



# Barriers to Implementing Climate Policies in Agriculture: A Case Study From Viet Nam

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Agriculture is both highly sensitive to climate change and a major global emitter of greenhouse gases (GHG). With growing international pressure to curb global emissions through the 2015 Paris Agreement and mounting climate change-related losses in agriculture, countries are in need of an increasingly robust agricultural policy framework. This paper takes an in-depth look at the agricultural sector in Viet Nam, contributing to a better understanding of the main bottlenecks in implementing the Paris Agreement, evaluating the relevance and impact of selected barriers for the implementation of current climate policies and their implications for nationally determined contribution (NDC) design. To address these questions, an exploratory mixed method approach was employed: (i) identifying and mapping key policies, (ii) reviewing global literature sources on barriers, (iii) conducting stakeholder interviews ( $n = 25$ ), and (iv) follow-up quantitative surveys ( $n = 16$ ). The interviews revealed numerous barriers within Viet Nam's institutional setting that acted to impede the creation and implementation of climate policy. As seen in other countries, insufficient inter-ministry collaboration and information sharing restricted the overall success of climate policy, with poor representation of non-lead ministries in drafting and inadequate channels for bottom-up engagement also considered major constraints. These coupled with gaps in financing make for fragmented policies that often lack clear implementation guidelines, particularly at a local level. The NDC process presents an opportunity for Viet Nam to coordinate their cross-sector climate response around a single international agreement, facilitating greater inter-ministry information and data sharing, while utilizing the technical and financial support provided through international partners to build capacity in this vital area.

**Keywords:** climate change, bottlenecks, challenges, policy analysis, nationally determined contributions (NDC), Paris Agreement (COP 21), vietnam

## INTRODUCTION

The 2015 Paris Agreement (PA) of the United Nations Framework Convention on Climate Change (UNFCCC) required all participating countries to propose greenhouse gas (GHG) emission reduction targets in the form of intended nationally determined contributions (INDCs). These commitments became NDCs when participating governments ratified the PA in November 2016.

Viet Nam, which ratified its NDC on 3 November 2016, has recently published (July 2020) an updated NDC with marginally more ambitious mitigation targets, including an unconditional commitment of 9% by 2030, compared with business as usual (BAU), which could be increased to 27% conditional on sufficient international support (Ministry of Natural Resources and Environment, 2020).

Developing countries, in particular, have placed great emphasis on the role of the agricultural sector in achieving GHG emission reductions stipulated in their INDCs (Food and Agriculture Organization of the United Nations, 2016). Globally, agriculture needs to reduce emissions by 1.0 Gt CO<sub>2</sub>eq·year<sup>-1</sup> by 2030 to meet its contribution in remaining below 2°C warming by 2100. However, current feasible options for agricultural development achieve only 21–40% of this requirement (Wollenberg et al., 2016). Agriculture, excluding land-use change and forestry, contributes 25% of Viet Nam's total emission, making it the second largest emitter behind the energy sector (Climate Watch Data, 2014). A recent study on Viet Nam by Escobar Carbonari et al. (2019) identified 22 mitigation measures for agriculture and 19 for FOLU with a cumulative mitigation potential of 405.3 Mt CO<sub>2</sub>eq (2020–2030) of which FOLU contributes about 73%. Agroforestry and livestock practices were found to have negative marginal abatement costs at –USD155.12/t CO<sub>2</sub>eq and –USD58.38/t CO<sub>2</sub>eq, respectively; land use change interventions including forest protection and restoration were found to have the highest marginal abatement costs at USD156.25/t CO<sub>2</sub>eq. The adoption of alternate wetting and drying (AWD) in rice was also shown to have a significant mitigation potential at negative costs.

As in other countries, the challenge for Viet Nam is to reduce emissions from agriculture while minimizing damage from climate change and reducing social vulnerability (Christoplos et al., 2017). These impacts are already apparent, with Viet Nam ranked sixth in terms of total climate-related losses from 1999 to 2018 (Eckstein et al., 2019). This is a direct threat to 43% of the population who rely predominantly on agriculture for their livelihood, many of whom are smallholder farmers (Ministry of Natural Resources and Environment, 2017). Viet Nam's topography, with eight agro-ecological zones, composed of mountains, two river deltas, and 3,260 km of coastline, leaves it highly vulnerable to the effects of climate change. The Mekong Delta, Central Highland, and Northern Mountainous regions are characterized as highly vulnerable due to a combination of sea level rise, flooding, droughts, and landslides (Parker et al., 2019). Mean temperatures in Viet Nam have increased by 0.26 ± 0.10°C every decade since 1971, approximately twice that of the global average (Intergovernmental Panel on Climate Change, 2007; Nguyen et al., 2014). By the end of the century, sea levels are projected to have risen in Viet Nam from 55 cm (RCP4.5)<sup>1</sup> to 77 cm (RCP8.5) (Institute of Meteorology, Hydrology and

Climate Change, 2016). This would have profound impacts on rice production in the Mekong and Red River Deltas (Neumann et al., 2015; Smajgl et al., 2015).

For Viet Nam to pursue a course of action that will adapt to and mitigate the impacts of climate change, the country will have to confront and overcome a raft of barriers. While the list of potential barriers identified in previous studies tends to be exhaustive (Biesbroek et al., 2013), the principal barriers in the literature include (a) financial constraints (Adger et al., 2007; Wreford et al., 2017); (b) the capacity to respond to the risks posed (Lipper et al., 2014; Rebugio and Ilao, 2017); (c) poor diffusion of relevant information (Amundsen et al., 2010; Brown et al., 2010); and (d) lack of coordination and collaboration between government institutions and non-government actors (Spratt, 2009; Long et al., 2016; McElwee et al., 2016). This paper builds on the existing knowledge of barriers through an extensive review of the literature both in Viet Nam and globally. The emerging categories formed the basis of semi-structured interviews with key stakeholders, exploring the reality in Viet Nam. Where possible, conversations on barriers were pegged to specific policies identified through a review of the Viet Nam framework. Finally, a quantitative survey shared with interviewees following the interview elicited a rating for severity and difficulty to overcome of the major barriers identified.

Through the above methods, this paper identifies, analyzes, and prioritizes the different barriers that hinder Viet Nam's fulfillment of their NDC commitments and the wider challenges of agricultural development under climate change. Conscious of the needs of the policy maker, we use qualitative and quantitative methods to prioritize barriers, in a systematic way, focusing on both government and non-government actors. This approach goes beyond that of similar studies that fail to attach a magnitude or importance to specific barriers, reducing their policy relevance. As such, this paper offers a unique insight into the barriers facing climate change policy, clearly identifying actionable interventions for policy makers to improve policy uptake.

## BARRIERS IN THE LITERATURE

We define barriers as “obstacles that can be overcome with concerted effort, creative management, change of thinking, prioritization, and related shifts in resources, land uses, and institutions” (Moser and Ekstrom, 2010). In this section, we briefly review the literature on barriers to adoption of climate policy, identifying key areas that persist across different spatial, temporal, and socioeconomic scales. We categorize barriers, identifying the stages in the policy cycle where they occur. We initially grouped barriers based on existing synthesis reports (Adger et al., 2007; Clar et al., 2012; Biesbroek et al., 2013; Antwi-Agyei et al., 2015; Long et al., 2016; Wreford et al., 2017). This initial grouping was adjusted in light of a broader survey of the literature, reviewing 47 papers on barriers (see **Table 1**). The categories that emerged from this analysis included institutional, informational, financial, behavioral/psychological, and technical barriers. In the following sections, we explore the underlying drivers for the different barriers and their impact on the different stages of the policy life cycle.

