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Using geographical indications as a development tool

A guide to product choice illustrated by the cases of Oku white honey and Penja pepper in Cameroon

Hive for Oku honey production, Kilum-Ijim forest, Cameroon

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SUMMARY

In comparing the contrasting situations of the “Penja pepper” and “Oku white honey” supply chains after their registration as geographical indications (GI) in Cameroon, this technical paper identifies the conditions under which a GI can be a development tool for producers. The prerequisites: a strong link between a product’s qualities and its origin, market growth potential, an information asymmetry about this market, a producers’ organization wishing to cooperate, and a system of traceability and fraud prevention. The benefits of GIs are all the greater since the costs of production and coordination are controlled, quality bonuses are equitably distributed in the supply chain, and scarce resources are well managed. Elements for a broader territorial development analysis are mentioned.

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FOREWORD

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Contents

List of acronyms

AFD	Agence Française de Développement
ANCO	Apiculture and Nature Conservation Organisation
BERUDA	Belo Rural Development Association
CAMGEW	Cameroon Gender and Environmental Watch
CIG	Common Interest Group
CIRAD	*Centre de coopération internationale en recherche agronomique pour le développement* (Agricultural Research for Development)
GI	Geographical Indication
HONCO	Honey Cooperative
IG	Indication Géographique
INAO	*Institut National de l'Origine et de la qualité* (French national institute of origin and quality)
INPI	*Institut National de la Propriété Intellectuelle* (French national intellectual property institute)
ISO	International Organization for Standardization
KIWHA	Kilum-Ijim White Honey Association
OAPI	African Intellectual Property Organization (*Organisation Africaine de la Propriété Intellectuelle*)
OECD	Organisation for Economic Co-operation and Development
OHCS	Oku Honey Cooperative Society
OWHC	Oku White Honey Cooperative
PAMPIG	*Programme d'Appui à la Mise en Place des Indications Géographiques* (Support program to implement Geographical Indications)
PHP	*Société des Plantations du haut-Penja* (High-Penja Plantation Society)
TRIPS	Trade-Related Aspects of Intellectual Property Rights
WIPO	World Intellectual Property Organization
WTO	World Trade Organization

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Summary

AFD has long supported implementing geographical indications (GIs), considering them to be a tool for rural and territorial development. However, the different GI projects have produced contrasted results. This is especially true for the products labeled as part of the support program for implementing GIs, known as PAMPIG (the Support program to implement Geographical Indications). In Cameroon, Penja pepper is considered a success, whereas Oku white honey is less so. Demand has risen faster than supply in both cases, and that has produced price tension in the case of the honey: +30% for producers, +100% for the cooperative. In the case of the pepper, the seven-fold increase of prices was accompanied by an increase in cultivated land and in the number of producers. The Penja pepper GI association is fully functional and operational, whereas the umbrella organization for the honey, which gathers beekeepers with very different practices, is facing both a lack of means and communication problems. Despite the notable local market potential, the development costs of GI honey were apparently much higher than expected.

Basing the analysis on these contrasting situations, the goal of this report is to determine what conditions produce success for GI projects and to identify the criteria to guide the choice of future products. The approach is analytical and is illustrated by the results of a two-week qualitative survey in Cameroon.

The report first analyzes the requisite conditions in choosing GI products, or in other words, the conditions without which the recourse to a GI is not relevant. The report reveals five conditions:

- The link between origin and the qualities sought by consumers must be as strong as possible to avoid encroachment by substitutes.
- Market studies must show a potential increase in demand.
- GIs being signs of quality, it is not relevant to pursue this approach if producers' efforts on quality are not perceived by consumers. Otherwise, the project is not useful and producers will have no interest in developing a costly approach. Therefore, it must be determined whether there is a problem in identifying quality for the market in question.
- Investment in a GI is a collective effort (drawing up specifications, training, communication, internal controls, etc.). Consequently, the sustainable management of the project must be confided to a producer representative (group, cooperative, etc.) which is capable, recognized and whose costs for coordination, communication and administration are reasonable.
- The protection of GIs presupposes the existence of an adapted legislative and regulatory framework, and an effective national system of controls and fraud prevention.

The main difference between the honey and the pepper lies in the supply chain organization of each: Penja pepper production is the result of grouping a score of non-coordinated actors who nonetheless have converging interests. They also bear the supply chain's reasonable coordination and communication costs. On the contrary, communication and coordination between the potential actors of the Oku white honey GI proved much more costly: the producers are isolated, and some of them, located on the western slope of the Kilum-Ijim mountain, do not know the white honey

production techniques. The costs of supporting the implementation of the GI were consequently much higher than planned in terms of training producers and structuring the supply chain.

Three additional conditions must be integrated in order to estimate the GI's capacity to genuinely improve the producers' situation:

- equitably redistribute the quality bonus throughout the supply chain,
- limit coordination costs and the differential in production costs,
- sustainably and equitably manage whatever creates the specificity of the GI (management of scarce resources, demarcation of the GI area).

In the case of Penja pepper, the GI floor price gives producers a significant share of the final product's price, especially on the local market. For exports, distributors' margins remain high (from 60 to 80%, the reverse of the proportions obtained on the local market), but lower since the GI. The data is insufficient to provide the same estimates for Oku honey, but producers have seen their product price rise by only 30%, whereas the retail price on certain distribution circuits tripled. The increased costs resulting from respecting specifications generates a lower relative profit on the honey at present (production techniques are very demanding, and financing is lacking for individual and collective equipment). On the other hand, there is greater pressure on resources (water, land) in Penja. In Oku, apiculture and forest preservation are complementary, but other uses of the forest could threaten the sustainability of this activity and thus apiculture's viability.

The end of the report presents a comprehensive analysis checklist of consumers, other producers, territorial development and inequalities.

Lastly, the suitability of a product for GI registration is not a foregone conclusion, whatever its intrinsic qualities. The identification of potential products requires a detailed analysis of demand and the costs related to meeting GI requirements. This is all the more important because the GI sign itself benefits several supply chains: 17 countries in the case of the African Intellectual Property Organization. Thus, each supply chain has an impact on the reputation of the other and on the GI sign itself. Maintaining a good overall image of the sign, particularly in its early stages, is therefore a comprehensive issue of utmost importance.

Introduction: context and objectives

Objectives of this paper

After the implementation of the first two geographical indications (GIs) in Cameroon, Penja pepper is considered an out-and-out success, while the Oku white honey supply chain is less so. These contrasting situations, hereafter described in detail, lead to investigating the difference between these two products and the lessons to be drawn for future GI projects. This report's goals are the following:

- Identify the conditions for success or impeding factors from the analysis of these two contrasting situations;
- Develop a GI analytical grid, resulting in an operational checklist aimed at simplifying the choice of future products for GI registration.

The geographical indications

What is meant by geographical indication?

According to the World Intellectual Property Organization (WIPO),

> *A geographical indication is a sign used on products that have a specific geographical origin and possess qualities or a reputation that are due to that origin*.
>
> WIPO, Geographical Indications: An Introduction, p.8

The geographical indication could therefore refer to any distinctive sign on a product intended to distinguish it from its competitors by a geographical reference; "Cameroonian coffee", for example. In reality, the GI clearly differentiates itself from indications of origin and trademarks, which makes it possible to narrow down the definition:

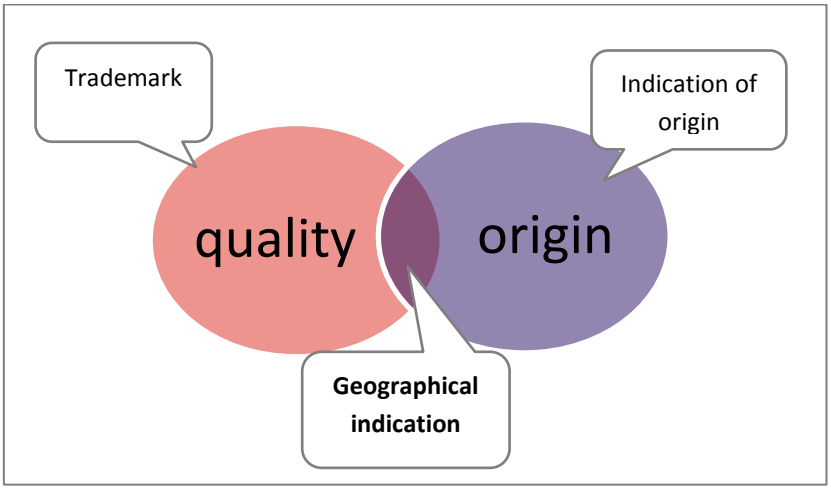
- The indication of origin merely indicates the place of production or manufacture of a product without indicating or guaranteeing a particular quality linked to origin or to production methods. Examples of indications of origin are "*fabriqué au Cameroun*" or "made in China".
- The trademark enables the consumer to conclude a particular quality, but that quality is linked to a particular *company* or group of companies, without necessarily being linked to a precise *origin*.

On the other hand, the GI indicates a place AND a quality, unlike the indication of origin, which only indicates the place, and the trademark, which only confers an indication of quality. Figure 1 illustrates the difference between trademark, indication of origin and GI.

Two other notable differences between trademarks and GIs are linked to the wish to preserve a place and not a person (physical or moral[1]):

- The GI is an intellectual property right which is a collective right of use: the use of the GI is exclusively reserved for actors who respect the specifications which guarantee the link between the geographical origin and a certain quality. But those who respect the specifications all have the right to use the registered GI name.
- Because of this link to the place of origin, the GI is non-transferable and said to be "unavailable" in the sense that "it can be neither assigned or licensed to someone outside that place or not belonging to the group of authorized producers (it cannot be sold, unlike the trademark)". (WIPO, *op. cit.*, p. 13).

Figure 1 - Difference between trademark, indication of origin and GI



Lastly, the African Intellectual Property Organization (OAPI[2]) specifies that "registering a GI protects a name and not a product. It is not forbidden to imitate a product whose name is registered as a GI, but it is forbidden to give it a protected name. The GI therefore does not confer a monopoly on the product, but an exclusivity to the name (under condition of origin and respect of specifications)" (OAPI, 2011).

WIPO summarizes all these characteristics as follows:

> *Geographical indications are distinctive signs used to differentiate competing goods. They are collectively owned with a strong inherent origin-base, namely the geographical origin to which they refer.*
>
> WIPO, *op. cit.*, p.7

[1] For more information, see WIPO, 2011 or OMPI *op cit.*

[2] OAPI is an intergovernmental organization which groups 17 member States and responsible for uniformly protecting the rights of intellectual property in these States. The Bangui Agreement, which regulates the operation of OAPI, was ratified in 1977 by the following States: Benin, Burkina Faso, Cameroon, Central African Republic, Chad, Comoros, Congo Republic, Côte d'Ivoire, Equatorial Guinea, Gabon, Guinea, Guinea-Bissau, Mali, Mauritania, Niger, Senegal, and Togo.

How is this reputation protected?

The GI being a sign of quality serving to set it apart from the competition (see infra), it is important to protect this reputation capital, this intangible asset. There are three ways to protect a geographical indication[3]:

- By developing a specific GI right (which is the case for the European Union, the 17 OAPI member countries, Switzerland, India and the Andean Community countries). It is then referred to as a *sui generis* protection.
- Through registering the GIs as collective trademarks or marks of certification, thus making the GI a right regulated by general trademark legislation. They are then protected against use by a third party who has not been authorized by the owner, and against any use of signs which may deceive consumers. This is the case in Australia, Canada, China and the United States.
- By protecting the GIs with laws relating to business practices linked to preventing unfair competition.

Given these different national-level approaches, international negotiations aimed at reaching an agreement to protect GIs are the subject of lively debates (Josling, 2006). WIPO recalls that as early as the 19th century, the protection of indications of origin and appellations d'origine were among the preoccupations of diplomats having concluded negations related to the Paris Convention for the protection of intellectual property in 1883[4]. It is finally in 1994, in the multilateral scope of the World Trade Organization (WTO) that the Agreement on Trade-Related Aspects of Intellectual Property Rights which affect trade (the "TRIPS" Agreement) was ratified. Under the influence of European countries and despite resistance from the United States, this agreement requires that WTO member countries (164 in 2016) offer legal means to protect GIs. Concretely, it requires countries to:

- foresee protection against any fraudulent use of a GI and against any use constituting an act of unfair competition,
- refuse the registration of a trademark which allegedly contains a GI for products do not originate from the territory in question,
- Invalidate the registration of such a trademark which has already been registered.

Legally, the TRIPS agreement does not require the existence of a sui generis system; the laws and trademark rights and the protection against unfair competition would suffice. The TRIPS agreement also reaffirmed the following definition of GIs:

> *"Geographical indications are, for the purposes of this Agreement, indications which identify a good as originating in the territory of a Member, or a region or locality in that territory, where a given quality, reputation or other characteristic of the good is essentially attributable to its geographical origin."*
>
> Article 22:1 of the TRIPS Agreement

[3] The interested reader can also refer to Menapace and Moschini (2011), who conclude in favor of *sui generis* protection.

[4] OAPI, *op cit.* Vandecandelaere *et al.* (2018) indicate with Marie-Vivien (2015) and Rangnekar (2004) that as early as the Roman Empire, products were traded for their quality or their reputation linked to origin, and they began to be regulated in the Middle Ages.

