Roadmap towards sustainable spices production in Myanmar

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Summary

In 2018-2019, in close cooperation with CREM in the Netherlands, Fresh Studio Myanmar has developed a 'Roadmap for sustainable spices export from Myanmar to the Netherlands'. The Netherlands Enterprise Agency (RVO) was the contracting authority and thus financer of this project. Especially the focus on the sustainability of production of spices is crucial for the possible sourcing to the Netherlands/Europe as it touches on issues beyond just the growth of a spice, such as labour health, biodiversity and impact on the environment.

The project consisted initially out of three result areas:

1. Quick scan of spices; both on the demand (Netherlands) and supply (Myanmar) side. Out of this quick scan, a selection of three spices was made;
2. SWOT analysis of selected spices;
3. Roadmap and awareness raising of stakeholders.

During the period of the quick scan, the demand side of this project was represented by 10 Dutch spice companies, with potential to the European market. All spices companies are prominent members of the Royal Dutch Spices Association (KNSV) and together they represent the bulk of spices imports in the Netherlands (based on direct sourcing in producing countries). All spices companies showed potential interest in sourcing spices from Myanmar, and all of them indicated a preference for certain spices for various reasons. On the basis of these preferences and the availability/potential of these spices in Myanmar, a selection of three spices for further elaboration was made: ginger, chili (specifically: chocolate bell variety) and cinnamon.

During the SWOT analysis of the three spices, field work was done to get more insight in the actual production practices and the different steps in the chain. Sustainability aspects were at the base of the interviews, such as effective planning and management system; biodiversity conservation; natural resource conservation; improved livelihoods and well-being and pesticide management policies. The (sustainability) level of the production of chili of the visited areas was quite low, therefore there is hardly any interest of Dutch spice companies at the moment. Ginger shows a lot of potential, especially as there are already initiatives taken place to produce ginger more sustainable. Furthermore, processing facilities are developed, which will make it more attractive for Dutch buyers. Regarding cinnamon, although the quantity is too low, the quality and the varieties produced are of interest for some of the Dutch spice companies. But this needs a long-term investment and commitment from various parties.

As this project is a feasibility study, the report ends with recommendations for the three selected spices, both on improvement on sustainable production and institutional strengthening and specific recommendations for possible export. To make this even more

practical a toolkit is added, to improve the sustainability of the production to eventually be ready for the European market.

Contents

1. Introduction

In 2018-2019, in close cooperation with CREM in the Netherlands, Fresh Studio Myanmar has developed this 'Roadmap for sustainable spices export from Myanmar to the Netherlands'. The Netherlands Enterprise Agency (RVO) is the contracting authority and therefore also the financer of this project.

The project consisted initially out of three result areas:

1. Quick scan of spices; both on the demand (Netherlands) and supply (Myanmar) side. Out of this quick scan, a selection of three spices was made;
2. SWOT analysis of selected spices;
3. Roadmap and awareness raising of stakeholders.

This report is an overview of what has been done with regard to all result areas, with a specific focus on the three selected spices. The report ends with concrete recommendations and possible follow-up actions for interested parties. Initially the idea was to organize a stakeholder workshop to validate the findings of the quick scan and the SWOT analysis, but as the stakeholders were spread over the country, this was not feasible due to budget constraints. Findings were firstly double-checked with the key informants and adjusted in the recommendations per spice in the respective chapters 3-5. After that the interviewed spice companies gave their reflections on the SWOT analysis and the possible potential for sourcing spices from Myanmar. These reflections form the final conclusion and recommendations in Chapter 6.

In order to make this report as practical as possible, we developed a small toolkit which provides some relevant documents for actors who are interested to be involved in the sourcing/trading of sustainable spices.

1.1 Background

Globally, an increasing scarcity of high quality and sustainably produced spices is expected. In general the international demand for spices is increasing rapidly, among others in emerging economies. But the supply of spices cannot keep up because worldwide spice smallholder farmers tend to stop farming or convert to other more profitable or 'easier' crops. In many places productivity and quality levels are low and post-harvest losses high.

An additional factor for specifically the Dutch spices sector is that spices are expected to be produced in a sustainable manner, both from an environmental and socio-economic point of view. The Royal Dutch Spices Association (KNSV: Koninklijke Nederlandse Specerijenvereniging) is one of the parties who signed a covenant on International Corporate

Social Responsibility (ICSR covenant[1]) on 29.06.2018. In addition, several KNSV member companies are active in the Sustainable Spices Initiative managed by the International Trade Initiative (IDH). At present 3 KNSV members conduct a project on eradicating child labour in spices value chain. Lessons learned from this project are included in a Toolkit for Responsible Business Conduct' that is available on the KNSV website (www.specerijenvereniging.nl).

At present Dutch spices traders and processors hardly import any spices from Myanmar. Lack of knowledge about what Myanmar has to offer and lack of business contacts are major reasons. This in addition to the perception that currently especially Chinese and Indian buyers dominate the market and that it may be difficult to enter as a newcomer. In view of the above described global scarcity of high quality and sustainably produced spices it can however be very strategic for Dutch companies to include Myanmar as a sourcing country.

Myanmar is known for a huge agricultural potential and the government, private sector, NGOs and research institutes are therefore largely focusing on how to improve agricultural production and how to connect this to domestic and international markets. So far spices are rarely a focus within existing programmes, although the country is already producing several spices such as for example chillies, sesame, ginger, turmeric, garlic, nutmeg and cloves.

For Myanmar exports of spices to the Netherlands may be potentially interesting, among other reasons because it may reduce dependencies of exports to China and India. Because the focus would be on sustainably produced spices it would also benefit the environment and possibly the socio-economic situation of farmers (often women), landless workers and local communities.

Important sustainability issue in spices relate to pesticides residues and inadequate drying methods leading to among others aflatoxins problems. Such issues must be dealt with before Myanmar has a chance to export to the Netherlands, possibly with the assistance of potential Dutch buyers and/or the Sustainable Spices Initiative. Improved production and post-harvest techniques may also trigger safer domestic consumption.

The project will map required interventions that may have to be implemented before export of spices to the Netherlands can materialise (including possibilities to fund these). The goal of this project is to develop a roadmap for market access to the Netherlands of three selected sustainably produced spices from Myanmar (chillies, ginger and cinnamon). In the first place, with regard to these spices, the project leads to insight into product, market and sustainability requirements of Dutch spices traders and processors. In the second place the project will describe the extent to which Myanmar producers are currently able to comply with these requirements and in possible measures that must be taken to close the gaps.

[1] https://www.imvoconvenanten.nl/voedingsmiddelen

1.2 Methodology

The methodology used for the quick scan were merely structured and semi-structured interviews and desk research, both in Myanmar and the Netherlands. As the Fresh Studio team in Myanmar consists out of nationals and internationals, the roles were divided in finding information through international persons/organisations and Myanmar persons on national, regional and township level. First a rough scan was done to quickly assess the spice production in Myanmar with players who already operate (or are willing to) with international players. At the same time field visits to various spice markets were done to identify other spice producing players. Subsequently, interviews were done on a national level with government institutions related to trade and commerce and agricultural production. Some of this data was not complete or too general, therefore we started to contact the regional offices in every state and division to find out more on the ground data. Here the remark should be made that the collection of data by various government institutions has not been done in a structured and consistent way, nor has the storage of this. Therefore given data always had to be double checked, which is challenging as there is not always a second source.

Some of the spices that we wanted to have information on were not known by the interviewees, or they were not aware of the name of a certain spice although they knew how it looked like. To translate the English name to Myanmar and back again gave also interesting insights, eg. *saffron* translates into Myanmar is called *kurkuma,* which is a totally different spice. But you only find this out after some interviews. Therefore an overview of pictures of spices with the English and Myanmar name was developed (Annex 1).

The methods during the SWOT analysis were focus group discussions on production calendars; history track record; stakeholder and market analysis and of course SWOTS. An interim report was produced based on the findings of the SWOT analysis and these findings were checked with the relevant stakeholders, both in Myanmar as in the Netherlands, by phone and by mail.

