interviewees from government institutions stressed that the goals are largely statements of intent "only on paper" (p8, p5) and that even environmental goals which have been translated into law are often not enforced due to a lack of political will (b1, si2, si5, p 8).

4.4.2. Reciprocal interests with international donors

Many of Vietnam's environment-related strategies were initiated by international development agencies (b1), whose (conditional) financial assistance has historically accounted for a sizable share of the government budget. However, the interaction of government and donor interests has in the past contributed to contradictory outcomes for several reasons. The Vietnamese government, on the one hand, has shown great interest in attracting further development finance with favorable borrowing conditions, especially after the country's recent graduation from two low-interest funds¹⁰ (p4, si2). The donor organizations, on the other hand, are themselves interested in continued lending (si2) (e.g. Rahman and Giessen, 2017). For example, EVN received direct financial and advisory support to prepare for its credit rating (World Bank, 2018); it received an issuer default rating of "BB", equivalent to the government's rating. The rating is sufficient for EVN to access foreign loans, especially from international financial institutions, without additional guarantees (si3).

The reciprocal interests have created contradictory incentives on both sides. First, the government is incentivized to approve environment-related policy plans which specifically meet the donors' requirements in order to tap into the increased volumes of environmental development policy financing¹¹ (b1). However, most of this

⁹ Examples of plans whose implementation is extremely delayed or continued to be postponed are the GGS and the Roadmap to Liberalize the Electricity Market (si4).

¹⁰ From the World Bank's International Development Association and the Asian Development Bank's Asian Development Fund.

¹¹ "Development Policy Financing (DPF) supports a government program of policy and institutional actions. The DPF instrument is intended to achieve development results primarily through the supported policy reforms and associated policy dialog and support." (Independent Evaluation Group, 2016, p. 1, p. 1).

results-based support has been tied to policy outputs, rather than concrete outcomes, i.e. to the approval, but not necessarily to the subsequent implementation of policy decisions (si2, si8, b4) (c.f. Independent Evaluation Group, 2016). Second, in order to single out their contribution and to prove aid effectiveness, donors have been reluctant to coordinate their efforts (si8) (c.f. Fuchs et al., 2015). Such policy-oriented efforts have significantly contributed to the silo mentality between government agencies as they compete for financing as well as to the incoherence between environmental and energy planning documents (b3, si1). Third, the weakly conditional financial support hampers political reform as it relieves financial pressure from the government and SOEs (si2, b4). For example, of EVN's USD 9 billion debt (2016), 90 percent are backed by the Finance Ministry, the majority of which are directly on-lent funds from international financial institutions (Gerner et al., 2018). As suggested in the literature, despite the well-known misappropriation and ineffectiveness of funds, many donors are continuing to (indirectly) fund the fossil-based system as it seems to serve their own interests, such as the continued outflow of funds (c.f. Rahman and Giessen, 2017; Swedlund, 2017).¹² These substantial financial flows are likely to strengthen the existing incumbent resistance to transition and, thus, render (environmental) development policy financing ineffective (si4).

4.4.3. Effective local public resistance against coal-fired power plants

While international efforts might not have deterred Vietnam's coal plans, the formation of local public resistance has effectively pushed some local Provincial Party Committees to cancel already approved coal-fired power projects and oppose new ones. In some provinces, especially in Southern Vietnam, public opposition is increasing due to concerns of degrading local air quality, as well as environmental harm from wastewater and from ash and slag discharge (sn2). In particular, Vietnam-based non-governmental organizations (NGOs) have successfully focused their climate change mitigation related advocacy work at the community and province level (sn1, sn2). While some provincial governments have subsequently advocated for renewables and gas-fired power additions with the national Party cadre, others, in regions depending on coal mining, exert equally strong influence on the national level in favor of coal (b3, si4). Nationally, the Prime Minister prominently advocated for a moratorium on new coal-fired power plants in the Mekong Delta after 2020 (b1, si2, p5).

5. Policy implications

This analysis of Vietnam's energy and climate governance reveals various tightly interwoven political economy factors contributing to the country's focus on coal. In the following, we discuss policy implications

Our key insight, that the motivation to expand coal-fired capacity goes far beyond (or even contradicts) economic cost criteria, likely applies also to other jurisdictions in which the energy sector is subject to state control, incumbent networks, and to international enabling environments. In such complex political contexts, it is challenging to identify deliberate entry points for an energy transition and the following discussion of how coal use in Vietnam could be reduced cannot provide a comprehensive overview. Yet, we attempt to offer some genuine insights on potential avenues for policy change.