Currently, more than 10,000 GIs are protected worldwide, 8,900 from OECD member countries and 1,400 from developing countries[5]. A large majority of the products are wines and spirits. In West Africa, the first GIs appeared under the initiative of the African Intellectual Property Organization and AFD in the scope of the Support program to implement Geographical Indications, known by its French acronym "PAMPIG" (*Programme d'appui à la mise en place des indications géographiques*).

Support program to implement Geographical Indications ("PAMPIG")

PAMPIG is the follow-up to a request for support made in 2006 by the OAPI to AFD to back a "pilot project for the promotion and protection of Protected Geographical Indications in Africa", a project begun in 2000 in partnership with OMPI, INPI, INAO and CIRAD[6]. PAMPIG's ultimate goal was to "support OAPI member States in winning niche markets thanks to GIs and thereby contributing to rural development while improving and securing the income of the producers concerned". Its specific objectives were "to support producer countries in identifying eligible products and to support the concrete implementation of some GIs[7]".

More precisely, the million-euro project directed action at these levels:

- supply chain (identification of eligible products and supporting them until registration as GIs),
- national (setup of national GI committees),
- and regional (OAPI capacity building, regional communication and organization of training).

More than half the budget was devoted to supporting supply chains. The project was to lead to registering pilot products as GIs with the OAPI, and three products reached the end of the process: Penja pepper and Oku white honey in Cameroon, and Ziama Macenta coffee in Guinea. The supply chains were supported upstream by CIRAD in filing for the GI, notably in drafting the specifications and demarcating the terroir. This step is key in encouraging good production practices and in determining what product characteristics create added value. PAMPIG also sought to help producers organize and to establish internal controls. The first feasibility missions were conducted in 2008 and the GIs were registered in 2013.

As for regional and national capacity building actions, PAMPIG enabled the creation of national GI committees in several OAPI countries. This led to the materialization of part of the Bangui Agreement, which already foresaw the theoretical supervision of GIs. Training and sensitization to GI problematics at the regional and national levels were also carried out.

As for communication, PAMPIG financed GI promotional campaigns through creating awareness of pilot products, both locally via regional trade shows and media visibility, and at the export market level via France's International Agricultural Show, for example.

This technical report (see also the methodological note in Appendix 1) focuses on the study of Penja pepper and Oku white honey supply chains. For analyses of the national, regional and institutional

[5] Giovannucci *et al.*, 2009.
[6] See list of acronyms.
[7] Source: AFD project documents.

aspects, the interested reader can consult the different PAMPIG evaluations and the references listed in the bibliography.

Cameroon's first two GIs: Oku white honey and Penja pepper

The following sections briefly describe the two supply chains and the results observed after PAMPIG. For more details, consult Charbonnier (2015), Chabrol *et al.* (2015), GRET (2015), as well the project's feasiblity studies.

Figure 2 shows the location of the GI zones of Penja pepper and Oku white honey. The first is found in the Southwest region of Cameroon, and the second in the Northwest region. It is important to mention that Oku is located in the English-speaking zone, an area of recurring tensions for many years, and is also one of the poorest regions in Cameroon.

Oku white honey[8]

CONTEXT AND PRESENTATION OF ACTORS

Figure 3 has a detailed presentation of the Oku white honey GI area. The production area of Oku white honey corresponds to the mountainous forest of Kilum-Ijim which covers 20,000 hectares and has a peak surpassing 3,000 meters and a crater lake, Lake Oku. The native forest species which bees forage, notably *Prunus africana*, give the white honey the texture, flavor, color and medicinal properties attributed to it. The appellation area of Oku white honey is divided into three: the sub-divisions of Oku and Jakiri on the side of Mount Kilum to the east, and the sub-divisions Fundong, Njinikom and Belo on the side of the Ijim Ridge to the west.

Cameroon Gender and Environmental Watch (CAMGEW), an NGO founded in 2007 whose principal missions are forest protection and the fight against poverty, estimates that 300,000 people live at least a day's walk from the forest and depend on it. This dependency is in the form of working the fertile soil at medium altitude, where coffee, corn and various vegetables can be grown; gathering non-ligneous resources (mushrooms, spices); or apiculture (honey, wax). The villages concerned are scattered in remote and even very isolated areas. Thus, from Bamenda and on paved roads, it takes two hours for a four-wheel-drive vehicle to reach Oku, 45 minutes to reach Belo, and 90 minutes to reach Fundong. Since a BirdLife International project in the 1980s, the Kilum-Ijim forest has been managed by 18 communities representing 44 villages and several tribes. In particular, the project resulted in the creation of a status of "community forests" entrusted to the villagers by the State.

Oku white honey is produced in several steps spelled out in the specifications filed for GI registration: construction of hives, transport of hives into the forest and honey making (from November to June), collecting, filtering within 24 hours after collection, and packaging.

Traditionally, on the Kilum side in the East, the Oku and Nso tribes produced and consumed white honey, unlike on the Ijim side and in the Kom tribe who, before GI, had no knowledge of white honey production and consumption practices, and even had a negative view.

[8] Source of information: 2016 interviews and CAMGEW documents. For filmed reports and photos of white honey production and apiculture in the Kilum-Ijim forest, consult the CAMGEW site here: http://www.camgew.org/index.php/videos.html

> *Bee farmers in Ijim […] increased their efforts in Oku White Honey production only when the certification process for Oku White Honey started. Those who produced the Oku White Honey earlier in Ijim never had a market for it and many a times mixed it with brown honey. Many farmers in Ijim told that many honey buyers never knew much about Oku White Honey and believed they mixed the honey with sugar to be too sweet.*
>
> CAMGEW, 2014, p.16

> *Producers on the Ijim side didn't even believe it was honey*
>
> Producer interviews, 2016

On the other hand, on the Kilum side in the east, white honey has been marketed and valorized since the 1987 creation of the Oku Honey Cooperative Society (OHCS). Located in Oku and gathering 305 producers, versus 146 at the outset, OHCS was the first promoter of white honey. It has a collection center and sometimes sets it up for beekeepers who cannot reach the filtering center within 24 hours (obligatory: if not, the honey crystallizes). It organizes packaging and marketing.

Whatever the mountainside, many actors support the beekeepers in their activities, notably through training: CAMGEW, located in Oku since 2011, but also the Belo Rural Development Association (Beruda), as well as most of Bamenda's honey distributors (Apiculture and Nature Conservation Organization (ANCO), which was created in Bamenda and tends to be considered as a beekeepers' representative by certain area authorities, and HONCO; see Chabrol (2008)).

White honey distributors are historically numerous in Oku, as well as on the Jakiri side, but their numbers have grown in Bamenda and beyond (Douala, Yaoundé) since the GI dynamic began. Sales are direct from the producer to the consumer in the well-established areas, via the cooperative or an additional distribution intermediary in the more distant villages or small towns (Kumbo, Bamenda). Douala and Yaoundé are supplied by the OHCS cooperative directly or indirectly: the Mielleries, for example, a honey packaging and distribution company, notably for export, sends trucks directly to pick up honey at OHCS. Some Bamenda distributors can supply the MAHIMA supermarkets.

Beekeepers typically have other, complementary activities, compatible with the seasonal work that the hives require of them. Many are also farmers. However, some beekeepers, met notably through OHCS, are highly dependent on their income from honey sales.

OBJECTIVES OF THE GI OKU WHITE HONEY

The initiator of the GI is said to be a member of the Agriculture and Rural Development Ministry, having spent 15 years in the Northwest and at the origin of the notification of the product as a potential candidate for registration as a GI (Chabrol, 2008). During CIRAD's feasibility study in 2008, the observation of a higher sale price for Oku white honey than for national brown honeys, from a brief survey performed in Yaoundé on 9 honeys, raises fears of identity fraud by producers and a decline in quality. The agronomic recognition of a specific origin quality confirms the validity of the approach.

The market targeted by the GI approach is above all domestic, with supermarkets and food processing firms. The 2016 interviews made it possible to determine different stakeholders' expectations of the GI.

- Unsurprisingly, the OHCS member producers met in Oku study the evolution of honey prices. They consider that the implementation of the GI must result in a rise in their incomes. The Beruda and HONCO action has a similar orientation. The association provides training in apiculture techniques which they believe to be a sure source of revenue for the local population. Spreading good practices was thus part of the stakes so that the new-found appeal of the sector in the Belo area does not have a negative impact on quality.
- CAMGEW and Man & Nature[9] consider the promotion of the honey (and beekeeping in general) to be a means of protection and conservation of the forest and its biodiversity. The specificity of the honey owes much to the species of plants pollinated by the bees, plants which grow only in the Kilum Ijim forest and only at certain altitudes. The valorization of the honey is part of the justification of the tree replanting efforts and provides an opportunity to raise awareness of neighboring communities as to the importance of the forest. One of the main threats which hangs over the Kilum Ijim forest is the risk of brush fires. The greater the number of beekeepers with hives, the more they will be able to participate in the sensitization of local populations.
- Downstream from the sector, the president of the Mielleries admitted to us that he had benefited from communication about the product on the local market. He is among the operators considering export and niche markets, but the problems of transport and low quantities produced (20 tons before and after GI) are real barriers to export (Chabrol, 2008). Yet, before the GI was set up, the NGO Guiding Hope was already exporting Cameroonian honey to Western markets with a biological certification as well as Oku white honey. The GI was intended to make it possible to promote white honey via communication but also to organize producers and to favor economies of scale in order to obtain a higher tonnage.

RESULTS OBSERVED

The Kilum-Ijim White Honey Association (KIWHA), an umbrella honey producers association, is the main result of the entire support system. At its head is George Nbang, who is also the president of OHCS. GI Oku white honey was registered at OAPI in July 2013. Despite this filing, the results of the GI are mixed (see also Chabrol *et al.*, 2015, GRET, 2015, and Table 1):

- Demand grew and prices increased for beekeepers (from 500-650 CFA francs – FCFA – per kilogram of unfiltered honey to 900), and OHCS sells a liter of filtered honey for up to 4,500 FCFA, versus 2,000 beforehand
- Production has remained stable at around 20 tons, more than half of which OHCS does.
- Even if certain associations such as Beruda and CAMGEW train beekeepers in the production of white honey, they stress the lack of means to train and equip producers, to equip collection centers, to organize honey collection and above all to coordinate action around KIWHA to market and sell the honey.

[9] Organization of International Solidarity which supported the implementation of the GI project and backed CAMGEW activities in general.

- The honey is not traceable, the GI logo is unavailable[10], and the packaging is not uniform.

The producers who were met also spoke of the lack of equipment, organization, and the very difficult access to packaging centers[11]. The management of KIWHA by the president of OHCS is sustaining a lack of trust among the scattered actors who did not communicate before the GI; the GI KHIWA group was not functional and had no means available.

[10] As a regional OAPI logo, it only appeared in May 2018.
[11] See also CAMGEW, 2014.

