



**Precious
Forests**
Foundation

*Market testing of
Coula edulis
as follow-up of NTFP
business case study*

Final report



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Client

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1. INTRODUCTION

1.1. Context and objective

As a follow-up on the detailed business case study on Non Timber Forest Products (NTFP) commissioned by Precious Forests Foundation to identify some of the more likely successful candidates, Form International and Eticwood have put extra effort in making one of these candidates “Coula edulis” known to trader¹ in the hope of finding a partner willing to introduce it into a broader market. The choice was on Coula edulis because it is a nut which has great properties and in principle less problems with perishability. To do this Form International and Eticwood have approached a broader network of traders in nuts and fruits to show them the potential of Coula edulis and allow them to test the nut according to their systematics. The idea behind it is that traders in nuts are not likely to read studies to identify potential products but are more likely to try something out that is proposed to them.

The objective was to sign MOUs with each of the parties interested in pursuing the potential of Coula edulis further, stating a continuous exchange of information and the roles of the various project partners (PFF, Form and Eticwood) for the follow-up activities.

1.2. Methods

Based on the study conducted by Form International for PFF on NTFP’s, a short informative storyline was developed to be sent to potential traders to provide the basic information needed to understand the market potential of the Coula edulis.

Form and Eticwood have then approached their network and done additional research online as well as in stores in order to compile a list of potential traders to contact. These traders were approached with the short informative text and asked if they were willing to see and test Coula edulis in the context of new product development.

In the meantime, Eticwood shipped Coula nuts from Gabon for distribution to potential traders in Europe. The distribution of samples was seen as a key element for making any discussions on the products concrete.

After exchange of tasting-agreements with a number of traders, packages of samples of nuts were distributed and thereafter feedbacks collected.

Finally, based on the feedback from those traders a short report was elaborated for submission to PFF with the findings and proposed follow-up steps.

¹ In the context of this study, the term *trader* is used to refer to any organization directly involved in the trading of dry fruits and nuts products, such as traders, processors, wholesalers, distributors.

2. NUTS COLLECTION, SORTING AND SHIPMENT

2.1. Nuts origin and collection

Eticwood took over the importation of *Coula edulis* from Gabon. In total, about 22 kilos of nuts in shell have been imported to Belgium. Those were divided in two batches; one batch harvested by local populations in Kouye (Figure 1), the other one bought in the capital with claimed origin North of Gabon.

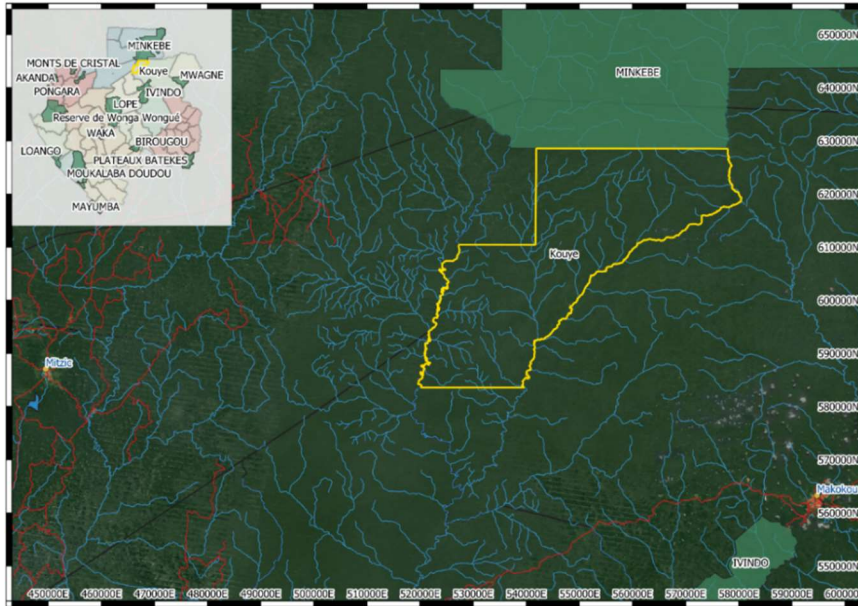


Figure 1 : Map indicating the harvesting location for *Coula edulis* in Gabon

The batch coming from Kouye has been “cleaned” (removal of the pericarp, external husk) against remuneration in Libreville, to prevent natural deterioration (mold, decomposition, bugs) and reduce the weight of the nuts for transportation. The other batch has been bought pre-cleaned by the villagers. Nuts have then been transported to Belgium by plane as additional luggage (Figure 2).



