4 Costa Rica and Vietnam

Pioneers in green transformations

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Introduction

Green transformations are required worldwide to enable economies and societies to operate within the planetary boundaries (Rockström *et al.*, 2009a; 2009b; Steffen *et al.*, 2015). Transformations of the energy sector are especially important as approximately 70% of global greenhouse gas emissions (GHGE) come from energy-related activities, according to estimates by the Intergovernmental Panel on Climate Change (IPCC, 2018). This includes especially fossil fuel combustion from electricity generation, heating, cooling and industrial processes, as well as fossil fuel use in transport (IPCC, 2018).

Costa Rica and Vietnam are two countries that are considered as pioneers in driving forward green transformations in the Global South although both have very different political systems with Costa Rica being democratic and Vietnam being a socialist one-party state. Costa Rica's government pledged carbon neutrality by 2021, a pledge it later changed to decarbonisation by 2050. Already by the late 2010s, 98% of the country's electricity came from renewable energy, most importantly hydropower, but also wind, solar and geothermal energy (IEA, 2020). Vietnam has a National Green Growth Strategy that aims at reducing GHGE, promoting renewable energy, increasing energy efficiency and introducing carbon trading. Just under 40% of its electricity comes from hydropower, the remaining share is from fossil fuels (IEA, 2020). Both countries market themselves as pioneers in green transformations, mainly driven by domestic reasons, yet the actual implementation of these goals is challenging.

This chapter compares the strategies and motives of green transformations for energy-related industries in Vietnam and Costa Rica, analyses what role their different political systems have played on climate governance, what progress has been made and what the barriers are. Our main argument is that we witness state-led pioneership in both cases but of very different kinds. In both countries, multilevel governance arrangements provided important input into national energy policies but the main reason why both countries became ambitious pioneers had more to do with domestic politics and the role of public officials. The major difference is that in Costa Rica, the government has been much more open to bottom–up inputs as well as polycentric governance while taking up important

initiatives from civil society actors of different kinds. In contrast, the government in Vietnam has adopted a much more top–down approach as can be seen from its energy policy which is almost completely dependent on government and party officials.

This chapter adopts a wide definition of the energy sector by including energy generation, use, and supply and demand in the power sector, transport sector, industry and through other economic activities. It discusses what other countries can learn from these pioneers in green transformations. The next section discusses the conceptual framework and the methodology before the results from Costa Rica and Vietnam are presented in the section which follows. The penultimate section analyses the results from a comparative perspective while the final section concludes the chapter.

Conceptual framework

This chapter combines the concepts of pioneers, leaders and followers in multilevel and polycentric climate governance by Wurzel, Andersen and Tobin in the Introduction (see also Liefferink and Wurzel, 2017; Wurzel, Liefferink and Torney, 2019) with the concept of green transformations by Scoones *et al.* (2015) to form a unique conceptual framework.

'Green' represents the environment, whereas 'transformations' are wide-ranging systemic changes across all sectors of an economy, affecting many groups in society. Transformations often involve 'challenging incumbent structures' through processes that tend to be driven by changes in knowledge and innovations (Stirling, 2015: 62). Green transformations can be defined as the reconfiguration of political, social, economic and technological systems to enable economies and societies to operate within the planetary boundaries (Scoones *et al.*, 2015). According to the Heinrich Böll Foundation (2013: 1) industrial societies should be transformed into 'climate compatible, resourceconserving and sustainable' systems. Achieving this requires farreaching and longterm changes in scientific, technological, social, economic, institutional and political systems and across global, regional, national and local levels (Lederer *et al.*, 2019; Urban *et al.*, 2018). Green transformations thus are multi-actor and multi-sectoral processes which pose the question: who are the agents providing most input? Scoones *et al.* (2015) have argued that drivers for green transformations stem either from technocentric or market-based innovations or are state- or citizen-led. We can differentiate *'material'-centred* types (technocentric and market-based transformations) and *'actor'-centred* types (citizen-led and state-led transformations). As our focus is on leaders and pioneers in this chapter, the actor-centred type seems to fit better. We focus more strongly on pioneership than leadership before justifying why the notion of state-led pioneership in a multilevel governance setting is the most appropriate analytical concept for a critical analysis of our two case countries.

We differentiate between pioneers, leaders and followers while largely following the definitions put forward in the introduction in this volume (see Chapter 1; see also Liefferink and Wurzel, 2017; Wurzel, Lifferink and Torney, 2019). Both

Costa Rica and Vietnam are therefore classified as pioneers with regard to green transformations in the energy-related industries. *Pioneers* tend to adopt ambitious climate and/or energy policies for domestic reasons. They may attract followers (e.g. other countries with similar policies), although they do so mostly unintentionally. *Leaders,* on the other hand, usually try to attract *followers*. For example, in case of the European Union (EU), one Member State may adopt an ambitious climate policy in the hope that another one will follow its example. Whether leaders and pioneers attract followers will need to be established empirically (Liefferink and Wurzel, 2017; Wurzel, Connelly and Liefferink, 2017; Wurzel, Liefferink and Torney, 2019).

In Central America, Costa Rica cannot be seen as a leader nor has it followed any leader in its neighbourhood. The same is true for Vietnam's role in Southeast Asia. As will be discussed below, this may provide empirical evidence for the leader concept not being applicable to Central America and Southeast Asia. There are, however, outside influences (i.e. exogenous factors) which we will assess in the empirical parts of this chapter. As these exogenous factors are too diverse, one cannot argue that either country is a clear follower of one other country, for example, the US in Costa Rica's case and South Korea for Vietnam. Focusing on these cases, we thus have to take into account the complex relationship between domestic politics and various inputs from the external environment. In order to be able to do so, we make use of the concept of multilevel governance.

Multilevel governance (MLG) focuses on the bi-directional dependency of governance between various actors at various levels, most importantly between supranational and subnational governmental players (Hooghe and Marks, 2001). MLG is, for example, frequently observed in the EU, where the European Commission plays a major role as well as national ministries. For climate governance, most scholars have suggested that there is no one central steering point. Instead, governance takes place at various governance levels by numerous actors (Jordan *et al.*, 2015). MLG also stresses the importance of coordinated action between environmental leaders/pioneers and the reinforcement of leadership/pioneership at multiple levels especially by supranational actors (Schreurs and Tiberghien, 2007). This concept is well suited also for our two case country studies, as no clear-cut leader-follower relationship can be identified, and we do not witness simple diffusion mechanisms without any involvement of domestic actors.