Figure 2 - Location of GI areas of Penja pepper and Oku white honey

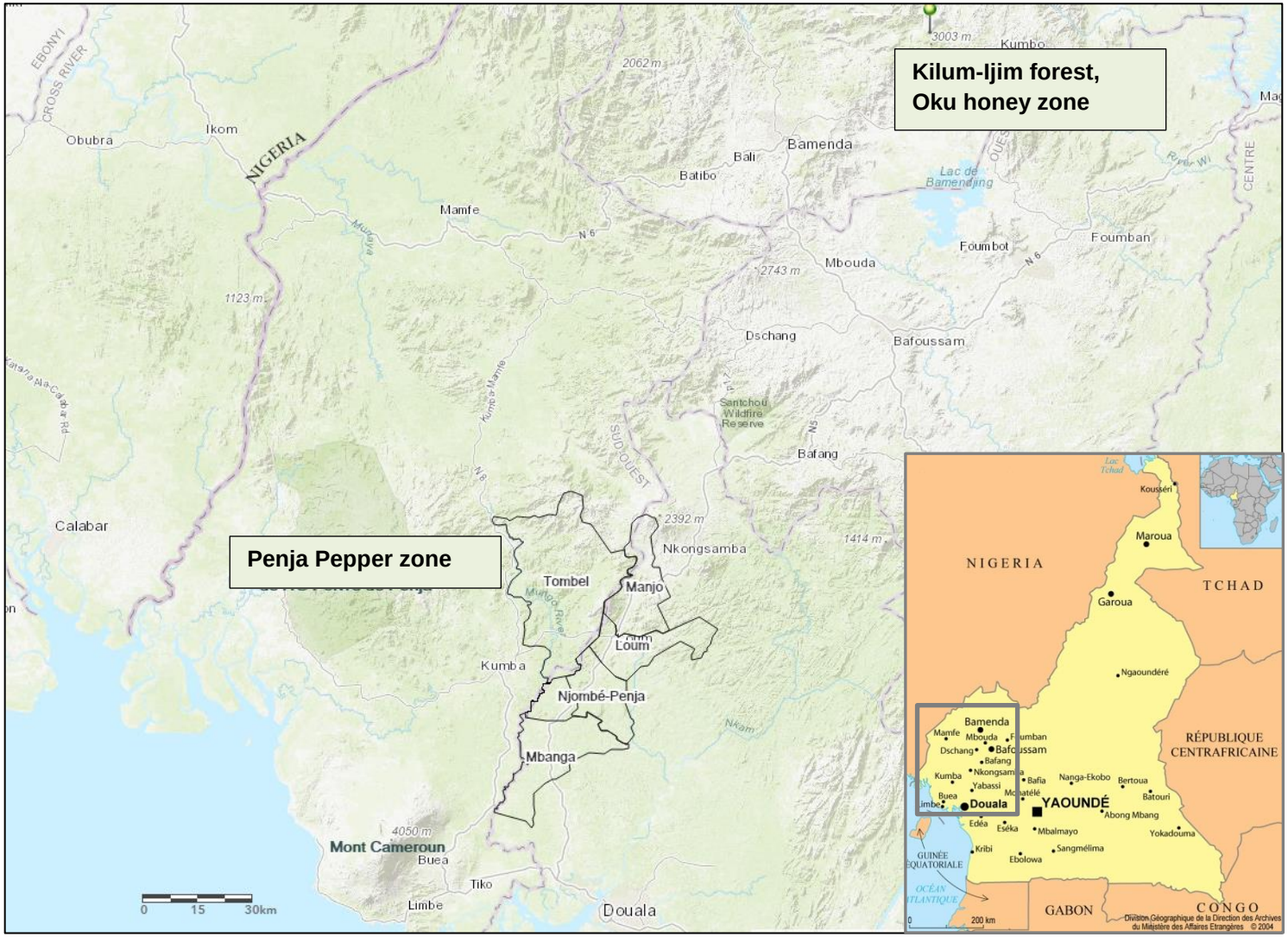
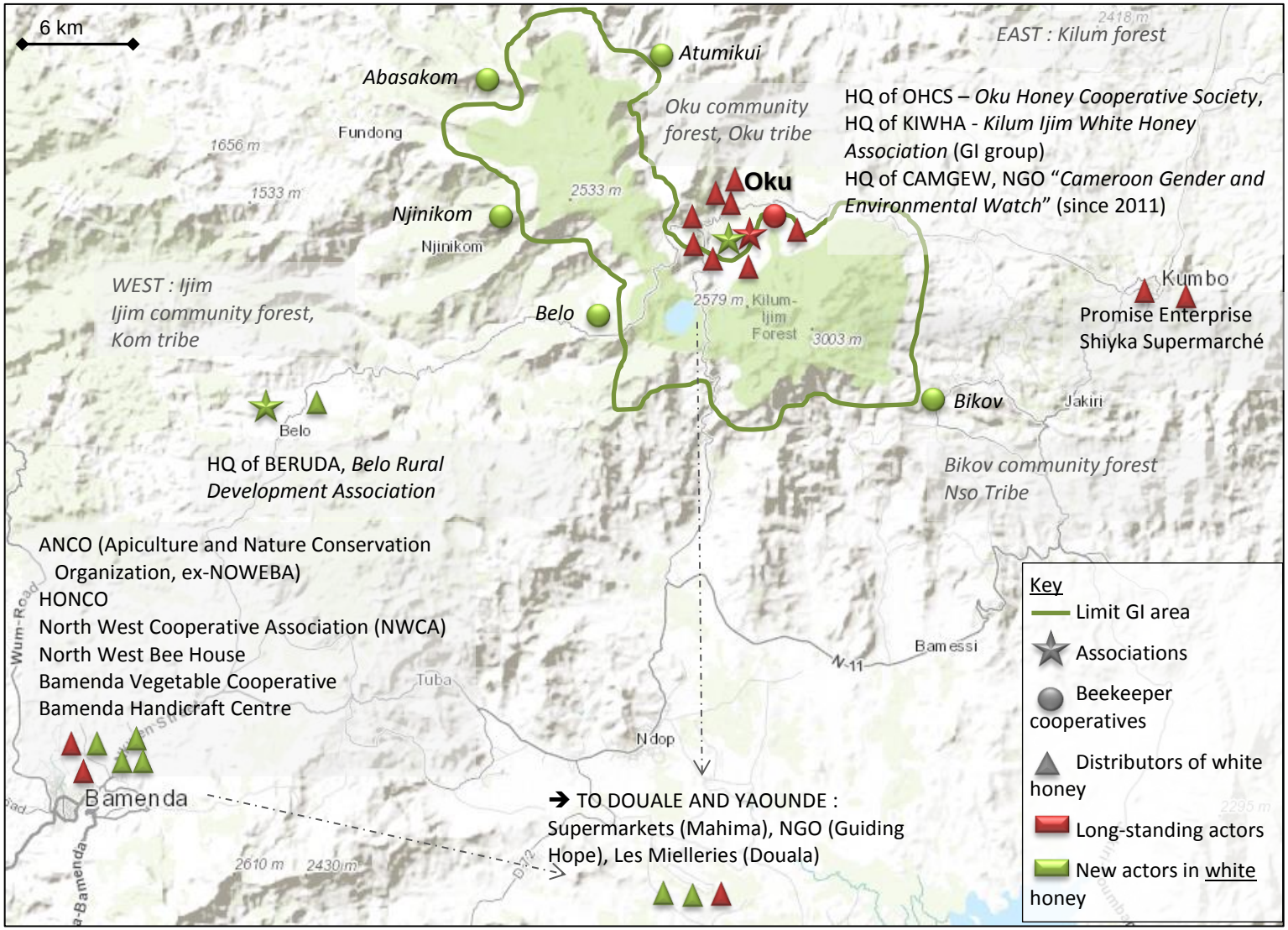


Figure 3 - Localization of the Oku white honey GI area



Source: http://cmr-data.forest-atlas.org/; data from gis.forest-atlas.org; Esri, HERE, Garmin, FAO, NOAA, USGS

Penja pepper

CONTEXT AND INTRODUCTION OF ACTORS

Penja pepper is made from the berries of Piper Nigrum, a non-native vine in the region. It is the characteristics of the Penja region (see Figure 2) – its fertile basaltic soils covered with volcanic earth, microclimate, regular and sufficient rainfall, altitude, as well as the growing and transformation methods – which produce the pungency, the spicy taste and the aroma specific to Penja pepper, which is internationally recognized (Chabrol *et al.*, 2015). There are three types of pepper – green, black and white – which come from the same berries and are obtained after different steps: green is harvested unripe, black also but is dried, white is picked at optimal ripeness, soaked (retting phase), pulped and dried[12]. Penja pepper specifications explain how to obtain seedlings, plant the vines in the fields, check for diseases and pests, harvest (manually), conduct post-harvest steps depending on the type of pepper, package, market, and carry out controls.

Before the GI, pepper production concerns a score of actors (nurseries and distributors included). The PHP (Plantations haut-Penja[13], and to a lesser degree the Métomo plantations, are the two main producers (5 tons from about 50 hectares), and the only official exporters (for half the production) whereas 80% of the planters have less than one hectare and produce less than one ton each year. The latter generally do not grow only pepper, and they diversify their sources of income. The downstream trade of the sector often occurs through interpersonal relations or via common interest groups (CIGS).

Penja pepper is recognized on the Cameroonian market, but is often mixed with ground pepper from China, called Dubaï pepper, whereas the Penja pepper specifications state that from this time forward it will be sold only in the form of peppercorns.

> *Chinese pepper may be cheaper, but by the end of the week you've used it up* [because it is not as strong, more must be used].
>
> Penja pepper distributor, Douala market

GOALS OF THE PENJA PEPPER GI

Different actors' goals were not necessarily identical, but were similar: after claims of fraud on the national market, and upon the filing of a "Penja pepper" trademark in Europe by the Terre Exotique company, a major distributor largely for France; the risks of fraud and usurpation were high. The entry of new producers led long-standing producers to fear a decline in quality. Thus, working upon the drafting of specifications and a group dynamic for training and investment in quality was in every actor's interest. For AFD, the relevance of the GI project lay in the improvement of sales outlets (as a lever for development), notably for exports. The wish to protect the product and the producers from "free-riders" was also part of the goals put forth by AFD.

[12] For filmed reports and photos of Penja pepper production, it is recommended to visit the Terre Exotique site here: https://www.terreexotique.fr/blog/retour-du-cameroun-poivre-de-penja/

[13] Subsidiary of Compagnie Fruitière, cultivating 3,000 hectares of bananas.

> *The GI protection is a means of organizing the sector and motivating teamwork between the different actors. This cooperation helps improve communication and therefore the circulation of information among the actors.*
>
> Long-standing producer, 2016 interviews

> *The GI is a way to fight fraud. The protection has to be supported by a credible description for the consumer. A common packaging center has to be set up. Controls have to be put in place to identify and deter fraudsters.*
>
> Member of the distributors association, Douala central market, 2016 interviews

> *The GI gives us the chance to be trained, to adopt good production practices. Youths are motivated by pepper production.*
>
> Small-scale producer, 2016 interviews

OBSERVED RESULTS

The GI procedure has led to the creation of the GI group "Penja Pepper GI Association". Pepper nurseries, producers and distributors which operated in isolation and without real relations or coordination are now all represented in the group. The association functions with elected officials at the level of geographical sub-divisions, which organize training and represent the members. In other respects, the GI protection association is divided into three sub-groups which encompass the entire value chain: nurseries, producers and distributors. Members pay a fee corresponding to the surface area they cultivate. The group is dynamic, structured and launches initiatives. The group pays a salary to the executive secretary.

The first elective general assembly of the representative group was held in November 2011 and the protection of the Geographical Indication of Penja pepper by the OAPI has been effective since September 2013. The supply chain is well structured.

Another difference from Oku honey is that the surface area and production have increased sharply. From 50 hectares of cultivated pepper there are now more than 300, from a score of producers to more than 300 actors (about 200 producers, 30 nursery workers and 100 distributors); and from five to at least 150 tons produced annually (GRET, 2015). Producers and planters who also grow cocoa or coffee, for example, are uprooting their seedlings to grow pepper.

Producer prices have grown significantly: from 2,000 FCFA/kg of pepper in the early 2000s, and 4,000 before GI, it reached 7,000 FCFA in 2011/12, 8,500 FCFA in the course of the 2014/15 harvest, and up to 12,500 to 14,000 FCFA in the course of the latest harvests.

Exports are also higher (70 tons by the PHP and 20 tons by the Métomo plantations (GRET, 2015)), but sales on local markets are more lucrative (see below: "Condition 7: equitably distribute quality bonuses").

The main challenges for the Penja pepper supply chain lie in building a system of traceability and effective controls which would include the following: functioning internal control, a common conditioning and packaging center for the group, the geolocalization of plots and, common to both Cameroonian GIs, the possibility to use the "GI" logo common to OAPI, which was introduced only in May 2018.

Methodology

The approach is analytical and illustrated by the results of a two-week qualitative survey in Cameroon. The survey methodology is described in Appendix 1.

⇨ **Key points**: The GI protection experiences supplied by Oku white honey and Penja pepper gave contrasting results: the pepper is seen as a success whereas the honey is less so, due to differences in terms of production and group dynamics, and prices to a lesser degree. Table 1 summarizes the key information for both supply chains.

Table 1 - The GI supply chains of Oku white honey and Penja pepper: key information

	Oku White Honey	Penja Pepper
Product	Oku white honey, obtained by bees foraging native species in the Kilum-Ijim forest and scrupulous filtering within 24 hours (among other production techniques). White honey, sweet, creamy, desirable flavor, medicinal virtues	Green, black and white Penja peppercorns. One of the best in the world according to international rankings. Spicy flavor. Obtained thanks to being grown in volcanic soil and to specific production techniques (manual harvesting, rinsing, soaking, drying).
Area	Kilum-Ijim forest, Northwest region of Cameroon, about 20,000 hectares.	6 sub-divisions in the Southwest region of Cameroon, 3,000 km².
Producers	A cooperative of 146 producers at start (305 in 2016) and some others on the forest's eastern slope, thousands of potential additional beekeepers but who know neither the product nor the techniques.	20 actors to begin, of whom 2 main producers; 200 producers after the GI. A hundred other supply chain actors (nurseries, distributors) are part of the GI group.
GI objectives and motivation	Product with organoleptic qualities detected by one individual at start, confirmed by feasibility studies. Price variation raises fears of usurpation but the local market potential is yet to be tapped. For other actors: protect the forest by increasing its economic value.	World-renowned pepper, the registration of a trademark by a long-standing distributor raise fears of losing ability to secure a large part of the added value on the Cameroonian territory.
Organization	Creation of the KIWHA umbrella association, which is non-operational, with neither means nor shared objectives. Many other support associations for beekeepers and/or forest conservation have links with the beekeepers.	Fully operational group (elections, training, representation, etc.). Large microcredit organization supports the supply chain.
Observed results after GI (2013->2016)	Rise in demand. Stability of production (20 tons). ⇨ Rise in prices (doubling of filtered honey price, from 2,000/liter to 4,000 FCFA). ⇨ Improvement of producers' income … to be confirmed if strict respect of specifications (higher costs). No GI dynamic: group non-operational, lack of means to train and equip producers, collect honey, filter according to specifications, and market and sell it. Misunderstanding or even wariness and high coordination costs within the GI association (isolation).	Rise in cultivated surface area and number of producers. Greater rise in demand, strong communication. ⇨ Price increase (from 2,000 FCFA/kilo to 13,000). ⇨ Increase in producer income. Strong group GI dynamic, operational group, election of representatives, coordination between different supply chain actors: nurseries, producers, distributors. Improvement in production practices for small-scale producers. Thefts, inequalities, lack of traceability, need for collective conditioning center.