2. Quick scan

2.1 Input from Dutch spices companies

As mentioned in the first chapter the first phase of this project consisted of a quick scan on the demand side of spices. The demand side of this project is initially represented by the Dutch spice companies, with potential to the European market. This chapter shows a brief overview of the results of the interviews held in the Netherlands with 10 spice companies. All spices companies are prominent members of the Royal Dutch Spices Association (KNSV) and together they represent the bulk of spices imports in the Netherlands (based on direct sourcing in producing countries). The complete report of this quick scan can be found in Annex 2.

All spices companies showed potential interest in sourcing spices from Myanmar, and all of them indicated a preference for certain spices for various reasons. Paragraph one of this chapter elaborates on this.

Besides their preference for certain spices, they also indicated other characteristics or unique selling points (USPs) which are important and equally relevant in the choice of deciding to source spices from Myanmar. This is described in the following paragraph.

2.1.1 Interest in Myanmar spices

The 10 spice companies indicated their preference for certain spices on the basis of various arguments: dominant production/sourcing of a certain spice by other countries, so Myanmar could 'break' the position of dominant players. Another reason could be the production of a spice during a different period (anti-cyclical) than the current sourcing areas. But also the dissatisfaction with various quality issues from other sourcing countries was an argument to be particularly interested in spices from Myanmar.

Table 1 provides a rough overview of the various spices and the interest of the Dutch spices companies in the particular spices. For further details, reference is made to Annex 2. The spices from Myanmar mentioned below are included in export statistics from ITC ([2]).

Table 1 Overview of classification of spices

High interest to prioritize	Intermediate interest to prioritize	Hardly any interest	No interest
Cinnamon	Black pepper	Coriander	Sesame
Cloves	Cardamom	Fennel seeds	Tamarind
Cumin	Chili	Garlic	
Ginger		Turmeric	

[2] https://www.trademap.org.

Mace/Nutmeg			
Star anise			

Sources: interviews with 10 Dutch spices companies

2.1.2 Other interesting characteristics (unique selling points)

Besides the preference for certain spices, the spices companies also indicated a couple of other criteria. If Myanmar spices could comply with these criteria, that makes Myanmar spices even more interesting to look into. These other criteria are:

- Uniqueness/distinctive taste of a Myanmar spice;
- Ability to produce sustainably / organically;
- Anti-cyclical production of certain spices (eg. black pepper and ginger) to compete with regional large producers.

Besides these criteria, some other unique selling points were identified during the interviews:

- Availability;
- Certified laboratories;
- Compliance with EU food safety standards;
- Price;
- Sensory characteristics;
- Steam sterilization;
- Sustainability;
- Traceability.

2.2 Input from Myanmar

Myanmar is not yet known for spices although the Myanmar dishes use a variety of spices and show influences from the cuisine of India, Thailand and China. All countries are known for their abundant use of spices. With the input from the Dutch spice companies, the Myanmar team started their quick scan. Especially the preference of spices and the other criteria mentioned in the previous chapter were the guidance in identifying potential spices.

Figure 1 shows an overview of the spices in Myanmar on the basis of data provided by the Ministry of Commerce and Trade, interviews with Department of Agriculture staff from all regions and states.

Figure 1 Spices map of Myanmar

Source: Ministry of Trade and Commerce and interviews with DoA staff

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Myanmar **Spices Map**

Spice name

- Cinamon
- Chilli
- Ginger
- Nutmeg
- Tumeric
- Chocolate Bell Variety
- Star Anise
- Cloves
- Black Pepper
- Cardamon

Level of intensity (acre)

1 - 100 | 100 – 2,000 | 3,000 – 6,000 | 7,000 – 30,000 | >30,0000

featuring foods

Although the production of the majority of spices is quite low; chili, ginger, turmeric and black pepper are the most popular in terms of size of production in Myanmar.

Table 2 Overview of production and export of most popular spices in Myanmar

	Production (2016-2017) (MT)	Export (2016-2017) (MT) (overseas and border)
Chili	132,000	7,701
Ginger	78,455	1,609
Turmeric	35,030	13,625
Black pepper	11,013	62

Source: Department of planning (Ministry of Agriculture) and Ministry of Commerce

Other spices that are taken up in the national data collection for GDP are fennel and coriander seed, but amounts are negligible. Another spice that is especially mentioned in the production of Kayah state is both black and green cardamom. Black cardamom is mainly exported to China for traditional medicinal usage. Exact volumes are not known.

Other spices such as cinnamon, star anise, nutmeg and cloves are mainly produced as input for traditional medicine in Myanmar and not on a commercial basis. They are mainly found in natural forests in Mon state, some parts of Shan State, Kayin and Kayah state, Mandalay Region (Pyin Oo Lwin) and Thanintharyi Region. The reason why they do not plant this on a commercial basis is because of the lack of a market.

2.3 Selected spices for the SWOT analysis

Looking at the main prioritized spices by the Dutch companies:

1. Cinnamon
2. Cloves
3. Cumin
4. Ginger
5. Mace/nutmeg
6. Star anise

Out of the six spices, only ginger is the spice that is produced on quite a large scale and this is also a spice that more international organizations (such as Winrock) are interested in and they started working already on the improvement of production and start to add value by assisting ginger producers in setting up processing factories (washing and packaging stations). At the same time several solar driers are being installed in various regions to dry ginger, but also chili and turmeric. Therefore, ginger was selected as a spice for further exploration in the second phase of the development of the roadmap.

Looking at the second priority list of spices:

7. Black pepper
8. Cardamom
9. Chilies.

Chili looks most potential in terms of volume, varieties (distinctive) and export potential. There are a lot of different chili varieties in Myanmar, varying from very spicy to mild, which might be interesting for the Dutch/Myanmar market. Myanmar even has its own variety, called the chocolate bell. This chili is produced in the Myitthar region, famous for production of quality chili and onion. The products of this township are very good, so the products' name always mention the name of origin, eg. Myitthar chili. The chili produced in that area is fleshy, with a beautiful color when grind and put in different types of curries. The level of spiciness is low compared with the long and small chili. They have less seed inside so that you can get more when buying. Therefore, the Myanmar consumer prefers this type of chili. Chili is the second selected spice for the SWOT.

The third spice that is selected is cinnamon. Even though it is currently produced at a very low scale and not on a commercial basis, the interest was so high on the demand side that cinnamon might be an interesting case to look into regarding the export potential and increasing the production in the long run. Eight out of ten Dutch spice companies showed their interest, even when starting from scratch. The varieties that the companies are interested in are *Cinnamomum Zeylanicum* and *Cinnamomum cassia.* These both varieties are grown in Myanmar, although the area that was visited during the SWOT analysis only produced Zeylanicum.

Concluding, the three spices selected for the SWOT analysis were:

1. Ginger: high potential spice which is already produced on a high scale;
2. Chili: commodity with distinctive taste;
3. Cinnamon: preferred spice from demand side point of view, interesting case to explore growth potential.

In the next chapter the findings of the SWOT analysis of each spice are given, with each paragraph ending with recommendations for follow up actions.

3. Ginger

Looking at the production data of spices from the Myanmar Ministry of Commerce, ginger is stated as the second largest with 78,455 MT per year[3] (first is chili). The main areas of production are Northern and Southern Shan state. During our quick scan we found out that for ginger already several parties (big farmers and farmer associations, buyers and service suppliers) are looking into possibilities of producing organic ginger. Even though the demand from the Dutch market is towards sustainable spices. Farmers who produce organic ginger are used to produce for a specific market and also comply with more specific standards. This might be of interest for the Dutch and European market and was therefore also one of the reasons to choose ginger for Phase 2.