<sup>1</sup>A Representative Concentration Pathway (RCP) is a greenhouse gas concentration trajectory adopted by the Intergovernmental Panel on Climate Change (IPCC) for its fifth Assessment Report (AR5) in 2014. There are four pathways (2.6, 4.5, 6, and 8.5) representing radiative forcing values ranging from 2.6 to 8.5 W/m<sup>2</sup> by the year 2100.

**TABLE 1** | Barriers identified in the literature and the stages of the policy process that they impacted.

Category	Barrier	Impact area <sup>†</sup>			Sources
		D	I	M	
Institutional	Political will				Smit and Pilifosova, 2003; Füssel, 2007; <b>Clement and Amezaga, 2009</b> ; Moser, 2009; Nilsson and Swartling, 2009; Smith et al., 2009; Lebel et al., 2011; Clar et al., 2012
	Top down approach				Smith et al., 2009; Lebel et al., 2011; <b>Castillo et al., 2012</b>
	Engagement in policy formation				<b>McCarty, 2001; Ohno, 2009; Spratt, 2009</b> ; Lebel et al., 2011; Madzwamuse, 2011; <b>Institute of Policy and Strategy for Agriculture and Rural Development, 2015</b> ; Landauer et al., 2015; Ampaire et al., 2017; Cochrane et al., 2017
	Inter-ministry cooperation				<b>Adger, 2001; McCarty, 2001</b> ; Moser, 2009; Nilsson and Swartling, 2009; <b>Ohno, 2009</b> ; Smith et al., 2009; <b>Spratt, 2009</b> ; Amundsen et al., 2010; Biesbroek et al., 2010; Brown et al., 2010; Burch, 2010; Lebel et al., 2011; Madzwamuse, 2011; Sietz et al., 2011; <b>Castillo et al., 2012</b> ; Harvey et al., 2014; Lipper et al., 2014; <b>Institute of Policy and Strategy for Agriculture and Rural Development, 2015</b> ; <b>Ministry of Planning and Investment, 2015</b> ; <b>Van Tran et al., 2015</b> ; Long et al., 2016; <b>McElwee et al., 2016</b> ; Ampaire et al., 2017; Wreford et al., 2017
Informational	Accountability				Moser, 2009; Amundsen et al., 2010; Biesbroek et al., 2010; Reij et al., 2009; Moser and Ekstrom, 2010; Clar et al., 2012; Landauer et al., 2015; <b>McElwee et al., 2016</b> ; Cochrane et al., 2017
	Insufficient knowledge brokerage				Barnard et al., 2007; Howden et al., 2007; Moser, 2009; Smith et al., 2009; <b>Spratt, 2009; Castillo et al., 2012</b> ; Stuart et al., 2012; <b>Doughty-Grajales, 2013; Institute of Policy and Strategy for Agriculture and Rural Development, 2015</b>
Financial	Financial capacity				<b>Shanks et al., 2004</b> ; Füssel, 2007; Moser, 2009; <b>Clement and Amezaga, 2009</b> ; Nilsson and Swartling, 2009; Smith et al., 2009; Sietz et al., 2011; Biesbroek et al., 2013; <b>Doughty-Grajales, 2013; Hoa Le Dang et al., 2014; Dinesh et al., 2015; Institute of Policy and Strategy for Agriculture and Rural Development, 2015</b> ; Landauer et al., 2015; Zimmer et al., 2015; Ampaire et al., 2017; Wreford et al., 2017
Technical	Capacity for implementation, enforcement and verification				Shanks et al., 2004; <b>Mitchell, 2006</b> ; Adger et al., 2007; Füssel, 2007; Smith et al., 2007; Moser, 2009; Smith et al., 2009; <b>Spratt, 2009</b> ; Amundsen et al., 2010; Jantarasami et al., 2010; <b>Doughty-Grajales, 2013</b> ; Harvey et al., 2014; <b>Phuc and Nghi, 2014</b> ; De Jalón et al., 2015; <b>Institute of Policy and Strategy for Agriculture and Rural Development, 2015; Ministry of Planning and Investment, 2015</b> ; Zimmer et al., 2015; Ampaire et al., 2017; <b>Rebugio and Ilaio, 2017</b> ; Wreford et al., 2017
	Expertise and awareness of climate issues				Adger et al., 2007; Moser, 2009; <b>Spratt, 2009</b> ; Amundsen et al., 2010; Brown et al., 2010; <b>Doughty-Grajales, 2013; Dinesh et al., 2015; Institute of Policy and Strategy for Agriculture and Rural Development, 2015</b> ; Ampaire et al., 2017; <b>Rebugio and Ilaio, 2017</b>

The citations in bold are those that are specific to Viet Nam or refer to Viet Nam.

<sup>†</sup>D, design; I, implementation; M, monitoring.

## Institutional Barriers

Unsurprisingly, institutions<sup>2</sup> play a vital role in a country's ability to effectively respond to climate change. This is well-grounded in the literature, with institutional structures, processes, and engagement in climate change activities frequently cited. Government institutions drive the design, implementation,

<sup>2</sup>Institutions are defined as structures of social order, designed to organize human interactions (Ostrom, 2005).

and monitoring of climate policy to such an extent that their “political will” is a major determinant of policy success (Smit and Pilifosova, 2003; Füssel, 2007). Political will is an essential tool to overcome bureaucratic resistance and risk aversion in confronting complex problems like climate change (Smith et al., 2009). A lack of political will in national policy making provide only weak incentives to local policy implementers, resulting in reduced uptake (Clement and Amezaga, 2009).

Governments that practice a “top-down” approach to climate policy implementation have less awareness of the barriers that persist at lower levels and as such may fail to attach the appropriate enablers to policies (Smith et al., 2009; Lebel et al., 2011). Such a hierarchy can result in unrealistic targets, incentivizing lower-level officials to misrepresent the reality on the ground, thus leaving those at a policy level unaware of the context-specific feasibility, capacity for implementation, and ultimate success rate of the policies they design, further exacerbating the disconnect between policy makers and implementers. Transformative change in the agricultural sector often emerges through a combination of feedback responses to external pressures, not following an organized, top-down, framework (Vermeulen et al., 2018). Studies identified a “lack of engagement in policy formation” as a major barrier to successful policy design, isolating drafting groups from the needs of multiple stakeholders (Madzwamuse, 2011; Landauer et al., 2015; Ampaire et al., 2017). It is part of a wider problem of “inter-ministry cooperation” that affects all aspects of the policy cycle (Brown et al., 2010; Sietz et al., 2011). The failure of ministries to cooperate on crosscutting climate change issues was the most commonly cited barrier in the literature. The failure to approach climate policy in an inclusive manner can create “legal restrictions and no enabling support,” by which existing laws, policies, and regulations, together with established procedures, block the transformative change required (Moser, 2009; Lipper et al., 2014).