In what cases is the recourse to GIs relevant? Necessary conditions

Preamble

Objective: mechanisms and conditions for GI success

The preceding section recalled the definition of GIs, and briefly showed how projects facilitating their setup and protection could be embodied. The objectives attributed to GIs, whether in regulatory texts or upon implementation of projects, are development objectives, as are support-advisory projects for agricultural supply chains or as is financing for agriculture. There seems to be a consensus about the global impact of GIs on development. On the other hand, the mechanisms which enable this impact are seldom described and probably very different from one project to the next. Understanding them better will allow for the better definition of future projects.

The objective of this part is to break down the GI components (and GI projects) to show:

- **the mechanisms with which they could reach development objectives**
- **the conditions for success**, which may constitute the criteria for product selection.

Bias: begin with the impact on incomes and rural development

The study is focused on the potential impacts of GIs as identified by the stakeholders and not on the entire set of sustainable development objectives. **Two particular objectives will be studied: improvement of producers' incomes and rural development**; both were PAMPIG's objectives (see above). The aspects linked to the "preservation of natural resources and know-how" will be raised quickly since they were cited by several of the project's stakeholders: AFD, OAPI, associations involved in the project, and producers.

> *The GI can stop products and know-how from disappearing, and African consumers are ready to pay for that.*
>
> GI unit member, OAPI, 2016 interviews

Definition of quality

Quality is a subjective notion. Here, that of the International Organization for Standardization (ISO) will be used.

> *Quality is the full set of properties and characteristics of a product, a process or a service which imparts its ability to satisfy implicit and explicit needs.*
>
> Coestier and Marette, 2004, p.7

In the case of honey and pepper, it concerns at once organoleptic qualities (flavors and aromas, the honey's texture, the pepper's strength), but also packaging, color, and of course origin and production method.

Reminder: differentiation and valorization of quality at the heart of the approach

The differentiation of products and the valorization of quality is a rural development strategy which allows small-scale producers to diversify and increase their incomes (Reardon and Barrett, 2000; Davis, 2006). In both developed and developing countries, the demand for high added value food and agricultural products is growing fast to the extent that incomes are rising and populations are urbanizing. More precisely, consumers are more and more willing to pay for intrinsic quality attributes such as nutritional content, freshness and food safety, but also for attributes concerning ethics, the environment and origin (Auriol and Schilizzi, 2015). These high added value products are characterized by very demanding production and certification processes, which create entry barriers. Kaplinsky (2006) considers this differentiation and the associated higher prices as a means of reversing the downward trend in terms of trade for producers of commodities (known as "decommodification", Kaplinsky, 2006, p.981).

Having recourse to a GI in the scope of a rural development strategy based on valorizing quality rests on several hypotheses examined hereafter. Conditions 1 to 5 are *necessary conditions*. The *conditions for profitability* for producers and for society in general are studied afterward (conditions 6 to 8).

Condition 1: Existence of a strong causality between the good's origin and its characteristics

> *Geographical indications are, for the purposes of this Agreement, indications which identify a good as originating in the territory of a Member, or a region or locality in that territory, where a given quality, reputation or other characteristic of the good is essentially attributable to its geographical origin.*
>
> Article 22.1 of the TRIPS Agreement

A product is a potential GI only if there exists a strong relation between the targeted territory and the product's attributes. Two cases can be made:

1. **The origin** and the respect of specifications[14] **is a necessary and sufficient condition** for products to effectively contain the properties valorized by consumers: **quality ⇔ origin**.
2. **The origin** and the respect of specifications **is a sufficient condition but not necessary**. The origin leads to certain quality attributes, but these may be obtained in another region (or with another know-how): **origin ⇨ quality**

In the case of Penja pepper as with Oku white honey, the necessary and sufficient link between the products' origin and characteristics has been shown from an agronomical point of view:

- Oku honey has a unique creamy texture and a unique white color, the fruits of species growing only in the Kilum-Ijim Forest, as well as specific honey filtering techniques.

[14] Origin only is rarely necessary and sufficient to implicate quality, which requires the respect of cultural practices and specific production techniques.

- The particular taste of Penja Pepper is conferred upon it by the volcanic soils and post-harvest transformation techniques.

> *Penja pepper is not a specific variety of* Piper nigrum*, but simply the fruit of pepper plants cultivated in an area where the constituent elements of microclimate, soil, altitude and cultural and transformation methods combine to produce a highly desirable taste, the pungency, the spicy flavor and particular aroma, attributes which have created its fame.*
>
> Standards for Penja pepper

However, demonstrating a necessary and sufficient link between quality and origin from a technical or agronomical point of view is absolutely not sufficient to make a product a potential GI: For that, the quality in question must be recognized and valorized by the targeted consumers.

Condition 2: There is a demand and a growth in market potential for these characteristics

The stronger the link between the consumer-valued qualities and the origin, for example in the case of a "necessary and sufficient" link, the less the product is exposed to potential competitors, and the more the differentiation strategy will be visible in the long term.

In the case of Penja pepper, demand was already high on all markets, national and international (particularly in France), for characteristics which it is impossible to obtain outside the production area. The high quality of Penja pepper is recognized by experts and on international markets. In Cameroon, consumers recognize and value its strength. Consequently, demand is strong on both national and international markets, as much among experts as among lay consumers.

> *Chinese pepper may be cheaper, but by the end of the week you've used it up* [because it is not as strong, more must be used].
>
> *In blind tests, with panels of international experts, Penja pepper is always ranked first.*
>
> Penja pepper distributor, Douala market

Unlike Penja pepper, the demand for the specific characteristics of white honey was initially concentrated in the Oku region. Historically, producers cultivated white honey both to trade it for red palm oil and to consume it themselves. Sales were limited and the honey was appreciated by a handful of local consumers. Producers on the other slopes were not producing white honey; this was not always the case at the time of the May 2016 interviews. Some were trying to begin, but the products are radically different between the OHCS cooperative and the cooperatives in the Beruda region, for example.

> *Before the GI, we didn't separate. We are starting now* [the producers had been harvesting both white and brown honeys and mixing them without distinction].
>
> *People didn't even think it was honey.*
>
> Distributors and producers in Beruda

Internationally, Oku white honey is unknown. The NGO Guiding Hope markets it without valorizing the name and by using the name "*miel royal*" ("royal honey"). It points out that targeting an international market is very risky given the costs involved (compliance is demanding for honey because it concerns a farmed product) compared with other potential market shares. Indeed, although both markets – pepper and honey – are growing fast, there is already an impressive number of competing honeys of declared origin, notably of French origin on the French market, for example, but also of international origin (white honey from Ethiopia's Tigray region, for example). In a context where the demand for local products is increasing[15], it is above all among urban Cameroonian consumers that Oku honey could find market opportunities.

Apart from its organoleptic qualities, other purchase motivations were mentioned by the various people met, notably:

- the desire to encourage forest preservation for Oku honey,
- the feeling of national pride and the wish to "*support Cameroonian brothers*" in the case of Penja pepper (notably in relation to "Dubai pepper")

Basing a GI project on this kind of characteristics which revolve around origin, but do not necessarily implicate it, is riskier than for the preceding ones. Indeed, the feeling of national pride, or that of helping the country develop and preserve the forest can be realized through means other than consuming Oku white honey and Penja pepper.

Moreover, some qualities can be difficult to maintain when complying with export constraints. In the case of honey, it is even in merely changing regions (warmer) that certain qualities are modified: color and aspect change, although they return after mixing, and that does not change the taste.

In the case of Oku as in that of Penja, the price rises which followed communication and awareness campaigns demonstrate the effectiveness of these investments in building demand: whereas most elements in a credible certification system are missing (traceability, external control, logo, fraud prevention – the supermarkets in Douala and Yaoundé are filled with small bottles falsely labeled "Penja pepper"), the rise in demand has permitted a seven-fold increase in pepper producer prices, and a doubling in the case of the OHCS cooperative.

Cameroonian products have benefited from additional communication done particularly in Cameroon upon the creation of the GI system itself (thereby making eponymic plantation director René-Claude Métomo "*a star in spite of himself*"). Indeed, in the PAMPIG project objectives, OAPI was also responsible for geographical indication communication. This investment was authorized to promote the three registered products (Penja pepper, Oku white honey and Ziama Macenta coffee) but also to promote GI as a sign of quality. As OAPI's headquarters are in Yaoundé, promotional activities for Ziama coffee in Guinea (the third GI product in the PAMPIG project) were significantly fewer (GRET, 2015). The next products will not benefit from such additional communication.

Consequently, for the selection of future products, the newer and the less noticed a reputation in a large market, the higher the costs of communication and marketing will be. Informational and persuasive publicity can increase demand for a good, but that implies an additional cost to consider in the global analysis of the project.

[15] Notably in rich countries, see Jensen and Mørkbak (2013) on the case of Denmark, and Wu et al. (2015) for the United States.

⇨ **Key points**: demonstrating a technical or agronomical link between a terroir, a product and a know-how may appear obvious, and it probably was for Penja pepper and Oku white honey. But that is insufficient to make a potential GI product. It is essential that the characteristic linked to the origin be the object of a demand, analyzed in all its aspects: Is the link to origin necessary and sufficient? (If not, the risk of seeing potential substitutes appear is high). What is the target market (local, regional, national, international)? How much is the future GI market potential worth? What prices would consumers be ready to pay? Is there a risk that substitutes will appear? Is the price elasticity of demand high? Will communication and marketing expenses be high?

Condition 3: There is an information asymmetry, a risk of fraud

GIs and their protection are primarily a means of signaling quality. We resort to signs of quality when it is not observable by consumers themselves. This is notably true for so-called "experience" goods (Nelson, 1970) where the consumer can only evaluate quality after the purchase, and for "credence" goods (Darby & Karni, 1973), where the evaluation of quality is possible neither before nor after the purchase. Figure 4 gives examples of characteristics corresponding to these different cases.

Figure 4 - Ranking of goods in function of information known by the consumer

Search characteristics	Experience characteristics	Credence characteristics
Characteristics known before purchase, through a process of research or inspection	Characteristics learned after purchase, through use or consumption	Characteristics which cannot be known be known either before or after purchase
Product freshness, packaging, color	Taste, texture	Nutritional qualities, origin, production processes (inputs, etc.)

Intensity of information asymmetry →

Source: From Nelson, Jahn *et al.*, 2005, p.55.

Thus, taste and texture (in our case the pepper's strength, the honey's taste and also texture, conservation possibilities without crystalizing, etc.) are experience characteristics: consumers can know them, but only after the purchase.

The techniques and the place of a product's production are credence characteristics. This is the case for organic farming products, for those which claim to respect a certain environmental quality or to respect "traditional" manufacturing methods, etc. Here, the origin of the pepper and the origin of the honey, the manufacturing method (use of traditional or Kenyan hives[16]) are credence

[16] Kenyan hives are more effective than traditional hives a priori because it is possible to remove only certain bars. With a traditional hive, once open, the fabrication process definitively stops. Both hives are authorized in the GI specifications.

characteristics: consumers themselves cannot check them, neither before nor after buying and consuming the product.

This information asymmetry between sellers and consumers introduces risks of disappearance from the market of quality products. Indeed, when the consumer has no way to verify quality before their purchase, they will not be ready to pay more for a product which is described as "quality". As producers anticipate that they will not be subsequently remunerated, they will not go ahead with the costly production of a quality good. It is therefore necessary to find mechanisms to reduce this information asymmetry.

The economic literature distinguishes several mechanisms for signaling quality in function of the severity of information asymmetry. For example, in the case of experience goods, there are "satisfied or money back" guarantees. Still in the case of experience goods, the building of a reputation can be an effective and credible strategy. It can also be effective in the case of credence goods, but for the latter, the certification of a third party is often essential. The two mechanisms are described in Appendices 2 and 3. The credibility of these guarantee mechanisms depends on several conditions, notably the existence of a probability of discovery in the case of fraud (and therefore unannounced inspections), and a large market potential: the larger a producer's market, the more they have to lose in case of fraud and the discovery of this fraud. Because consumers anticipate this, they tend to trust large producers or distributors more. This characteristic tends to develop a monopolization of markets of credence goods[17].

Two other elements arise to complicate the analysis:

1. Among the set of properties which constitute Penja pepper and Oku white honey, all of them are not characterized by the same degree of information asymmetry, notably in function of consumers' expertise and the proximity of the production areas (local market versus export market),
2. Not all consumers are seeking the same characteristics (see previous sections).

In these conditions, a mechanism which signals credible quality on one market and for one particular characteristic may not have the same effect on another market and for another characteristic. For example:

- In the Oku region, consumers who are used to white honey can infer the origin of the honey through simple observation: its white color does not change at high altitude, nor does its aspect. Furthermore, the marketing chains were very short, and relations between sellers and buyers were repeated and even personal. Otherwise said, on the local market, producers had already built a good reputation which did not require other mechanisms to guarantee quality. Therefore, on the local market, no signaling mechanism was necessary, with consumers relying either on their own skills or on relationships of trust and a previously established reputation capital.
- However, in Cameroon's other regions and abroad,
    - Experience characteristics such as taste, which cannot be detected by consumers before their purchase, a signaling system must be set up,

[17] It must be said that this credibility effect of large organizations also applies to large "certifiers": the credibility of certification agencies often exists from their monopoly position (they have too much to lose in case of collusion with the client, and nothing to gain since they have a captive market), and the independence between their income and the result of their inspections.