First, changes in context factors could provide incentives to liberalize the electricity sector and allow to respond to market dynamics; for

¹² Recent examples of assistance whose effectiveness were called into question by interviewees included: (i) USD 340 m of direct budget support by the EU, (ii) financial support of overall USD 1 billion to the Finance Ministry to guarantee further debt of EVN by the World Bank, and (iii) a USD 100 million loan from the same organization, guaranteed by the Green Climate Fund with another USD 75 million (Green Climate Fund, 2019), for energy efficient equipment in the SOE-dominated steel and cement industries. (si2, b4).

example, increasing the price of coal relative to that of cleaner energy sources. The motivation of Vietnam's government to reduce indirect subsidies could be intensified by the SOEs' continued losses which are being absorbed by the government budget. Particularly in light of the current global economic recession, taking on such additional debt can be expected to result in an unsustainable fiscal position. In order to reduce the regulatory biases toward coal and facilitate private sector participation (including in renewables investments), it will be necessary to contain the political and economic power of the energy SOEs. The government would need to withdraw as a majority shareholder and deregulate electricity tariffs. This window of opportunity might be growing as financial underperformances and warnings of electricity shortages are rendering state control increasingly unviable. Interestingly, at the time of writing the feed-in-tariffs for solar have led to around 4.5 GW of grid-connected solar despite the rather unfavorable conditions (non-bankable PPAs) for investors. Further, the Energy Ministry has handed over its major SOEs to a centralized committee in order to separate the ministry's role as owner and regulator, with a special focus on EVN (OECD, 2018; Viet Nam News, 2019a). Keeping up the momentum of these changes would likely require wide-ranging systemic change, which only the ruling CPV could initiate. Officials in the CPV's Committee on Economics have recently shown interest in energy topics, including sustainability and security – also in the wider sense of dependence on coal imports. This reevaluation of policy objectives could be an important element to tip the balance of political forces in favor of low-carbon energy sources.

Second, foreign actors play an important role in financing coal-fired power plants in Vietnam. Hampering access to such financing could be a lever to offset some of the advantages coal investments derive from preferential regulatory treatment and level the playing field. Some efforts to hold private banks and other financial institutions, such as pension funds, accountable for their portfolios have already resulted in substantial 'divestment'. A few British and Japanese private banks have declared to (partially) refrain from coal investments (BankTrack, 2019; Trencher et al., 2020). However, Chinese, Japanese and Korean financial support for coal remains substantial (Gencsu et al., 2019). Particularly the role of Chinese investment might be difficult to control internationally as it seems to be a means of support to domestic Chinese companies (Li et al., 2020).

International organizations could help to strengthen the political will to shift away from coal by providing government officials with comprehensive, high quality and independent information on the full socio-economic cost and grid integration potential of different energy carriers. In Vietnam, government officials have frequently emphasized the need for large coal capacity shares to stabilize the grid. Against this background, it could be beneficial to overcome information asymmetries and associated uncertainties by providing reliable grid integration estimates. Bilateral and multilateral development banks could use their leverage, for example by financing projects which improve transmission and grid integration capacities instead of supporting energy efficiency measures in state-owned industries which achieve little in the presence of low, regulated electricity prices. Furthermore, environmental development policy financing could be more effective if tied to policy outcomes instead of to the adoption of policies which might not be properly implemented.

Finally, civil society organizations could become important actors in support of an energy transition. As indicated in our interviews, the CPV has repeatedly demonstrated that it is highly attentive to public sentiment (for instance with regard to electricity prices, but also to environmental pollution). So far, environmental organizations have been successful in curbing coal-fired power generation at the plant level, but have not exerted influence on national energy sector planning. However, several context factors could increase public concern with climate

change and environmental impacts. Important aspects in this regard include negative public health and environmental effects of coal-fired power plants through air pollution, waste water run-off and coal ash (Ha-Duong et al., 2016), as well as climate change impacts, such as droughts, floods, or tropical storms, which Vietnam is highly vulnerable to (Eckstein et al., 2018; IMHEN & UNDP, 2015). If such concerns are pronounced enough to jeopardize the CPV's hold on power, they might induce a change in national energy policy. Providing CPV authorities with a clearer picture of the true economic and health costs of coal use might be a promising strategy for civil society as well as local governments pushing for a coal phase-out.

6. Conclusion

Our analysis suggests that Vietnam's focus on coal for electricity generation is primarily driven by the incumbent networks between decision-makers in the Communist Party, the Ministry of Industry and Trade ('Energy Ministry'), responsible for regulating the energy sector, and the state-owned energy enterprises (SOEs). Financial and structural constraints lead to a strong dependence on – mostly international – independent power producers for capacity additions. Yet, barriers for renewable energy investors remain high because market regulations are volatile and tailored to the needs of the fossil-leaning energy SOEs. International and local environmental efforts exert limited influence on the energy sector. Concessional development policy financing creates incentives for weakly integrated and hardly enforced environmental strategies. Additionally, direct budget support to SOEs relieves, to some extent, the financial pressure to reform. Despite this combination of factors that consolidate Vietnam's reliance on coal, some recent developments could gradually change policy makers' incentives. First, declining prices for clean energy sources in conjunction with increased fiscal pressure might accelerate the liberalization of the energy market. Second, a shift of financial support from international donors and investors away from coal could result in substantial expansion of renewables. Third, public concern about climate change and environmental pollution could provide an important motivation for the Communist Party to reconsider its focus on coal-based power generation.