Polycentric governance by contrast focuses more on the role of societal actors such as businesses, NGOs and civil society. Self-coordination of these actors leads to multiple, decentralised decision-making units at various levels. Each of these units can function relatively independently, adopting its own norms and rules (Ostrom, 2010). This polycentric leadership/pioneership of societal actors supports the functioning of global climate governance. Important roles are attributed to self-organisation, experimentation and learning (Ostrom, 2014; Jordan *et al.*, 2015). We will show that Costa Rica and Vietnam became pioneers by incorporating external stimuli within their governance arrangements and that the way in which this happened was strongly influenced by the ideas, interests and institutions of the respective country. For both case countries, we will focus

on how this has played out particularly at the government level as most analyses of multilevel governance have done. We therefore neglect some of the influence that societal actors have had and pay less attention to processes of polycentric governance although particularly in Costa Rica, civil society has had a tremendous influence on environmental and energy policies. And even in Vietnam non-state actors should not be completely neglected as we will show below. Nevertheless, in both cases we do not witness the degree of self-organisation or decentralised decision-making that one would expect in polycentric governance arrangements.

Methodology

This research draws on insights from in-depths qualitative fieldwork in Costa Rica and Vietnam during the period 2016–2019. The project team conducted 20 interviews in Vietnam and 27 in Costa Rica. The interviews were semi-structured and open ended. Four types of groups were interviewed: (1) policy-makers from government and bureaucracy; (2) representatives from firms and entrepreneurs; (3) experts from civil society and academia; and (4) representatives from multilateral organisations and donors. The interviews were recorded and stored on digital media, where possible. The interview data was analysed according to the conceptual framework, using narrative analysis to understand and interpret the findings. The primary data was supplemented with secondary data. This included qualitative data (e.g. policy documents) and quantitative data (e.g. energy and emission data from the International Energy Agency (2019) and the World Bank (2019)).

Costa Rica's green transformations in energy-related industries

Costa Rica, a small country in Central America, has a longstanding reputation of being a pioneer in green transformations. It has even been labelled a 'green republic' (Evans, 1999). It is a democracy in which civil society plays an important role and the country has no own military since 1948. From an environmental perspective, the country has hardly any extractive industries (e.g. mining). It has a high forest cover and a low rate of deforestation. Already in 1961, the government decided to dedicate a substantial part of Costa Rica's land to conservation by introducing a protected area system, particularly for forested areas. Over decades the forest cover has indeed increased. In 2020, about one-quarter of the country was under some form of protection and 55% of the country is once again covered by forests (World Bank, 2019). A Sustainable Development Strategy for national development was introduced in 1988, followed by the introduction of a Payments for Ecosystem Services (PES) scheme under the Forestry Law in 1996. In 2008, Costa Rica's government decided on a Carbon Neutrality Goal to be achieved by 2021, a pledge it later changed to decarbonisation by 2050. Costa Rica introduced the National Climate Change Strategy (ENCC) in 2009. It launched the National Climate Development Plan in 2015, which was followed by the National Decarbonisation Plan for the period 2018–2050.

In terms of energy, about 98% of the country's electricity comes from renewable energy, mostly hydropower (about 74%), but geothermal energy (about 12%), wind (about 11%), biofuels and solar play an important role (IEA, 2019). Hence, for about 70 years, Costa Rica has been a pioneer in green transformations, particularly in relation to forestry and energy issues for the following three main reasons. First, its green transformations are mainly domestically motivated. This is the case for protecting valuable natural resources such as forests where strong international actors (e.g. the World Bank) and also domestic actors (e.g. scientists but also indigenous communities) pushed for conservation schemes already in the 1980s. Similarly, when it comes to energy dependency, costly fossil fuel imports were reduced. This was motivated by economic reasons and allowed the provision of relatively cheap electricity in the whole country with almost all communities being connected to the grid system. Secondly, while Costa Rica has built a reputation of being green due to ambitious climate and energy goals, it has relatively few followers. When, however, it has attracted followers, it has happened unintentionally and much more in the field of PES and forestry than in the energy sector. Politically, Costa Rica is rather isolated in Central America in many policy fields (e.g. defence, environmental, energy and other policies) and no other country in the region ever officially labelled Costa Rica as an example that it wants to follow. Thus, with regard to climate and energy governance, Costa Rica is more progressive than its neighbouring countries, but this has not resulted in the country attracting followers. Finally, domestic pioneership has been taken up by different groups in Costa Rica, mainly from civil society, scientists and some government officials. Domestic leaders have faced strong opposition but also received some external support including donor agencies. For example, the development of the PES scheme was built on ideas that originated from the World Bank and that were taken up by scientists at the Universidad de Costa Rica and domestic NGOs. However, it was the central government that set up the scheme, regulated/re-regulated it and made sure that financial means, through the taxation of gasoline, were made available (Porras *et al*., 2013). Overall, the PES scheme is thus a successful example of multilevel governance with elements of polycentricity.

Policy objectives, progress and current status

Already in 2008, Costa Rica pledged to become carbon neutral by 2021 and in 2015, the government also suggested that the country would be limiting its emissions to a maximum of 9.37 Mt CO_2 equivalent annually by 2030 (compared to about 12 Mt in 2012), as part of its Nationally Determined Contribution (NDC) for the Paris Agreement under the United Nations Framework Convention on Climate Change (UNFCCC, 2015a). Costa Rica's government also suggested ambitious goals for reducing per capita emissions, namely from more than 3.5 t CO_2 per person in 2015 to about 1.73 t by 2030, 1.19 t by 2050 and -0.27 t by 2100 (UNFCCC, 2015a). However, in 2018, the carbon neutrality goal for 2021 had to be replaced with the goal to decarbonise completely only by 2050 as it became evident that the earlier date was simply not achievable. In the energy field, Costa

Rica is already well advanced in the use of renewable energy sources, especially for electricity production. In 2017, the country set a new record when its electricity needs were completely covered by renewables over a period of 300 days. Most of the electricity generation comes from renewables, especially hydropower, as well as geothermal energy, wind, biofuels and solar (IEA, 2019). Solar energy is expected to grow rapidly in the future. The actual installed capacity of solar energy amounts to approximately 8.4 MW compared to the identified potential which amounts to 120 MW (Acuna *et al.*, 2018). From 2010–2017, Costa Rica attracted $1.9 billion for clean energy investments: over a third was directed to small hydro plants, followed by geothermal and wind (Rapid Transition Alliance, 2019).