Ginger is one of the main sources of income for about 10,000 households in six townships in southern Shan, which together produce about 90 percent of all Myanmar ginger. There are two main varieties mostly grown in Shan State: the blue ring ginger which is a local variety and is called green variety by the local people; and the Japan variety which is called the yellow variety by local people. Most consumers prefer the taste and smell of the blue ring variety and this is also the variety which is exported the most to Bangladesh, China, India, Thailand and Pakistan. The location of the fieldwork was in Southern Shan State: around Aungban and Heho.

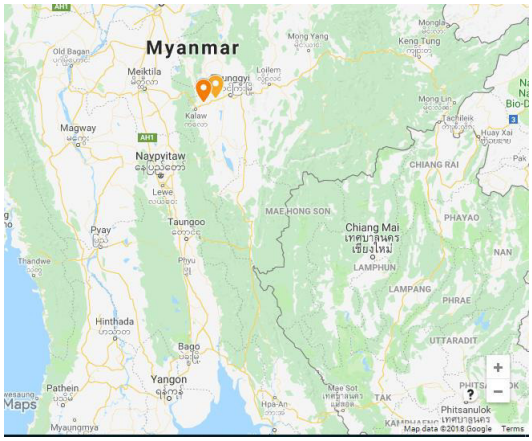


Figure 3 Field visit locations

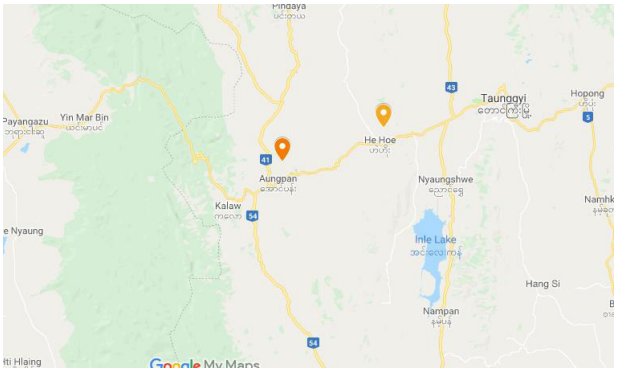


Figure 2 Close up of field visit locations

The actors that were interviewed were the following:

1. Department of Agriculture officer from Hopone;
2. Department of Agriculture officer from Ka Law;
3. Ginger suppliers (rhizome) and exporters in Heho;

[3] 2016-2017, Source: Department of Agriculture.

4. Ginger traders and wholesalers of the Aungban wholesale market.

Three focus group discussions were held with ginger farmers from three different townships (Su Pan Inn, Ou Min and Hopone) of which Hopone village was already producing with Myanmar GAP certification.

3.1 Main findings

3.1.1 Historical background of the villages

Lon Hae village, Hopone Township

The soil of the ginger farmers of Lon Hae village is suitable for producing ginger as there are less soil born diseases and other insects compared to other producing areas in Southern Shan State. Lon Hae Village is currently producing ginger according to the Myanmar GAP guidelines and they even received Global GAP certification provided by Control Union. They received GAP training by Winrock International and inspection training by Control Union. They receive support from Green Eastern Agri (Box 1) who helps out in connecting to the US market. They exported for the first time in 2017. Regarding the training of Winrock, they trained 6000 farmers in total of which currently 400 farmers do not use any chemicals in their production.

The total ginger production of Hopone township is 747,334 ton per season.

Figure 5 Ginger inter-cropping practices in Hopone village

Figure 4 Ginger fields in the area of Hopone

Box 1:
Interesting company: Green Eastern Agri (GEA)
Green Eastern Agri is an agribusiness company which is focusing on production and processing of agricultural commodities by supporting small-scale farmers in their endeavors and assisting them to get quality products for local and global markets. In relation to ginger, GEA is helping ginger farmers to export to the US market which successfully happened in 2017. Furthermore, GEA set up a washing and package facility for ginger.

Ou Min village

Ou Min vilage is one of the fresh agriculture production villages located closely to Aung Ban. Ginger, upland paddy and niger are mainly grown in that village. Most of the farmers cultivate about 2 to 3 acres ginger besides other crops. Farmers have 10 to 50 years' experience in ginger cultivation and the yield of ginger per acre is around 0.8-1.1 ton (500-700 viss). Normally, farmers will leave the ginger field fallow after one year of production for the next 2-3 years.

Figure 6 Ginger fields in the area of Aungban

Su Pan Inn village

Although Suu Pan Inn village is located in the ginger production area, potato is the main income crop for the farmers. Other crops are corn, upland paddy, niger, groundnut, tomato, mustard and ginger which are cultivated after potato. After finishing the ginger cultivation, farmers start cultivating ground nut, niger and upland paddy.

3.1.2 Production characteristics

Error! Reference source not found. shows the production calendar of ginger in the various illages[4].

Lon Hae village uses intercropping with maize: after four rows of ginger, one row of corn is used. After corn is drying, they use legume to climb into the corn to receive partial shade for the ginger. In the table below the different cropping calendars of the three villages are shown. Even though the villages are located quite near to each other, the growing and therefore harvesting period is quite different. The main reason for this is the location of the

[4] Colors in the table have no special meaning.

villages: Lon Hae village is located on the Hopone plateau, so this is lowland. Ou Min and Su Pann village are higher located.

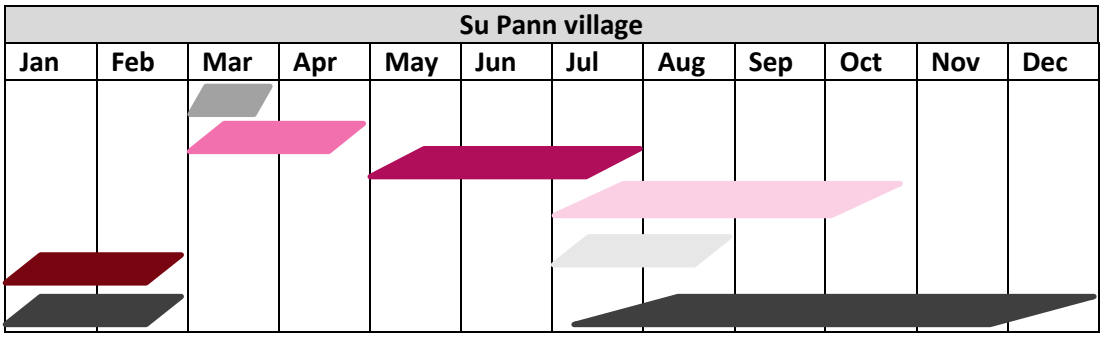
The usage of herbicides is very different in all three villages. In Lon Hae Village, they do not use chemicals at all. They do this intentionally as they need to comply with Global GAP and they are aware of the health issues related to the use of chemicals. In Ou Minn they do have pests and diseases, but they cannot afford to buy chemicals. Therefore their harvest is always what is left after pests and diseases have affected their production. In Su Pann village the farmers do use chemicals. The reason for this could be that the village lies close to Aungban where chemicals are easy to purchase and the farmers are used to do this with all other crops (tomato, potato and other veggies). But these reasons are assumptions as this is not double checked with the farmers themselves yet.

Regarding harvesting, even though ginger is ready to harvest in September in Ou Min village, when the price is low or farmers do not want to sell their ginger at that time, they keep the ginger into the soil without harvesting at the end of June. The same counts for Su Pann village.

Table 3 Production calendar ginger visited villages

Lon Hae Village (Hopone)											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Ou Min village											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec



Land Preparation
Sowing
Growing
Applying foliar and pest & disease control
Mother rhizome harvesting
Harvesting
Selling period

Fertilizer application

Out of the three villages, Lon Hae is the only village of which all ginger farmers are using (chemical) fertilizers in a structured and well-dosed way. About 90% of the ginger farmers of Ou Minn and Su Pan Inn village are only using traditional methods such as cow dung and no additional fertilizers. The other 10% is using chemical fertilizer such as Urea, TSP, MOP and compound fertilizer. For Su Pan Inn village, the farmers mentioned that they use 3-5 bags of fertilizer per acre when the ginger price is high. If the price is going down, they reduce the amount of fertilizer and some farmer don't apply any fertilizer for side dressing in that year.

