



©FAO/Spairani



## Value chain analyses for Shan tea and Arabica coffee under climate change in the northern mountainous region of Viet Nam

July 2015

### Executive summary

This brief summarizes the results of analyses of Shan tea and Arabica coffee value chains in the Northern Mountainous Region of Viet Nam in order to better understand how they are affected by climate change and their potential to be climate smart. It provides highlights from the larger studies that can help shape sectoral development plans within a climate-smart agriculture (CSA) framework to sustainably improve the food security and resilience of the population dependent on these sectors, while capturing any potential mitigation co-benefits. The evidence base will also contribute to the formulation of sub-national and national CSA frameworks and financing mechanisms for agricultural development in Viet Nam.

### Introduction

As part of the project “Climate Smart Agriculture: Capturing the Synergies between Mitigation, Adaptation and Food Security,” the FAO Economics and Policy Innovations for Climate-Smart Agriculture (EPIC) team commissioned MCG Management Consulting<sup>1</sup> to prepare two reports examining the value chains of Shan tea (in the Yen Bai and Dien Bien provinces) and Arabica coffee (in the Dien Bien and Son La provinces) during 2013-2014. In addition to the detailed analyses of the interactions between climate change and these value chains, the reports also identified potential interventions to help the sectors become climate-smart.

### Climate change trends and implications

Viet Nam is one of the countries most vulnerable to climate change (CC) and is expected to face increasingly frequent and unpredictable extreme weather events. The country has developed a National Strategy on Climate Change, in response to which all provinces in the study area have produced provincial action plans on CC. According to the provincial plans of Son La, Dien Bien and Yen Bai, analyses of temperature since 1961 show increases in all districts where significant tea and coffee production takes place. Rainfall trends,

#### HIGHLIGHTS – KEY RESULTS

##### Shan tea

- Enhance knowledge on the role of Shan tea for the income and food security of ethnic minorities.
- Continue improving the quality of Shan tea products for domestic and international markets.
- Increase the volume of Shan tea production by the adoption of more sustainable farming practices.
- Research on and application of CSA measures for the development of the industry.

##### Arabica coffee

- Improve productivity by adopting climate-smart farming practices.
- Enhance coffee quality management to meet the increasing demand for better quality in the market.
- Enhance vertical and horizontal links in the value chain.
- Promote value-added products through investment and promotion.
- Carry out research on and application of CSA measures for industry development.

<sup>1</sup> MCG is a Viet Nam-based consultancy firm: [www.mcg.com.vn](http://www.mcg.com.vn)

however, are more ambiguous, with some districts showing an upward and others a downward trend. Research on the effects of CC on coffee and tea cultivation in Viet Nam remains scarce; but some lessons can be drawn from the literature on other producing countries. CC is predicted to shift the altitude of coffee growing areas in Central America and significantly decrease the area suitable for coffee cultivation in Ethiopia, the birthplace of Arabica coffee (Davis et al., 2012; Laderach et al., 2008).<sup>2</sup>

Similarly, there is little research on the impact of CC on tea production in Viet Nam, while research from other countries projects that tea production will decrease in the key producing countries of India, Kenya and Sri Lanka (CCP, 2014).<sup>3</sup>

Viet Nam has ambitious plans to expand its Shan tea and Arabica coffee



industries at all stages of the value chain from farming practices to export markets. However, the current lack of site-specific research on the effects of CC on these sectors could potentially jeopardize long-term investments in the industry, not least because of the perennial nature of these crops and the above-mentioned effects of CC in other countries. Unlike

other tea plants, Shan tea trees can live for over a hundred years and can be planted at altitudes of over 1 000 metres above sea level (m.a.s.l.), hence the need for specific research. The Northern Mountainous Region (NMR) is home to most of the country's ethnic minorities and has one of its highest poverty rates. The impacts of CC on the overall livelihoods (not just the part based on these cash crops) of the population have implications for the sustainable development of these two sectors and their ability to support food security and rural development under CC.