Strategies and motives

Costa Rica's decarbonisation strategy has the highest political backing. For example, President Carlos Alvarado Quesada was quoted as saying:

> *Costa Rica knows that decarbonisation is the great task of our generation, and we want to be the first country in the world to achieve it. We are putting decarbonisation at the heart of our national development, public investment and long-term strategic plan. Our nation has understood that responding to climate change requires transformational – not incremental – shifts, and that the government has a key role to play in charting the path for such transformations.*
>
> (2050Pathways, 2019: 1)

Similarly, the Minister of Environment and Energy, Carlos Manuel Rodriguez, argued:

> *Decarbonisation is a commitment of Costa Rica with current and future generations, it means transforming the development model to a sustainable one, free of fossil fuels, that improves the country's competitiveness and the quality of life of people. The goal is to be a country with net zero emissions by 2050. These transformations are not new to the country, we have done it before. We are a tropical country that stopped deforestation and tripled our per capita income, which generates 99% of our electricity from renewable sources, we abolished the army and instead decided to invest in education. Costa Rica is ready for the challenge of decarbonisation.*
>
> (2050Pathways, 2019: 1)

Thus, the government identifies itself as a pioneer that is clearly 'moving ahead of the troops' (Liefferink and Wurzel, 2017: 2–3) arguing that decarbonisation is central to any policy-making and will go beyond incremental change, hence embarking on transformational pioneership driven forward at the top policy level. Furthermore, the green transformation is framed as being part of a tradition in

environmental policy providing justification for radical change. Finally, as the National Decarbonisation Plan is labelled 'No one left behind – Decarbonisation and resilience are based on the principles of inclusion, respect for human rights, and gender equality' (Costa Rican Government, 2018: 3) and a rights-based legitimation strategy is being employed. The motives for decarbonisation in Costa Rica are therefore not only environmental and economic, but – at least on the official level – also related to quality of life for its people, intergenerational equity and social fairness.

Strategies for decarbonising Costa Rica's economy, as part of the National Decarbonisation Plan (2018–2050), target public and private transport, energy, industry, buildings, waste management, agriculture and land use management. The goal is that 100% of all electricity should come from renewable energy by 2050, which is a very realistic target to achieve, as about 98% of the electricity comes from renewables already today. However, more demanding is the transport sector. Most proposed emission abatement measures therefore rely on a greater use of electric transportation such as for buses, taxis and private vehicles. Other strategies include improving energy efficiency, encouraging energy conservation and fuel switching to reduce emissions in the built environment (e.g. housing, and residential energy use) and in industrial processes (Costa Rican Government, 2018). Several programmes are in place to reduce the impacts on emissions of the agricultural sector including Nationally Appropriate Mitigation Actions (NAMAs) to reduce GHGE from coffee production and processing, the livestock sector and the biomass sector.

Challenges and barriers

Despite these ambitious, aspirational goals for green transformations and decarbonisation, there are various challenges and barriers. First of all, it needs to be discussed why and how the goalposts have been shifted from the 2021 carbon neutrality goal to the 2050 decarbonisation goal. One interviewee argued that '[d]ecarbonisation is a step forward in comparison to carbon neutrality. Decarbonisation is more than having zero emissions' (Interview, climate and energy expert, 2019). Another interviewee pointed out that '[d]ecarbonisation is a transformation process, it is not just emissions' compensation. Decarbonising the economy is much better than carbon neutrality since you can involve several sectors of the Costa Rican economy' (Interview, environmental lawyer, 2019). Hence, expert interviewees seem to consider the change in policy a positive move that shifts from a strong reliance on forests as carbon sinks to wider emission reductions across every economic sector. Yet, changing the time frame of the goal from 2021 to 2050 also means that actions are postponed by several decades, hence buying time at a moment when the carbon neutrality goal might be difficult to achieve. Second, progress is quite uneven across different sectors and the transport sector in particular is lacking far behind as it is still heavily reliant on oil-based combustion vehicles. Transport makes up 50% of Costa Rica's energy demand and the transport sector accounts for more than 80% of oil product

demand (IEA, 2019). Figure 4.1 shows the growing CO_2 emissions from transport as a percentage of total fuel combustion in Costa Rica. A sharp increase in emissions from transport has been found, amounting to nearly 70% of national emissions in Costa Rica (World Bank, 2019). The contribution of the transport sector to CO_2 emissions is predicted to grow in future, as Costa Rica's car market is growing between 3.5% and 6% per year (RECOPE, 2018). The abatement of transport-related emissions will thus require an ambitious investment portfolio in sustainable transportation systems (e.g. in electric vehicles and infrastructure) over the coming decades. In short, decarbonisation will only be possible if the Costa Rican transport sector will be transformed as emissions from other sectors were comparatively low: industries and construction emit about 15% of national CO_2 emissions, the remaining 15% of emissions are from households, services and agriculture (World Bank, 2019).

State-led pioneership?