Pests and diseases

In general there is a very low pest and disease problem among the ginger farms. Fusarium wilt tends to be the only major disease in ginger cultivation. When this occurs, farmers use systemic action fungicide such as Sepin. Farmers do not use any herbicides. In Su Pan Inn village they mentioned that if there is pest or disease, they mix the pesticide and fungicide together with the foliar fertilizer application. Having said there is a very low pest and disease problem, the department of agriculture mentioned that in the last 3 years, the disease and pest of ginger has increased which caused a lot of damage. This makes a favourable sustainability performance very uncertain.

The department of agriculture of both Hopone and Kalaw have provided training on pesticide usages. Before this training farmers had no knowledge on how to use herbicide, pesticide and fungicide. They were used to mix the chemicals with water with their bare hands. They also did not know the symptoms of diseases and pests and what would be possible control measures. Besides improving the knowledge of the farmers on how to use pesticide etc. and on growing techniques, they also provide training on how to make Bokashi

compost by using cow manure, effective micro-organism (EM) and crop residues in order to improve the soil fertility for a long time.

They also share knowledge on the usage of Personal Protection Equipment (PPE), however the quality is not very good and farmers do not want to use it as they think that wearing PPE is extra work for them.

Harvest

The harvest is done by hoe and it is mentioned that no child labour is used during this process. But this is only mentioned by hear-say. For normal use (no Myanmar GAP, Global GAP) the ginger is carried in 30 Viss bamboo baskets. For Myanmar GAP/Global GAP the ginger is carried in 10 Viss plastic baskets in order not to damage the ginger. They carry the ginger from the land to the factory/washing station by car.

3.1.3 Quality

In general, there is no quality standard available for ginger. This means that the overall Myanmar GAP guideline is used. The only way how ginger is checked on 'quality' is through visible checking on the moisture level and if the ginger is free from fungus or rot. The trader that was interviewed mentioned that he buys randomly and does not classify the grading of the ginger and also sells mostly randomly to exporters. If ginger appears to have a lot of moisture and impurities such as mud, stone etc. from the farmer who sells to him, he checks the moisture and impurities by hand and reduces the price based on these criteria level and then he cleans and dries by using his own laborers. He packs the ginger with 20, 30, 50 Viss bag and stores it in his own warehouse. The main problem during the storage time is fungus infection of the ginger, an unstable price and there is not enough place for drying and storage.

As ginger becomes more and more popular as a cash crop in Myanmar, the Department of Agriculture has already developed specific ginger GAP guidelines and there is also Myanmar GAP certification available. And this also results in a higher focus on extension. Not only at township level but also at district and regional level DoA is trying to promote extension education on ginger by organizing farmer meetings. It is actively discussed with farmers how to improve the ginger production of Shan State. Besides that, DoA is also trying to introduce more sustainable land management (SLM) practices to grow along the contour. The current practices are that they grow against the contour, which causes erosion. But farmers cannot follow the SLM requirements of the DoA, as this requires high initial cost and they believe that if they practice contour farming, the total land area will be reduced and it is difficult to prepare the land. Therefore, most of the farmers are reluctant to apply SLM practices.

Box 2:
Interesting individual: U Chan Htwe
U Chan Htwe is a trader/supplier of agricultural products such as ginger and potato but also an agricultural input dealer. He mainly emphasizes on potato by introducing new potato seed varieties from the Netherlands since 2015. He started in the ginger business last year as a ginger grower, supplier and processor. He is planning to export and send some fresh ginger samples to the US. He is now implementing the ginger washing facility in Heho.

GAP certification
He is trying to apply for GAP certificates for ginger and garlic (Global GAP) and potato (Myanmar GAP) with the support and collaboration with MFVP and GIZ. He has 20 acre of ginger land. On his land, he is trying not to use pesticide and herbicide at all. His plan is to improve the quality of ginger and penetrate the market. In order to maintain the quality, he is trying to improve:

- Education system to farmers
- Meet the need of standards (as requested by different buyers)
- Introduce a contract system
- To get the guarantee price for farmers
- Trying to reduce shifting cultivation (to maintain the ecosystem)
- Introduce agroforestry system.

3.1.4 Quantity

The ginger production area around Kalaw, which is the area where visited townships are located, is around 2479 acre. What is available for export and what land could be additionally used for export is still uncertain.

Su Pann Inn village
Regarding ginger cultivation, there are about 30 ginger cultivation acres in the whole village and it means some households cultivate only 0.5 to 1 acre. Normally, the average yield per acre for ginger cultivation is about 10 -12 tons (6000-7000 viss). But during high rainfall the yield is much higher and lies around 13-16 tons (8000-10000 viss) per acre. The rhizome seed requirement for one acre is about 1.6 tons (1000 Viss).

3.1.5 Labor management

The ginger actors interviewed during the fieldwork indicated that no child labor takes place and that the minimum age of ginger workers is above 18 years. Although this was difficult to completely verify, it is a fact that 60-75% of the ginger production and harvesting work is done by women of the household. But, the marketing and decision of marketing is mainly done by men as household heads.

Traders make use of migrant laborers. They come from Meikthilar in Mandalay region and hire houses in Aungban. They get two types of payments: daily wages and a fixed price of 5MMk/viss through delivery by truck.

3.1.6 Post-harvest practices

Several post-harvest practices can be seen in researched area. Some traders boil the fresh ginger with hot water and dry under sunlight in order to make dried ginger. Unfortunately this practice can bring all kinds of contamination risks along. GEA and U Chan Htwe have washing stations and drying is done by an air-drying machine. In the washing station they wash ginger and remove the bad components. The water for washing ginger is purified water and is also checked in the laboratory to be sure to have the right water quality. For the export of dried ginger, they cut the ginger pieces immediate after washing and dry it in an electronic oven or the solar dryer. They pack 50 lb per one pack for exporting. They deliver to Yangon in cold storage containers.

3.1.7 Market

Most of the ginger produced in Kalaw region goes to different local markets such as Yangon and Mandalay for local consumption. Some goes to the processing factory to produce ginger powder and dried ginger. Some ginger is collected by companies for export with their standard size and specifications (for example, ginger should have the length of 7 to 12 inches with the diameter of 1 to 1.5 inches when slice, and weight much have at least 0.25 viss). The main buyers for export are coming from Sri Lanka, Japan and India. And they are interested in chemical free ginger. And another market is the US market, for which they produce according to Global GAP. Recently an essential oil company (HDDS) from Sri Lanka showed interest in organic ginger from southern Shan State and they are investigating possibilities to source organically.

Box 3:
Interesting organization: Ginger Association initiated by MFVPEA (Myanmar Fruit and Vegetables Processing and Exporter Association) [5]
The ginger association is lead by Zaw Ko Ko and the ginger farmers are mainly active in Baw Nin village or coming from remote areas as they believe organic ginger is more likely to come from remote areas. U Zaw Ko Ko owns a solar dryer where the ginger is dried. Quality checks have been done by Control Union, but these results are not yet known.

Box 4:
Interesting individual and company: Dr. Pyae Phyo Aye from Snacks Mandalay Co., Ltd

[5] Myanmar has a lot of various associations, of which the members are very diverse and producers are not always part of the association. The exact nature can differ from association.