- For credence characteristics such as forest preservation, certification by a third party seems essential.

- It is therefore the expansion of market ambitions for Oku white honey which makes a quality certification necessary, both to harmonize new producers' production practices and to certify quality for the average consumer. This mechanism to institutionalize interpersonal trust relationships is rather classic when expanding markets.

⇨ **Key points**: after precisely analyzing the link between qualities and origins, and what characteristics are valued on what markets (conditions 1 and 2), the nature of the information asymmetry should be clarified, in order to determine what mechanism of signaling quality to use.

Table 2 summarizes what could be reconstituted for the two Cameroonian GIs. There was indeed consumer demand for the Penja pepper: the sought-after organoleptic qualities are experience characteristics, and fraud is probable. On the other hand, for Oku honey, consumer demand outside the historical area had to be stimulated, whereas in the historical area, the OHCS cooperative and Oku producers had already effectively built a good reputation.

Table 2 - Type of characteristics sought in Penja pepper and Oku white honey in function of markets

	Characteristics of the good (✓= valued by consumers)		
Product/market	Search	Experience	Credence
Penja pepper, local market	Color Type of peppercorn (not ground) Packaging	**Taste** ✓ **Strength** ✓ **(organoleptic characteristics)**	Origin: - only for the link to organoleptic characteristics - to be **patriotic** ✓
Penja pepper, for export	Color Type of peppercorn (not ground) Packaging	**Taste** ✓ **Strength** ✓ **(organoleptic characteristics)**	Origin: - a priori for organoleptic questions - "fair trade" type of approach?
Oku white honey, local market	White color and relevant aspects for Oku area consumers to infer organoleptic qualities	**Taste** ✓ **Texture (creamy)** ✓	**Medicinal virtues** ✓ **Forest protection and conservation** ✓ **Conservation of traditional know-how** ✓ Patriotism?
Oku white honey for export	?	**Taste** ✓ **Texture (creamy)** ✓ (But the product is competing with other honeys against which the organoleptic differentiation is less obvious)	Origin? Forest protection an "environmental good" approach"?

Condition 4: There exists a legitimate producers organization which is able to lead the project

Signaling an unobservable quality before purchase has been the subject of much academic research which companies have not waited for to develop solutions. The tools for building and signaling reputation capital such as a name, a brand, or a logo (mechanism presented in Appendix 2) are well known to companies.

As mentioned above, this sort of mechanism tends to lead to monopolizing the market for reasons linked to the credibility of the quality signal. Moreover, spending on communication for product development (free samples, trade show participation, creation of a brand image, etc.) is generally borne by companies which already have market power (or joint-trade organizations) to avoid the free-rider phenomenon.

For this reason, brand development is often the privilege of large companies or large groups able to subsequently grant licenses and franchises. That is what Terre Exotique did for Penja pepper exported to France (notably bought from PHP), and Afidi (Métomo plantations) on the Cameroonian market; they did not wait for the GI to valorize their quality. In the case of Oku white honey, the investment into reputation had occurred previously in the OHCS GI procedure, when OHCS represented the near totality of white honey producers.

Investing in reputation to signal quality therefore works very well where there is a concentrated market, which is not the case for producers in developing countries. One solution thus consists in associating with others to invest in this reputation capital together.

This is exactly what a GI consists of: an association of producers who agree to share reputational investment costs (drafting of specifications, harmonization of producers' quality and training, finalizing a logo and explanation of the approach, marketing and communication costs, …) **and the costs of administration and controls** (organization and coordination of the association, internal controls, certification costs, implementation of collective investments such as a packaging center to seal products, …). For this mutualization of costs to be possible and profitable, demand must allow for a price which will cover these costs (see condition 2), but these costs must also be limited, thanks to an effective collective organization and a will to cooperate.

On these two points, the cases of Penja and Oku differ. In the case of Oku, actors are scattered on different slopes of the mountain, they did not have common objectives before the GI, nor did they have the same conception of what "Oku white honey" is (see above). The long-standing HOCS actor took charge of the procedure and the umbrella organization, but organization of the supply chain has not been rethought. The producers in the three different regions finally did not produce the same product and the different stakeholder associations do not have the same objectives (certain of them see apiculture as above all a way to protect the Kilum-Ijim Forest, whereas others focus more on the honey itself). Consequently there was no reason to organize around the sale of white honey. The creation of a cooperative which gathers all stakeholders thus had to be done from the bottom up, with high transport costs between areas. All the stakeholders often cited the lack of means as a major obstacle for the organization, given the cost of travel in this area, and this is in a context where the profitability of the investment is not yet certain.

In the case of Penja pepper, the procedure was initiated by the large, long-standing actors who had as much interest as the small-scale producers in seeing the GI registration to the end and investing in the operation of the supply chain. Notably, this made it possible to train the small-scale producers and to avoid a drop in quality. Besides, the pepper supply chain was largely supported by an active microfinance association (MUPECI), which permitted the GI group to obtain financing for this collective investment.

⇨ **Key points**: The GI is led by an association of producers who agree to share investment costs for reputation, administration, coordination and control. For this mutualization of costs to be possible and profitable, demand must be sufficient to set a price which will cover these costs, though the costs must be limited, thanks to an effective collective organization and a will to cooperate. Particular attention must be paid to coordination costs between many small-scale producers who are sometimes very far away, and also to the legitimacy of the group.

Condition 5. There is an effective system of traceability, controls and fraud prevention

As for the credibility of the guarantee signal (condition 3), the GI combines the mechanisms of third-party reputation and certification. Indeed, the verification of respect of specifications occurs on two levels: the representative GI group controls its members internally, and an organization accredited by competent institutions controls the representative group.

By the official registration of products in GI, State public services are legally obliged to protect the GIs. The pre-existence of competent services which have the necessary resources be able to detect and prevent fraud is therefore particularly important, notably given the increases in price that the GI leads to (and thus an increase in temptation of and attempts at committing fraud).

In Cameroon, the Ministry of Commerce has indicated an overload in requests and complaints about Penja pepper. This is an essential element to take into account before proposing new products or even new countries. Indeed, beyond the failure that the non-existence of a control system and sanctions could cause on the concerned supply chain, **it is all the credibility of the GI system itself which would be implicated.**

Protecting the GI system in and of itself often requires international certifiers since their credibility is greater due to their monopoly position (for example, the consequences for Véritas' "cheating" during a control are more than for one small office); and the prevention of corruption is more probable. Developing local certifying organizations may be a good idea to reduce costs and boost employment, but that could have negative consequences on quality supply chains.

Producers will be interested in the GI if it effectively protects them from the risk of fraud. Moschini et al. (2008) show – and this is rather intuitive – that the size of the penalty to pay in case of fraud should at least equal the differential in production cost between a product respecting the specifications and its non-GI equivalent.

For now, the credibility of the two Cameroonian GI product rests above all on their reputations. The reputation on the international pepper market, for example, rests clearly on Terre Exotique. The transfer of reputation can only occur if controls are well respected.

For that, it is vital to strengthen training and increase the means devoted to control and fraud prevention, and to implement the use of the "GI OAPI" logo, notably via the centers of collective conditioning and a traceability of products.

⇨ **Key points**: A GI cannot be protected if there is no effective system of traceability, control and fraud prevention. This implies that the GI association has the means to implement a system of traceability (notably via a conditioning and packaging tool), the means for controls and sanctions at the State level, and the recourse to private certifiers whose credibility is undoubted.

Assessment: Were the requisite conditions respected for Oku white honey and Penja pepper?

Table 3 summarizes the relevance analysis of the GI for Oku white honey and Penja pepper.

Table 3 - Respect of requisite conditions for a GI in the cases of Oku white honey and Penja pepper

	Characteristics / market			
	Local market		Exports	
Conditions	Organoleptic	Extrinsic	Organoleptic	Extrinsic
Oku white honey				
1. Strong link between origin and characteristics	✓	✓	✓	✓
2. Strong demand and absence of substitutes	✓	✗	✗	✗
3. Risk of fraud due to an information asymmetry	✗ ✓	✓	✓	✓
4. Organization of producers in cooperative	✗	✗	✗	✗
5. Traceability and fraud prevention	✗	✗	✗	✗
Penja pepper				
1. Strong link between origin and characteristics	✓	✓	✓	✓
2. Strong demand and absence of substitutes	✓	✗	✓	✗
3. Risk of fraud due to an information asymmetry	✓	✓	✓	✓
4. Organization of producers in cooperative	✓	✓	✓	✓
5. Traceability and fraud prevention	✗	✗	✗	✗

For Oku white honey:

- There is a necessary and sufficient link between quality and origin.
- Demand for organoleptic or extrinsic qualities such as forest preservation was not very developed in regions other than those of Oku. The GI project aimed at extending the production area to organizations of producers who did not know the production techniques. The means necessary to harmonize product quality were no doubt underestimated.
- However, the price increases following the communication about the GI indicate that there were indeed good reasons to believe in the potential of Oku honey, notably on the local Cameroonian market where there are fewer substitutes than on the international market.

- As the honey's quality is not detectable by simple product inspection before the purchase, and producers are scattered and small-scale, it was relevant to foresee a strategy of collective investment in reputation capital and/or certification by a third party.
- The greatest difficulty is essentially in these last conditions: no joint-trade organizations wishing to cooperate, difficulty in mutualizing the high costs and the productive investments. Weak capacity of pubic authorities to detect and sanction possible fraud given the scattered location of producers.

⇨ In conclusion, Oku white honey has good potential but the investments necessary for it to materialize (in terms of training, supply chain organization and communication) were underestimated.

In the case of Penja pepper:

- The requisite link between origin and sought-after qualities exists.
- Local market and international demand is strong.
- The investment in reputation has been made, the request for a GI brings protection and additional means, making it possible to target other markets and to secure them.
- There is a dynamic joint-trade organization where the costs of coordination and communication are lower than for Oku.
- Control and fraud prevention must be pursued (supermarket observations show a large amount of attempted usurpation). Continued communication spending, if only to tell consumers that Penja pepper is never sold in ground form, would probably help reduce fraud attempts.

⇨ Strengthening the credibility of the GI sign and the appellation with effective controls is all the more urgent that new products must be selected, in order not to risk that the whole system loses its credibility. Notably, that implies continuing communication on the GI sign itself, raising awareness among distributors and consumers, and limiting fraud.

Cost-benefit analysis of GIs for producers

The GIs are therefore a tool making it possible to indicate quality and to produce goods that otherwise family producers would have decided not to. However, their implementation is costly, all the more when deviations, with regard to the ideal conditions presented above, are significant and imply additional financing to boost demand (condition 2), generate trust toward the "IG" quality sign (condition 3), organize the producers' association (condition 4), or finally strengthen traceability and controls (condition 5).

Given that GI projects are often subsidized by frequently scarce public funds, the projects must undergo a "cost-benefit" analysis, at a minimum for producers but also for their environment in the larger sense: under what conditions do GIs benefit producers (GI and non-GI)? What are the effects on rural development in the area? How do they impact consumers and the general society through potential externalities (on the environment, inequalities)? This type of well-being analysis does not produce consensual results from a theoretical viewpoint (see Box 1). Indeed, the impacts on different groups of actors (GI producers, non-GI producers, consumers) depend on a certain number of hypotheses, which are that many criteria to study in order to anticipate the potential impact of a GI.

Condition 6: Control the costs of production and coordination

Production costs

The GI dynamic can have positive or negative effects on production costs incumbent on producers in function of specified demands in the specifications, on the one hand, and effectiveness of collective investments, on the other hand. The differences between Penja and Oku are clearly noticeable.

In the case of Penja, the small-scale producers expected that the GI would allow them to acquire good production practices. According to them, that is the key for export marketing and penetrating international markets (Chabrol *et al.*, 2015). Besides, the main changes they indicate following the GI concern the practices (fertilizer, production density, soaking, etc.).

> *The GI teaches us to valorize the product, to know which fertilizer to apply and when. We have also changed the production density to comply with the norms, and that increases the yield and quality. I am doing the soaking in plastic vats for now.*
>
> Small-scale producer, 2016 interviews

Box 1 – Theoretical GI winners and losers

The model of Zago and Pick (2004) distinguishes several situations. In the general case, the GI improves the situation for consumers and for GI producers; on the other hand, demand for low quality drops: the situation is not as good for low-quality producers because their price-setting latitude is smaller. The extent of these impacts depends on the difference between the production cost for a GI product and its "low-quality" equivalent, and demand. The total impact will be all the more positive when differences in quality are great, production costs do not differ significantly, and administrative costs are not too high. It is therefore an empirical question.

When GI producers can raise prices due to a shortage of quantity with regard to demand, consumers lose in the post-GI situation, GI still win and more, and producers of low-quality substitutes still lose, but less than in the previous scenario.