Costa Rica's motives and strategies for achieving carbon neutrality and complete decarbonisation are mainly internally-driven which can partially be explained through the high vulnerability of the country. Climate change is considered a real threat, for example, due to increasing droughts, water stress and extreme weather events although this is also the case for Costa Rica's neighbours. We therefore argue that we also have to focus on the political system and ask how strong government officials pushed for state-led transformative processes. In all of our interviews, it became apparent that both the political elite as well as street-level

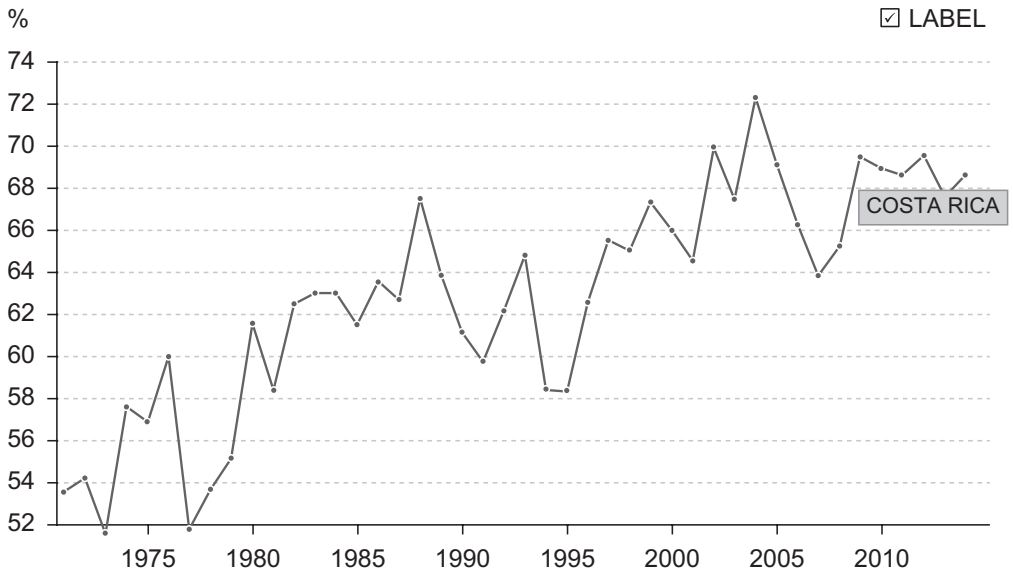

Figure 4.1 CO_2 emissions from transport as a percentage of total fuel combustion in Costa Rica. *Source:* World Bank (2019); Based on IEA Statistics © OECD/IEA 2014, //www.iea.org/statistics, All rights reserved.

bureaucrats consider green transformations as an opportunity to improve resilience, competitiveness, quality of life, inclusion and gender equality. The notion of Costa Rica becoming a pioneer in green transformations has therefore evolved into a national project. Historically, the country has a rather strong public service (e.g. in the field of health and education) and has been labelled a 'social democratic developmental state' (Sandbrook *et al*., 2007) in which the bureaucracy not only enjoys some autonomy but also has strong capacities and a rather high degree of legitimacy (Lederer *et al*., 2019). There is a strong correlation between the energy sector's actions proposed in the National Development Plan by the Ministry of National Planning and Economic Policy (MIDEPLAN) for the last two administrations (2014–2018 and 2018–2022) and the legal reforms approved by Parliament, executive orders from the Presidency and directives from Ministries in the last six years. This shows the strong influence of government in the energy-related industries, particularly for renewables, electric cars and trains, and the reduction of energy consumption from state institutions.

Yet, there is nevertheless some discernible external influence (e.g. from international donors) that is supporting green transformations. Interviewees reported the following:

> *International donor agencies have taken advantage of the experience of Costa Rica. Costa Rica is a sort of laboratory for new projects. They push certain kind of projects. For example GIZ is promoting that airport taxis become electric. GIZ thinks that Costa Rica can be an example of a green transformation.*
>
> (Interview, Ministry of Environment and Energy representative, 2018)

Similarly, the former UNFCCC Executive Secretary Christiana Figueres has argued that 'Costa Rica's decarbonisation plan is an excellent example for the rest of the world to follow' and the former US Vice President Al Gore claims, 'I am so excited to see that Costa Rica continues its role as world leader to help solve the climate crisis with the rapid deployment of the strategic plan to completely decarbonise its economy' (2050pathways, 2019). We can therefore state that while Costa Rica has domestic motives for a green transformation, the country has, on the one hand, been very good at promoting a 'green' image to the rest of the world, partly to create revenue from eco-tourism and to attract donors. On the other hand, the domestically-motivated pioneer is being pushed to take on the role of a leader in the future, both by internal and external actors.

Vietnam's green transformations in energy-related industries

Vietnam, a socialist country in Southeast Asia, has also become a pioneer in green transformations since about 2010. Vietnam is an autocratic country with a strong state apparatus where party and state as well as private and public issues are closely intertwined. Vietnam can therefore be characterised as a 'market economy with socialist orientation' (London, 2014: 2; Hansen, 2015: 92). It also features extractive industries (e.g. mining, oil and gas). From an environmental perspective,

forest cover is high, and the deforestation rate is low although forest degradation is a major issue and many primary forests are turned into plantations. In fact, nearly 50% of Vietnam's land area is covered by tropical and sub-tropical forests, with increasing forest area over the last few decades (World Bank, 2019). In 2010, Vietnam introduced a user-led PES programme, under its Biodiversity Law, being the first in Southeast Asia. In 2011, the government adopted the National Climate Change Strategy, followed by the National Green Growth Strategy in 2012 and the Sustainable Development Strategy for the period 2011–2020. In 2014, the Vietnamese government issued the Green Growth Action Plan – again being ahead of all its neighbours. The Vietnam Green Growth Strategy (VGGS) aims to promote economic restructuring, increase economic competitiveness and achieve poverty reduction while at the same time using natural resources more efficiently, reducing GHGE and adapting to climate change (Urban *et al.*, 2018). It has quantifiable targets for GHGE reductions, namely, unconditionally to reduce GHGE by 8% compared to business as usual (BAU) by 2030, and a reduction of 25% if access to finance and climate-relevant technology is granted (UNFCCC, 2015b).

In terms of energy, total primary energy supply is still dominated by fossil fuels, mainly coal and oil. However, a growing part of Vietnam's electricity is generated from hydropower (currently about 39%), coal (about 33%), gas (about 28%) and a very small share of oil and wind energy (IEA, 2019). There are increasing investments in non-hydro renewable energy, most importantly wind and solar, but the generation capacities are still negligible compared to the contribution large-scale hydropower, coal and gas make (World Bank, 2019). Nevertheless, Vietnam can be characterised as a pioneer in green transformations for the following reasons. Firstly, its green transformations goals are ambitious and they are driven by domestic motives that are underpinning the Green Growth Strategy. Increasing poverty reduction and achieving economic growth through sustainable and resource-efficient economic restructuring are at the heart of the Green Growth Strategy. Secondly, in the past Vietnam could have been described as a follower that first learned from South Korea's 2008 Green Growth Strategy before it adopted its own VGSS in 2012. Ever since, the country has given its strategy a clearly Vietnamese perspective within which domestic interests in the bureaucracy but also with state-owned enterprises have dominated energy policies. Domestic leaders have also received some external support including donor agencies like GIZ or the World Bank. We can again identify a multilevel governance setting, highlighting the bi-directional dependency of governance between various actors at various levels. Thus, on the one hand, the Vietnamese government is deliberately aiming for international donor money in the field of climate and energy as other funds are often no longer available for a middle-income country like Vietnam. On the other hand, donors are actively trying to push the country into a green direction but, as stated above, the Vietnamese government – like many others in the Global South – has become quite self-confident in formulating its own priorities.