2 Davis AP, Gole TW, Baena S, Moat J, 2012. The Impact of Climate Change on Indigenous Arabica Coffee (*Coffea arabica*): Predicting Future Trends and Identifying Priorities. *PLoS ONE*, 7(11): e47981.

Laderach P., Mark L., Andy J., Julian R., Emiliano P., Kathleen S., 2010. *Predicted impact of climate change on coffee supply chain*. International Center for Tropical Agriculture. Nicaragua.

3 [www.fao.org/fileadmin/templates/est/meetings/IGTea21/14-4-ClimateChange.pdf](http://www.fao.org/fileadmin/templates/est/meetings/IGTea21/14-4-ClimateChange.pdf)

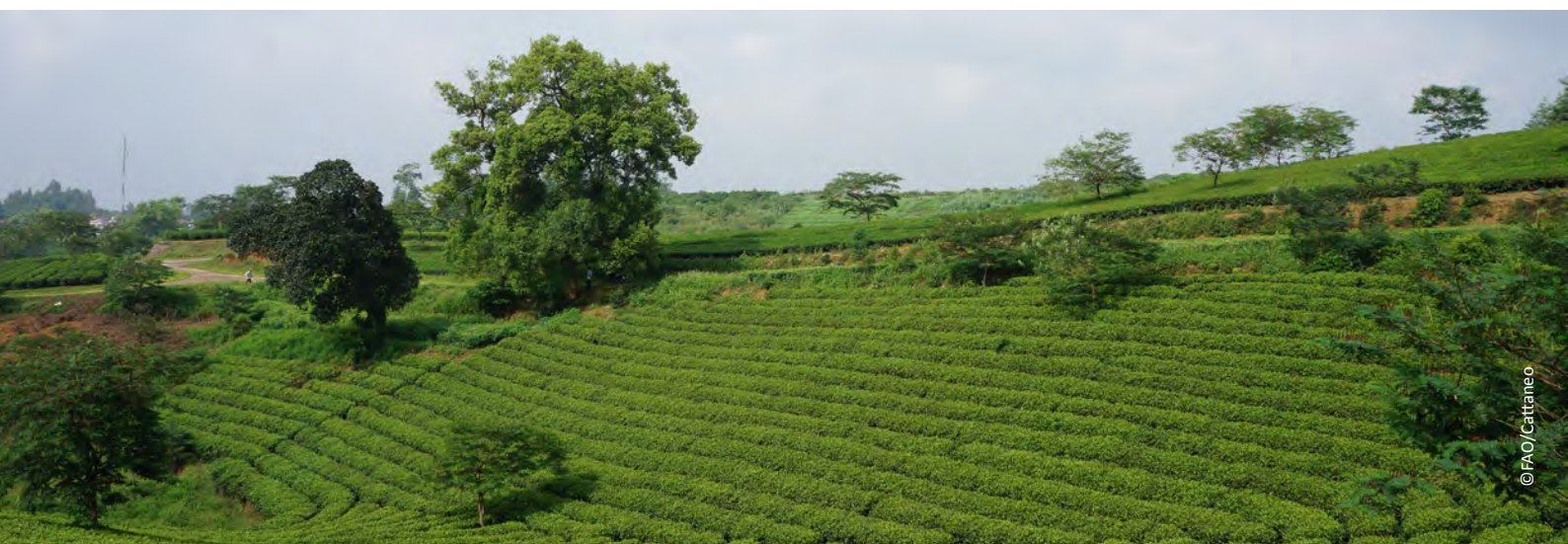
## Methodology

In preparation for the Arabica coffee and Shan tea value chain analyses (VCA), an exhaustive literature review on the Vietnamese coffee and tea sectors was first conducted. The MCG then formulated questionnaires and focus group discussion (FGD) guidelines, framed towards extracting insight on agronomic practices, market context, value chain actors and stakeholders, the influence of climate factors (and options for CSA), as well as current and potential

technological developments. Key value chain actors were identified for each targeted province, with special support from the NOMAFSI team.