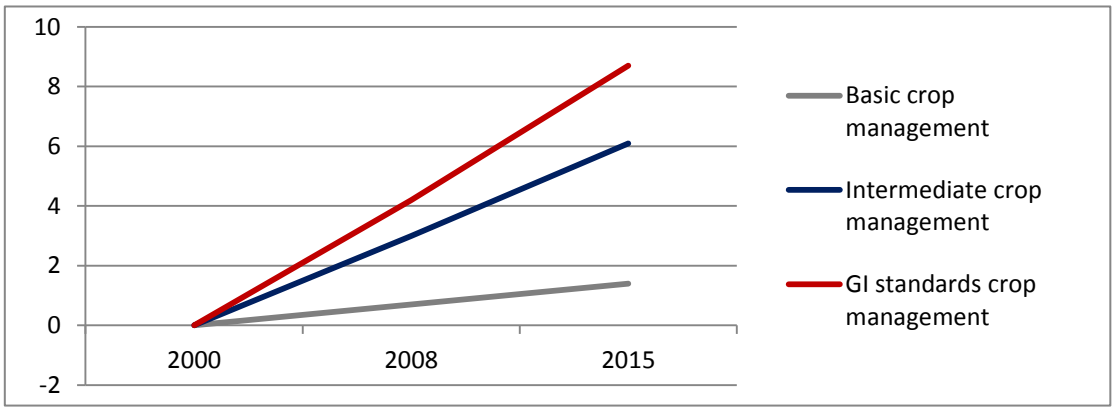
The model of Moschini et al. (2008) open entry into the GI (the number of producers can increase after setting up the GI*). The main beneficiaries of the creation of the GI are consumers, thanks to access to better-quality products at competitive prices. Producers benefit only if the production depends on access to inputs or factors of production which only exist in limited quantity (land, for example).

* This is not necessarily the case. In France, for example, certain vineyard terroirs are no longer available. In the case of Oku honey, the entry of producers is largely allowed. In the case of Penja, the tension on land is being felt, and new plantations require the uprooting of cacao tree seedlings, for example.

The specifications for Penja pepper have thus allowed for an improvement in production techniques and in productivity, leading to a better sale price / production costs ratio. From a collective point of view, closeness to producers makes it easy to mutualize investments (access to water for rinsing, to drying and conditioning areas). Proximity also permits having dialogues and training new producers in production techniques. In a word, more demanding specifications and a collective dynamic have generated an increase in profitability, a hypothesis which seems to be borne out by the rise in production and crop cultivation (see Table 1), and this despite a high entry cost[18]. Charbonnier (2015) in an in-depth survey on production costs and sale prices confirmed that respecting specifications leads to a rise in profitability for producers with regard to "basic" production techniques, whether the producers are at an intermediate level or more advanced (see Figure 5).

[18] "The investment is very high for someone who wants to get started in pepper production: you need between 2 and 3 million FCFA to buy one hectare of land. The density recommended in the specifications is 2x2,5 so 2,000 stakes per hectare. A stake costs 100-200 FCFA. The pepper seedling costs 1,000 FCFA, with a 10 to 20% loss rate. With the costs of crop protection and labor, you have to invest between 4 and 5 million FCFA the first two years with no crop" (Penja pepper GI group, 2016 interviews).

Figure 5 - Annual profitability per hectare of Penja pepper cultivation depending on crop management techniques, millions of FCFA



Source: reproduction based on Charbonnier, 2015, graph 13, p.43

In the case of Oku, high demand for honey as it is produced now and with no official quality sign does not attract investment in a GI dynamic. That is probably reinforced by the costs of production which would be high when respecting specifications, and a collective dynamic more costly than profitable to implement for now. Indeed, for Oku producers, the white honey production techniques are known, but the specifications have very costly demands on the producers – in a context where white honey sells regardless of whether the specifications are respected or not. The OHCS producers state that they know the honey production techniques, but that respecting the specifications is costly.

> *It is difficult to get the material to build the hives, to transport the honey within 24 hours following the harvest for filtering, to obtain suitable equipment; financing is a problem.*
>
> *There is a lack of collective filtering equipment, storage. Producers are not allowed to use alternative filtering techniques due to questions of quality and respect of specifications* [in Beruda, beekeepers filter the honey into a pail with netting on top of it]
>
> Beekeepers at OHCS and OHCS office

Beyond that, the legitimacy of trainers may be questioned:

> *« It is difficult to hear in Oku that a person needs to learn how to keep bees »*
>
> Beekeeper at OHCS

On the other slopes, respecting the specifications implies training producers in techniques which they do not know well. From the viewpoint of collective equipment, the filtering and conditioning centers are too many for the time being, and the collection of honey for filtering under conditions which respect the specifications is extremely expensive. Thus, unlike the case of Penja, the production of white honey has not increased much in the region for now.

To summarize, the GI dynamic in the case of Penja increases profitability thanks to more effective production techniques and mutualized collective investments, whereas in the case of Oku, specification demands are too costly to respect with regard to the anticipated price differential.

Administrative, organization and control costs

Upon requesting registration of a GI, the different actors of the profession and product's value chain must be involved, notably to reach a consensus on the specifications, but also for the sustainable management of the GI dynamic. The procedure requires the existence of a joint-trade grouping which will lead the project. This grouping must be representative, including producers, processors and distributors in their diversity. This requirement, coming from the definition of GIs at the institutional level, imposes (and encourages) the creation of a collective organization which can facilitate cooperation between actors and the mutualization of the costs of production, promotion, marketing and distribution. However, these gains must not be reduced to a rise in transaction and coordination costs within the supply chain. The Oku and Penja cases differ greatly on this point, as already explained above.

Condition 7: Redistribute quality bonuses to producers which are theirs

In the case of the PAMPIG project as in most GI projects, one of the main objectives was to increase producers' income. It is therefore important to ensure that the quality premium goes to them. This "equitable" redistribution of bonuses in the supply chain depends on the producers' level of information and on their negotiating capacity (with distributors, and even within the association).

For the Penja case, the Charbonnier survey (2015) shows that producers succeeded in securing 90 to 95% of the sale price "in bulk". Indeed, contrary to a pre-GI situation where each one negotiated prices individually and without veritable information, the "field-side" floor sale prices are now negotiated at the association level. They jumped, more than sale prices on international markets. The price going to producers of a kilogram of pepper rose from 2,000 FCFA at the beginning of the 2000s, to 4,000 before the GI, then reached 7,000 FCFA in 2011/12, 8,500 FCFA in the course of 2014/2015 harvest and up to 12,500 to 14,000 FCFA in the course of the latest harvests[19]. Bulk resale prices by local distributors on the local market reach 1,000 to 2,000 FCFA more. Producers have therefore been well able to secure a large share of the price of the final product sold in bulk (Charbonnier, 2015).

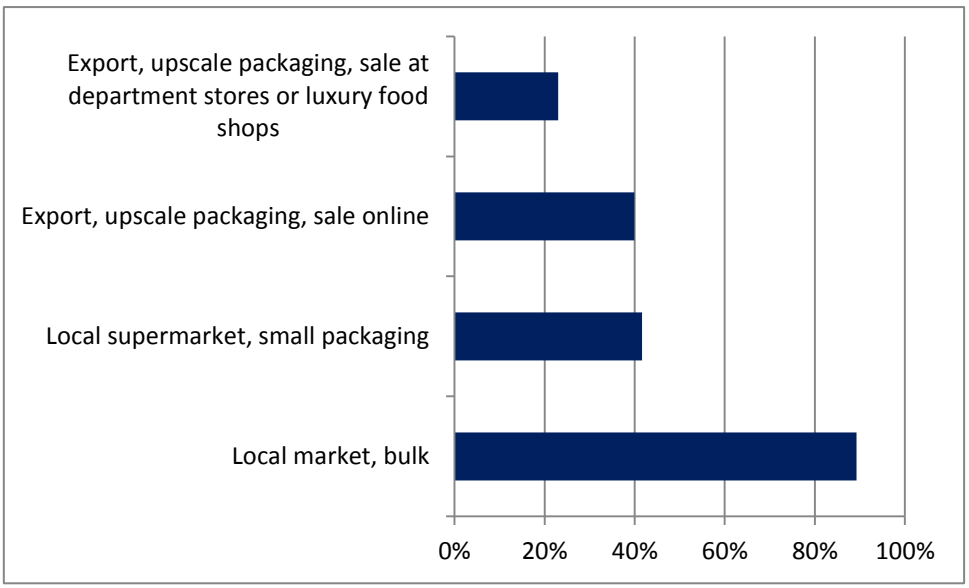
Still, when taking account of consumer sale prices on other circuits and in other packaging (50g, for example), the added value going to distributors reaches disproportionate levels.

- The price per kilo of pepper coming from Métomo plantations can reach 30,000 FCFA / kg in a 50g bag in direct purchase, 38,000 at SPAR in Douala. This packaging is moreover probably the source of a higher profitability on the local market: Métomo plantations indeed account for 30% of export sales for the lower average sale price of 19,650 FCFA / kg.
- Export distributors' margin rises further: Terre Exotique sells Penja pepper for 75 euros per kilo online (€121/kg for 70g), €132.14/kg at the Bon Marché (a Parisian department store). Ducros sells 48g at supermarkets for €145/kg. The margins are substantial, have been trending downward. Finally, members of the Penja pepper IG found containers of 48g at 7,000 FCFA – 148,936 FCFA/kg (€227/kg) at Casino in Yaoundé – without learning the provenance.

[19] It should be noted that these prices also depend on climate conditions and the production period (high or low).

Figure 6 indicates the share of the final product price which comes back to producers, estimated in function of the marketing network. It is given for information only and is based on the figures which have just been mentioned.

Figure 6 - Share of Penja Pepper consumer price reaching consumer depending on marketing network, after GI



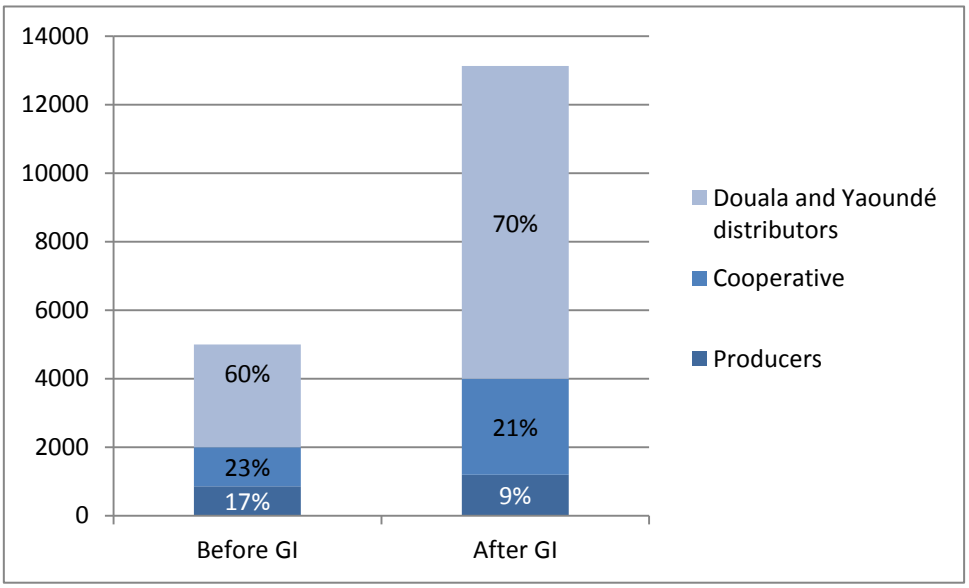
Source: qualitative survey, interviews and supermarket visits, May 2016

As for Oku white honey, producers sell unfiltered honey on a per-liter basis to the cooperative. According to their indications, the price has risen from 650 FCFA per liter to 900 since the GI. The cooperative sells the honey filtered, at prices which appear to vary little in function of the buyer, with distant distributors buying in bulk to benefit from economies of scale. OHCS, the only cooperative able to make comparisons, sold a liter of filtered honey for between **2,000** and 3,000 FCFA before the GI, and for **4,000**-4,500 since then. Local distributors (ANCO for example) confirm this range, and resell at most 500 to 1,000 FCFA higher. In the large cities of Douala and Yaoundé, the context is different: Mielleries pays round-trip transport, supplies stocking pails, and repackages the honey. The company reports buying the honey in pails of 20 liters at a price which has risen from 1,500 FCFA per liter of filtered honey to around 4,500. For this same distributor, resale in Douala is on a per-kilo basis, and prices vary depending on the packaging: 2,500 for 250g, **3,500 for 400g**. CAMGEW indicates reselling 500g for 5,000 FCFA. Finally, for the calculations which helped produce the graph in Figure 7, one liter of unfiltered honey gives between 0.66 and 0.75 liters of filtered honey. Stated differently, one must buy between **1.33** and 1.66 liters of unfiltered honey from producers to obtain a liter of filtered honey. A liter of filtered honey weighs around 1.5 kilograms[20].

From the hypotheses indicated in boldface, Figure 7 shows the evolution in prices per liter of filtered honey and the distribution of added value in the supply chain for supermarket sales in small containers in Cameroon's largest cities.