Similar to Costa Rica, Vietnam has no clear followers in the region although the country is well integrated in the Association of Southeast Asian Nations

(ASEAN) and more active than other ASEAN countries with regard to climate and energy policies.

Policy objectives, progress and current status

The main policy framework for green transformations in Vietnam is the Green Growth Strategy (GIZ, 2012). It has the following quantifiable targets: a GHGE intensity reduction of 8–10% compared to 2010; a decrease of energy intensity by 1–1.5% per year and GHGE from energy-related industries by 10–20% compared to 2010. The emissions could further be reduced to 20% with international financial support under the 2015 Paris Agreement or they could be limited to 10% domestic efforts without external support. The Strategy was also informative for Vietnam's NDC in the aftermath of the 2015 Paris Climate Change Conference (see below for details).

Vietnam's geography is highly favourable to renewable energy installations because renewable energy resources, such as for hydropower and solar energy, are abundant throughout the country. The current energy planning places greater emphasis on Vietnam's domestic potential for renewable energies for industrialisation and domestic demand of consumers. Politically, some experts argue that the country needs to become more independent from the favoured coal import market, which is mainly dependent on China. Public campaigns are in place to raise awareness and to help attract both domestic and foreign private sector investments and green technology in this growing field. The Vietnamese government also aims to increase the share of renewable energy among electricity generation (excluding hydropower) to 5–8% by 2020 compared with 3.5% in 2010. By 2025, the installed capacity of renewable energy should be 4,050 MW (Dang, 2016).

In terms of efforts and achievements, Vietnam increased its share of hydropower among the total energy supply, as well as wind and solar energy generation in recent years (IEA, 2019). About five wind farms are currently operating in Vietnam, nearly 30 further wind farms are currently under construction or in the pipeline. About 12 solar parks are in operation and about 30 are under construction or in the pipeline (DEVI Renewable Energy, 2017). Finally, old coal-fired power stations are being replaced by more modern, less polluting gas turbines and renewable energy sources (DEVI Renewable Energy, 2017). Vietnam has also been one of the major beneficiaries of the Clean Development Mechanism (CDM), achieving total GHGE reductions of about 137.4 million CO_2 emissions equivalent by 2015, and nearly 90% of the over 250 registered CDM projects were in the energy sector. There has also been an investment of about $150 million for renewable energy development and network expansion. This also included efforts to achieve rural electrification through grid extension. In addition, there were five to ten mini-hydro subprojects in off-grid mountainous areas where grid extensions were not feasible. These efforts aimed to provide electricity to about 100,000 households in rural areas. By 2015, Vietnam had therefore managed to achieve an electrification rate of 100%, even in the rural areas (World Bank, 2019).

Strategies and motives

The Green Growth Strategy as well as policies for climate change mitigation and adaptation are initiated and driven forward at the highest political level, as they are considered strategic national planning instruments to achieve economic growth, competitiveness, economic restructuring and poverty reduction. The Green Growth Strategy is also a way of tapping into new financing options and proving access to new technologies that would otherwise have been unavailable (Urban *et al.*, 2018). The Green Growth Strategy as well as policies for climate change mitigation and adaptation are embedded in Vietnam's NDC that the government submitted to the UNFCCC under the Paris Agreement. In line with national commitments, Vietnam aims to reduce its total GHGE by 8% by 2030 compared with BAU. Emission intensity reductions of 20% should be achieved by 2030 compared to 2010 levels. The NDC states that these targets will be increased to 25% GHGE reductions and 30% emission intensity reduction by 2030 compared to 2010 levels, if bilateral and multilateral financial and technical support is made available to Vietnam (Urban *et al.*, 2018). The unconditional goals can probably be met with some policy efforts, but meeting the conditional goals will depend on access to new technologies, new investments and much larger scale industrial restructuring.

One interviewee reported that 'Vietnam is viewed as a high-risk country for climate change' (Interview, representative from ADB, 2017). This is driving government's policies for green transformations and tackling climate change. Another interviewee argued that the 'government plans until 2030 offer new opportunities and advantages at wider economy level. This includes industrial policies for a green future … this creates opportunities for economic growth, and it is driven at high-level' (Interview, representative from ADB, 2017). Diversifying the energy sector also increased energy security by avoiding load shedding and under-capacity in the power sector. While renewable energy only contributes to a small share of electricity at present, '…high-level policy-makers see the green growth strategy and the renewable energy expansion as important for national development and important for the energy security of supply' (Interview, representative from ADB, 2017). Based on our fieldwork we conclude that Vietnam is a pioneer in climate governance. Its reasons for driving forward green transformations are internally motivated. Some inspiration has been taken from South Korea's Green Growth Strategy or China's restructuring of its energy sector (see also Chapter 2 in this volume) and one might argue that Vietnam was a follower first before it became a pioneer. This initiative is driven primarily by the state bureaucracy, it is hardly influenced by civil society and NGOs, and only marginally by donor agencies.

Challenges and barriers

The biggest challenge for Vietnam is how to transform both the power sector and the industrial sector, given that the industrial sector accounts for about 35% of national CO_2 emissions (IEA, 2019). This is indicated in Figure 4.2.