Field interviews and data collection in the three provinces involved individuals across the full spectrum of the value chain, including farming households, tea/coffee manufacturers and traders, and authorities at the provincial and district levels. Specific indicators such

as input, crop and production prices, as well as meteorological data were collected. All results are brought together in comprehensive reports outlining action plans for value chain upgrades, SWOT (Strengths, Weaknesses, Opportunities and Threats) analyses. Particular emphasis was placed on aspects related to climate change adaptation. Main results of the VCA are summarized below.





## Summary of Shan tea and Arabica coffee sectors in Viet Nam

### Shan tea

In 2012, Viet Nam ranked 6th in global tea production, and 5th in global tea exports. However, Shan tea production and its market are small (3 042 tonnes of fresh leaves and 604 tonnes of dried tea products in 2013) with 8.2 percent of production for export. “Special Shan tea” is beginning to earn a reputation among domestic and international consumers for its high quality and distinctive values and is commanding higher prices. However, the product’s potential has not yet been fully exploited.

Shan tea production is estimated to cover an area of around 6 000 ha in northern Viet Nam and provide around 6 000 ethnic minority households with income. There are three key farming systems: (i) an extensive farming system of about 394 ha in Yen Bai (80 000 ancient tea trees) and 270 ha in Dien Bien (7 200 trees) in areas at almost 1 400 m.a.s.l.; (ii) a semi-intensive farming system practised in Dien Bien (on approximately 244 ha) using seeds from ancient Shan tea trees; and (iii) an intensive farming system or “industrial plantation of Shan tea” with about 345 ha in lower upland areas at 600-800 m.a.s.l in Yen Bai province.

The Shan tea value chain in Yen Bai is more vibrant due to a greater number of processors and collectors (dominated by the Duc Thien Company), while Dien Bien’s value chain is mainly driven by the Agricultural Seeds Company (DBASC), which accounts for 60 percent of the province’s tea production. In 2013, most tea farmers reported that tea farming generated a better income than other crops, with a majority interested in expanding their tea gardens. However, some households reported that tea farming was only worthwhile with subsidies and that they planned to switch to paddy or corn, indicating that value chains can differ significantly and interventions to improve them need to be site-specific.

### Arabica coffee

Viet Nam is now the world leader in the production of Robusta coffee (40 percent of total world production in 2012/2013) and the 13th largest producer of Arabica coffee (1 percent of total world Arabica production in 2012/2013). Arabica coffee production is scattered around the northern mountainous provinces of Dien Bien and Son La, and central provinces of Lam Dong, Kon Tum and Quang Tri. The total area under Arabica cultivation was estimated to be 42 000 ha in crop year 2013-2014. Viet Nam exports over 90 percent of its total coffee production, mainly in raw form (green coffee beans) with low added value, the industry’s principal weakness. Son La and Dien Bien account for 1.7 and 0.6 percent respectively of the total coffee area of Viet Nam. The coffee plantation area in Son La reached 10 621 ha in 2013 and around 3 961 ha in Dien Bien (Fig. 2).

The current growth exceeds the targets of the Ministry of Agriculture and Rural Development (MARD), which planned to have 4 500 and 5 000 ha respectively in the two provinces by 2020. High parchment coffee prices (ranging from VND 31 500 – 62 500/kg) in the 2007–2010 period were the driving force behind dramatic increases in coffee plantation areas in both provinces.

Arabica coffee value chains in both provinces show interactive links among actors, including input suppliers, farmers, pre-processors, collectors, exporters, processors and consumers. Four leading firms were identified in the region: Cat Que, Minh Tien, Thai Hoa and SOLACO. Of these, only Cat Que and Minh Tien operate with a wide network of farmers and collectors, collecting 90 percent of coffee produced by farmers in Son La and Dien Bien.