## Informational Barriers

Decision makers need timely and accurate climate data to support their responses to climate change (Howden et al., 2007). Moreover, the information must be disseminated and understood on multiple levels within and outside the government (Spratt, 2009). Accessible and transparent knowledge sharing, resulting in the development of actionable advisory on climate issues and responses, is key (Moser and Ekstrom, 2010). Therefore, in situations where data and information are not shared, “insufficient knowledge brokerage” represents a serious barrier to the design, implementation, and monitoring of policies. This is particularly relevant for the highly fragmented agricultural sector with millions of farmers who are both a data provider and a user. The World Resources Institute (2014), identifies five principles of good governance for the implementation of climate policy; effective information sharing can contribute to the attainment of three, namely, policy coordination, transparency, and stakeholder engagement, the other two being clarity of role and responsibility, and institutional capacity. As a new and complex field, climate change governance can lack clearly defined responsibilities, resulting in a breakdown in knowledge transfer (Clar et al., 2012). Consequently, new policies fail to take into account all available information and expertise, leaving them poorly targeted. The role of aggregating and distributing climate change-related information is often not clearly defined, resulting in a lack of “accountability,” reducing the flow of information on policy enforcement, implementation, and monitoring (Moser and Ekstrom, 2010). Therefore, a lack of leadership and accountability at local levels is a major

bottleneck to information dissemination, policy implementation (Amundsen et al., 2010), and financial accountability (Biesbroek et al., 2010).

## Financial Barriers

The incorporation of NDC objectives (both unconditional and conditional) into the national policy framework and the subsequent fulfillment of those policies will require considerable mobilization of national and international financing (Hedger and Nakhooda, 2015). Therefore, “financial capacity” restricts both the human and operational capacity needed for effective climate change governance (Adger et al., 2007; Biesbroek et al., 2013; Phuong et al., 2018). Through the review of the literature, financial capacity emerged as a major determinant of successful policy design and implementation, with indirect impacts on institutional, informational, and technical barriers. A recent UNFCCC report reviewed the NDCs submitted by all participating governments in the PA, to assess the different barriers and enablers. The report found that from the 133 developing country NDCs analyzed, economic and financial barriers are the single largest factor in both adaptation and mitigation activities. Economic and financial enablers were also the most commonly cited enabler (85–88%) for technology development and transfer, listed in NDCs (United Nations Framework Convention on Climate Change, 2018).

Viet Nam’s report on financing the country’s response to climate change found that of the five ministries most involved in climate change activities, 18% of their total budget was allocated to climate change (Ministry of Planning and Investment, 2015). Of this, 88% was used for resilience-building activities, such as large infrastructure projects (more than half of which went on irrigation schemes). Only 9% was for science and technology and 2% for policy and governance. While climate-related spending is increasing, it is essential that policies include financial planning to ensure that their outcomes are financially feasible (Christoplos et al., 2017). In reality, some policies are developed as plans or “expressions of interest” with the purpose of mobilizing international finance to support the fulfillment of the identified objectives (Korbee et al., 2019). Budgeting reform that promotes cross-ministry budget allocation and planning will be essential for Viet Nam to capitalize on available funding for climate change activities, channeling budget lines across ministries and their departments to where they are most impactful. Such steps will require improved institutional coordinating and steering (Ministry of Planning and Investment, 2015).

## Behavioral, Psychological, and Cultural Barriers

Prudent climate policy can include elements that conflict with current policy, inviting political interference (Ampaire et al., 2017). Countries where agriculture is an important component of the economy tend to resist mitigation activities in the sector due to the perceived risks to production (Wreford et al., 2017). They often fear impacts on competitiveness or on food security, especially among poor smallholder farmers (Lee et al.,



2007). Sometimes “conflicting values and interests” stem from institutional overlaps between ministries, as their roles are unclear, resulting in inconsistencies in implementation. For example, Malaysia promoted the lucrative rubber industry to the detriment of their own forest protection targets, a result of having a separate ministry for forestry and plantations (Pacheco et al., 2012).

Governments often do not make decisions on the time horizons needed to tackle slow-onset issues, such as climate change. “Short-term thinking,” conflicting political priorities, and economic factors all contribute to poor policy design (Nilsson and Swartling, 2009). This might be more prevalent in lower-income countries, with weaker or less systematic involvement of actors from across government (Berrang-Ford et al., 2011). Cultural factors are also important in determining the success of climate policy. Barriers that reflect personal beliefs or experiences often represent deeply held values (Moser and Ekstrom, 2010), making them harder to overcome than material barriers (De Jalón et al., 2015).

## Technical Barriers

Climate change is a new and complex policy field, resulting in gaps in the capacity of the different actors, which can act as a barrier to effective policy design, implementation, and monitoring. “A lack of expertise and awareness of climate issues” is a major factor resulting in poor strategic planning of agricultural policies (Ampaire et al., 2017). Because of their inability to articulate climate change issues, local officials can struggle to obtain finance from non-government sources (Ampaire et al., 2017). Projects often require the “technical capabilities for implementation, enforcement and monitoring” to be demonstrated before they are approved, with the failure to do

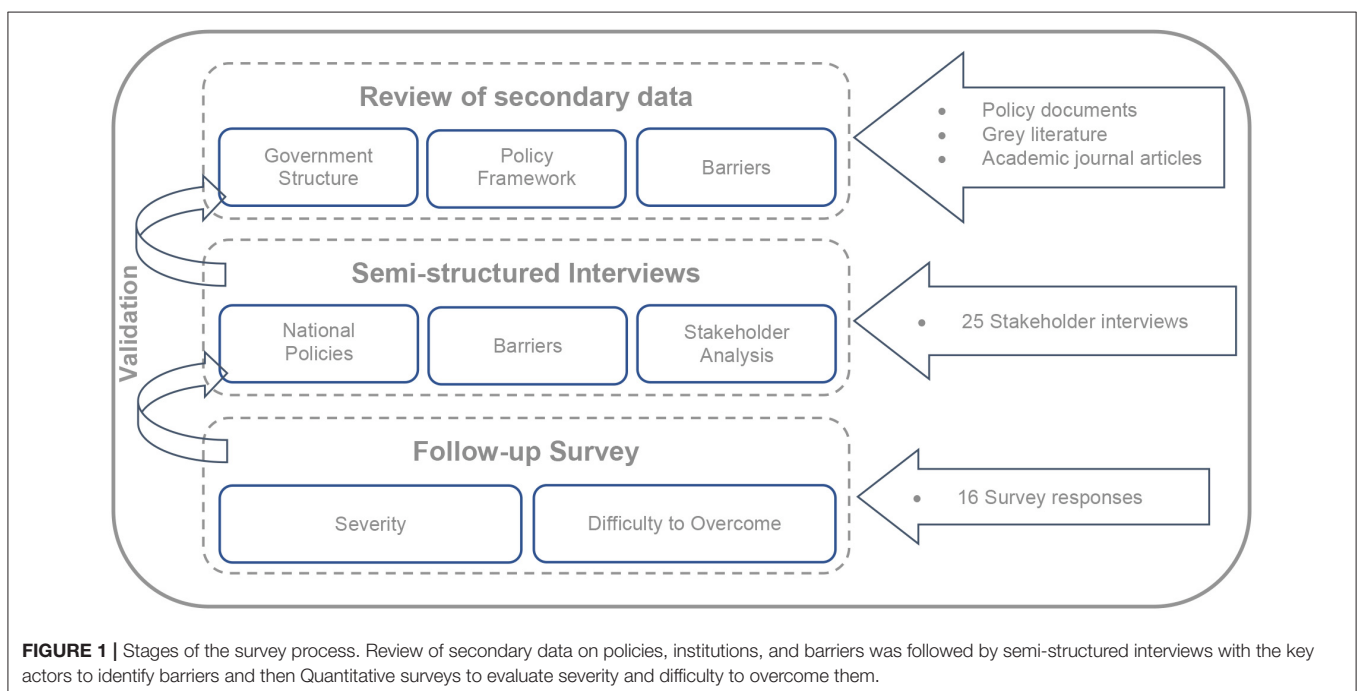
so constraining national and local governments efforts to secure additional funding (Füssel, 2007; Hoa Le Dang et al., 2014).