[20] A hive produces between 6 and 23 kilos of raw honey

Figure 7 - Distribution of added value of Oku white honey sold in Douala and Yaoundé in the supply chain, before and after GI



Source: qualitative survey, interviews and supermarket visits, May 2016

Most of the people met are suspicious about the equitable nature of the redistribution of added value within the supply chain, for several reasons. Firstly, producer information on the sale prices of their honey to the final consumer is much less widely published. Then, whereas producers sell a kilo of unfiltered honey for 950 FCFA, the filtered honey (next immediate step) is sold for between 3,000 and 4,000 FCFA. The question of knowing whether this price difference reflects a difference in cost is asked, to the extent where producers cover their transport from their hive until the Oku filtering center, and that honey filtering is done essentially in "using the law of gravity" (May 2016 interviews). Furthermore, it seems that there has been confusion between this cost and passing on the costs of operating the cooperative for services rendered in the scope of the GI and non-GI. For more clarity and trust, the modes of contribution to the KIWHA association versus OHCS would merit being clearly distinguished from the passed-on costs of filtering, packaging and marketing (and collection if the case applies).

Condition 8: Controlling supply – managing scarce resources and entry barriers well

Differentiation by GI rests on a restriction to the production area, a minimal form of "entry barriers", which shields producers from competition and helps them maintain high level of quality. Thus, when drafting eligibility criteria, it is essential to delimit the production area as fairly as possible: on the one hand, it is essential to restrict this area as one which is effectively able to produce a quality good, and at the same time not exclude a production area which could potentially produce the exact same products without tainting the reputational aspect linked to origin[21]. Here again, this delimitation depends on agronomical and technical constraints, and also on the target market and consumer preferences.

[21] This is what Belletti *et al.* (2016) call the "quality-exclusion" trap.

Besides this, scarce resources must be well managed (land, water resources, soil fertility, etc.) to enable the sustainability of the GI when it depends on their use. Once again, the Penja and Oku cases differ sharply on this point.

Thus, in the Penja region, producers are notably questioning the need to carry out all parts of the process in the area. The pepper plant being affected by epidemics and sensitive to climatic conditions, an interesting debate is emerging among members of the Penja pepper GI association about the possibility of planting cuttings (nurseries) outside the area.

> *If both your parents are Cameroonian but you're born in France, you'll sure enough be French!*
>
> [a cutting taken from outside the GI but cultivated in the area will indeed give "Penja pepper"]
>
> A member of the Penja Pepper GI association

Due to the restriction of the production and propagation area and the possible blockage of innovation, Penja pepper could suffer a decline in quality and in production (disease, fungus, climate change). The debate is important for the Penja pepper association.

- What impacts on trust if the nursery area is enlarged?
- What impacts on exports if conditioning is done elsewhere?
- What impacts in terms of rural development?

In any case, pepper producers are concerned by long-term access to resources in the appellation area, and by the possibility of modifying production practices if necessary (to adapt to climate change, for example).

The difficulties in managing resources in the case of Penja apply to land and water. In the case of Oku, the use of the GI is, on the contrary, intended to preserve scarce resources. A usage conflict between farmers could develop. In both cases, viewing a GI as the management of a common may provide solutions (Fournier *et al.*, 2016).

Elements for the comprehensive cost-benefit analyses

As the GI projects are aiming to be territorial development projects, they encompass more objectives and populations than the duo that this technical report is focusing on (increasing producer incomes). The above-identified conditions 1 to 8 are not enough in the scope of an analysis which concerns all of society and the sustainable development goals. Table 4 indicates the nature of the elements to take into account for such an analysis. For more details on a comprehensive analysis, see Vandecandelaere *et al.* (2018).

Table 4 - Elements for GI cost-benefit analyses at the territorial level

	Probable impact [a]	Examples drawn from the Oku honey and Penja pepper case studies
Populations other than GI producers		
PRODUCERS OF LOWER QUALITY PRODUCTS ☹	Negative, because demand decreases. The situation is different if there is free entry into the GI (i.e. producers of lower quality goods can shift to higher quality goods).	In the case of Penja pepper, it is the Chinese pepper that is downgraded. For the inclusion of small-scale producers who would be excluded by overly demanding specifications, see Belletti *et al.* (2016).
OTHER JOBS IN THE SUPPLY CHAIN ☺	Ratchet effects may occur through post-production steps.	In the case of Penja pepper, GRET (2015) notes that the pepper supply chain creates many jobs; see also Vandecandelaere *et al*. (2018) for other examples and counter-examples.
OTHER SUPPLY CHAINS, OTHER SECTORS ☺	Ratchet effects possible, notably via heightened attractiveness to tourists	"In Oku, visiting the White Honey cooperative is a must-see for tourists, just like the Métomo plantations."
CONSUMERS ☺	Consumers are the first beneficiaries of a quality labeling approach, except when price increases are too great due to control of supply or market power. Moreover, different groups may be impacted differently: consumers with a weaker purchasing power do see a decrease in the average quality that they consume as GI products are exclusively oriented toward the best-off consumers.	In a configuration where the richest consumers are favored, there may be a local market / international market dichotomy. Today, Bamenda honey consumers have trouble obtaining it. A distributor in the Douala region said that the "*challenge today is to make Penja Pepper reappear on the Cameroonian markets*."
Other objectives and/or externalities		
INEQUALITIES ☺ ☹ : under certain conditions	Even if overall well-being is improving, the introduction of a GI may lead to inequalities, with harmful effects. The extent of inequalities depends on the capacity of the supply chain and the territory to take advantage of the GI to create other jobs in the supply chain or in other sectors; see above.	In the Penja area, in significant increase in thefts has been observed (plant material, cuttings, output), sometimes aggravated (that is, with violence).
PRESERVATION OF RESOURCES AND BIODIVERSTIY ☺ ☹ : under certain conditions	The GI may be a factor of conservation of the environment or of biodiversity, acting directly and indirectly. Directly, since the GI can increase the conservation of biodiversity and diminish the environmental impact by writing these considerations into the specifications. This must be discussed and validated by all the stakeholders at the time of registration. Indirectly, when the preservation of common resources is the consequence of their economic value (thus usage value). Some authors	In Oku, CAMGEW insists on the complementarity between forest preservation and apiculture, biodiversity being a major vector of honey's specificity and apiculture in general. "*If producers have an interest in it, they will be major actors in the preservation of biodiversity and the fight against brush fires.*" In Penja, monitoring the pressure on resources brought about by the pepper's profitability is a major preoccupation of the grouping: the diversity of crops is sacrificed for pepper ("we are uprooting cacao and

	have defined the GI as being similar to a common: a community of people (the GI association) must get along to preserve scarce resources. The ability of the association to preserve the resources therefore depends on the rules established. The rise in prices and the economic value could on the contrary motivate producers to use land and resources maximally, endangering not only the sustainability of the supply chain but also the environment and biodiversity (Fournier *et al.*, 2016).	banana trees to plant pepper"). The pressure on land and on water resources (necessary in large quantities to wash the pepper) is high. Continuity in the good operation of the association is thus essential to ensure sustainable management of the GI.
PRESERVATION OF TRADITIONAL PRACTICES ☺	Rangnekar (2004) identifies three levers which help preserve traditional knowledge and know-how. First, ownership remains in the public domain: it is government institutions (national or regional) which own the rights to the logo and accept the registration of a GI. Then the rights are not limited in time, so protection is potentially eternal. Finally, the GI is in harmony with the cultural and traditional rights: it is inaccessible, unless the knowledge and thus methods or procedures, which are now written in the specifications, are transferred. However, practices must not be set in stone. The specifications of a GI can, in the same way as for traditional practices, evolve, on the condition of obtaining approval from the different supply chain actors.	This objective is particularly emphasized by OAPI. Flexibility exists: For Oku white honey, the use of so-called "Kenyan" hives (and traditional bamboo hives as used in Oku) was authorized for practical reasons: better visibility when the honey is ready, safer, less traumatizing for the bees at harvest time, more hygienic conditions (the honey is not touched before gathering it).

Key
☺ observed effects generally positive ☹ observed effects generally negative
(a) theoretical impact or generally observed in the case studies

Conclusion: key components of studies identifying GI candidate products

To conclude, the following elements should be considered when conducting identification studies in searches for products potentially eligible for GI registration:

Part I. Elements justifying the recourse to a GI: "relevance" criteria of the GI procedure with regard to the objective of increasing producers' income and of rural development:

1. There is a strong link between the characteristics which are sought after and valued by consumers (on a target market) and the production area

a. If the origin is a necessary and sufficient condition for the production of this quality sought by the consumer, the product has less chance of seeing the development of substitutes.

> *Example: Growing the Piper nigrum variety in the Penja region leads to flavor qualities, and these qualities can only be acquired in this region.*

b. If the condition is not necessary, there are high risks that substitutes will be developed.

> *Example: Supporting Oku white honey is a way to encourage producers to preserve the Kilum-Ijim Forest, but it is not the only way.*

2. There is a demand / market potential for this characteristic:

a. What is the current demand? Who are the consumers and whom do they trust for their provisions? Why? What are the target markets? On these different markets, what is consumers' willingness to pay?

b. Are there substitutes? Could there be substitutes in the future?

c. How elastic is demand?

⇨ It is absolutely necessary to carry out a market study with the appropriate tools upon filing a GI candidacy application.

3. For the characteristics identified in 1 and 2, **there is an information asymmetry** (otherwise, signaling quality would not be necessary) whose intensity will determine the necessary level of certification and therefore the cost.

4. There is an organization of producers who wish to cooperate and who produce the same product in order to create a GI association sharing a common vision and objectives, with reasonable coordination and administration costs. It is possible to create an *ex nihilo* supply chain (or nearly), but that requires much greater public or international financing.

5. **There is a national system of controls and fraud prevention.** This supposes the existence of an institutional architecture allowing for the implementation of credible signs of quality (that is to say, GI legislation AND an effective and credible control and fraud prevention service making it unprofitable (the penalty amount must be at least equivalent to the differential cost between compliance with the specifications and not doing so, and frequent controls).

Part II. Who benefits from the GIs? Elements for the cost-benefit analyses and conditions of rural development

6. **Coordination and administrative costs are not too high**. That notably implies limited transport costs between the different production areas (or producers).

a. When the GI is working well, the mutualization of collective investments and discussion on production techniques may even help reduce costs.

b. A cost-benefit analysis in function of anticipated demand (condition 2) must be performed.

7. **The producers organization and the supply chain must allow for the fair redistribution of the bonus to producers**

8. **Entry barriers and specifications are not an obstacle to innovation or adapting practices to change** (climate, for example)

9. **The analysis of the following potential externalities and potential negative effects on other population groups must be carried out:**

   a. Impacts on producers outside GI areas, other rural populations and consumers (in function of the GI's market power)
   b. Rise in inequalities?
   c. Preservation of biodiversity and the environment, or on the contrary, pressure on resources?
   d. Protection of traditional know-how

A complete analysis therefore includes:

- ✓ An analysis of demand, at minimum the link which the target consumers make between origin and quality,
- ✓ An analysis of the business model, at least for producers (including, if possible, the analysis of the business model of the producer cooperative and the GI group),
- ✓ An analysis of the general equilibrium either by simulation or "qualitative" to estimate the impact on other population groups,
- ✓ An estimate of the pressure on resources caused by the GI or, on the contrary, its preservation potential.

Appendices

Appendix 1. Methodology

Detail of the problematic

What criteria determine the successful implementation of a geographical indication? That is the main question which has oriented and guided our research. The underlying questions notably concern the criteria for the perpetuation of the procedure and the motives in appropriating innovation.

The first task was to define what success would mean. Is it the survival of the product which will benefit the GI? In this case, we must know what the GI will contribute to protecting cultural heritage, biodiversity, producers' income, the diversity of products, etc. Is the GI then the best adapted means? Do other levers of action lead to the same goal without perverse effects (problems of exclusion, overproduction, hampering of technical innovation limited by strict specifications, etc.)? Is the GI procedure therefore only an institutionalization of a good's reputation? How effective is it as a development tool?

The choice of Cameroon

In the scope of the PAMPIG project (Support program to implement Geographical Indications), three GIs resulted from the initiative of the African Intellectual Property Organization (OAPI) and AFD. Two of them are from Cameroon: Oku white honey and Penja pepper. Registration occurred at OAPI, whose headquarters are in Yaoundé. The different levels of actors involved are thus present in Cameroon: regional, national (with the GI committee) and the supply chains.

The two Cameroonian GI products are far from being similar. One of the differences between the Penja pepper and Oku white honey projects dates from before the implementation of GIs. The pepper supply chain is operated by a few small producers and one main exporter who holds the trademark "Penja Pepper" (the latter is ready to withdraw his brand for the benefit of the GI and its European registration). The honey, for its part, is organized around many small-scale producers (of whom a minority were grouped into a cooperative). After GI registration, the idea of specifications spread among Penja pepper producers, whereas few Oku honey producers joined the GI defense association, often due to a lack of information or trust. These differences and their very different successes provide two pilot cases to study.

The choice of Cameroon was clear for two main reasons: the presence of the three levels of authority (regional, national and supply chain) and the existence of two geographical indications with different contexts.

Selected methodology

The constraints of time, the lack of figures as well as the wish to analyze stakeholders' discourses with regard to the GI oriented us toward the qualitative methods used in sociology. The aim of the case study was thus to carry out a qualitative survey allowing for a comparison of the two case studies (Penja pepper and Oku honey) in order to identify factors of success or of blockage of the GI

and criteria of perpetuation. Four methodological qualitative tools are principally used in sociology: questionnaires, semi-structured individual interviews, focus groups and participant observation.