Figure 1: Tea production area in Viet Nam 2012 (GSO, 2014)

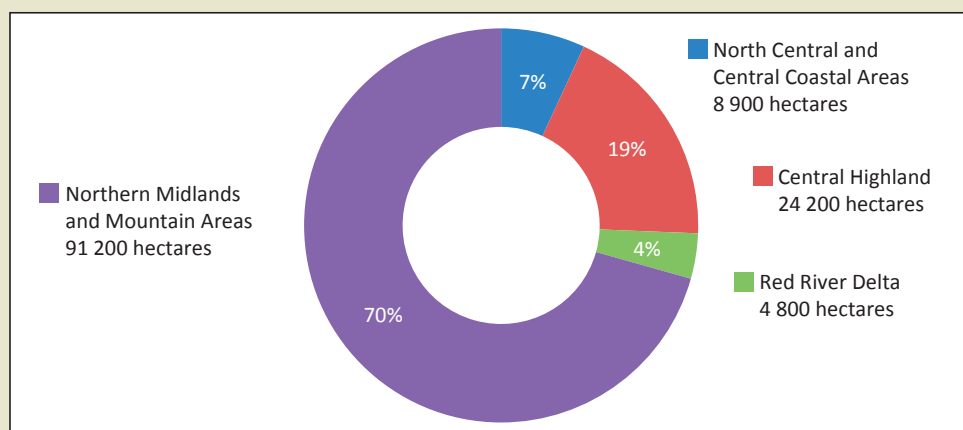
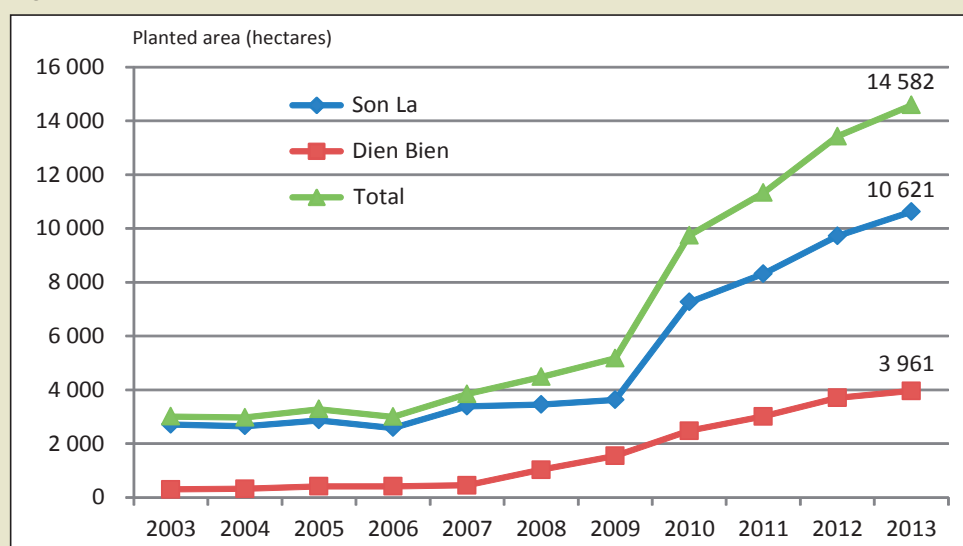


