Nicaragua is among the 16 countries producing and exporting certified organic cocoa in the world. 100 percent of exportations are the highest quality, Quality A. Given Nicaragua’s potential in the global cocoa market, private investors, international cooperation agencies and NGOs have invested time and resources in strengthening the cocoa value chain for more than a decade. The chocolate value chain is evolving rapidly, with highly differentiated markets in terms of price, quality, type of production, and management of social and environmental issues, among other. Moreover, consumers are increasingly prepared to pay a premium for high quality or ethically produced cocoa. These trends are creating pressure to value chain stakeholders, including wholesalers, retailers and manufacturers, to adopt standard certification and ensure traceability in the value chain in order to guarantee product quality.

Cocoa becomes a lucrative investment at the post-harvest stage of the production process, after the products have left the farm. However, the quality and productivity of production relies on farm-level production. As the profitability of the sector is directly linked with production success, the entire value chain is vulnerable to climate variability and weather events. It is crucial to reduce the vulnerability of producers.
Activities

There are around 10,000 cocoa farmers, of which an estimated 95% are small producers, and the balance are medium and large producers. Small producers own farms between 0.7-3.5 hectares and normally deliver their products to retailers through cooperatives and associations. Formality of growers is difficult to assess as many small farmers do not have land ownership. Some larger companies are establishing commercial plantations, such as Ritter Sport and Bean & Co, and medium size companies, such as Ingemann, are implementing innovative business models that cover the entire value chain.

Direct cocoa beans are critical steps in the production process.

Microbial fermentation and drying of cocoa tree requires protection from rainfall of 1,000-3,000 mm. The ideal temperature for the cocoa production is between 18-32°C, with an environment that could affect the quality of the product.

The growth stage of the cocoa plant is particularly vulnerable to climate variability. Changes in the duration of the rainy or dry seasons affect the physiological settings for flowering and bean production. Short rainfall and prolonged droughts can cause losses in flowers and diminish sugar development in the fruits, affecting the post-harvest phase and overall product quality.

Main challenges in the sector

Continued political instability has been leading cooperatives to downsize or close operations temporarily and, consequently, exports have been delayed. Other challenges include limited and reduced credit and financial support available for producers and reduction of cooperation programs. All negative impacts have been particularly critical for small farmers and organizations.

Sector association level

Around 60% of farmers are organized in associations or cooperatives and normally deliver the products to retailers through them.

Key sector stakeholders

Direct actors: farmers, cooperatives and associations, harvesters and seasonal labour force, input suppliers, post-harvest & storage centers, anchor companies, traders and transporters.

Indirect actors: research centres, including the Nicaraguan Institute of Agricultural Technology (INTA), National Agricultural University (UCA) and Tropical Agricultural Research and Development Institute (CATIE), National Agricultural University (UCA), Technology (INTA), National Agricultural University (UCA), including the Nicaraguan Institute of Agricultural Technology (INTA), financial institutions and funding programmes, international cooperation, technical assistance and NGOs.

Main climate-related impacts affecting the value chain and the entire sector

- Post-harvest processes are significantly dependent on environmental conditions. The quality of products is vulnerable to excessive humidity during storage or transportation to collection centres.
- Strong winds and other extreme weather events, such as hurricanes, windstorms and floods, may cause loss in flowers, pods or even causing the falling of plants.
- Increases in temperature and excessive humidity can damage the beans during drying, inducing conditions for mould formation.
- Floods, landslides and disruptions in rural roads can affect the transportation of products to markets, leading to increasing transportation costs.
- As the road network in the main cocoa regions is frequently affected by floods and landslides during the rainy season, farmers often use rivers and boat transportation to deliver their products to the market. These modes of transport enhance the risk for increased humidity. On the other hand, during prolonged periods of drought, the lower water level of rivers complicate the river transportation of products to markets.

Normal environmental conditions for production

- The ideal temperature for the cocoa plant is between 18-32°C, with an average of 25°C and ideal annual rainfall of 1,000-2,500 mm.
- For optimal production, in order to avoid physiological stress, the cocoa tree requires protection from direct sunlight and excessive winds.
- Micrőbial fermentation and drying of cocoa beans are critical steps in the post-harvest process, to guarantee developing of aroma and flavour, a main quality factor in chocolate industry. Humidity and temperature conditions need to be monitored in order to assure the quality of the product.
- Dry beans required to be packed in clean bags made of food-grade packaging material, stored off the ground and away from wails in dry, well-ventilated and smoke-free storage. Cocoa should be transported in clean, well-ventilated conditions away from odorous material.

