

FRAGRANT FRONTIER

Global Spice Entanglements
from the Sino-Vietnamese Uplands



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Extreme weather events, cardamom livelihoods, and commodity chain dynamics in Southwest China

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INTRODUCTION

This chapter emerged from two ‘failed’ fieldwork missions that we undertook in the Sino-Vietnamese borderlands. In fall 2016, we visited six villages in Caoguo Township,¹ an important cardamom cultivation and trade hub in Honghe Prefecture, in the southeast of Yunnan Province. At the outset, our aim was to attend the annual black cardamom (*Lanxangia tsaoko*) harvest and to look into how this spice, and the high prices it commands, contribute to the livelihood strategies of local cultivators. However, no harvest occurred in fall 2016, as a series of extreme weather events decimated almost all the cardamom plants in January of that same year. As a result, we had the opportunity to learn about how ethnic minority cultivators experience, and respond to, the livelihood consequences of extreme weather events. In an attempted follow-up visit in June 2017, we found that unusually late flooding had destroyed a section of the road we were due to use on our way to Caoguo. Our ‘plan B’ this time was to follow cardamom commodity chains as they unfold outside production zones, tracing how this crop, mostly used as a spice or in traditional Chinese medicine, reaches consumer markets.

This chapter brings together our findings from these two fieldwork journeys. We probe how a range of actors experienced harvest failure and the resulting market disturbances and price spikes – with farmgate prices rising more than 200 per cent to over RMB100 (Chinese Renminbi; about USD15) per kilogramme between 2014 and 2016. In doing so, we shed light

¹ Caoguo is a pseudonym, as are all the patronyms we cite in this chapter.



Map 5.1. Case-study cardamom production sites and marketplaces in Southwest China.

on the capacity of different stakeholders to benefit – or at least avoid negative impacts – from trade vagaries resulting from extreme weather events. We investigate how trust and power manifest among actors along the cardamom commodity chains, and we highlight the series of informal arrangements and behaviours that shape the governance of these chains.

We begin our chapter by briefly outlining the conceptual underpinnings that span vulnerability and livelihood studies, as well as debates from commodity chain literature. We then introduce the cardamom commodity chains as they functioned before the 2016 extreme weather events, together with how different stakeholders experienced the extreme weather events, and the impacts on cardamom supplies. We examine how these data testify to the potency of extreme weather events and argue that their role in driving livelihood and economic disruptions with regards to spices grown in these borderlands deserves further scrutiny.

We have been conducting ethnographic research centred on ethnic minority livelihoods and agrarian change alongside ethnic minority collaborators in the Sino-Vietnamese borderlands since the late 2000s. We gathered the specific data introduced here over the course of three ethnographic fieldwork periods spanning 2015–2017 and lasting for over six weeks in total in cardamom production areas and wholesale markets in both Yunnan Province and Guangxi Autonomous Region (Map 5.1.). Our data stem from

conversational interviews and participant observation in urban settlements as well as in upland ethnic minority villages within Caoguo Township. In Caoguo, a Hani villager facilitated our integration into the communities and served as a driver and interpreter with non-Mandarin Chinese-speaking contributors. We interviewed 34 Yi, Hani, and Hmong (officially part of the Miao *shaoshu minzu* in China) ethnic minority cardamom cultivators in total, as well as two Han Chinese ethnic majority traders of non-timber forest products (NTFPs) and their four employees. In urban research sites beyond the borderlands, we interviewed six Han traders based in Mengzi, the seat of Yunnan's Honghe Prefecture, which serves as an important trans-shipment point for cardamom pods grown on both sides of the Sino-Vietnamese border. We also met eight Han traders of NTFPs in retail and wholesale markets in Kunming, the capital city of Yunnan Province, and seven in Yulin City in Guangxi Province, where significant quantities of cardamom grown in Yunnan and Vietnam transit as the pods make their way towards the main consumption markets in eastern China.

LIVELIHOODS, COMMODITY CHAINS, AND VULNERABILITY

The conceptual literature we engage with pertains to livelihood approaches, commodity chain analysis, and vulnerability to climate shocks such as extreme weather events. Extreme weather events diverge from average climatic patterns and drive significant and potentially long-lasting social consequences and responses over a short period of time (Jentsch et al., 2007; Morss et al., 2011). Anthropogenic factors affect the frequency and magnitude of extreme weather events, and such events are expected to become more frequent in the future due to climate change (Stott, 2016). A stream of scholarship unpacking the outcomes of extreme weather events focuses on livelihood impacts, the severity of which is dependent on the vulnerability of affected populations to climate stimuli. Numerous vulnerability frameworks exist, though a common proposition frames vulnerability as the outcome of exposure, sensitivity, and adaptive capacity (Adger, 1999; Intergovernmental Panel on Climate Change [IPCC], 2012). Exposure encompasses 'the nature and degree to which a system is exposed to significant climatic variation' (IPCC, 2001: 987), while sensitivity is 'the degree to which a system is affected, either adversely or beneficially, by climate-related stimuli' (ibid.: 993). In turn, adaptive capacity is

‘the ability to anticipate and transform structure, functioning, or organisation to better survive hazards’ (IPCC, 2012: 71).