Figure 2: Coffee planted areas in Son La and Dien Bien



## Findings

### Shan tea

1. Focus group discussions (FGD) pointed to various CC related issues that affect production: increased incidence of diseases and pests, unusually heavy rains, high temperatures and drought. There is a lack of site-specific research to identify direct linkages between CC and its implications for production and food security in the region.
2. The production phase is the most vulnerable part of the Shan tea value chain, followed by the processing phase, due to the use of firewood in drying (with potential linkages to deforestation and forest degradation).
3. Shan tea in Yen Bai and Dien Bien is currently supported by provincial tea development projects with subsidies for seedlings, loans and output prices.
4. Business linkages between processors and tea farmers are weak. The Tea Association has only existed in Yen Bai since late 2011, and weak capacity means it is yet to meet its members' needs.
5. Shan tea is processed into green and black tea products, with the former used for the domestic market and the latter largely exported. There are no official statistics on the demand for and consumption of this product in international or national markets.
6. None of the tea farmers interviewed reported adhering to international quality standards, and tea processors only apply the most basic production standards. Around 2 230 tea farmers have recently been participating in 70 Viet-GAP (based on international standards for “good agricultural practices”) groups supported by the Quality and Safety Enhancements of Agricultural Products (QSEAP), and 69 other groups certified by the VIETCERT certification body. There is only one registered trademark for Shan tea, “Suoi Giang-Yen Bai”.
7. Shan tea has the potential to absorb CO<sub>2</sub> and help prevent soil erosion. However, increased intensive farming and industrial production can also directly and indirectly threaten the environment. FGDs raised the following related concerns: land encroachment leading to deforestation, increased use of chemicals, and a higher demand for firewood for tea processing.
8. In the domestic market, Shan tea processors receive the largest share of the total retail price along the value chain at 36.9 percent, followed by retailers at 30 percent, farmers at 26.6 percent, and tea leaf collectors at 6.5 percent.
9. Gross margins for processing companies supplying the domestic market are higher than that of the only processing company directly exporting. This indicates that the value of Shan Tea is still not recognized in export markets and campaigns to improve this situation will be needed to tap into export markets.





## Arabica coffee

1. FGDs point to various CC related issues that affect coffee production: an increased incidence of white frost (which damaged about 1 000 ha of coffee in 2013), more pests, high temperatures and unusually heavy rains/flash floods. There is a lack of site-specific research to identify direct linkages between CC and its implications for production and food security in the region.
2. It appears that shade-grown coffee can be more resilient to these shocks, while at the same time commanding higher prices on the market. This potential, however, has not yet been exploited in the region.
3. The production phase is the most vulnerable part of the Arabica coffee value chain, with potentially negative effects on deforestation. Increased temperatures will potentially push Arabica coffee to higher altitudes, increasing deforestation on the steep terrain, which is increasingly prone to flash floods and soil erosion.
4. Total coffee growing areas in two provinces have already exceeded the planned coffee cultivation area (for 2020) approved by MARD, indicating a lack of coordination between central government, the provinces and the coffee industry. Farmers in many communes planted coffee in unplanned areas (with slopes over 15 degrees) without developing the necessary infrastructure (e.g. irrigation and roads). As a result, it is difficult to adopt intensive and sustainable practices such as intercropping or other conservation practices that could prevent soil erosion.
5. Coffee production in Dien Bien and Son La is mainly semi-intensive, small-scale, scattered and carried out independently by households with an average plantation area of 0.5 – 1 ha. There are no cooperative models or groups to facilitate bulk purchase of inputs and sales of products in these provinces. A coffee association was established in Muong Ang District (Dien Bien province) in late 2013, but it will take time to define its role and function to promote the interests of farmers and other actors in the chain.
6. Despite subsidized credit lines for coffee farmers from the State Bank of Viet Nam, only 33.33 percent of households in Dien Bien and 10.20 percent in Son La have access to bank credit. The constraints identified by the Department of Agriculture and Rural Development (DARD) include farmers' lack of sufficient collateral assets, short-term loans and complicated procedures.
7. The coffee farmers interviewed for this research indicated that coffee production would bring positive cash returns (not taking into account the market value of household labour), if prices remain at current levels (6 000 VND/kg cherries). They also believed that coffee cultivation would continue even though it was less profitable than rice or maize, as it can be cultivated on soils unsuitable for anything else. On average, the households interviewed earned around 50 percent of their income from coffee.
8. In two provinces, 55 percent of the coffee farmers were found to possess a hulling machine and to pre-process cherries into parchment coffee before selling them. The remaining 45 percent sold coffee cherries to traders. At 2013-2014 season prices, the former group had a negative gross margin (-17.57 million VND/ha), whereas the latter had the second largest gross margin (8.66 million VND/ha) among the chain actors, after the export companies (9.18 million VND/ha).
9. The Common Code for the Coffee Community (4C) programme is currently the most widely promoted and successful sustainability programme in the Vietnamese coffee sector and Dak Lak and Lam Dong provinces account for the majority of certified coffee production. In Son La and Dien Bien, the application of sustainable practices in coffee production is still in the early stages.<sup>4</sup>