Dr Pyae Phyo Aye started three solar dryer facilities and a state of the art washing facility (making use of purified water) in Mandalay 1,5 year ago. Although the location of Snacks Mandalay was outside our research area, Snacks Mandalay is becoming such a relevant and important processor to connect, that it is worth mentioning. And recently he added a grinding facility which can grind 5,000 kg/day. Furthermore, Snacks Mandalay recently received a grant through the DaNa facility of USD3.1 million in a project aimed at boosting the earnings of thousands of farmers who grow spices.
www.snacksmandalay.com

Box 5:
Interesting company: Green Eastern Agri
A socially responsible business in Myanmar working closely with smallholder farmers and their communities to grow, process and market world-class agricultural produce. At the moment they are improving the production practices of selected fresh ginger farmers in Southern Shan State. They set up a washing and packaging house between Heho and Aungban and find actively international buyers for their fresh ginger.
www.greeneasternagri.com

3.2 Sustainability

In comparison to the chili production, it is positive to see that there is already a group of ginger producers and traders in Hopone village who are producing and processing without chemicals. And who produce according to Global Gap, so that there is a sense of understanding how to comply with standards and how to produce for another more demanding market. But from a sustainable perspective, if for example producing chemical free ginger entails finding new virgin land and shifting cultivation to the hill slide in the forest, these practices are not very sustainable. As this leads to erosion, forest and land degradation and nutrition depletion. The farmers cultivate along the hill side without any practice on contour band or terrace farming.

The practices of the farmers of Ou Min and Suu Pan villages show that they use chemicals and have no knowledge on how to use chemicals more safely. They do not wear any personal protective equipment during the chemical handling time.

Labour conditions of workers on the farms and at the traders need a deeper investigation to come up with clearer recommendations.

Just like with chili, both farmers, traders and government are very eager to upgrade production to a higher quality and quantity in a safe manner. Government sees the necessity to train and upgrade the capacity of the farmers. Farmers are eager to comply with standards as long as they know that there is a market and they will receive a higher or at least a consistent price. Traders are willing to invest in whatever what is necessary to reach a higher

(better paying) market. All ingredients for upgrading a segment of the ginger market to a sustainable production.

Table 2 shows the sustainability matrix for ginger in Hopone village, as this village seems to be the frontrunner in the ginger production in Myanmar.

Table 4 Sustainability matrix for ginger from Hopone village

	Sustainability issue	**No / minor risk**	**Medium risk**	**Major risk**	**Don't know**
1	**Socio-economic**				
1.1	Inadequate **decent (living) income** for **farmers** (e.g. as a result of low productivity, inferior product quality and low and/or volatile prices).				X
1.2	Inadequate **decent (living) wages** for (seasonal) **workers.** (*farm and processing level*)				X
1.3	**Health & Safety risks farmers** (e.g. as a result of exposure to hazardous chemicals, extreme weather conditions and other dangerous situations).		X		
1.4	**Health & Safety risks** (seasonal) **workers** (e.g. as a result of exposure to hazardous chemicals, extreme weather conditions and other dangerous situations). *(farm and processing level*)		X		
1.5	Inadequate **other labour conditions farmers.**				X
1.6	Inadequat**e other labour conditions** (seasonal) **workers** (e.g., secondary labour conditions, working times, payment for overwork, leave arrangements, access to sanitary facilities, training, maternity leave). *(farm and processing level)*				X
1.7	**Child labour** (both farmers and workers).	X			
1.8	**Forced labour** (both farmers and workers)				X
1.9	**Debt traps**, resulting in **bonded labour** (both farmers and workers).				X
1.10	**Discrimination of workers** (e.g. based on race, ethnic background, religion, sex). *(farm and processing level)*				X
1.11	Inadequate **freedom of association and the right to collective bargaining** for workers				X

	(farm and processing level)				
1.12	General abuse of **migrant workers** (both working and living conditions). *(farm and processing level*)				X
1.13	Inadequate attention to **gender** (e.g. women have no meaningful participation in decision-making and leadership role, no equal access and control over natural resources, inputs, productive tools, advisory and financial services, training, markets and information).	X			
1.14	Inadequate attention to **indigenous peoples** (e.g. indigenous people have no meaningful participation in decision-making and leadership role, no equal access and control over natural resources, inputs, productive tools, advisory and financial services, training, markets and information).	X			
1.15	Conflicts related to **land ownership** and **access to natural resources** (e.g. land, fisheries, forests and water). This includes inadequate **compensation mechanisms**.			X	
1.16	Inadequate measures to **mitigate climate change / increase resilience of spice production systems.**			X	
1.17	**Excessive crop loss** (e.g. as a result of inadequate post-harvest practices and/or risks of harvest failures).	X			
1.18	Inadequate **access of farmers to finance** (credit and insurance).	X			
1.19	General **adverse impacts on local communities** (e.g. as a result of adverse impacts on tangible and intangible cultural heritage, influx of migrants, access to healthcare and education).	X			
2	**Environmental**				
2.1	**Conversion of natural ecosystems** into production systems, including deforestation.			X	
2.2	**Soil degradation** (erosion, depletion).			X	
2.3	**Water and soil pollution** (e.g. as a result of agro-chemicals use and post-harvest cleaning practices).	X			

2.4	**Air pollution** (e.g. as a result of burning practices, fumigation).	X			
2.5	Contribution to **climate change** (e.g. as a result of use of fossile fuels, deforestation and/or dewatering of peat lands).			X	
2.6	Excessive **water use** (*at farm and processing level*).				X
2.7	Inadequate **waste management** (*at farm and processing level*).				X
2.8	Introduction of **invasive species** (including GMO).	X			
2.9	**Overexploitation** of spices collected in the wild.				X
2.10	Contribution to **depletion of (other) natural resources.**				X
2.11	**General adverse impacts** on protected areas, high conservation areas and/or endangered species.				X
3	**Other**				
3.1	Inadequate **consumer safety** (e.g. as a result of product contamination).		X		
3.2	Occurence of **corruption and/or fraudulent practices**.				X
3.3	Occurence of **tax evasion and/or avoidance**.				X
3.4	Occurence of **anti-competitive agreements**.				X
3.5	Inadequate **diffusion of appropriate technologies and innovations**, particularly environmentally friendly technologies.				X
3.6	Inadequate **disclosure** about sustainability risks in supply chains and efforts to prevent or mitigate these.				X
3.7	Inadequate supply chain **traceability**.	X			
3.8	Inadequate **consultations with spices communities**, especially indigenous peoples, among other reasons in order to obtain their free, prior and informed consent.				X
3.9	Inadequate **grievance mechanisms** in place.	X			
3.10	Other, namely….				

3.3 SWOT

The next SWOT is combined with the information gathered by means of the Focus Group Discussions with the farmers, interviews with government and traders. In this SWOT we focus on Hopone village as here seems to be the highest potential.

Table 5 SWOT ginger related to ginger from Hopone village

Strengths	Weaknesses
- Availability local ginger variety - Favorable weather and disease tolerance variety available - Apply record keeping - Apply Myanmar GAP and Global GAP standard - Very low pesticide, fungicide and herbicide application - Low soil borne disease problem - Experience with other markets than local (US, Japan, Sri Lanka and India) - Willing and eagerness to produce organically (or any other demand) - Started to introduce contract farming with the support of MEDA (150 farmers) - Washing and drying facilities for ginger available - Cold storage infrastructure (2000 ton/time) available - Export experience - According to DoA, ginger farmers are confident in cultivation.	- Lack of awareness and knowledge on cultivation and disease control - Level of knowledge of farmers on full systematic production (incl. harvesting) still not sufficient - Successive growing of ginger causes more disease incidence (pest and diseases increased the last 3 years) - No experience with EU markets and the related requirements - Not certain if quality of product complies with EU/Dutch standard - Sufficient and continuous supply is uncertain - Lack of (skilled) labour - Uncertain overall sustainability performance.
Opportunities	**Threats**
- Favorable weather conditions with high rain fall - Possibility to increase available land and quality yield - Possibilities to address different markets: local, chemical free, organic and potentially sustainable - Already existing relations and good communication with international organization	- Unstable price - Minimal extension services from government and private companies - Farmers lack of technical knowledge on how to apply fertilizer, pesticide and fungicide - Farmers have no direct knowledge/information on (premium) ginger market prices to the farmers

- Transportation system already in place - Market demand from various markets (US, EU and Asian) - Training opportunities with various organizations such as GiZ, Winrock, ILO and MFVPEA - Government support to introduce Myanmar GAP, including relating training programs; - Presence of a ginger association (*developed by the Myanmar Fruit and Vegetable Grower Association (MFVP);* - Interest by Sri Lankan company HDDES.	- Different weighing system by farmers and traders - Weak technology in agricultural production and post-harvest - No good seed stock available - Distrust between farmers and traders as the traders do not give the promised premium price.