Livelihood approaches introduce a framework to assess how extreme weather events impact individuals and households with different vulnerability levels. Livelihood scholars seek to highlight the complexity and diversity of livelihood asset portfolios and how they combine both tangible and intangible components. To do this, livelihood components are typically conceptualised in the form of an asset pentagon that groups five forms of capital: natural, social, financial, physical, and human (Ellis, 1998; Carney et al., 1999). Changes in access to these assets by an individual or household can drive livelihood diversification strategies that aim to establish new opportunities and to cope with new stressors. The livelihood literature often posits livelihood diversification, or pluri-activity, as a risk-spreading strategy, although the entry costs associated with some livelihood activities mean that diversification is not an option for all, as is also argued in Chapter 3 (Hahn et al., 2009; Martin and Lorenzen, 2016).

Vulnerability and livelihood conceptualisations are frequently addressed together. Localised livelihood knowledge is increasingly acknowledged as key to understanding climate change-driven social impacts and implementing effective mitigation and adaptation policies (Smucker et al., 2015). This literature posits livelihood diversification as a core criterion shaping vulnerability, with households whose livelihoods are more diversified being considered less vulnerable (Adger, 1999, 2006; Goulden et al., 2013; Tian and Lemos, 2018). Yet this scholarship often overemphasises financial income as a determinant in shaping livelihood diversification and tends to assume that diversification correlates with both greater financial wealth and reduced vulnerability (Scoones, 2009). Livelihood approaches have been critiqued for this economic bias, which can overlook the non-financial assets upon which people structure their livelihoods (*ibid.*).

Moving on from the livelihoods literature, less is known about how the impacts of extreme weather events manifest along commodity chains. Commodity chain analysis first emerged from world system theory scholarship, which defined such chains as the ‘network of labour and production processes whose end result is a finished commodity’ (Hopkins and Wallerstein, 1986: 159). Critiques have focused on how this vision was embedded in rigid conceptualisations of the hierarchies between actors, from the core vis-à-vis the periphery (Neimark et al., 2016). In response, approaches such as global commodity chains (GCC), global production networks (GPN), and global

value chains (GVC) have considered how macroeconomics and industrial organisation shape profit distribution along commodity chains (Bair, 2005; Gereffi et al., 2005). Often absent from this scholarship, however, are the social and power relations that commodity movement breeds, together with the cultural factors that govern these relations, as is also discussed in Chapters 1, 2, and 4 of this book (Bush et al., 2015; Hughes et al., 2015).

Commodity chains connect actors set within diverse social, cultural, and geographical contexts, with radiuses of influence ranging from the local to the regional and global scales (Hartwick, 1998; Ribot, 1998; Tugault-Lafleur and Turner, 2009; To et al., 2016). None of these variables are permanent or fixed in space, and commodity chain analysis exposes the dynamic power relations that link actors as well as the institutional, political, economic, and socio-cultural factors that mediate these interactions (Leslie and Reimer, 1999; Turner et al., 2017).

Despite the benefits of drawing upon commodity chain analysis to expose these relationships, the commodity chain literature has allocated little attention to how extreme weather events disturb the social relations embedded in commodity chains (Rousseau and Xu, 2021). Among the few scholars to have addressed this link, Adger, Eakin et al. (2009: 152) posited that ‘commodity and financial markets serve as a structure for transferring risks’, including climatic risks, during their study of the Brazil coffee bust in the 1990s, when rising prices prompted production booms elsewhere. Our case study differs in its approach from their work, however, as we focus on localised, small-scale production that fuels niche culinary and traditional medicine markets. Also, unlike in the case of coffee and other food commodities, financial mechanisms are not involved in any way in cardamom price fixing. Instead, the price bubble that rendered cardamom such a lucrative crop for farmers by the mid-2010s and the price spike that followed the 2016 extreme weather events were outcomes of supply-demand imbalances and speculative manoeuvres from a handful of large-scale market actors, as we reveal below.