One major challenge for Vietnam is that the energy sector is increasingly coal-dominated, despite investments in renewable energy as a way to achieve access

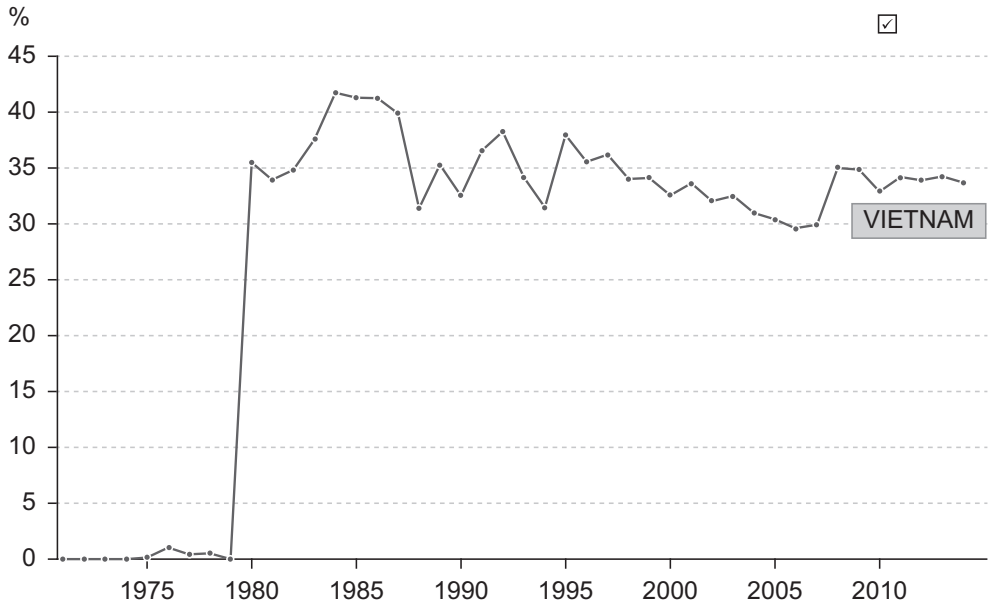

Figure 4.2 CO_2 emissions from industries as a percentage of total fuel combustion in Vietnam. *Source:* World Bank (2019); Based on IEA Statistics © OECD/IEA 2014, //www.iea.org/statistics, All rights reserved.

to electricity (Figure 4.3). According to data from the IEA (2019), in 2017 only 323 GWh of electricity was generated from wind energy and none from solar PV. According to expert opinion, Vietnam currently ranks globally as the 20th largest user of coal-fired power plants. This situation could worsen in future, unless the share of renewable energy will be increased significantly. A challenge is policy-making and the existing restrictive legislative framework for renewables. For example, power pricing rules currently favour fossil fuels due to price distortions by unequal government subsidies for fossil fuels. This keeps the price of fossil fuels artificially low and reduces the cost-competitiveness of renewables. To increase the uptake of renewable energy, the Vietnamese government issued a Made in Vietnam Energy Plan in October 2016 to encourage the private sector to invest in domestic renewable energy resources as an alternative to more imported coal.

Vietnamese interviewees mentioned that the country is keen to follow a more sustainable development trajectory to avoid some environmental problems China experienced recently (e.g. air pollution and fossil fuel resource depletion). They also stated that the challenge is to achieve a socially just green transformation to make sure that poor people are not being left behind. This relates again to power pricing, energy access and the impacts of energy development. For example, one interviewee suggested the following:

> *Key concerns regarding the energy sector are greenhouse gas emissions, impacts of energy infrastructure projects on local people and impacts on the*

> *environment, like hydropower projects flooding the natural environment and impacts on local people. These serious problems are being recognised by government and government think tanks. Some hydro projects—big dams—were cancelled due to environmental and social concerns, for example two large dam projects in central Vietnam.*
>
> (Interview, Institute of Energy Science representative, 2017)

State-led pioneership?

Vietnam can be considered a typical Asian developmental state (Beeson and Pham, 2012). However, the absence of a coherent industrial policy is a major problem for the country (Lederer *et al.*, 2019). Focusing on green issues and renewable energy has thus been perceived as a way out of stagnation and reviving modernisation. As stated above, our research found evidence for multilevel governance in relation to climate governance and green transformations. Overall, the central government has been the major driver. It has pushed state-owned enterprises to modernise and local or regional governments to issue green development plans. Furthermore, think tanks and research institutes are often linked to the state-elite and cannot be understood as independent actors. Thus, although some evidence is discernible for polycentric governance (especially through a partial opening up towards civil society), the case of Vietnam is much more state-centric than the one of Costa Rica.

Comparative analysis

Costa Rica and Vietnam are two middle-income countries with similar regional importance that are both ambitious pioneers in green transformations. In Costa Rica the green transformation is being driven by the government's Sustainable Development Strategy and in Vietnam it is embedded within the Green Growth Strategy. Both countries have increasing income levels, measured in gross domestic product (GDP) and gross national income (GNI) per capita. Both countries also have had several decades of increasing CO_2 emissions in total terms (although they have levelled off in Costa Rica since 2007) as well as increasing CO_2 emissions per capita. Per capita emissions for both Costa Rica and Vietnam are around 2 Mt per person, which is less than half of the world average (World Bank, 2019). Both countries also have rising energy demand and supply and growing electricity use. However, despite similar economic and environmental trends, there are striking differences between these two countries.

In terms of energy generation, the main differences are that in Costa Rica about 98% of the country's electricity comes from renewable energy, mostly hydropower, and Vietnam's electricity is predominantly generated from a mix of hydropower, coal and gas (IEA, 2019) (see Figure 4.3). In terms of economic structure, Vietnam depends more on energy- and carbon-intensive industries than Costa Rica. Energy use and emissions from the residential sector are also higher