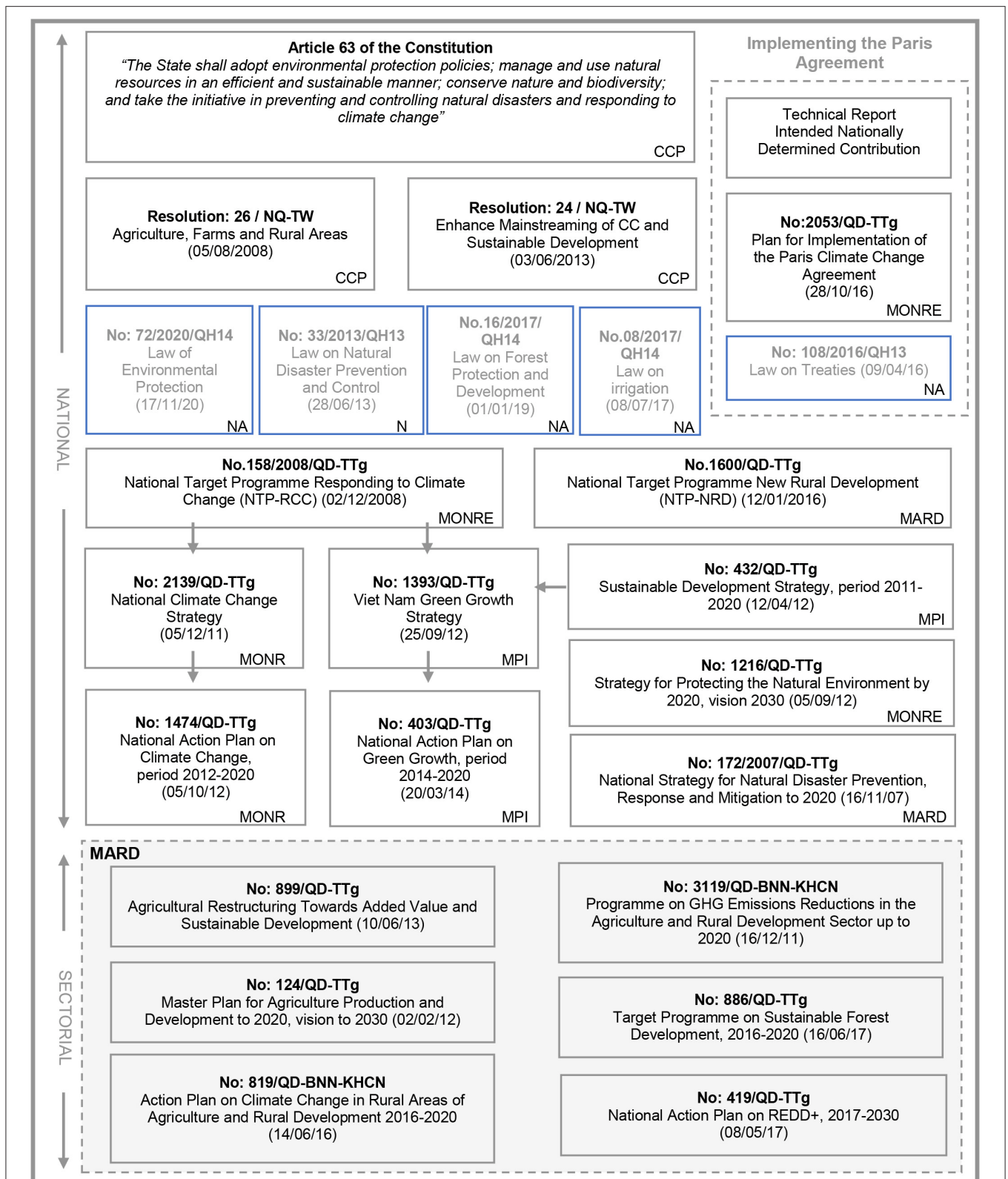
## METHODS

To identify and prioritize the prominent barriers, an exploratory sequential-mixed method approach was employed (Creswell, 2013), with multiple tests on the relevance and severity of different barriers through the convergence of different sources (Patton, 1999; Carter et al., 2014). Triangulation of different methods allowed for a more complete and holistic portrayal of the data (Jick, 1979). The research approach followed three stages (see **Figure 1**).

First, an extensive review of the current literature on barriers was conducted, reviewing 47 papers, through which a system of classification was established. The subsequent findings provide an insight into the different forms of barriers known to be impacting climate policy adoption, forming the basis for probing interview questions and a baseline to assess the Viet Nam context against. A key word search was conducted, exploring both academic and gray literature through which further sources were cross-referenced. The barriers were sorted and grouped to the point where the five categories emerged. The literature review included an in-depth analysis of the current policy framework and the implementing institutions (see **Figure 2**), identifying potential bottlenecks.

For stage 2, stakeholders who were directly related to the policy process were interviewed with a snowball sampling method employed, allowing for the inclusion of others outside the initial sample (Heckathorn, 2011). Stakeholders were identified amongst government ministries active in the field of agriculture and climate change ( $N = 9$ ). We supplemented





**FIGURE 2 |** Viet Nam’s policies, laws, and programs that focus on climate change and the agricultural sector arranged hierarchically. Articles and resolutions from the Central Committee of Party (CCP) are at the top with sub-sector specific policies from Ministry of Agriculture and Rural Development (MARD) at the bottom. Arrows show relationships between different policies. Policy typology code; NQ-Party resolution, QD-Decision, QH-Law: Signing authority; TTg-Prime Minister, BNN-MARD Minister, KHCN-MOST Minister: lead ministry, bottom right-hand corner.

these with development partners ( $N = 8$ ), multilateral and bilateral donors ( $N = 4$ ), and national and international non-governmental organizations (NGOs) working on research and development ( $N = 4$ ), conducting 25 interviews in July–November 2017. The contents of the discussions were recorded in note form, with the notes subsequently coded to facilitate the categorization of the barriers. The coded results support the narrative in the discussion section by identifying areas of agreement and disagreement between the different actors. All interviewees were required to give verbal consent to their answers being recorded and used in this study; this was in accordance to and approved by the Imperial College Research Ethics Committee (ICREC).

The interviews were semi-structured, lasting 1–2 h and included a set of open-ended questions, which offered flexibility and allowed for a detailed discussion (King and Horrocks, 2010). Themes included the interviewee's role and experiences in climate policy, knowledge, and understanding of NDCs; barriers in policy design, implementation, and monitoring; and steps to overcome the barriers (interview questions can be found in Appendix 1 in **Supplementary Material**). The results of the interviews were coded to identify the frequency with which interviewees confronted the different classifications of barrier identified in the literature. The frequency of each barrier identified, broken down by stakeholder group, can be seen in Appendix 2 in **Supplementary Material**.

As previous surveys on barriers were criticized for failing to present their findings in a format accessible to policy makers (Ampaire et al., 2017; Climate Policy Workshop, 2017). In stage 3, a survey with the same key stakeholders was conducted (16 ultimately participated) asking them to rate the barriers for severity and difficulty to overcome. This third stage supports and validates the findings of the interviews and allows policy makers to prioritize actions according to impact and manageability, improving confidence in the accuracy of the study (Denscombe, 2014).