CONTEXTUALISING COMMODITY CHAIN INITIAL NODES: YUNNAN’S BORDERLANDS

Given the high prices that black cardamom commands in Yunnan’s borderlands, ethnic minority cultivators there consider it a crop for which there

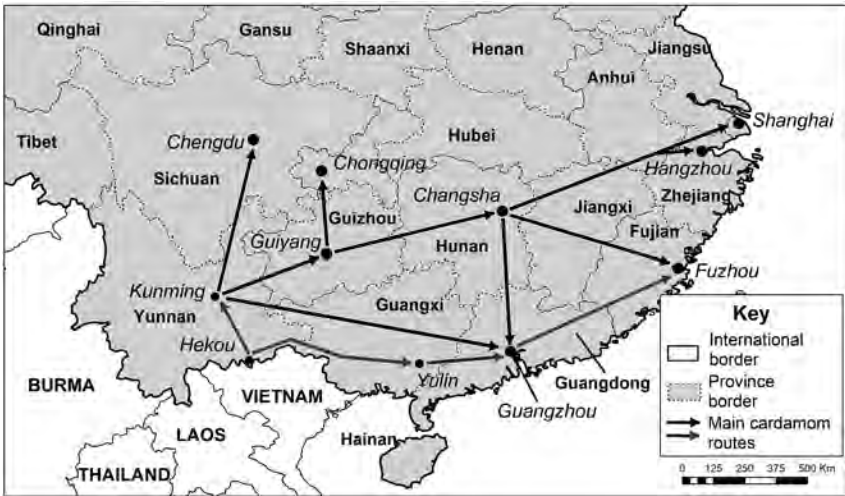
is no equivalent in terms of profitability, and local authorities highlight its unique importance for the economies of villages in Caoguo Township. As one village chief from a remote upland settlement explained in 2016: ‘There are only two ways for people to earn cash here: either they sell cardamom, or they leave the village and engage in wage labour’.

Although cardamom cultivation generates unique opportunities for ethnic minority cultivators, they nonetheless consider cardamom an unpredictable and unreliable crop. Growers acknowledge that cardamom yields have customarily varied due to environmental circumstances beyond their control, a situation encapsulated in the idiom *kaotian chifan*, which translates to ‘relying on heaven to make a living’ (see also Writer, 2017). In comparison, local farmers do not think this way about bananas, the main cash crop they grow using intensive ‘modern’ agrarian technologies including hybrid seeds and chemical farm inputs.

Political and market circumstances have also been key in shaping opinions regarding cardamom cultivation since the country’s broad economic reforms of the 1980s. State authorities actively promoted cardamom cultivation expansion in Caoguo Township at the outset of these reforms. At that time, cardamom was framed as an alternative to swidden farming, a semi-nomadic customary agricultural system practiced by many ethnic minorities in this area, which state campaigns sought to eradicate due to its alleged ‘backwardness’ (see Sturgeon, 2005). Yi, Hani, and Hmong ethnic minority farmers from this upland setting were thus invited to grow this perennial crop in old growth and/or state-protected forests where they had previously maintained swiddens. By the late 1990s, a rapid price increase for cardamom spurred plantation expansion, which increasingly emerged as a challenge to state forest protection priorities (cf. Xu and Melick, 2007). By the mid-2000s, forest regulations had become more stringent and plantation expansion was officially halted.²

From then on, regulations made it virtually impossible for those who had not previously sown cardamom to join this lucrative industry; newcomers to growing could only sow cardamom in their home gardens, where conditions were not as optimal and where the available space was much more

2 This coincides with the onset, in western China, of a reforestation and afforestation campaign initiated after catastrophic floods hit central provinces in 1998. Officially targeted at ‘upper catchment protection’, the campaign also aimed to regulate ethnic minority behaviour considered undesirable, such as cardamom expansion (see Rousseau and Sturgeon, 2018).



Map: J.-F. Rousseau, adapted from Yang, 2016

Map 5.2. Main black cardamom commodity chain routes in China.

restricted than in distant old growth forests. Those who had already secured access to plantations still managed to expand their cardamom lands after the ban, though at a very slow pace. They explained that the forestry bureau limited resources to control plantation expansion and forest rangers would not bother them if they added a few more plants each year. These small encroachments were not considered serious affronts to the ban, and forest rangers who lived in the communities or knew the cultivators personally turned a blind eye. Hence, access to cardamom plantations in this setting remained an important driver of wealth and livelihood differentiation in the villages in the late 2010s. Those with greater access to cardamom lands were typically better off and have continued to maintain more cardamom-centred livelihoods than their fellow villagers (Rousseau et al., 2019).