CRedit authorship contribution statement

Ira Irina Dorband: Project administration, Writing - original draft.
Michael Jakob: Writing - original draft. **Jan Christoph Steckel:** Writing - original draft.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix D. Supplementary data

Supplementary data related to this article can be found at <https://doi.org/10.1016/j.enpol.2020.111860>.

Appendix

A 1. List of interview partners

Table A 1

List of interview partners by type of actor. Note: Order of listed interviews does *not* correspond to numbering of references; however, each reference (e.g. b3) corresponds to one specific interview partner.

Type of actor	Name of institution	Interview date
Political		
p 1	Ministry of Industry and Trade (MOIT)	April 12, 2018
p 2	Ministry of Industry and Trade (MOIT), external advisor	April 20, 2018
p 3	Ministry of Finance (MOF), Tax Department	April 18, 2018
p 4	Ministry of Finance (MOF), Price Management Department	April 11, 2018
p 5	Ministry of the Environment (MONRE)	April 14, 2018
p 6	Ministry of Planning and Investment (MPI)	April 15, 2018
p 7	Institute of Energy, under MOIT	April 25, 2018
p 8	Central Institute for Economic Management (CIEM), under MPI	April 17 & 23, 2018
Societal – national		
sn1	CleanED Research Lab	April 13, 2018
sn2	Climate Change Working Group	April 16, 2018
sn3	Green Innovation and Development Centre (GreenID)	April 23, 2018
Societal – international		
si1	Friedrich-Ebert-Foundation (FES)	April 03, 2018
si2	Global Green Growth Initiative (GGGI)	April 14, 2018
si3	German Development Agency (GIZ)	April 17, 2018
si4	United Nations Development Program (UNDP)	April 13, 2018
si5	Independent consultant	April 17, 2018
si6	World Bank	April 11, 2018
si7	Danish Energy Agency (DEA)	April 16, 2018
si8	World Wide Fund for Nature (WWF)	April 19, 2018
Business		
b 1	Enerteam	April 09, 2018
b 2	General Electrics	April 09, 2018
b 3	Vinacomin	April 15, 2018
b 4	International equity fund	April 10, 2018
b 5	Law firm	April 24, 2018

A 2. High-level objectives and number of mentions

Table A 2

High-level objectives, relevant sub-aspects and number of mentions as shares of interview partners by actor group

High-level energy policy objectives	Relevant aspects	Number of mentions (Interviewees' shares by group)	
Affordability <i>Lack of systematic cost analyses of capacity additions</i>		13%	Political
		33%	Societal national
		25%	Societal international
Credit-constrained energy SOEs, subsidies and public debt		17%	Business
		13%	Political
		33%	Societal national
Slow progress on electricity sector reform		13%	Societal international
		67%	Business
		25%	Political
Tighter requirements for limited government guarantees		33%	Societal national
		75%	Societal international
		50%	Business
Dependence on independent power producers and high investment risks		0%	Political
		33%	Societal national
		25%	Societal international
Regulatory bias of investment risk reduction toward thermal power plants		17%	Business
		25%	Political
		67%	Societal national
	75%	Societal international	
	33%	Business	
	0%	Political	
	67%	Societal national	
	38%	Societal international	
	17%	Business	

(continued on next page)

Table A 2 (continued)

High-level energy policy objectives	Relevant aspects	Number of mentions (Interviewees' shares by group)	
<i>Fiscal consolidation through environmental tax increases</i>		63%	Political
		0%	Societal national
		38%	Societal international
		33%	Business
Security of supply <i>Coal perceived as stable and well known</i>		38%	Political
		33%	Societal national
		50%	Societal international
		17%	Business
		25%	Political
<i>Uncertainty about renewables' grid integration potential</i>		67%	Societal national
		25%	Societal international
		17%	Business
Promotion of the domestic energy industry and personal interests <i>'Revolving door' with EVN and weak regulation</i>		13%	Political
		33%	Societal national
		50%	Societal international
		50%	Business
		25%	Political
<i>Complex permitting process and favoritism</i>		67%	Societal national
		50%	Societal international
		33%	Business
Climate and environmental objectives <i>Vague, inconsistent and weakly implemented emission reduction targets</i>		50%	Political
		0%	Societal national
<i>Reciprocal interests with international donors</i>		88%	Societal international
		67%	Business
		13%	Political
		0%	Societal national
		63%	Societal international
		50%	Business
		13%	Political
<i>Effective local public resistance against coal-fired power plants</i>		67%	Societal national
		25%	Societal international
		33%	Business

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