The *Results and Discussion* section is built on the findings of the above steps, supporting the more quantitative findings with qualitative narrative from the key informant interviews. The paper does not directly quote the respondents in order to protect their anonymity but rather builds conclusions around the convergence of their opinions. Other studies that use similar approaches include Sietz et al. (2011) and De Jalón et al. (2015).

## RESULTS AND DISCUSSION

The results section is structured to first analyze the current policy framework, looking at how it has evolved over time, the current objectives, and what progress has been made to meeting them (section *Current Policy Framework and Institutional Setting*). The contents of this section are based on a review of the existing policy documents, with commentary supported through the existing literature and key informant interviews. This is followed by the presentation and analysis of the identified barriers, exploring the different categories that emerged, how they are impacting agriculture in Viet Nam, and how they can be overcome.

## Current Policy Framework and Institutional Setting

The domestic climate change agenda in Viet Nam lagged behind that of international agreements, with climate change not entering the national discourse until 2008<sup>3</sup>. A decade later, climate change has been integrated into all levels of government, from the Central Committee of Party (CCP), to sector- and region-specific action plans. This rapid mainstreaming of climate change into policy may have outpaced the advances on climate change capacity with implications for implementation. The emergence of new climate change policies from resolutions down through strategies to specific action plans can be observed in **Figure 2**.

The CCP plays a prominent role in shaping the direction of policy within the country through resolutions. The 2008 resolution on Agriculture, Farms and Rural Areas<sup>4</sup> included the text, “take measures to adapt and respond to global climate change.” This leads the way for the incorporation of climate change responses into agricultural policy. The National Assembly (NA), which works below the CCP, converts policy directives into legislation (laws, codes, resolutions, and ordinances). The NA elects the prime minister (PM), who heads the central government. The PM oversees the creation and dissemination of national policies, in the form of decrees, decisions, and directives. These are issued to ministries (Institute of Policy and Strategy for Agriculture and Rural Development, 2015), whose ministers are accountable to the PM to carry them out and relay feedback from the provinces (McCarty, 2001).

Ministries are each mandated to specific areas, with tasks allocated accordingly. The Ministry of Natural Resources and Environment (MONRE) is responsible for National Target Programme to respond to Climate Change (NTP-RCC) (see text footnote 3), the National Climate Change Strategy (NCCS),<sup>5</sup> and the subsequent action plan<sup>6</sup> (see **Figure 2**). The NTP-RCC, which is heavily weighted toward adaptation, emerged at a time when Viet Nam recognized that climate action coupled with economic restructuring and energy security gave access to international finance (Fortier, 2010; Zimmer et al., 2015). The Support Programme to Respond to Climate Change (SP-RCC) was established by MONRE in 2009, to facilitate the implementation of the NTP-RCC. It funds scaling up of climate change responses in Viet Nam and provides a forum for the government and development partners to discuss the policy direction, creating a policy matrix aimed at fostering a better enabling environment (Ministry of Planning and Investment, 2015). Development partners offer concessional loans for the implementation of actions set out in the matrix. Six donors participate in the SP-RCC, raising USD872M in 2009–2014 (Agence Française de Développement, 2014). The SP-RCC shows that Viet Nam acknowledged the climate impacts of its

<sup>3</sup>National Target Programme to Respond to Climate Change (NTP-RCC: Decisions 158/2008/QD-TTg, 2008; and 1183/QA-TTg, 2012–2015).

<sup>4</sup>Resolution 26/NQ-TW of August 2008.

<sup>5</sup>Decision No. 2139/QD-TTg.

<sup>6</sup>Decision No. 1474/QD-TTg.

development pathway and the need to reduce global emissions (Zimmer et al., 2015).

The Ministry of Planning and Investment (MPI) shapes the direction of investment in climate change. It is the lead ministry for the Viet Nam Green Growth Strategy (VGGGS<sup>7</sup>), a policy orientated toward mitigation. The VGGGS was approved to address the environmental and socioeconomic challenges that Viet Nam faces by greening the growth model to meet the competing demands. Where the NCCS failed to make specific targets for reduced emissions, the VGGGS stipulated that GHG emissions for the period 2011–2020 would fall by 8–10% compared with those in 2010. The VGGGS was followed 2 years later by the National Action Plan on Green Growth (NAP-GG)<sup>8</sup>, which contained objectives specifically geared toward agriculture. Policies related to agriculture fall under the Ministry of Agriculture and Rural Development (MARD) with the Action Response to Climate Change and Rural Development<sup>9</sup> the most ambitious. It targets 20% growth, 20% poverty reduction, and 20% GHG reduction every 10 years from 2016 onwards.

The local government plays an important role in implementing climate change policy in Viet Nam's agricultural sector. Many national strategies have provincial equivalents with the objectives tailored to the provincial context. The Provincial People's Committee (PPC) oversees province-specific programs and implements climate policy at the provincial level (Kerkvliet and Marr, 2004). Ministry departments provide technical, financial, and other forms of assistance necessary to execute national policies in the provinces (Rebugio and Ilao, 2017). Below the PPC are the District and Commune People's Committees (DCP and CCP), which execute programs on the ground level. Agricultural Extension Centers (AECs) of MARD provide networks of extension officers that work at the commune level. Local organizations, such as the Farmers' Union and the Women's Union have a lot of influence in Viet Nam, disseminating and implementing programs among their members (Rebugio and Ilao, 2017).

It is within this framework that the PA will be implemented, the foundations for which were in Viet Nam's INDC (Ministry of Natural Resources and Environment, 2015). Viet Nam published an updated NDC in July 2020, with modified adaptation and mitigation contributions. The mitigation component saw Viet Nam increase its unconditional commitment from 8 to 9% and its commitment conditional on international support from 25 to 27%, with mitigation measures in the agricultural sector contributing 0.7 and 3.5%, respectively (Ministry of Natural Resources and Environment, 2020). Emission reductions in the agricultural sector are to be achieved through "the application of improved management practices and technological solutions in cultivation and husbandry; improving diets for animals; shifting crop production structures; changing land-use methods; applying technology to treat and reuse by-products and waste in agriculture and livestock production; and developing organic agriculture" (Ministry of Natural Resources and Environment,

2020). Viet Nam's updated NDC also identified some of the likely challenges facing its implementation and the measures to address them; these challenges will be reviewed alongside the identified barriers in the following section, making recommendations specific to the agricultural sector. The analysis in this paper will also build on the challenges identified in the NDC, using global literature to strike comparisons with other countries facing the similar issues and quantifying their severity and difficulty to overcome in the context of Viet Nam's agricultural sector.

The government approved the Plan for Implementation of the Paris Climate Change Agreement,<sup>10</sup> which will incorporate NDC objectives into the national framework. The process is also supported by the updated Law on Treaties<sup>11</sup>. The success of the agricultural sector in meeting its NDC contribution will therefore depend on the effective integration and promotion of policies within this complex framework. This process will need to take into account the existing policies under the different Ministries, avoiding overlaps and conflicting objectives. While following the existing top-down structure, efforts must be made to ensure all national-level policies are supported with localized implementation plans.

## Ranking and Overcoming Barriers to Policy Implementation

This section presents the findings from the 25 key stakeholder interviews and subsequent surveys. Organizing the barriers according to their severity and difficulty to overcome better enables policy makers to prioritize potential entry points for improved policy implementation and uptake. Where relevant, we cross-reference our conclusions with published information from Viet Nam.