These increasing restrictions regarding cardamom crop expansion also coincided with a period of growth in demand for cardamom from the China-based food and medicine industries. Black cardamom is a key ingredient in some Chinese dishes as well as in a number of traditional medicines for stomach and respiratory ailments. The markets for these niche products have grown in the last several decades, fuelled by an expanding Chinese middle class and the retail sectors catering to it. This has also boosted both Vietnamese and Laotian cardamom imports (Ducourtieux et al., 2006; Tugault-Lafleur, 2009; Choocharoen et al., 2013), along with steady price rises.

A significant portion of these imports now enters China through Jinping County, in which Caoguo Township is located, and then follows two main routes before reaching the main processing and consumption centres in eastern China (Map 5.2.). We document how cardamom circulates along this route next (shown in dark grey in Map 5.2.) and highlight how certain commodity chain actors experienced drastic market disturbances that accompanied the 2016 extreme weather events.

EXTREME WEATHER EVENTS ALONG CARDAMOM COMMODITY CHAINS

Transborder flows and local traders

Steadily growing market demand, alongside legal constraints to plantation expansion, has driven Chinese demand for Vietnamese cardamom. This trade does not always follow ‘formal’ trade routes. Some Vietnamese pods do transit through large border stations where trade is monitored and potentially subject to import duties, but traders also utilise various tactics to avoid Chinese taxes. One such tactic involves dividing up shipments transiting through prominent border crossings into smaller amounts, so as to benefit from legal arrangements exempting tariffs on trade flows worth less than RMB8,000 [about USD1,250].

Some of this transborder cardamom trade also escapes officials’ notice when conducted along small, porous border crossings (cf. Aubertin, 2004; Turner, 2013). The areas in which these crossings are situated have a much lower level of surveillance regarding cross-border movements, allowing for the evasion of trade laws. At one such border point in Caoguo Township, we met two Han traders, Mr Li and Mr Wang (Figure 5.1.). These individuals had known each other for decades, since working together for the former state cooperative that maintained a monopoly on NTFP trading until the late 1990s. Through their former employment, they had acquired the human capital (know-how) and social capital (contacts) now central to their private ventures, including trading this spice, amongst other activities.

Both traders explained that cross-border trade has become increasingly important to their businesses since the mid-2000s as an outcome of growth in market demand and limitations on expanding local cultivation. They added that they and other traders need to maintain trust-based relations with Chinese and



Figure 5.1. Han trader Wang's shop in Caoguo, Honghe Prefecture, Yunnan Province, China. **Colour** p. 150.

Vietnamese border patrol agents to ensure that cardamom and other NTFPs can keep crossing the border steadily. This involves treating border guards to regular dinners, a gesture that in turn generally shields traders from experiencing their shipments being halted at the border or seized in Chinese territory. However, changes in the individual officials posted to specific crossings or new policies can leave traders vulnerable to border patrols implementing the legal framework in a more zealous manner (Rousseau and Xu, 2021).

Local traders such as Li and Wang also maintain relationships with networks of Vietnamese trade intermediaries who regularly cross the border to sell NTFPs during the weekly market spanning both sides of the small Caoguo border crossing. Though Li and Wang do not speak Vietnamese and their Kinh (lowland majority Vietnamese) counterparts only speak very rudimentary Chinese, they manage to conduct weekly trade in cardamom and other NTFPs worth tens of thousands of US dollars during the fall harvest period. Prices are set in RMB, and no contracts are signed.

The trust relations these traders partake in also encompass networks of local, China-based cultivators. They explained that they have to be honest

and accommodating with farmers to ensure regular NTFP supplies. This notably involves using properly calibrated scales and offering cultivators the real market price for their crops. The latter aspect is now particularly important since cultivators can access real-time price information on social network platforms such as *Weixin* (WeChat) through their smartphones. Traders used to offer upfront payment for unharvested cardamom as another strategy to ensure steady supply and cultivator loyalty, but the incapacity of many cultivators to pay the traders back, particularly after the 2016 extreme weather events destroyed already-sold portions of their production, brought this scheme to an end. Li and Wang both stated that they knew there was no way for small cultivators to pay them back entirely that year, so they themselves absorbed most of the loss. While this served to maintain good relations with their respective networks of farmers, both traders agreed that any upfront payment for cardamom would now expose them to great risks and decided to bring this scheme to a halt.

In the early 2010s, Li and Wang both traded some 300–400 tonnes of dry pods yearly, representing a multi-million USD turnover.³ In 2016, though prices skyrocketed, both traders argued that their profits from trading cardamom went down drastically, as fears about a sudden price drop convinced them to stockpile as little as possible. At that time, Li lamented that trading cardamom was not very lucrative for him anymore: ‘I just make a few thousand RMB profit per tonne. This is ten times less than from trading cheaper and less risky NTFPs. Still, I have to buy cardamom to ensure that growers keep selling me their other products.’