4 The 4C Association is the leading multi-stakeholder sustainable coffee platform, guiding the mainstream sector toward more sustainable production. [www.4c-coffeeassociation.org](http://www.4c-coffeeassociation.org).



## Summary of SWOT analyses

Tables 1 and 2 provide a summary of the SWOT analyses for each sector. Regarding the *strengths* of coffee and tea production in the targeted provinces, the climate and soil are well-suited for these types of agriculture. Moreover, local agriculturalists possess a deep degree of experience in the cultivation of these crops. As a result, both the coffee and tea grown in these zones enjoy a reputation for high quality (although quality variance is high for coffee production).

However, *weaknesses* include the fact that both crops are produced at a relatively small-scale and coffee production in particular is not optimally managed (with environmental and efficiency costs as a result). Due to the mountainous nature of the targeted provinces, transportation costs are significant. Additionally, the flow of market-relevant information is relatively weak for both coffee and tea value chains.

**Table 1: SWOT analysis of Shan tea**

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>Suitable climate and soil</li> <li>High concentration of tea growing</li> <li>High quality and organic products</li> <li>Registered trademark (i.e., Suoi Giang Shan tea)</li> <li>Support of the local government</li> </ul>	<ul style="list-style-type: none"> <li>Small scale of plantation</li> <li>Small production</li> <li>Low level of business acumen</li> <li>Mainly green tea, semi-products consumed locally</li> <li>Geographical difficulties cause high costs and low competitiveness</li> <li>Underdeveloped market and market information</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>Increasing demand in both international and domestic market</li> <li>Support from various development organizations</li> </ul>	<ul style="list-style-type: none"> <li>Food safety and quality standards, especially in areas of intensive farming</li> <li>Increasing competition in both domestic and international market</li> <li>Increase in production costs</li> <li>Trade barriers</li> </ul>

**Table 2: SWOT analysis of Arabica coffee**

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>Suitable Climate and soil conditions</li> <li>Experienced coffee production</li> <li>Support of purchase companies and local governments</li> <li>Sound coffee area planning and orientation</li> <li>Good quality of coffee for high quality export</li> <li>Technical Support from Research Institute and local enterprises</li> </ul>	<ul style="list-style-type: none"> <li>Small and scattered production</li> <li>Limited sustainable standards production</li> <li>Low value-added mostly in production and preliminary processing</li> <li>Poor infrastructures and facilities</li> <li>Unstable product quality</li> <li>Heavy dependence on export market with high rate of raw coffee products</li> <li>Limited number of motive forces</li> <li>Disadvantages of geographical location</li> <li>Weak planning for the production</li> <li>Weak integration among the chain actors</li> <li>Underdeveloped market, market information and forecast</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>Local orientation for coffee development</li> <li>Potential markets</li> <li>Increasing interest of private sectors</li> </ul>	<ul style="list-style-type: none"> <li>Frost/cold weather threat</li> <li>Plantation in high sloping area would increase risks of deforestation, severe frost impacts, strong winds, water conservation and soil erosion.</li> <li>No terraces, or shade trees</li> <li>Small scale production</li> <li>Traditional production vs technical requirements for sustainable development</li> <li>The fluctuation of export price</li> </ul>



Both sectors enjoy the *opportunity* of strong international demand for their products, and in Vietnam there is a growing domestic demand for high quality tea. Nevertheless, export markets and prices are notoriously unpredictable, constituting a direct *threat* to actors along the Arabica coffee and Shan tea value chains. Whereas competition both within and without Vietnam may be the biggest threat to tea production in these provinces, coffee faces pronounced challenges from environmental factors such as frost and soil erosion.