Of the five barrier classes identified from literature review (Table 1), institutional barriers, such as inter-ministry collaboration and top-down structure were deemed the most severe and hardest to overcome in the case of Viet Nam, according to the policy stakeholders (Figure 3).

### Inter-ministry Collaboration

Climate policy in Viet Nam draws on elements mandated under multiple ministries, which requires good collaboration across ministries and their departments. Inadequate collaboration was cited as a major barrier to building a comprehensive policy framework in agriculture (Figure 3). Interviewees acknowledged weak horizontal and vertical linkages between ministries and departments at national and provincial levels stifled their ability to create a coherent strategy on climate change. Within ministries, cooperation between departments was considered inadequate. MARD, which consists of eight formerly separate ministries, still experiences limited integration between the different departments. A key implication of this situation is poor knowledge brokerage across ministries, departments, international organizations, and NGOs (Dusík and Kirsch-Wood, 2019), with information and data valued as a commodity to be traded rather than openly distributed. Although inadequate

<sup>7</sup>Decision No. 1393/QĐ-TTg.

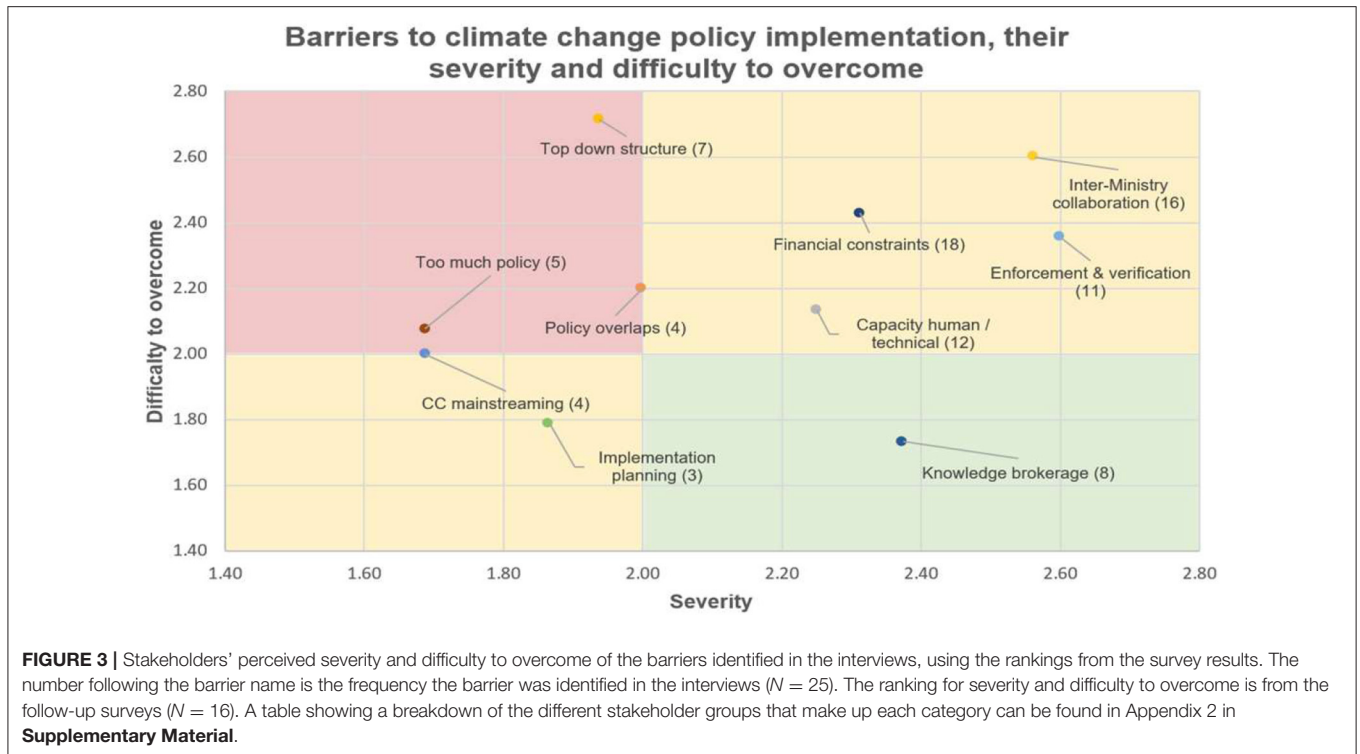
<sup>8</sup>Decision No. 403/QĐ-TTg.

<sup>9</sup>Decision No. 819/QĐ-BNN-KHCN.

<sup>10</sup>Decision No. 2053/QĐ-TTg of 2016.

<sup>11</sup>Decision No. 108/2016/QH13.





knowledge sharing has been identified by stakeholders as one of the most severe barriers, it was also ranked as one of the easiest to overcome. Therefore, increased sharing of information can be considered a “quick win” and may be an important first step in facilitating improved inter-ministry collaboration on a wider range of topics. By avoiding the need for departments to purchase data or conduct their own data collection activities, the overall quality and availability of data would be improved. However, this will still require a concerted effort from a coordinating body, due to complex power relations, interdependencies, limited capacities, data validity issues, and divergent methodologies and baselines.

### Inclusive Policy Design

The process of drafting policy is crucial in determining how successful the policy will ultimately be, requiring input and backing from across the relevant ministries. When drafting national policies, ministries must comply with regulations on drafting/issuing policy documents<sup>12</sup> and with the decree on the function and responsibilities/duties of government agencies<sup>13</sup>. These state that the PM will assign ministries and agencies to lead the relevant drafting processes. Agricultural policy is mandated to MARD as the lead ministry. MARD assigns drafting to a body of senior officers representing the formulating institutions, appraising agencies, technical organizations, experts, and researchers (Institute of Policy and Strategy for Agriculture

and Rural Development, 2015). The drafting body can draw on outside expertise, such as research institutes, universities, experts, and relevant organizations as necessary. The drafting group then clears the legal status of the draft with the Ministry of Justice (MOJ). The draft is then distributed to other ministries for comment, which allows the ministries to consult with and provide feedback from other actors affected by the policy (Institute of Policy and Strategy for Agriculture and Rural Development, 2015). The process allows other ministries, the regions, and NGOs to contribute to policy.

The National Climate Change Committee (NCCC) is an example of a cross-ministry body set up to facilitate mainstreaming of climate change into policy. It consists of high-level officials, chaired by the PM, to create a forum to discuss climate change issues. The NCCC has been effective in debating climate change matters, but some interviewees believe that topics discussed were either not included in subsequent policies or were insufficiently emphasized. The failure to harmonize policies from different ministries causes *policy overlaps*, which in turn results in policy inflation at the local level with different policies containing the same or similar objectives. Lower levels of government become “swamped” or “paralyzed” with bottlenecks. Both overlaps and large amounts of policy were moderate or low-severity barriers that were moderately difficult to overcome. The rapid policy inflation is driven by the creation of strategies and plans, which is seen as an application for funds, which may or may not be granted. Those policies that are not funded exist but are unlikely to ever achieve the objectives set out within them. It is crucial, therefore, that the Ministry of Finance (MOF) and MPI are involved throughout the process so that policies

<sup>12</sup>Law 80/2015/QH13: Law promulgating legal documents (22/06/15).

<sup>13</sup>Decree 123/2016/ND-CP: Regulating the functions, tasks, powers, and organizational structure of the ministries and ministerial-level agencies (01/09/16).

with insufficient backing are not ratified. Respondents felt this would reduce the clutter and the resulting complexity within the current framework.