Caoguo Township cardamom cultivators

Yi, Hani, and Hmong ethnic minority cultivators noted during interviews that the dry cardamom pods that they store in their attics is ‘their most important household asset’. Given the high value of black cardamom, remote plantations in old growth forests have long been subject to theft, especially just before the harvesting period, when seeds have not yet reached full maturity but can nonetheless be redeemed for cash. Farmers therefore deploy various strategies to bring their crops to maturity while keeping them secure. For instance,

3 While historical price information has been difficult to collect, we know that farmgate prices averaged RMB40 [about USD6.25] per kilogramme in early 2015, compared to about RMB100 in late 2016 [about USD15].



Figure 5.2. A woman Hani cultivator descending from her attic, in which she has stored cardamom, Yunnan Province, China. **Colour** p. 151.

cultivators guard their plantations and/or those of their friends and relatives through work-pooling arrangements in the weeks leading up to the harvest. Cultivators also place animal traps with the aim of catching trespassers.

Another tactic to avoid theft that farmers have deployed is agreeing on a common harvest date for the whole village, based on current climatic conditions. Although this means that some areas produce suboptimal yields as they are harvested either too early or too late in the season for the specific micro-climates of the location, cultivators consider fixed harvest dates an efficient strategy to curtail theft; anyone caught with fresh pods before the harvest date is considered a thief.

In normal years, three groups of cultivators might sell their cardamom at harvest, either fresh or dry: those with immediate cash needs; those for whom cardamom only comprises a supplementary income source; and those harvesting very small quantities. In contrast, cultivators with no immediate financial obligations and larger plots dry their harvested crop in the old growth forests where their plantations are located. This is a labour-intensive activity that lasts for up to a week, during which time massive quantities of firewood must be gathered and a fire maintained non-stop so that the seeds dry properly. Forestry law allows cultivators to collect only dead branches lying on the ground for such purposes, but cultivators note that cutting branches on standing trees does not get them into trouble as long as it does not imperil the trees.

As the pods dry, their volume and weight diminish four to five times, with the market value by weight of the dried pods rising accordingly. Drying concurrently reduces the amount of labour required to carry the harvest back to the village, a task that is predominantly undertaken by women, who are considered more capable and careful than men when it comes to carrying sacks of cardamom. When stored in a dry place, dried cardamom pods can be kept for many years without their appearance or taste – and hence their market value – being affected. Ethnic minority growers' attics are perfect conservation environments in this regard: the combination of heat from firewood used for indoor cooking and heating and the fact that houses have few windows and doors creates a suitably dry environment for the pods. Those cultivators who can afford to store dry pods can therefore 'play the market'; they do not have to sell their crops at harvest time, when greater supplies tend to pull prices down, potentially benefitting from annual and pluri-annual supply and demand-driven price fluctuations instead (Figure 5.2.).

Until the 2016 harvest failure, this approach, together with steady price increases, suited large-scale cultivators who had secured significant land for cardamom cultivation before the expansion ban. These individuals typically harvested at least 500 kilogrammes during normal years, a quantity worth about USD10,000 when farmgate prices boomed at RMB100 per kilogramme in 2016, while cultivators with the largest plantations harvested up to a few tonnes per year. Such large-scale cardamom growers thus accumulated much greater financial savings compared to their co-villagers. They also developed cardamom-specialised livelihoods, focusing on cardamom as their key cash crop and taking on more plantation maintenance tasks than cultivators for whom cardamom only comprised a supplementary income source.

Given the range of plantation sizes and cardamom-based livelihood approaches, the 2016 harvest failure, in which local plantations yielded no more than 15 per cent of their usual outputs, affected cultivators very differently. Those maintaining larger plantations, with cardamom-specialised livelihoods, were highly sensitive to climatic events. Still, these cultivators could rely on their wide asset base, including their highly valued cardamom stocks, to cope with the immediate consequences, namely harvest failure and the medium-term impacts of having to wait for their crops to recover. At first, these larger-scale cultivators were not keen to reorganise their livelihoods away from cardamom in order to adapt to future extreme weather events. Though the 2016 events were the most severe they had witnessed in decades, the income they could potentially derive if weather patterns returned to normal in the medium-term was high enough to incentivise them to keep maintaining their plantations, even with financial losses, for some time.