Value chain of the cocoa sector in Nicaragua

The value chain builds on six main processes from input selection to transportation and distribution. Each process involves specific activities, which are conducted by direct actors and engage identified indirect actors.

BRPM analysis

Each process of the value chain was assessed in order to identify the climate risks associated to each phase and the resilience options and tools available to address these risks and achieve specific resilience outcomes. The BRPM analysis of the site preparation, crop management and storage and transport processes in the cocoa value chain is presented below.
Resilience Solutions

Leading resilience solutions

Identified resilience solutions in the cocoa sector in Nicaragua vary from certified schemes to knowledge services, including expertise, training, technical assistance and specialized consultancies. The leading resilience solutions identified are certification and traceability schemes.

Description: Certification and traceability schemes encourage the production of stipulated product quality by applying good production practices, improving entrepreneurial and productive processes, reducing environmental impacts and supporting financial sustainability. Ultimately, the certification of products can lead to greater knowledge, capacity, higher prices and profits for cocoa farmers.

At the farm level, certification schemes stipulate guidelines and production practices in terms of crop and farm management, including shade management, agroforestry, biodiversity, conservation and management of soil and water, and watershed management.

to name a few. The implementation of production practices aligned with certification schemes requires training and capacity building for farmers, producers and cooperatives to guarantee that the quality level and standards of a given certification or tracing schemes are met.

Resilience contribution

Good practices promoted by certification and traceability schemes can optimally lead to reduced losses due to climate change and to guarantee sustainable and climate-resilient production in the cocoa sector. As best practices supported by certification schemes in the cocoa sector are closely linked to farm-level biodiversity, these schemes are expected to contribute directly to the climate resilience of the sector. In practice, biodiverse cocoa agroforestry systems may perform better during extreme climatic events than mono-crops.

In addition, certification can help farmers to face the price variability and achieve financial sustainability, as certification of products ensures higher prices and a larger share of final price to the farmer, than traditional cocoa markets.

Advantages of the resilience solution

- As the quality of the cocoa bean greatly influences final prices, certifications schemes are key in ensuring adequate quality of cocoa production and higher prices.
- Certification schemes support the strengthening of farmers’ capacity through training that enhances their understanding of plant physiology, crop and product management, and ultimately the financial management of their farms, including budgeting and access to credit.
- The main certification companies, including international quality control and traceability schemes and independent to certification schemes (e.g. Ingemann), are represented in Nicaragua and have proven to be successful.
- The generalization of certification schemes is being supported by the increasing global demand and willingness to pay premiums for high quality and sustainable cocoa.

Main challenges related to the resilience solution

Certifications schemes are expensive and the implementation of required changes in production processes and farm-level practices can create a significant cost impact. Most small farmers do not have the necessary financial resources to proceed with necessary investments to ensure the qualifications of certification schemes.

International certification standards respond mostly to European or North American requirements, which can change unexpectedly and repeatedly within short time periods. Constant changes in requirements and regulations can make the implementation processes even more expensive and less appealing to farmers and producers.

The requirements and benefits associated with the certification programs are not always clear for producers and, consequently, selecting a certification processes can be confusing for producers. Moreover, in some instances, particularly for producers that are not exporting, investments required by certification schemes are ultimately not reflected in their revenues.

Market opportunities

With adequate training around certification processes and protocols, the different actors involved in the production and commercialization of cocoa in Nicaragua may also support and facilitate certification processes. With around 1.8 million hectares available with climatic conditions for growing cocoa, there is a big potential to increase its production in the country.

Private companies play a crucial role in achieving a higher uptake of certification and traceability schemes in the cocoa sector. The demand of certified cocoa beans is continuously increasing in Nicaragua, as companies such as Ritter Sport are paying premium prices for cocoa beans that meet the quality standards for the international fine cocoa market. Ingemann is an example of a company that trace cocoa beans from the early stage, to ensure that good practices are being implemented in order to meet with quality requirements.