3.4 Recommendations for follow-up actions (roadmap)

Out of the fieldwork, the sustainability matrix and the above SWOT the recommendations are developed around 'further analysis', 'improvement (sustainable) production' and 'institutional strengthening'.

1. Further analysis

- Assess if Myanmar GAP guidelines and the Global GAP certificates are acceptable for Dutch buyers. US requirements are different from EU buyers;
- Require more intelligence on the overall sustainability performance of ginger;
- Subsequently assess the feasibility of developing a standard for 'sustainable ginger', eg. in cooperation with Rainforest Alliance and/or the Sustainable Spices Initiative;
- Benchmark ESA guidelines with the current ginger guidelines (quality standards) that are being used and assess the applicability of the ESA guidelines to the Myanmar situation;
- The quality of the current produced ginger needs to be analysed by the Dutch spice companies and/or certified laboratories;
- The possible quantity of ginger that could be exported to the Dutch market should be calculated and double checked;
- DoA mentioned that pests and diseases have increased in the last three years. A proper analysis with data backing this up and possible scenarios for the future should be developed.

2. Improvement of (sustainable) production

- As there are already ginger farmers growing ginger organically, the step towards growing sustainably ginger (from an environmental point of view) might be less complicated. Therefore a sustainable production pilot to develop and implement standards for sustainable ginger within the organic ginger production should be explored;
- A practical training and supervise/monitor programme on sustainable ginger production in Myanmar should be developed and implemented.

3. Institutional strengthening

- Assess the capacity and possibilities of each organization active in ginger, with a special focus on the ginger association.

After the field research was done, but during the finalization of this report, Fresh Studio was contacted by ILO, under the Vision Zero Fund project. The Vision Zero Fund (VZF) Myanmar project strives to realize the goal of zero work-related fatalities and severe injuries and diseases, by improving occupational safety and health practices and conditions in the garment and ginger supply chains[6]. During Phase II (2018-2020), VZF will work in the ginger value chain in six townships in Southern Shan State: Kalaw, Pindaya, Pinlaung, Hopone, Nyangshwe and Lawksawk. Occupational Safety and Health (OSH) activities identified for the ginger value chain will benefit ginger farmers who will have access to better information on the safe use of agrochemicals and other OSH-related information that can improve their working conditions, as well as government stakeholders from the Department of Agriculture. Therefore another recommendation should be included:

- Explore possibilities to link the farmer groups trained by the Vision Zero Fund with the interested Dutch Spice Companies.

[6] https://www.ilo.org/safework/projects/WCMS_563285/lang--en/index.htm

4. Chili (chocolate bell)

Some Dutch spice companies indicated two characteristics of interest regarding chilies from Myanmar: a specific local variety and a moderate level of spiciness. On the basis of the quick scan of each of the selected spices, we found out that certain areas produced specific local varieties. During one of our first visits to Bayint Naung Market in Yangon where they mainly sell chili, garlic and onion, we heard about the chocolate bell chili variety. And this was described as a local special variety in Myanmar with a lower level of spiciness, which added also a nice colour to the food. The level of spiciness can only be defined by tasting and unfortunately not by measuring the Scovil Heat Unit (SHU) as there is no possibility in Myanmar to measure this. Although it is mainly referred to as chocolate bell pepper variety, it is a chili variety. In the report we refer to it as the chocolate bell variety or chocolate bell pepper variety, but we are talking about the local Myanmar chili variety.

Figure 7 Chocolate bell pepper being dried

For the fieldwork we went to the area where the chili was originally grown: Myittha, Mandalay Region. Another name for the chocolate bell pepper is also Myittha chili. During the meeting with the Department of Agriculture (DoA) staff at Myittha we found out that Myittha does not grow the chocolate bell variety as much as they used to do and that the main growing area is now in Wundwin, luckily only 20 miles South from Myittha. Therefore we changed our scoping mission to Wundwin area. Another new area where the chocolate bell variety is grown nowadays is the Ayerwaddy Delta.

Figure 8 Location of field visits for chili

The actors that we interviewed were the following:

1. Deputy senior regional officer Mandalay, Department of Agriculture;
2. Chili wholesaler/trader Mandalay;
3. Department of Agriculture staff (including staff from the Plant Protection Department) in Myittha;

4. Chili farmers in Nabaekan village, Wundwin township;
5. Input supplier in Nabaekan village, Wundwin township;
6. Chili collectors in Nabaekan village, Wundwin township.

Besides the interviews with relevant chili actors and the focus group discussions with the chili farmers, we also visited a solar dryer in Nabekan village, Wundwin township.


Figure 9 Solar dryer facility in Wundwin

4.1 Main findings

4.1.1 Historical background

Although our scope shifted from Myittha to Wundwin it is interesting to also elaborate a little bit more on the historical background from Myittha as it provides insights why the farmers shifted to another chili type and how this influenced the farmer practices and the quality of the chili. The downgrading of the quality of the chili influences the sustainability of the production of the chili.

Myittha

In 1988 Myittha region started to grow chocolate bell pepper. They had the choice between the chocolate bell pepper and the erected chili type. The disadvantage of the erected[7] chili was that it was susceptible to diseases and for the chocolate bell the disadvantage was solely that it had less weight (less seeds). Nevertheless, the majority (exact numbers not known) of the farmers chose at that time to grow chocolate bell pepper, hence the other name of the chocolate bell pepper: Myittha chili pepper. In 2013 all farmers stopped producing chocolate bell for commercial purpose and changed to the chili pepper

[7] In Myanmar they use the term 'erected' type to indicate the long, thin, regular chili. The chili which is commonly known worldwide as chili.

variety 692 (mostly from East West Seed). The reason for this change was that 692 gave a higher yield because of more seed weight and a better price was given for this. The chocolate bell pepper is still produced for home consumption, but it is not chemical free. The 692 variety is a very hot variety and is mainly transported to Muse (China market) but also to Yangon (Bayint Naung). The demand from China is very high: in 2013 2000 acre chili was cultivated and in 2018 this 250% more: 5000 acre. But this extensive growth in demand and also the high susceptibility of disease makes farmers use a lot of pesticides. Together with the 'philosophy' 'the more the better', the pesticide usage level is very high. Nevertheless, this has not been checked by qualified labs as they are not available in Myanmar and as it is not required by the current buyer. In terms of the farmers' and workers' health: no protective clothing is worn, as this is perceived as unnecessary and uncomfortable. Even some farmers mixed the pesticide solution by hand.

Nabaekan village, Wundwin township

During the time of the military regime (1960-2010), the farmers were forced to grow only rice but the farmers of Wun Dwin started cultivating chili since the building of the King Da Dam (1990). As this dam provided them with water (relatively fresh), they could manage the irrigation of the chili. During the military regime and the farmers' choice to start growing chili, farmers got arrested as they were supposed to grow only rice in the dam irrigated area. But they continued growing chili even after returning from jail. In the 30 years that they have been growing chocolate bell pepper, the differences and changes (according to the farmers and input supplier) in the production over the last 30 years are the following:

- Beginning-now: still usage of the local variety, although more varieties have been added;
- Growing techniques, extension and methods of fertilizer usage have increased (although this did not result in higher production due to soil degradation);
- At the beginning the variety was more pure.

Besides the perfect location close to the King Da Dam (which provides clean/fresh water in comparison with the surrounding dams as Wundwin is also famous for clothes dying) it is also perfectly located in terms of transportation: only 30 minutes' drive to the main road which also limits many collectors to interfere.

From this part onwards, all the information provided is related to Nabaekan Village, Wundwin Township, unless stated otherwise.