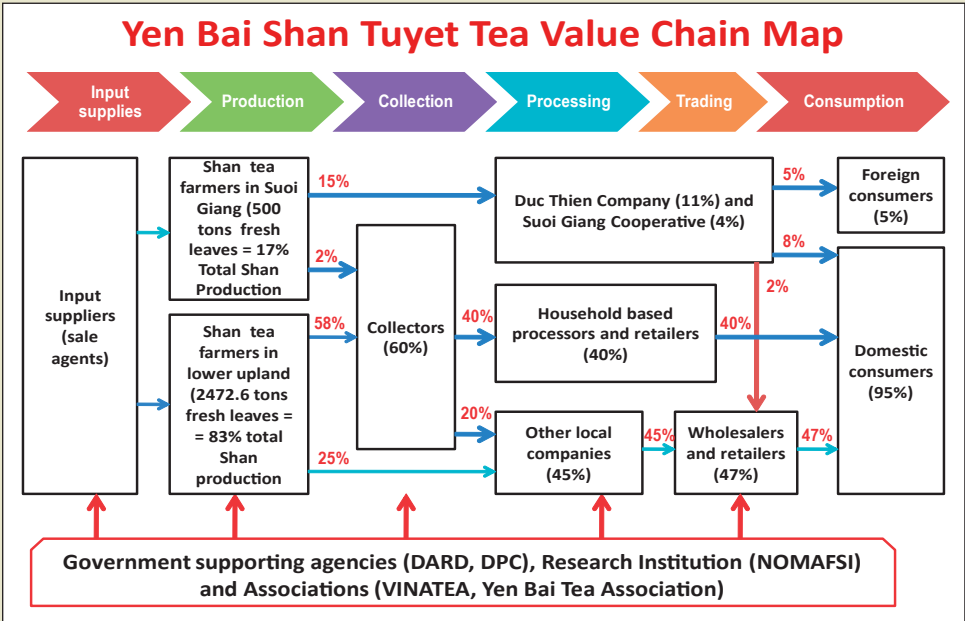




## Recommendations

### Shan tea

- Enhance knowledge on the role of Shan tea for the income and food security of ethnic minorities: i) encourage data collection and analysis of households (mostly of H'mong origin) involved in Shan tea production, and ii) use evidence base to inform policy making that promotes Shan tea, reduces poverty and increases resilience to the expected impact of CC.
- Continue improving the quality of Shan tea products for domestic and international markets: i) support lead firms to brand and enhance market development of special ancient Shan tea products, ii) support tea processors to improve the quality of processed products for greater added value, more environmentally friendly and safer products, and iii) support tea farmers and processors in quality improvements to raw materials through the adoption of climate-smart farming practices.
- Increase the volume of Shan tea production by the adoption of more sustainable farming practices: i) expand current plantations and establish new ones as much as possible without causing deforestation, and ii) improve extension systems for more sustainable farming practices for ancient Shan tea areas.
- Research on and application of CSA measures for the development of the industry: i) conduct more systematic research to assess the impacts of climate change on tea production, ii) align all tea sector development plans with CC projections and poverty reduction programmes in NMR.