Conversely, those who had secured less cardamom land due to state limits on expansion already relied upon more diversified livelihood portfolios spanning tourism, cash cropping, wage labour, and so on, before 2016. As cardamom constituted a supplementary livelihood activity for them, they were less sensitive to the extreme weather events and could reorganise their livelihoods to adapt relatively easily. Their diversification approaches were akin to those Langill and Zuo describe in Chapter 6, comprising a range of on-farm strategies such as crop substitution, as well as off-farm approaches such as engaging in work migration.

Traders beyond Caoguo Township

Some cardamom pods leaving Caoguo Township are bound for Mengzi, the closest prefecture-level city and a convenient node for commodity chains oriented towards Kunming, the capital city of Yunnan, or Yulin in Guangxi, home to China's biggest cardamom wholesale market. In Mengzi, Zhou, an NTFP dealer, explained during an interview in 2017: 'While we do buy pods from some cultivators we know well, we often have no choice and cannot bypass the local bosses,' referring to traders (or 'bosses') such as Li and Wang. All transactions occur over cell-phones through *Weixin*, and no contracts are signed. As Zhou's son-in-law elaborated: 'This business is all about trust. I only ask for upfront payments from new clients. Anyone not paying would be excluded from the business anyway.' Zhou also told us that



Figure 5.3. Han trader Chen's store in Yulin, Guangxi Province, China. **Colour** p. 152.

he only hired truck drivers he knew personally to transport his NTFPs to wholesale markets, such as Yulin or final destination markets farther east along China's seaboard.

In 2016, the Zhou family's business handled no more than 100 tonnes of cardamom, compared to 600 tonnes during average years. Zhou stated that this drop was not a major concern to him, as lower trade volumes exposed him to less risk. High cardamom prices, which he deemed 'irrational', do indeed breed high risk and low mark-ups. Like the traders from Caoguo Township, Zhou argued that he could not afford to stock cardamom since its high value, combined with the possibility of a sudden price slump, made this crop too risky. He further explained that such a situation is only beneficial

to a network of big bosses who have the capacity to handle such risks and ‘buy everything they can and store for long periods, so as to pull prices up’. According to Zhou, these speculative manoeuvres had been on-going since the early 2010s and mostly involved Kunming and Yulin-based actors.

In Kunming, we were fortunate to meet with Mr Dao in 2017, who self-identified as the city’s biggest cardamom dealer. He claimed to trade about 1,000 tonnes of cardamom per year – about 20 per cent of the local trade – while also amassing large stocks about which he remained rather vague. Dao stated that information is key to his business. He explained: ‘I visit plantations three times a year. By May I can anticipate the size of the fall harvest precisely, and manage my stocks accordingly. That is how I was able to profit from the snow in 2016’. In relation to this, Dao frowned when asked about *Weixin*: ‘*Weixin* has made price information transparent. There are no more secrets in this business. We used to have more control over the market, as small sellers had no means of knowing the real market price.’

Moving on to the Yulin spice market in Guangxi, we met Mr Chen in 2017, another Han trader dealing 2,000–3,000 tonnes of cardamom per year, who agreed that accessing market information and anticipating supply vagaries are fundamental to the profitability of his business (Figure 5.3.). He asserted, however, that the size of local harvests is not that important for his bottom line. Chen said that his procurement strategies, spanning many cultivation zones in Yunnan and Vietnam, protect him from localised supply failures. Chen added: ‘What really counts is that we know about supply vagaries first, so we can manage our stocks accordingly’. When failures occur, large-scale market actors aim to pull prices as high as possible while making sure to avoid a speculation-driven market slump.

Besides information, trust is also fundamental for large-scale actors. As elsewhere along the commodity chain, typical transactions do not involve paper contracts, and *Weixin* is central to business operations. For instance, Mr Liu, another large-scale Han trader whom we interviewed in 2017 and who was allegedly dealing thousands of tonnes yearly and holding important stocks, argued: ‘Since we cannot inspect all supplies, we must be sure that the cardamom in the middle of a 60-kilogramme sack is the same as that on the top’. Liu specifically pointed out his dependence on local bosses such as the Caoguo traders, whom he knows personally, as they are the last actors along the commodity chains that oversee the handling of cardamom pods before Yulin. He added: ‘These people control cardamom supply, and they

control our access to information about cardamom. We must have good relations with them.’