Figure 10 Focus group discussion with male and female chocolate bell pepper farmers on farming practices and SWOT

Interesting key person: U Min Aung

U Min Aung was our contact person in Nabaekan Village and he turns out to be the leading farmer in Nabaekan village; the input shop owner in the village AND also the DoA extension who is responsible for the pesticide practices and who provides training on this, including the promotion of wearing protective clothing. Furthermore, he was involved in the establishment of the solar dryer for chili and now manages this dryer (although the village is the owner). His plan for the future is to test the 13 varieties in demo plots and to check the different qualities, do a variety update and make a quality categorization. His plan is also to promote organic production as he knows how to make organic fertilizer (bokashi) as he was trained in Japan.

4.1.2 Production characteristics

The table below shows the production calendar of the chocolate bell pepper in Nabaekan village during the monsoon period. Besides the monsoon production, the farmers also grow pre-monsoon chili, but this happens in the irrigated area, where they make use of the dam.

Table 6 Production calendar chocolate bell pepper Nabaekan village

Jan:	Feb:	Mar:	Apr:	May	June	July	Aug:	Sep:	Oct:	Nov:	Dec:

Nursery

Land Preparation

Transplanting
Farming
Harvesting
Drying
Next Crop (Rice)

Common pests and pesticides

The common pests of bell pepper are pod borer, aphid, thrip and spider mite. They use Dozar, and systemic pesticides. Mechanical weeding is mostly done. The farmers rarely use Personal Protective Equipment (PPE) and if they do, they wear their normal *longyi,* hat and shirt. They need to be educated about Integrated Pest Management. The crop residues are put in the field and buried in the field after ploughing with tractor if the next crop is rice. Having said this, according to the farmers and the input supplier, pesticides are rarely used. Using pesticide is based on visible checking and getting suggestions from U Min Aung. Insects (Aphid, Thrip, Red spider mite and Spodoptera) are common. According to the DoA in Wundwin, the farmers use pesticide only 3 times regularly and they use this only before flowering.

Harvest

Seven to eight times picking can be done during the crop season, which makes it quite a labor intensive crop. During the harvesting season, the laborers are not wearing protective materials such as hand gloves or eye protective glass. The harvesting is mostly done by female workers. Various sources give various ages of the laborers, some start with the age of 18, some start with the age of 15.

4.1.3 Quality

In the last 3-4 years Myanmar GAP (Good Agricultural Practices) has been developed and an overall framework has been developed. For some crops and spices specific tailored guidelines have been developed, of which chili is one (see Annex 3). This was only released mid-2018. Having this specific guideline was a perfect entrance to ask questions on quality and whether or not farmers were following the guidelines. But in reality it turns out, the GAP for chili is not in practice yet. Some farmers have heard about it, some of them have not. But the government is trying to introduce the chili GAP in some townships of the Mandalay region where chili is the main product to grow. In Myanmar, DoA extension staff is responsible to provide the specific GAP training to the farmers and to do a possible follow-up. As the extension service is under staffed there is only limited time and resources available to roll out the chili GAP effectively.

According to the DoA staff in Wundwin they started to implement and rolling out GAP Myanmar Chili in Wundwin area. They did already soil tests, which showed a high level of

alkaline and they will have to lower this. Furthermore, as the chocolate bell pepper seems to be an interesting crop, also due to its uniqueness, the DoA is thinking of writing a specific guideline for the chocolate bell pepper. Nevertheless, at the moment no export is being done with this variety and the farmers have no experience with export. This is also not a focus area for DoA, as they are only focusing on improving the production and not the connection with the market.

In terms of testing and checking, on farm/collectors level the only checking which happens is visibly checking on occurrence of mould, rot and strange appearance. But the overall checking is mainly related to the moisture content. They check this by listening to the sound of the seeds (dried or not), feel and the stalk of the chili. If the stalk is dry, then the chili is dry. At the wholesaler level there is regular checking by the Food and Drug Administration (FDA) of Myanmar. For the whole chili, also here only visual checking and testing by hand because some sellers mix dry chili with wet chili in order get more weight. For the chili powder FDA takes samples and test in their lab due to dying practices of some traders/wholesalers. The quality and capacity of the FDA lab is not known.

The wholesaler has his own collectors in order to maintain the product quality. The collectors know exactly the quality of chili that the wholesaler wants. The chocolate bell quality criteria of the wholesaler are: fully/proper mature, proper sundried, good colour (uniform dark red) and free from mould. Some farmers come and sell directly to their shops. By doing so, the farmers can get a much better price than selling to nearby wholesalers and the wholesalers can get a good quality from the farmers.

4.1.4 Quantity

5-6 years ago the quality and yield of the chocolate bell pepper was really good: 700-800 baskets/acre. But the yield has decreased tremendously over the years. The current production of Nabaekan village is 200 to 350 baskets[8]/acre. And in total Nabaekan village has around 10,000 acre chili production of which 1/3 is chocolate bell variety. Thus, total production area for the chocolate bell variety is 3300 acre. The total current production capacity of FRESH chili is thus: 3300*(350*3.52) = 1,155,000 kg. The ratio from fresh to dried chili is 1:0.26. Which means that the total production of dried chocolate bell pepper is 300,300 kg. At the moment there is no export. There is a possibility to expand when European companies show interest. All farmers and relevant actors involved show interest in this.

[8] One basket is 2.2 Viss and this equals 3.52 kg.

4.1.5 Labor management

The labor for chili cultivation is mostly done by female farmers and workers. From planting to harvesting, the role of female labor is important. The age of labor ranges from 15 to 55 years. Which shows that child labor is being practiced. This village also faces the problem of laborers who migrate to other places in Myanmar and they therefore have to cope with a scarcity of laborers. Their practices to overcome the labor problem is by giving more labor charges, by providing meal and snacks, and by arranging transportation if the labor is from a different village.

4.1.6 Post-harvest practices

There seems to be two drying processes:

1. Only sun-drying: this can happen everywhere, on the compound next to a road or in the backyard. But specific racks are made for this to create better ventilation;
2. Boiling/steaming before sun-drying: in order to prevent aflatoxin the peppers are boiled and dried. The boiling practice depends on the area. In Nabaekan village the boiling/steaming process takes 5 to 10 minutes and then 3-4 days for sun drying. The benefits of boiling are that it prevents going moldy, the chili gets more colorful and it shortens the drying period (3 days instead of 7 days). But evidently, it loses the specific taste. Therefore, common practice is that the boiled pepper is for the market and the non-boiled pepper is for home consumption.

Figure 12 Sun-drying practices

Figure 11 Boiling-steaming practices

Figure 14 Storage facilities

Figure 13 Sun-drying practices

4.2 Sustainability

From a sustainability point of view there are unfortunately not so many positive things to be mentioned at the moment. Although, processes to upgrade the chili production towards a more sustainable kind are set in motion. From both government, farmer and trader (some) point of view the necessity to produce more sustainable and safe is present. Although the 'how' question is still under development. Nevertheless, the farmers are very interested in producing and supplying certified sustainable chili. Organic might be a bit too challenging at the moment. Bottom line is that if there would be an interested party, they are willing to produce according to their criteria. As an example GAP sesame is mentioned. Some of the neighboring villages produce sesame with contracts and a guaranteed high price. If something like this could happen for chili, this can become a success.

Table 1 shows the sustainability risk assessment matrix for spices, developed by CREM and to a large extent based on OECD-FAO Guidance for Responsible and Agricultural Supply Chains. On the basis of the information that is gathered through desk study, interviews and field work in phase 1 and 2, the matrix is filled out.