Figure 2 : Left : *Coula edulis* in their original shell before harvesting (Anonymous internet stock photo); Right : *Coula edulis* stored at the Eticwood office (Eticwood)

Once in Belgium, the cleaned whole nuts were stored in a dry room to slowly dry them to ease later cracking and collection of the final dry shelled nut.

2.2. Testing of the material

2.2.1 Flotation test

A first quality test has been done with water. The flotation test allows discarding mouldy and empty nuts. As shown in the images, nuts floating (Figure 3 in the left) show mouldy or undeveloped almonds unsuited for consumption (Figure 3 in the right). About a fourth of both batches had to be discarded at this stage.



Figure 3 : Left: flotation test; Right: moldy and empty nuts (Eticwood)

2.2.2 Shelling

Nuts have then been cracked open manually. When the nuts are fresh, the process can appear to be difficult as the fresh inner nut is stuck to the shell. After slow drying, the inner nut slightly shrinks and detaches itself from the shell, which eases the opening (Figure 4).

2.2.3 Visual test

Prior to shipment of the samples to traders, a visual quality test has been done. Nuts showing holes, stains or mouldy parts were discarded Figure 4. For some nuts, the quality deficiencies are difficult to detect.



Figure 4 : Discarded Coula edulis due to holes, stains, mouldy parts (Eticwood)

In total, more than 2.000 nuts have been collected. After cracking and quality checking, about 30% of them qualified to be sent as samples to the different organizations. In total, 2/3 of the total volume had to be discarded.

Regarding sizing, it was calculated that the average weight of a nut with shell was 14,5 g and the average weight of a shelled nut was 4,2 g.

2.2.4 Shipment

After the contacted organizations agreed on testing some samples, nuts were sent via mail. Nuts were packed in food friendly plastic bags with samples of 100 g, 200 g, or 500 g depending on the request. Those bags were then placed in a cardboard box or envelope depending on the size and sent to the organizations with a tracking number.



Figure 5 - Premium quality nut manually opened

2.2.5 Inclusion of other NTFP

Previous to this study, Eticwood had conducted an opportunity study addressing the importance for forestry companies to invest in profitable projects for farmers with real market opportunities, as well as the promotion of the product diversity from Gabon. One focus was to study the harvesting patterns of NTFP and spices (for example afromomum, piper sp., local flowers or nuts) of villages surrounding forestry concessions and evaluate opportunities for scaling up those practices for specific products to diversify villages income. A interesting potential for several specific products have been highlighted :

- *Coula edulis* (african walnut)
- *Xylopi aethiopica* (african pepper),
- *Aframomum melegueta* (grains of Paradise)
- *Terminalia catappa* (badame)

To capitalize on the outcome of that opportunity study and to increase chances of creating interest among european traders for those NTFP, the shipment of additionnal Badame, african pepper and grains of Paradise was discussed when judged relevant. However, given the focus of the market players on the nuts sector, only samples of 100 g of *Terminalia catappa* (badame), collected by Eticwood in Gabon, were added to the shipment of samples of Coula. Badame kernels had to be roasted prior to shipment to ensure proper conservation as the fresh almond shows a high humidity content.



Figure 6 - Almonds of badame bought in Libreville, Gabon (Eticwood)

3. MARKET FEEDBACK

3.1. Number of traders contacted

Over the project period, 35 traders have been contacted either by email or by filling a form on their website. Those companies were located across Europe (Belgium, France, Germany, Netherlands, UK) except for one, from the USA.

Out of those organizations, 8 were open to a discussion about the project and 7 of them agreed on tasting the nuts.

3.2. Feedback from traders (*Coula edulis*)

Summary of traders' feedback

Transport, processing

- Some of the nuts arrived mouldy due to transport time and in poor pre-cleaned condition. Fortunately, it still was possible to clean and crack most of the nuts – but it was a laborious job. As a consequence, cracking the nuts before transport is recommended to increase the quality.
- The biggest issue would be finding a food-safe facility to process in-country as cracking in the USA/Europe would be too costly.
- Roasting the nuts was described as difficult and recommendations for the proper technique were requested. R&D regarding product conditioning and conservation, and post-harvesting treatment (ex: sterilization, drying, packaging) is needed.