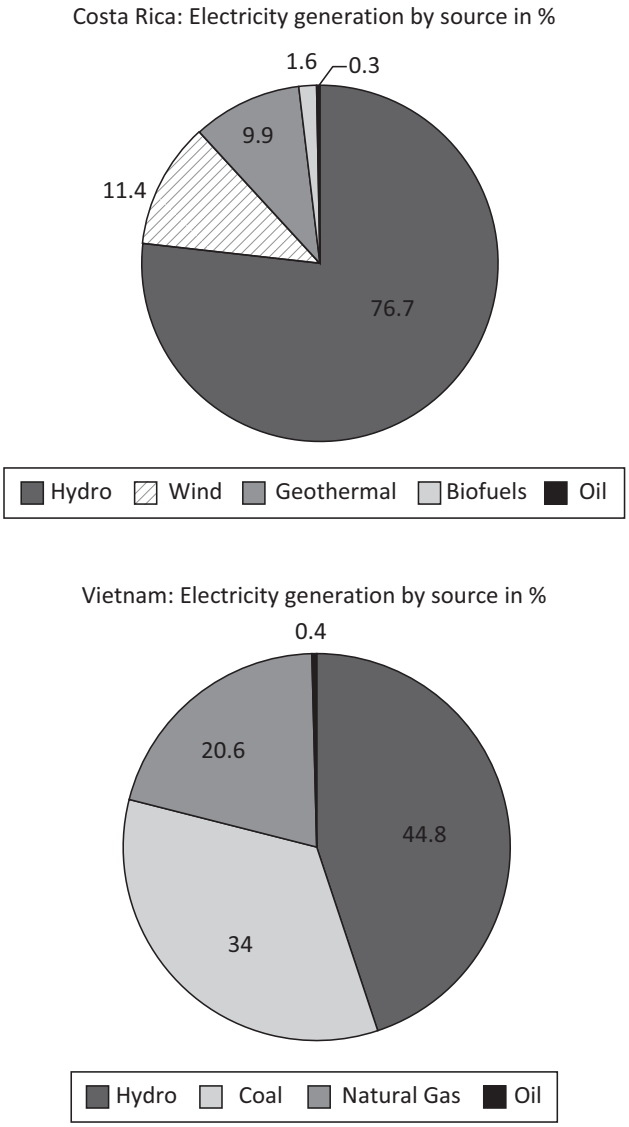

Figure 4.3 Comparative perspective of Costa Rica's and Vietnam's share of electricity generation by fuel. *Source:* IEA (2019).

compared to Costa Rica. This may be due to lower energy efficiency in buildings and potentially due to higher heating and cooling demand. The large majority of Costa Rica's CO_2 emissions are from the transport sector which amounted to about 70% in the late 2010s (World Bank, 2019). Figure 4.4 indicates the energy consumptions and CO_2 emissions by sectors.

In terms of opportunities, both Vietnam and Costa Rica are actively driving forward policies, strategies and actions to increase electricity production from hydropower, wind, solar and modern biomass to raise energy efficiency, conserve energy, and encourage fuel switching and economic restructuring. Both countries

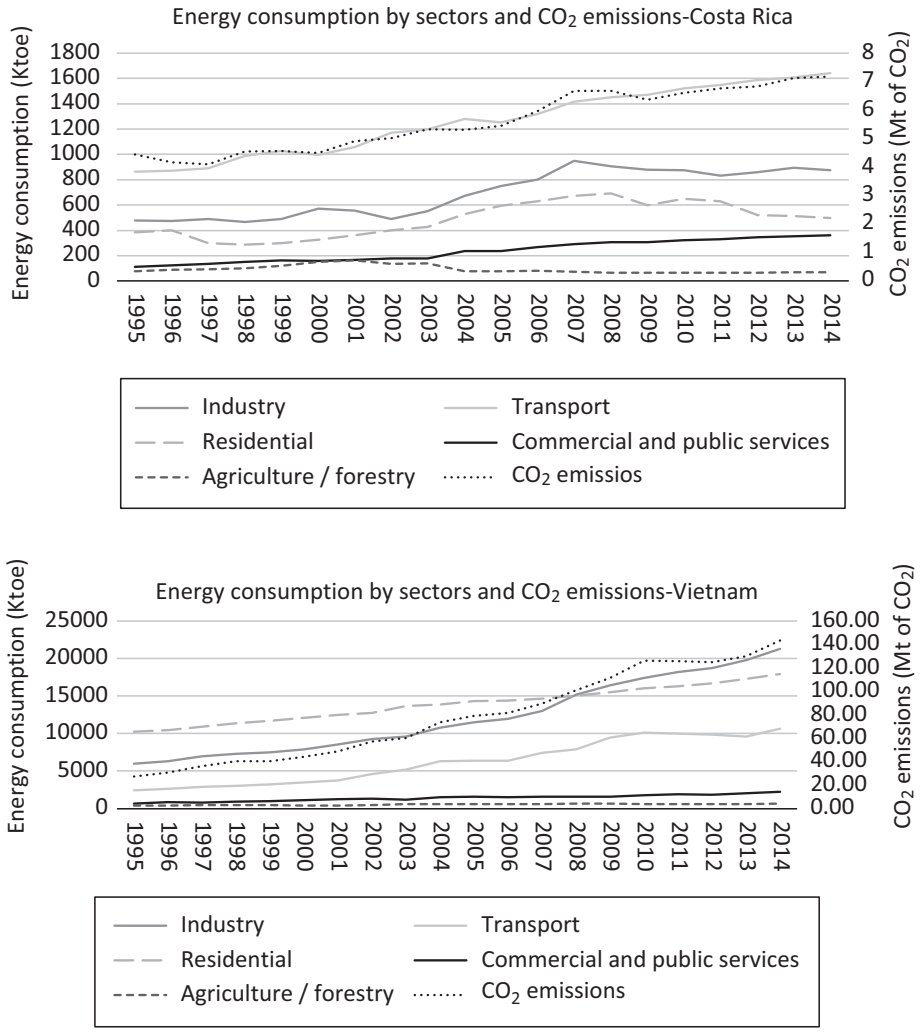

Figure 4.4 Comparison of Costa Rica and Vietnam's energy consumption and CO_2 emissions by sector. *Source:* IEA (2019).

are also attempting to integrate economic growth, sustainable development and climate change issues. However, looking at what has been achieved, we have been able to witness that Costa Rica has a far higher share of renewables (including hydro) than Vietnam, namely 98% compared to 39%, respectively. Furthermore, future goals of the Costa Rican government also appear more ambitious due to its target to achieve the complete decarbonisation of the economy by 2050. The challenges in Vietnam are greater due to the required economic restructuring that is needed regarding the industrial sector and the need to introduce renewable energy at larger scales.