©FAO/Cattaneo

Arabica coffee

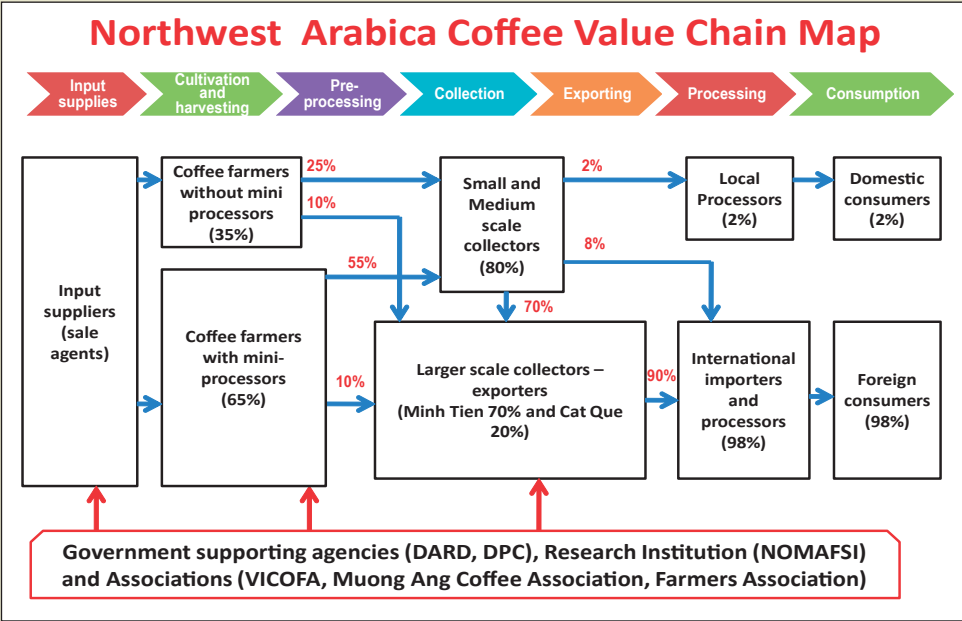
1. Improve productivity by adopting climate-smart farming practices: i) help coffee growing households access quality inputs and the relevant extension training to improve the quality of coffee cherries, ii) implement plans for sustainable coffee development, iii) support nurseries to improve the quality of seedlings, and iv) support research and the application of CSA practices.

2. Enhance coffee quality management to meet the increasing demand for better quality in the market: i) develop a unified quality management system to meet these demands, and ii) support Arabica value chain actors in complying with sustainability standards such as the 4C quality management system.

3. Enhance vertical and horizontal links in the value chain to reduce costs
- and develop the brand name of Northwest Arabica Coffee. Strengthen horizontal links among coffee farmers for collective business actions, and vertical coordination among chain actors for sustainable coffee development.

4. Promote value-added products through investment and promotion: i) promote investment in the processing of refined coffee products, and ii) enhance business promotion for domestic consumption.

5. Carry out research on and application of CSA measures for industry development: i) conduct more systematic research to assess the impact of climate change on coffee production, ii) align all coffee sector development plans with the CC projections and poverty reduction programmes in NMR.



ACKNOWLEDGEMENTS

This document is based on two reports prepared by MCG Management Consulting as an outcome of the Value Chain Analysis for Arabica coffee in Son La and Dien Bien provinces and Shan tea in Yen Bai and Dien Bien provinces. They were commissioned by Northern Mountainous Agriculture and Forestry Science Institute (NOMAFSI) as part of a project on Climate Smart Agriculture in Vietnam, funded by the European Commission and implemented by the Food and Agriculture Organization (FAO) of the United Nations.

Valuable guidance was provided by the members of NOMAFSI and the Economics and Policy Innovations for Climate-Smart Agriculture (EPIC) team at the FAO. The stakeholders of the coffee and tea supply chains in the three provinces contributed their time, experience, and expertise during the assignment. Any views expressed or remaining errors are solely the responsibility of MCG.



ABOUT EPIC

EPIC is a programme of the Food and Agriculture Organization of the United Nations (FAO). It supports countries in their transition to Climate-Smart Agriculture through sound socio-economic research and policy analysis on the interactions between agriculture, climate change and food security.

CONTACTS

Economics and Policy Innovations for Climate-Smart Agriculture (EPIC)  
Agricultural Development  
Economics Division (ESA)  
Food and Agriculture Organization  
of the United Nations (FAO)  
Viale delle Terme di Caracalla  
00153 Rome, Italy  
andrea.cattaneo@fao.org