The appropriate treatment of the nuts for storage and for consumption would need to be developed

Taste, market potential

- Feedback regarding the taste: the skin tastes a bit chalky and seems difficult to remove (US consumers prefer nuts with their skin). In general, the taste of the nuts was described as OK but not amazing (probably due to the inexperienced roasting). The sweetness of the nut was appreciated.
- "Great product, surprised that it was ready to eat. I will try it again when oven-roasted."
- *Coula edulis* has an organoleptic potential as well as a potential for storytelling.
- The taste of the fruit is rather bitter, with a slight yeasty taste. The skin surrounding the seed is quite thick and very close to the appearance of soil, which could be a drawback in the French market in the current state.
- Belgium isn't a country of choice for new product introduction, as the market is not particularly receptive to food innovation (at least in the dry fruits and nuts sector). It was suggested to explore the UK, German or Dutch markets. In the past, the UK was a great market for novelties, but Brexit has created a new context that leads to less attractiveness for market exploration
- Wild harvesting from sustainably managed forests could be an important element of marketing as it is linked directly to the preservation of forests.
- There is great marketing potential for ethical products (increase local communities' revenue).

- There is a good potential in the chocolate sector for praliné (sugared almond; praline-flavoured) and brittle nuts in chocolate or ice cream.
- The snacks market is very sensitive to quality and food safety (HCCP, IFS). These products can be interesting to taste on the tree (the pleasure of picking and eating an ultra-fresh product), or more generally on the spot (local product) but lose interest here in the face of nuts already well established on the French market which will have more gourmet flavours and a quality-price ratio that is probably more interesting.”

Necessary development steps

- Some traders do not want to pursue the product due to the deterioration of the nuts during shipment. If they had received a dried shelled product, their feedback may have been different.
- Clear estimate of potential volumes: main concern, next to food safety, is the continuous, large availability of raw materials.
- Novell Food Registration
- Conditioning before shipment and facilities in country of origin (HAACCP certification)
- Figuring out the ideal preparation as a final product
- Creating a clear storytelling around a value chain.

4. CONCLUSIONS

4.1. Market feedback

Market feedback for the *Coula edulis* was mixed among the different traders. It seems that only companies with a more innovative or explorer mindset see an interest in Coula. French and Belgian companies were less enthusiastic with new product development than companies working in more innovative markets such as Netherlands and UK. Most parties also indicated that getting a new product in the market is a lengthy process, and many of the traders do not actually have the energy and the resources to do this.

In terms of the information needs to introduce a new product in the (European) market, all traders were very clear on needing to find out the following information:

- Quantity reliably available on an annual basis
- Conditioning possibilities in countries of origin and food safety certification possibilities
- Ideal treatment to bring out best the taste of the product
- Food safety (biotoxins, microbiology)
- Novell Food registration in the European market
- Develop the story telling potential
- Certification as organic or other relevant certificate (UEBT)

This process may take several years to complete with probably the lengthiest process being the novel food registration.

It seems also that all traders would be more comfortable if the market development were not their responsibility. The needed prove of the quality of the product and market potential is too much for most traders contacted. If someone else were already offering the product in Europe, it would be easier for others to integrate the product into their range.

4.2. Potential next steps

Based on the traders' feedback and their hesitations regarding the introduction of new products, it becomes clear that products will have a better chance after they have been introduced in the market. The question then is who should do the work for the introduction. For the EU market unknown products will have to pass the Novel Food regulations. As with any marketing work, it will have to be done before a real proof of the success of a product can be obtained. It would maybe not be a strange thought to have **a fund for this specific purpose**.

If this hurdle becomes less high, there is still the question of the sanitary condition of products and availability of volume. The harvesting process and the contamination risk should be analysed using a Hazard Analysis Critical Control Points (HACCP) approach to identify the critical control points and address these. Such an analysis can be done relatively quickly. Designing the solutions will need support. This would concern, among others, the identification / adaptation of warehouses at forest and harbour level. Much can be learned from the cashew market. It is important to find out which sanitary rules would apply for products. As it is we do not understand why aflatoxins are a problem for

Coula but not for Cashew, Coffee and Cocoa. The relation between aflatoxins and processing needs to be clearly understood in order to be able to produce cleanly.

With proper partnerships, the product flow can be more closely controlled so that volume and sanitary state are sufficient for introduction in markets such as the EU.

Parallel to the groundwork, the **attractiveness of NTFP from sustainably managed forests** can be further explored. Does the positive story represent enough marketing appeal to convince companies to invest in products. Similarly, is there an **advantage for wild harvested products compared with those from plantations?**

Much of this work can be covered in a producing country such as Gabon. In parallel to the Coula edulis market study for PFF, Eticwood and its partners conducted a feasibility study in 2021 to define the opportunities for structuring low-carbon agroforestry chains around FSC-certified forest concessions in Gabon (project "Oil&Spices for Sustainable Landscapes"). The objective of this study was to lay the foundations for functional projects that would contribute to the respect of FSC principles, improve the income of local populations, enhance the value of waste products from the timber sector and facilitate access to financing mechanisms for producers.