The study's format and expectations made it possible to identify the most suitable method. Indeed, it had to be possible to adapt the methodology to the different contexts of Oku and Penja in order to ensure coherence. It was important to introduce the weakest possible bias to obtain the account of the GI implementation and to detect key hardships without stopping the dialogue. Lastly, the method had to put the interviewee at ease to encourage them to speak.

Following these considerations, semi-structured interviews and focus groups seemed to be the best-adapted tools. Questionnaires did not seem appropriate because the diversity of actors to interview is not compatible with the inherent formality of questionnaires. Participant observation is not adapted for research based on the comparison of two cases given the time available for this project.

An interview guide which scans the different problematics identified upstream was therefore drawn up. The first question must be compelling as it is starting off the interviews and must be adapted to all types of actors questioned.

One particularity of the semi-structured interviews is the need to see the actors individually. To faithfully relay the words of interviewees for their analyses, the interviews were recorded when interviewees granted their permission. At the end of each day of interviewing, transcribing had to be done.

During meetings with organizations (associations, cooperatives …), focus groups were conducted. They sometimes helped build interviewees' trust (notably in the case of Oku beekeepers), or to testify about internal relations and group debates (like during the meeting with the people most involved in the association to protect the Penja pepper GI).

List of people met

Yaoundé

- OAPI
    - Michel GONOMY, manager of the Geographical Indications program
    - Jean-Baptiste WAGO, assistant to the General Manager
    - GI unit
- Ministry of Agriculture and Rural Development (MINADER), Mr. Petit MESSA, national GI contact
- Ministry of Livestock, MINEPIA, Mrs. Florence YOUBISSIE, manager of apiculture-linked projects, follow-up on a MINEPIA laboratory to control finished products
- MINCOMMERCE, Mr. Ousmanou ABDOURAMANE, manager of aspects of the fight against fraud and counterfeiting
- Patrice de Vernou, regional director of CIRAD
- Guiding Hope (Michael TCHANA – CEO, Steve KAMENI – manager of quality), honey distributor which provided technical support in Oku during the PAMPIG project
- Théo TOURNEBIZE, technical assistant of the Man and Nature NGO
- Qualitative surveys in supermarkets and markets (Mahima, Casino, Dovv, street market …)

- ANOR (Agency for Norms and Quality)
    - Jean-Pierre FOKA – Deputy Director of the promotion and information division
    - Stephen EBAÏ TAKANG – Deputy Director of technical services

Oku / Kilum-Ijim

- Bamenda
    - Emmanuel WIRSIY – Manager of CAMGEW (Cameroun Gender and Environment Watch)
    - Bamenda networks of distributors
        - ANCO (Apiculture and Nature Conservation Organisation) – focus group with managers
        - HONCO
        - North-West Beefarmers House – interview with Simon CHIA, President
        - Bamenda CAMGEW sales outlet and office
- OKU
    - George BANG, manager of OHCS (Oku Honey Cooperative Society Ltd.) and President of KIWHA (Kilum Ijim White Honey Association), the association in charge of the GI
    - focus group with about fifteen producers from the OHCS cooperative then separation into smaller groups
    - Visit of the honey filtering center
    - Lunch with the association
    - Visit of nurseries and hives
- Belo
    - Meeting with member of Beruda (Belo Rural Development Association) and focus group session
    - Visit of filtering and conditioning center in Fundong

Penja

- Emmanuel NZENOWO, Executive Secretary of Penja Pepper GI representative group
- Meeting with members of Penja Pepper GI representative group (Emmanuel NZENOWO, Nestor Calvin TCHANGA – President of GI nurseries, Honoré-Marie BATCHAMBA – GI trainer and delegate from the Penja area, Henri DIKOUMBE – GI trainer and delegate from the Manjo-Loum area)
- Local representative of MINADER and visit of nursery (training setup)
- Meeting with Jean Olivier KAMWA of MUPECI (Mutual for the promotion of Savings and Investment Loans) – microfinance institute which the Penja Pepper GI representative group uses to finance inputs
- Meeting with René Claude METOMO ELOGO, President of GI producers group, planter and second largest producer of Penja Pepper
- Visit of a pepper treatment center for small-scale producers and interview with a producer
- Lunch followed by a focus group with Emmanuel Nzenowo, RC Metomo, the local delegates of MINADER, trainers and GI producers
- Landry Kom et Jean-François GROGNET, en mission pour le CIRAD sur le Poivre de Penja Landry Kom and Jean-François GROGNET, on a mission for CIRAD concerning Penja Pepper

Douala

- Qualitative surveys in a few supermarkets (Super U, Spar …)
- Meeting with Jacques Georges BADJANG, General Manager of Mielleries, distributor of Oku white honey – visit of refurbishing center
- Meeting at the central market with Ambroise NOUMBISSI, President of the Penja Pepper association of GI distributors

Appendix 2. Building a reputation[22]

By adapting the reputation models developed by Kreps and Wilson (1982) and Milgrom and Roberts (1982) to the quality of experience goods, Tirole (1993, pp. 247-252) has shown that a company may be led to provide good quality products if this allows it to build a good reputation.[23] Engel (2006) adapted Tirole's model to credence goods in the broad sense. The three basic assumptions of the model are as follows.

I. **There is a positive probability of the company being "honest".** At each period t (t= {1.2}), the company chooses the quality of the good supplied. To simplify, Engel assumes that there is a fixed quantity. She also assumes that there are only two levels of quality (good or bad). There can be two types of company: "honest" or "dishonest". The honest type always prefers to produce good quality. This can be for "moral" reasons (if good quality production leads to a certain satisfaction), or because for this company, the cost of good quality production is lower or equal to the cost of poor quality. The dishonest type maximises the discounted sum of the profits made over the two periods. It does not derive moral satisfaction from good quality production and, for this type, the cost of good quality production (c) is always higher than the cost of poor quality production (assumed to be zero). The basic assumption of the model is that the *ex ante* probability of the company being honest (ρ) is strictly positive. In other words, prior to the beginning of the first period, consumers think that there is a non-zero probability of the company always preferring to produce good quality (comply with fair trade specifications in our case).

II. **There is a probability of discovery in the event of fraud,** *i.e.* in the case of the provision of poor quality whereas the company has declared good quality (that it was "fair trade" in our case). Unlike Tirole's model, Engel's model applies to credence goods and not to experience goods. Consequently, consumers do not systematically discover the actual quality of the good at the end of each period (the probability of discovery in the event of fraud is not equal

[22] Source: Balineau, 2010

[23] And even at a finite horizon. The reputation model developed by Tirole is in this way in contrast to the theory of quality premiums of Klein and Leffler (1981) and Shapiro (1983). The quality premium model is based on the idea that in a repeated game, consumers can sanction the poor quality of the monopoly by not repeating their purchase. This is only a sanction if the quality allows the monopoly to achieve a margin (a "quality premium"). Consequently, there are balances in which the monopoly maintains a good quality for fear of reprisals by consumers, and where the latter buy as long as the quality is good. The quality premium must be such that the reduction in quality would generate gains lower than the losses related to the reduction in future sales (due to a sanction on the poor quality by consumers). This model requires an infinite horizon. Otherwise, the principle of backward induction leads to the production of a poor quality right from the first period. For more details, see Tirole, 1993, p. 243.

to 1). In this context, Engel assumes that there is a non-zero probability (γ) of a company having sold poor quality for good quality being discovered (by a consumer association, for example), and of consumers finding out it about, as the case may be.

III. **Consumers repeat their purchases often enough.** This assumption is necessary for all the reputation models. It should be noted that with Tirole (1993, p. 224, footnote n° 1), repeated purchases can have an effect, even if they are not repeated by the same consumer in the same establishment or for the same good: endorsing a collective brand (a "chain" of restaurants for example) can consequently help develop the reputation (see for example Hakenes and Peitz, 2008).

In this context, are there balances in which good quality is produced? Of course, if the company is the honest type, there is an immediate answer, because by assumption the honest type always prefers to produce good quality. But Engel's main contribution is to show that it may even be in the interest of the "dishonest" type to offer quality products. The intuition is the following: if the company provides a poor quality product in the first period and consumers find out about it, the latter deduce that the company is dishonest. They consequently reduce their willingness to pay in the second period (as the probability of the product on offer being of poor quality is revised up compared to the first period). Another strategy may therefore be more advantageous: the dishonest type can offer good quality in the first period and thereby try to convince consumers that it is the honest type. If consumers are not informed of fraudulent behaviour by the company at the end of the first period, and if they think that this is due to an absence of fraud rather than an absence of control (see below), they do not reduce their willingness to pay in the second period. The dishonest company can then exploit this reputation by supplying a poor quality product at a high price during the second period. This strategy means that the loss during the first period due to the investment in reputation is offset by the gain during the second period. This depends on the value of several parameters. The results of Engel's model, which can be generalised to n periods, indicate that a balance in which the dishonest type produces good quality during the first periods is more likely to emerge because:

a) The difference between the cost of poor and good quality production is low (c is low),

b) The discount rate is low (the preference for the present is not too high),

c) The probability that consumers *a priori* assign to the honest type (ρ) is strong,

d) Consumers have a strong taste for quality,

e) The probability γ of being detected in the event of fraud (declare good quality and produce poor quality) is high.[24] This latter condition is crucial: indeed, the higher the probability of being discovered in the event of fraud, the more consumers will attribute the fact of not having received revelations over the reliability of a firm to an absence of fraud rather than to an absence of control or to the imperfections of the control system, which leads them to not revise down their willingness to pay during the second period.

However, the dishonest company still provides poor quality during the last period, when there is no longer any reason to uphold a reputation.

[24] It should be noted that the higher this probability, the more we are closer to a situation of experience goods (and to Tirole's model).

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Appendix 3. Third-party certification[25]

According to Lizzeri (1999) and Albano and Lizzeri (2001), reputation mechanisms are insufficient to ensure good quality production when the information asymmetry is very strong. In this case, the will of consumers and/or companies not to see the market disappear because of an adverse selection problem can lead to the emergence of intermediate actors: certification agencies. These institutions play a crucial role: it involves finding the information held by informed parties and providing it to uninformed parties.

Consequently, the problem raised is that of the credibility of certification agencies. It has been widely studied by the literature on the principal-agent relationship in general, and by the literature on audits in particular. There is indeed a dual agency relationship as the principal, is faced with two agents:

1. The company, which must respect the specifications.

2. The certification agency, recruited to oversee the company.

Yet Antle (1982) recalls that the auditor's honesty is not a given: the auditor itself must also be considered as an economic agent which is seeking to maximise its profit (or which, more generally, is seeking its own interest). The strategy which involves disclosing information to the principal may therefore not be the best: the certifier could be tempted to establish a contract with the "dishonest" company in which it commits to certify that the products are standards-compliant against the payment of part of the profits made thanks to this fraud. Kofman and Lawarrée (1993), by adapting the founding article by Tirole (1986), have highlighted this possibility of collusion between the auditor and agent in a principal-auditor-agent relationship.

For third-party certification to be credible, the principle of independence between the auditors and the companies they monitor is therefore fundamental (Antle, 1984). What are the elements which encourage the auditor to remain independent and provide the real information on quality? According to the literature, the mechanism able to encourage the auditor to remain independent and provide the real information on quality is the same as the one which can encourage the dishonest company

[25] Source: Balineau, 2010

to produce good quality (see above): the auditor can seek to maintain a reputation of independence in order to encourage potential clients (the principals) to request its services. Intuitively, it will especially be in the interest of the certification agency to invest in building a reputation because: (i) there is a high probability of being discovered in the event of collusion, (j) the discount rate is low, (k) there is strong market potential.

Of course, for good quality to be produced, it is not enough for the certification agency to be honest: the company also needs to be encouraged to produce this quality and request the agency's control services. This depends on the profits expected in this case and therefore on a number of parameters: consumers' willingness to pay for quality, the production cost for good quality and the fees set by the certification agency. Strausz (2005) studies the conditions for the existence of a balance in which:

1. Certification agencies are encouraged to be honest and,

2. Companies are encouraged to produce good quality and request certification.

The basic assumption of the model of Strausz (2005) is that when the certification agency does not provide the correct information, consumers find out about this and therefore no longer have confidence in the agency. The starting point for his model is a "classical reputation dilemma" (ibid., p. 46) in which the certification agency chooses between the short-term gains which result from the fraud (propose a contract in which it declares the company to be honest against remuneration) and the long-term gains due to honesty (which allows new clients to be gained). The gains due to fraud can be high because the agency saves the control costs (in addition to the benefits provided by the corrupt company, which are often non-monetary). In view of this, collusion is even less attractive because the agency expects high future profits. They may come from significant future demand and/or extremely high fees. Yet the fees charged by the certification agency cannot exceed a certain limit, as the request for certification by companies depends on them. It is for this reason that honest certification tends towards a monopolisation of the market (particularly when there is a strong preference for the present): otherwise, certification agencies must not only share future demand with their competitors, but competition in terms of prices also makes it impossible to set tariffs at a higher cost than the marginal cost (Bertrand paradox). Yet, in this case, consumers know that is more in the agency's interest to be corrupt (and it is therefore pointless for companies to request certification services).

The monopolisation of the market is therefore a natural trend on the certification market.

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