MURKY GOVERNANCE AND NATURAL EVENTS

Through tracing how cardamom pods make their way from Vietnam and/or Southwest China towards the main processing and consumption centres in East China, we add to research carried out by Yang (2016) and Putzel (2017), which has investigated parallel commodity chains between production centres in the Sino-Vietnamese borderlands and Kunming. Earlier studies have also probed how spice crop commodity chains partly oriented towards China unfold from cultivation centres in Vietnam or Laos up to the Chinese border (Ducourtieux et al., 2006; Tugault-Lafleur and Turner, 2009; Choocharoen et al., 2013; Turner et al., 2017). More specifically, in this chapter we are focusing on a range of informal arrangements that shape livelihoods and social relations along these commodity chains and investigating how different actors experienced the harvest failure resulting from the 2016 extreme weather events and the ensuing price spike. We analyse these two themes in greater detail below.

The murky governance of cardamom

A multitude of trust-based informal arrangements occur within and between nodes along the cardamom commodity chains, as detailed above. In Caoguo Township, these arrangements involve local traders maintaining good relations with border patrol agents so that Vietnamese cardamom pods can keep crossing the border smoothly and steadily. In relation to this, it is notable that Li and Wang do business with their Vietnamese counterparts without leaving any paper trails and using only rudimentary interlingual communication. At another initial node of these commodity chains, farmers in Caoguo Township engage in work-pooling arrangements and check on their friends’ or relatives’ plantations close to harvest time. They also comply with self-developed local resource management regimes in which all agree to harvest their fields on a commonly agreed-upon date, even if this means incurring some financial losses. Large-scale cultivators growing cardamom in old growth and protected forests maintain their own understandings of what

timber they are allowed to burn, which differ somewhat from what forest laws stipulate. They also negotiate the plantation expansion ban through expanding their fields by a small area year after year. This allows farming communities to increase their cardamom cultivation while maintaining good relations with forest rangers.

Beyond Caoguo, Zhou in Mengzi explained that he only conducts business, including securing contracts and hiring drivers, with people he knows. He considers this safer than filing any paperwork for his cardamom business, which generated a revenue close to USD two million at farmgate prices in 2016. Larger market actors in Kunming and Yulin who trade tens of millions of USD worth of cardamom yearly – and who also maintain stocks probably worth as much – likewise prefer not to leave a paper trail. They too deem trust relations sufficient to ensure that their business goes smoothly and safely. They also hold a tight grip on information about available supply and exert a strong control over market prices – tactics they consider to be key to business profitability and risk alleviation. It therefore comes as no surprise that these actors express little enthusiasm for social media outlets that now allow other commodity chain actors to exchange information that they previously could not access. However, these larger-scale actors realise that this is now an aspect of the commodity chains, and they also realise that they wield very little leverage over it.

The above circumstances testify to the limited influence of formal structures and institutions on these commodity chains, including tariff regimes at the Sino-Vietnamese border and forest laws. In addition, Kunming- and Yulin-based traders deploy strategies of market distortion that are prohibited under domestic trade laws, including the 2007 anti-monopoly law (see Ng, 2018). When asked why cardamom commodity chains operate in such legal grey zones, traders referred to the following reasons: cardamom has a very high market value per weight and volume unit; demand is price inelastic (i.e., consumers still buy cardamom-based commodities in spite of the rising prices of these); the plantation expansion ban makes it easier to anticipate supply; and the relatively small size of the cardamom market keeps it under the authorities' radar. Indeed, interviewees argued that the authorities' grip on the cardamom market is much looser than for commodities considered central to both the state's food security and modernisation agendas (Zader, 2011; Lin, 2017).

Who benefited and who suffered from the extreme weather events?

Turning to the impacts of the 2016 extreme weather events, our research has highlighted how the actors involved in these cardamom commodity chains experienced different levels of vulnerability to harvest failure. For instance, harvest failure drove limited livelihood disruptions for small-scale ethnic minority producers, who could compensate for their cardamom income losses with the other livelihood activities they already pursued. This finding mirrors vulnerability and livelihood scholarship that has posited livelihood diversification as a risk-spreading strategy (Hahn et al., 2009; Martin and Lorenzen, 2016).

Conversely, farmers who maintained more specialised livelihoods based on large-scale cardamom cultivation were more negatively affected. The important benefits they had been deriving from cardamom in the years leading up to 2016, together with the cultivation expenses they incurred, had previously convinced these farmers to concentrate their livelihoods around cardamom. These individuals were then severely affected when their cardamom crops were ravaged, simultaneously losing significant income for that season and potential future income opportunities, given the four- to five-year period it took for their plantations to recover. In addition, these actors now had to cope with greater plantation maintenance expenses.

Large-scale farmers were thus forced to mobilise important financial assets, including both monetary savings and dry cardamom stocks, which they had amassed through the years. As they divested themselves of their stocks, record prices for dried cardamom pods made it easier for these actors to navigate the impacts of the 2016 extreme weather events. Still, they found that the short-term gains earned from booming cardamom prices could not compensate for the immediate and longer-term impacts of harvest failure and plantation devastation. These circumstances reduced their capacity to cope with further cardamom-related expenses, causing concerns over what they could do should more bad weather events impact cardamom yields or plants in the future.