In terms of challenges and barriers, over 70% of Vietnam's primary energy supply comes from fossil fuels, mainly coal and oil (IEA, 2019). Thus, in Vietnam the goals for introducing renewable energy is very modest and many of our

interviewees claimed that it could be more ambitious. In the late 2010s, the aim has been to increase the share of renewable energy among electricity generation (excluding hydropower) to 5–8% by 2020, compared with 3.5% in 2010 (Dang, 2016). However, there are financial restrictions towards the large-scale uptake of renewables (such as fossil fuel subsidies that distort market prices), high upfront costs for renewable energy technology and limited frameworks for how to attract investments in renewables. At the same time there is a rapidly increasing energy demand and a growth in electricity generated from coal.

In Costa Rica the main barrier to decarbonisation is the transport sector which accounts for almost 70% of national CO_2 emissions. The car market is growing rapidly each year and there is strong oil dependency (IEA, 2019) which is rapidly driving up energy demand and thereby increasing emissions. In terms of similar challenges, interviewees in both Costa Rica and Vietnam showed a level of awareness for social justice in relation to energy issues including energy pricing which they argued needs to be fair and affordable for poorer people, as well as in relation to the siting for energy projects (in Vietnam with reference to hydropower and in Costa Rica with reference to geothermal energy).

Politically, both countries are very different. Costa Rica is a democracy and Vietnam is a socialist autocracy. Due to these political differences, the role of the state and the interplay with civil society also differ in relation to green transformations and climate governance. Although the bureaucracy is a central player in both polities, it works much more top–down in Vietnam and access for civil society is much more restricted. This should, however, not be perceived as a strict form of environmental authoritarianism, as our interviewees stressed that, for example, in comparison to China (see also Chapter 2 in this volume) or to other countries from Southeast Asia, Vietnamese civil society can make a difference and often does as became apparent in local protests against hydropower installations. Also, business interests have a chance of being heard and Schmitz and colleagues (2015) have argued that the Vietnamese government is working closely together with the private sector (including both national and foreign enterprises) to achieve economic development. Regarding Costa Rica, we can conclude that although the classification as an open democratic state with lots of access for civil society actors is generally accurate, not all civil society representatives are equally heard and particularly those from indigenous groups have a hard time being taken seriously. In both cases, we thus have been able to witness a much more nuanced picture when it comes to decision-making in the field of energy. However, in both states it was primarily governmental actors who made strategic choices. In Vietnam, the government decided to move from climate change adaptation to a focus on mitigation issues as a way of achieving economic restructuring, enable energy security, leverage of new finance and access to technology at a time when traditional development aid is coming to an end. Costa Rica's proactive democratic government has at the very top chosen to pursue climate neutrality and environmental protection as key government targets although the interlinkages with business, NGOs and scientists are very close so that frequently individuals not only know each other but also move in and out of the state apparatus. Over decades, hydropower has

been pushed by the government as the main source of electricity and the Costa Rican government has supported renewable energy development through import tax exemptions for imported and local equipment and materials used in the renewable energy industry.

Conclusion

This chapter compared and evaluated the strategies and motives of green transformations for the energy sector in Vietnam and Costa Rica, analysed what role their different political systems play in relation to climate governance and pioneership, what progress has been made through different forms of central leadership within the two countries and what the barriers are for full implementation.

Overall, we can classify both countries as pioneers, a status which both achieved due to rather strong governments and capable bureaucracies. Opening the black box of the state as Wurzel, Liefferink and Torney (2019) have recommended is thus a worthwhile undertaking and our cases show many elements of vertical exemplary leadership/pioneership from the government. Through its top–down character the Vietnamese government could make more use of structural leadership, as it not only formulates policy agendas like the Green Growth Strategy but also largely monopolises all financial means to actually implement them. In Costa Rica, the government is also in the driving seat when it comes to finance, but it is also leaning towards cognitive leadership regarding societal actors by providing ideas and expertise. In both case countries, elements of an entrepreneurial pioneership are also visible with Vietnam's government strongly pushing for solar and wind installations and Costa Rica's focus primarily on hydropower. Interestingly, the role of external leadership from other countries or donors only plays a marginal role in both case countries. This might prove that the 2015 Paris Agreement's strong focus on domestic governmental action has been a smart choice as indeed neither civil society nor business nor subnational actors have played much of a role in formulating the respective NDC. Although the former actors might push for more ambitious action in the near future through the ratchet-up mechanism, true and lasting pioneership and leadership and thus the eventual implementation of progressive climate action will depend on the government's ownership and leadership.

What could other countries and also the research community learn from these two specific pioneers in green transformations? First, we are in a state of flux with changes occurring fast. Only a couple of years ago, one would not have thought of Vietnam as being a potential green pioneer. As we have shown in this chapter, the barriers to get there are still high and although progress in the field of energy might be visible it is slow. Nevertheless, some progress has been made which might lead to new leader-follower relationships. In the early 2020s, Southeast Asian countries are more concerned with China's Belt and Road Initiative than with green transformations although this might change soon, particularly when the Chinese government realises that it cannot externalise the costs of attempting to green its own economy by installing coal fired power plants in Vietnam or other

countries on its periphery. We would therefore predict that countries in the region will try to emancipate their energy systems from Chinese influence and Vietnam might evolve as a leader. Similarly, Costa Rica's pathway towards decarbonisation might well evolve as a blueprint for its neighbours once countries within Central America start pushing for energy transitions. It will be interesting to see whether the ratchet-up mechanism of the Paris Agreement will lead to countries looking for solutions in our case countries' neighbourhoods. In both instances, these positive instances of leadership are not yet happening. Neither the Vietnamese nor the Costa Rican governments are yet intentionally leading, but there clearly is a high potential for intentionally setting an example for others to follow.

A second take-home message is that green transformations do not have to look alike and thus a large variety of energy transitions is possible taking into account very different contexts regarding size, economic structure, instrument choice and political systems. Similarly, processes of green transformation are varied and, even if successful, do not work in linear fashion as Costa Rica's ups and downs have shown. Finally, green transformations are in the end highly political projects and political alliances will have to be generated domestically to either transform Costa Rica's transport sector or lessen Vietnam's dependence on coal. This will not be easy as the low hanging fruits (e.g. regarding hydro) have already been picked. Multilevel governance can be of help, particularly through providing expertise and resources, but the influence should not be overestimated, as success eventually depends on political processes within these second-tier countries. And here, questions of coordination, fragmentation and institutional innovation are of importance. This is where more research on leaders and pioneers has to be undertaken.

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