Provincial governments, service providers, and local communities play only a peripheral role in the formation of national policy (Spratt, 2009). Several interviewees cited the need for more “bottom-up” engagement in policy design. One observed that although the local government has very little influence over national policy, it had greater local freedoms than the top-down structure suggests, representing a more multidimensional power balance. All major national policies go through a review process at the provincial/city level where they provide specific guidelines for implementation. In practice, however, this rarely takes place at the extent needed to fully integrate provincial, bottom-up feedback into the national policies, leaving provinces to adapt national policies to local realities. This can leave national policies open to interpretation by individuals who are not experts, creating a trade-off between local knowledge and expertise. Provincial officials are more aware of the direct impacts of climate change on their communities but are constrained in influencing policy due to the bureaucratic top-down structure that persists. The updated Viet Nam NDC identifies the need to strengthen human capacities at national and provincial levels, to grow the knowledge of government officials on climate change, and to provide them the skills needed to access investment capital for climate-related activities (Ministry of Natural Resources and Environment, 2020). The final stage of the policy process involves a review of the draft document that was prepared through consultation. Interviewees noted that the draft can be altered at this stage, changing elements that may have been agreed previously. This frustrates those contributors who see their inputs misrepresented or omitted.

The interviews found that research, private, and NGO officials are actively engaged in designing and implementing climate change policies when given the opportunity to do so, with development partners often acting as technical advisors in policy design. For example, the NDC design process received technical assistance from UNDP and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ). The Climate Change Working Group (CCWG) is a forum through which NGOs operating in Viet Nam communicate with national policy makers. While there are mixed opinions among the respondents on the effectiveness of such bodies in influencing policy, the coherent message it produces helps to bring key issues into the policy dialogue. Similar initiatives to engage with the private sector and researchers could help to further improve the policy process. The private sector’s ability to influence policy is mixed, with some actors heavily involved while others struggle for representation. We could find no formal mechanism through which the private sector can provide its views to the government, with individuals relying on personal relationships or status of their company. As a result, smaller enterprises with less direct access to policy makers struggle to make their views known.

### Top-Down Governance and Decentralization

The process of decentralization that has occurred in Viet Nam resulted in the incremental transfer of fiscal and administrative

responsibilities to the provincial level (Fritzen, 2006). However, the hangover from central control is still apparent in many provinces, with respondents noting a sharp drop-off in human and technical capacity at local levels, something also reported in the literature (Dinesh et al., 2015; Rebugio and Ilaio, 2017; Phuong et al., 2018). The decline in capacity is often more acute in poorer provinces (Fritzen, 2006) with interviewees rating the problem moderately severe and difficult to overcome. The provinces have increased autonomy over their budget, which if not harmonized with top-down policy making, creates conflicting agendas. Should these issues be resolved, decentralization has the potential to bring about a greater responsiveness and accountability of local leaders, with resources being better matched to local needs (Smoke et al., 2006). Provincial initiatives without horizontal coordination can cause inconsistencies across provincial plans, such as fragmented and conflicting land-use plans (Nguyen et al., 2020). This limits provinces’ capacity to influence national policy, as the government requires large studies spanning multiple provinces for evidence-based policy design. Harmonizing budget lines from national policies with additional expenditure from provincial budgets will optimize the use of scarce financial resources to achieve meaningful outcomes. Regional steering committees are one of the tools that have been used with some success in the Mekong, strengthening cross-province initiatives on climate change and other development issues (Ministry of Planning and Investment, 2015; Korbee et al., 2019). Low levels of inter-sectoral and inter-regional budget planning are identified as a major challenge to climate change adaptation activities in the updated Viet Nam NDC. Enhancing the coordination role of the National Committee on Climate Change and the Advisory Council of the National Committee on Climate Change could therefore be an effective countermeasure for improved budgetary alignment for crosscutting issues (Ministry of Natural Resources and Environment, 2020).

Communication between ministries and their departments tends to be in one direction, with little feedback from the provincial to national level. Provincial departments are required to provide ministries with reports on their attainment of targets to meet national policies, with future funding dependent on their performance. This, in some instances, creates an incentive for local authorities and provincial governments to misreport; there is also no mechanism for critical feedback or recommendations. The PPCs and the Department of Agriculture and Rural Development work well together on provincial matters. Action plans of national policies, such as the NCCS and VGGs contain detailed information on responsibility for specific objectives and completion dates. Local implementers often lack incentives to execute these national policies, for which they have little accountability, creating conflict with the national-level actors. Poor implementation planning was ranked as a barrier with low severity and difficulty to overcome; however, those working at a provincial level cited it as a major issue in effective implementation. The low scores may be explained by the larger number of national actors taking part in the study, failing to see the impacts of poor planning at the local level. Local authorities lack clear guidance on how to achieve the objectives of the broader national policies, citing as barriers “budget,” “technical

capacity,” “legal framework,” and “evaluation tools.” Respondents noted the need for both bottom-up and top-down governance. Urwin and Jordan (2008) concluded that neither a top-down nor bottom-up approach alone will be sufficient to represent the enabling or constraining effects of different climate policies, installing the virtues of an inclusive approach to governance with input and coordination across all levels. This type of combined bottom-up and top-down governance is promoted under the Mekong Delta Plan as an effective mechanism to promote locally explicit large-scale actions to combat salinization (Korbee et al., 2019).

The NDC process harbors a great potential to break down many of these barriers. Being a single national document, containing contributions from each sector, there is a greater potential to harmonize the response across the Ministries, ironing out any overlaps or conflicting objectives. The review process involved more bottom-up engagement than what occurred with the INDC, with provinces and cities consulted on numerous aspects. The NCCC already forms a steering committee that coordinates across ministries to achieve the broader objectives. The major barrier for the future will be to incorporate the objectives of the NDC into the sectoral plans and policy frameworks. The 9% unconditional target is seen as achievable, because many of the requirements to meet it are already included in the VGGs, NAP-GG, and ARCCARD<sup>14</sup>. These policies will nonetheless require local-level support in capacity building and finance, especially in the poorer provinces (Morgan and Trinh, 2016). Meeting the 27% target is conditional on international support, which we discuss below.

### Financial Barriers

Financial barriers identified in the literature survey (Table 1) were mirrored in the interviews (Figure 3). Interviewees noted the need to adapt to changes in the sources of finance and better use of the funds obtained. Because they were key to successful implementation of policy, financial barriers ranked as high severity and high difficulty to overcome. With Viet Nam's transition to a lower-middle-income country in 2010, bilateral official development assistance (ODA) in Viet Nam fell by almost 25% from 2015 to 2017 (Organisation for Economic Co-operation and Development, 2018), and the trend is likely to continue as ODA priorities shift following the coronavirus disease 2019 (COVID-19) pandemic. The government has recognized that it needs to promote climate change policies that support their ongoing development with economic co-benefits, referencing the VGGs and its hybrid approach to mitigation and development. This is consistent with the government's policy to become an upper-middle-income country by 2035 (World Bank and Ministry of Planning and Investment of Vietnam, 2016), which requires yearly growth of 6.5%.