The story of these large-scale cultivators adds nuance to earlier scholarship that has highlighted how greater access to resources has usually correlated with lower degrees of vulnerability to climate change and how wealthier farmers in the Global South have often maintained diversified livelihoods that have lowered their vulnerability (Adger, 1999, 2006;

Lemos and Agrawal, 2006; Goulden et al., 2013; Thulstrup, 2015; Thomas et al., 2019). As growing cardamom has long been a lucrative and relatively hassle-free activity, the large-scale farmers we met decided to concentrate their livelihoods around this specific crop. Nonetheless, this meant that they were highly exposed and sensitive to harvest failure.

However, large-scale cultivators showed little interest in deploying adaptive strategies to reduce their vulnerability to future extreme weather events – for instance by changing their cardamom plantation management strategies or diversifying their livelihoods – citing ecological and technological constraints (cf. Adger, Dessai et al., 2009). They justified their decision to maintain the *status quo* on the grounds that there was no way to protect cardamom plants from future extreme weather events. Indeed, due to their lack of knowledge of alternative approaches, farmers argued that on-site adaptation strategies, such as protecting plants from the elements in the winter or growing more resistant breeds, were not options (Rousseau et al., 2019). Yet these farmers also stated that they wished to maintain their plantations – and thus their cardamom-oriented livelihoods – because they could not afford to miss potential good harvests in the future (cf. Gautam and Andersen, 2016; Cinner et al., 2018).

Despite what one might expect, the 2016 price spike created few profit opportunities for trade intermediaries in Caoguo and Jinping. These intermediaries were extremely concerned that prices were going to remain volatile and could thus drop at any stage, leaving them with important financial debts. In reality, however, there was such a shortage in supply that their cardamom trade volumes fell drastically anyway. In contrast, large-scale traders in both Kunming and Yulin who maintained significant stocks experienced positive impacts and capitalised on the price rise, which they further amplified.

It thus becomes clear that social factors such as ethnicity and location, as well as position and role in the commodity chain, have shaped differences in the distribution of benefits and losses emerging from the extreme weather events (cf. Ingram et al., 2014; Bargawi and Newman, 2017). For instance, none of the ethnic minority farmers we spoke with thought that they benefitted from the extreme weather events, whereas individuals further along these commodity chains, belonging to the Han majority, seemingly reaped the greatest benefits. Likewise, the price spike imposed financial losses or greater risks on most actors located far from large urban settlements, whereas those who gained were based in cities such as Kunming and Yulin. The capacity to store cardamom,

itself an outcome of one's position and role along the commodity chains, as well as access to financial capital, also stood out as an important factor.

CONCLUSION: TENUOUS BALANCES OF POWER

In this chapter we have investigated the activities, actors, and power dynamics involved with black cardamom commodity chains reaching from small China–Vietnam border crossings to the largest black cardamom wholesale market in Southwest China. Our research has exposed the diversity of roles that cardamom cultivation plays in ethnic minority cultivator livelihoods in the borderlands of southeast Yunnan. We have also highlighted the social relations in which these cultivators and other market actors engage, and we have analysed how these stakeholders experienced the consequences of the 2016 extreme weather events that struck the plantations in Caoguo and created nationwide supply and price disturbances.

Our analysis has pinpointed the fact that commodity chain actors engage in informal governance arrangements that often contrast sharply with the dictates of formal trade and legal institutions. These informal arrangements were in place before the 2016 weather events, and they suited the needs of all of the commodity chain actors we encountered when prices rose and the supply was stable. These actors, however, experienced different levels of vulnerability to extreme weather events. Large-scale cultivators were the most sensitive due to their degree of exposure, and such informal arrangements did not necessarily reduce their vulnerability. In contrast, access to important market information and the capacity to influence cardamom markets turned out to be especially beneficial assets for Kunming- and Yulin-based traders and wholesalers.

Nevertheless, new communication platforms that enhance different actors' access to market information and create new connections between distant stakeholders may further reshuffle the distribution of benefits and risks along the cardamom commodity chain in the future. Cultivators now follow real-time cardamom market prices on their smartphones, ensuring that they receive the right price for their pods. At the other end of the chain, the annoyance of some large-scale actors towards *Weixin* suggests that social media could mitigate their current capacity to pull the strings in this sector, regardless of market conditions. This may occur in a context where extreme weather events – and related market disturbances – become more frequent and intense due to global climate change.

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