Viet Nam has signaled that reaching the more ambitious 27% reduction target in its NDC is conditional on it receiving support from the international community. Bilateral and multilateral funds are seen as one of the major delivery mechanisms through which Viet Nam will receive this support. Viet Nam has already had some success in securing international funding for

climate change projects. In 2016, it obtained a Green Climate Fund grant to improve resilience of coastal communities and mangrove restoration and another in 2018 to promote energy efficiency in the industrial sector. Both government and non-government interviewees signaled ways in which Viet Nam could better manage ODA, including improved project monitoring and evaluation (M&E). This is changing, with ODA in the form of soft loans now requiring that funds are allocated to provincial accounts, ensuring sufficient budget is made available for implementation. This has encountered some resistance with interviewees reporting that some provinces prefer not to receive large loans if the objectives are not aligned with their current strategy. This in turn gives the provinces more power to determine the success of policies in receiving sufficient financing and therefore meeting their objectives.

The private sector is playing an ever more prominent role across agricultural value chains in Viet Nam (Christoplos et al., 2017). The success of the agricultural sector in achieving the objectives of the NDC will therefore depend on the private sector and the areas in which it chooses to invest. The private sector is active but tends to focus on individual issues, often failing to meet the wider national objectives. Both government officials and private sector interviewees acknowledged the need for better collaboration.

Priambodo et al. (2013) suggests that Viet Nam has a high potential for the formation of private-public partnerships (PPPs), where private entities work with the government, sharing skills and assets to deliver better outcomes. The mobilization of private sector investment was seen as an opportunity to stimulate further growth and fill the gap left by falling ODA. However, the current market mechanisms in Viet Nam presents a number of challenges through a complex business culture, which deters potential investors. The updated NDC identifies measures that improve the policy framework in support of PPP development as a priority for attracting investment in mitigation technologies, building investor confidence, and aligning public and private sector approaches (Ministry of Natural Resources and Environment, 2020). Such initiatives have already been seen through the Agricultural Cooperation Dialogue between Viet Nam and Japan, which has explicitly been set up to facilitate PPP within the agricultural sector (Moreddu, 2016).

### Enforcement and Verification

The extent to which policies are enforced and the impacts verified are critical for their effective implementation and the realization of their objectives. As it stands, the limited enforcement and monitoring of climate change policies in Viet Nam are considered a major barrier, and one that is hard to overcome. Policy enforcement is further complicated by the large and fragmented policy framework, reduced technical capacity at local levels, and low levels of inter-ministry collaboration and data sharing. However, the most important factor driving the enforcement of policies is the political will behind them. Viet Nam's political system has proven itself highly effective in enforcing policy; for example, Viet Nam's national commitment to electrification resulted in the rapid development of electrical infrastructure in rural areas, with 100% of the population achieving electricity access in 2017, up from <50% in the early

<sup>14</sup>Action Response to Climate Change and Agriculture Rural Development.

1990s (Asian Development Bank, 2011; World Bank Data, 2020); however, instances of environmental degradation persist where the political will was not sufficient to ensure the enforcement of policy commitments (Schiappacasse et al., 2020).

To understand the political will behind the climate change policies in the agricultural sector, one must understand the competing pressures faced by policy makers and the potential trade-offs they face. At a national level, insights can be taken from the energy sector, where the BAU scenario shows emissions quadrupling from 2014 to 2030 to sustain high levels of economic growth and energy security (Ministry of Industry and Trade, 2018; Ministry of Natural Resources and Environment, 2020). Agriculture faces many of the same issues, with measures that reduce emissions often considered to be detrimental to other objectives in the sector, such as increased productivity, food security, and rural poverty alleviation (Institute of Policy and Strategy for Agriculture and Rural Development, 2015). There is therefore a need to highlight the potential co-benefits of mitigation measures in achieving broader objectives supporting the development and modernization of the agricultural sector in Viet Nam. In recent years, climate-smart agriculture has been promoted as an approach that can help the sector meet its mitigation commitments while simultaneously achieving improvements in productivity and strengthening climate change resilience, with an increasing body of evidence on its potential effectiveness across these three priority areas (Nguyen et al., 2017; Escobar Carbonari et al., 2019).

The establishment of a robust measurement, reporting, and verification (MRV) systems and M&E frameworks will support greater levels of accountability in the implementation of climate policies and provide a more effective barometer for measuring the enforcement and verification of mitigation targets. The updated Viet Nam NDC includes a series of measures to strengthen enforcement and verification, in order to meet the requirements set out by the enhanced transparency framework (Ministry of Natural Resources and Environment, 2020). Considering the high perceived severity of poor enforcement and verification on the implementation of climate policies in the agricultural sector, measures to establish the enhanced transparency framework should be prioritized in the early stages of the NDC implementation process.

## CONCLUSIONS

The paper finds a comprehensive policy framework for agriculture in Viet Nam, with climate change adaptation and mitigation integrated at all levels. The central government is well-equipped in terms of capacity to meet the challenges posed by climate change, with an in-depth knowledge on its impacts and appropriate responses. However, we found barriers that act to undermine this progress. Many of these are not unique to Viet Nam but reflect the wider challenges of responding to a new and evolving threat.

The institutional setting in Viet Nam was found to encompass a number of barriers to the successful creation and implementation of climate policy. Insufficient inter-ministry

collaboration and rigid, top-down structure posed challenges in responding to the crosscutting issues of climate change. Moreover, the drafting of policy was hindered by inadequate collaboration and bottom-up engagement, thus creating a fragmented approach to policy making, with different ministries each drafting their own policies, prompting policy overlaps and rampant policy inflation, which in turn overwhelms local implementers. This—coupled with low technical capacity, inefficient and inadequate systematic guidelines and instructions for climate actions, limited funds, and no enforcement at local levels—created an implementation gap.

While steps have been taken to resolve the issues of climate change mainstreaming through the creation of the NCCC, further work is needed to ensure all policies have the financial backing and localized implementation plans needed for the fulfillment of their objectives. To meet the conditional 27% GHG reduction target stipulated in the NDC, Viet Nam, donors and the private sector need to align their activities with national and localized strategies. For Viet Nam to become a more appealing option for multilateral, bilateral, and private sector finance for climate change activities, it must ensure that systems are put in place, which encourage investment through greater transparency and reporting. This needs to be done through the establishment of robust MRV and M&E systems for climate-related activities in the agricultural sector. The implementation of the enhanced transparency framework to achieve these ends should be a priority for the initial phases of NDC implementation. Such a system would facilitate bottom-up feedback, instilling greater capacities at lower levels while ensuring policy is accountable and responsive to the needs of implementers. Additional benefits of an MRV system would be the creation of standardized and centralized data, improving information sharing within government and with non-government actors.

## DATA AVAILABILITY STATEMENT

The datasets generated for this study are available on request to the corresponding author.

## ETHICS STATEMENT

The methodology of this study was approved by CIAT to assure that that it was of the highest research standards and did not compromise those who participated in any way. All interviewees were first asked to give consent to their responses being used as part of the paper. It was also ensured that all of those who took part remained anonymous and could not have their answers traced back to them. The study did not work with any vulnerable populations.

## AUTHOR CONTRIBUTIONS

JG designed the methodology, conducting the literature review and interviews, and writing up the final article. GG contributed to the methodology design, the analysis, the writeup, and reviewed several versions of the paper. VB contributed to the interpretation



of the results from the key informant interviews and follow up survey, using his extensive knowledge of the systems, and process of the Vietnamese government. J-FLC reviewed the various iterations and helped conceptualize the findings. BH reviewed the various iterations and provided insight into the government workings in Vietnam. PL assisted in the design of the methodology and review of the various iterations. All authors contributed to the article and approved the submitted version.

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## SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/fsufs.2021.439881/full#supplementary-material>

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