Table 7 Sustainability risk assessment chocolate bell chili

	Sustainability issue	No / minor risk	Medium risk	Major risk	Don't know
1	**Socio-economic**				

1.1	Inadequate **decent (living) income** for **farmers** (e.g. as a result of low productivity, inferior product quality and low and/or volatile prices).				X
1.2	Inadequate **decent (living) wages** for (seasonal) **workers.** (*farm and processing level*)				X
1.3	**Health & Safety risks farmers** (e.g. as a result of exposure to hazardous chemicals, extreme weather conditions and other dangerous situations).			X	
1.4	**Health & Safety risks** (seasonal) **workers** (e.g. as a result of exposure to hazardous chemicals, extreme weather conditions and other dangerous situations). *(farm and processing level*)			X	
1.5	Inadequate **other labour conditions farmers.**				X
1.6	Inadequat**e other labour conditions** (seasonal) **workers** (e.g., secondary labour conditions, working times, payment for overwork, leave arrangements, access to sanitary facilities, training, maternity leave). *(farm and processing level)*				X
1.7	**Child labour** (both farmers and workers).			X	
1.8	**Forced labour** (both farmers and workers)				X
1.9	**Debt traps**, resulting in **bonded labour** (both farmers and workers).				X
1.10	**Discrimination of workers** (e.g. based on race, ethnic background, religion, sex). *(farm and processing level)*				X
1.11	Inadequate **freedom of association and the right to collective bargaining** for workers *(farm and processing level)*				X
1.12	General abuse of **migrant workers** (both working and living conditions). *(farm and processing level*)				X
1.13	Inadequate attention to **gender** (e.g. women have no meaningful participation in decision-making and leadership role, no equal access and control over natural resources, inputs, productive tools, advisory and financial services, training, markets and information).				X

1.14	Inadequate attention to **indigenous peoples** (e.g. indigenous people have no meaningful participation in decision-making and leadership role, no equal access and control over natural resources, inputs, productive tools, advisory and financial services, training, markets and information).	X			
1.15	Conflicts related to **land ownership** and **access to natural resources** (e.g. land, fisheries, forests and water). This includes inadequate **compensation mechanisms**.			X	
1.16	Inadequate measures to **mitigate climate change / increase resilience of spice production systems.**			X	
1.17	**Excessive crop loss** (e.g. as a result of inadequate post-harvest practices and/or risks of harvest failures).			X	
1.18	Inadequate **access of farmers to finance** (credit and insurance).		X		
1.19	General **adverse impacts on local communities** (e.g. as a result of adverse impacts on tangible and intangible cultural heritage, influx of migrants, access to healthcare and education).	X			
2	**Environmental**				
2.1	**Conversion of natural ecosystems** into production systems, including deforestation.		X		
2.2	**Soil degradation** (erosion, depletion).		X		
2.3	**Water and soil pollution** (e.g. as a result of agro-chemicals use and post-harvest cleaning practices).		X		
2.4	**Air pollution** (e.g. as a result of burning practices, fumigation).	X			
2.5	Contribution to **climate change** (e.g. as a result of use of fossile fuels, deforestation and/or dewatering of peat lands).	X			
2.6	Excessive **water use** (*at farm and processing level*).	X			
2.7	Inadequate **waste management** (*at farm and processing level*).				X
2.8	Introduction of **invasive species** (including GMO).	X			

2.9	**Overexploitation** of spices collected in the wild.	X			
2.10	Contribution to **depletion of (other) natural resources.**				X
2.11	**General adverse impacts** on protected areas, high conservation areas and/or endangered species.				X
3	**Other**				
3.1	Inadequate **consumer safety** (e.g. as a result of product contamination).			X	
3.2	Occurence of **corruption and/or fraudulent practices**.				X
3.3	Occurence of **tax evasion and/or avoidance**.				X
3.4	Occurence of **anti-competitive agreements**.				X
3.5	Inadequate **diffusion of appropriate technologies and innovations**, particularly environmentally friendly technologies.	X			
3.6	Inadequate **disclosure** about sustainability risks in supply chains and efforts to prevent or mitigate these.				X
3.7	Inadequate supply chain **traceability**.			X	
3.8	Inadequate **consultations with spices communities**, especially indigenous peoples, among other reasons in order to obtain their free, prior and informed consent.				X
3.9	Inadequate **grievance mechanisms** in place.				X
3.10	Other, namely….				

4.3 SWOT

Out of the various interviews and Focus Group Discussions the following SWOT was developed.

Table 8 SWOT chocolate bell chili

Strengths	Weaknesses
Irrigation availability (Kin Da Dam) Favorable condition	Inadequate number of extension staff to provide relevant extension

Abundant land Knowledge about the chili production Awareness on food safety (Aflatoxin) Own solar dryer Get higher price than other variety (stable income) Well experienced in growing chili Easy to pick (8-10 bsk per woman/day) and safe labor cost compared with hybrid variety Pest and disease resistant variety available, which reduces the input cost Production technique is easy because of traditionally adopted Local variety (saves costs) Farmers' favourite variety Interesting story to tell (history)	Farmers non-awareness of products reduce quality of chili (mold/aflatoxin problem) Cannot emphasize only on chili (as investments costs are quite high) Labor intensive (from planting to harvesting) High investment cost Need pure variety Limited knowledge on high technology Disease resistant level decreases year by year as no pure seed No steam sterilization facilities present No traceability system present Risks of adulteration No experience with export (to the EU) Many uncertainties about overall sustainability performance of the product Child labour risks Unknown chemical residue levels (both on the chili, as in the soil) Unknown quantified quality No packaging facility available
Opportunities	**Threats**
Government policy provides farmer freedom of choice what to grow GAP training by governments Laws related with agriculture (seed law, pesticide law, land law etc.) are being developed[9] More export opportunities in open market economy Regular check by FDA Other buyers interested other than China People awareness increased about food safety (aflatoxin etc.) Convenient transportation infrastructure	Difficult to control illegal agricultural chemicals through border area Adverse weather (climate change) No market information (supply/demand) only on price information Maintain local variety Exploited by exporters (especially on weight) Price fluctuation in harvesting time Labor migration problem is increasing Not enough and sufficient extension services Limited awareness of soil and crop testing The lack of laboratories (certified)

[9] At this stage it is not completely clear if these laws are fully compliant with EU standards as various consultants are involved.

Competition among collectors makes competitive market Favorable government policy for cash crop like chili	Limited financial sources to get credit for investment costs of chili

4.4 Recommendations for follow-up actions (roadmap)

At this point there is not enough quantitative data available concerning the quality of the chili: chemical residue levels in the soil/water and in the end product itself; levels of SHU and levels of aflatoxin. And there are many uncertainties about the overall sustainability performance of the product. Besides the lack of quantitative data it is clear that the farming practices and the usage of standards/guidelines are far from perfect. But as standards and related guidelines together with the capacity building of farmers is all in development in Myanmar and this also happens rapidly, progress can be made fast. Together with the eagerness and willingness of farmers to succeed and change this might be an important catalyzer. Therefore, the recommendations below are divided in: further analysis, improvement of sustainable production and institutional strengthening.

1. Further analysis

- Decent analysis of soil and water on chemical residues and heavy metals, executed by a recognized and qualified laboratory;
- Decent analysis of MRLs, SHU and aflatoxins of the fresh AND dried chilies;
- More in-depth analysis on the sustainability performance of this product;
- These analyses should not only be conducted in the researched area of Wundwin but also in the delta of Myanmar. Within the current study, it was not possible to cover the delta as well. But as the chili in the delta is produced in alluvial soil, the chances of contaminated soil and water might be lower;
- Executing these analyses by both PPD and FDA (for respectively soil, water and product) and by another foreign lab would also provide data on the reliability of the data of Myanmar laboratories;
- Besides the analysis of the soil, water and the product itself in the delta, more data should be gathered in terms of quantity and farming practices in the delta.

When above analyses is done and when results are negative, the decision needs to be made if it is worth investing in step 2: improve production. If results are positive straight away, activities under step 2 can kick off.

2. Improvement sustainable production (incl. post-harvest)

- Assess to what extent the Myanmar GAP guidelines comply with the requirements of Dutch buyers;
- Develop/adjust the Myanmar GAP guideline to a guideline which complies with the requirements of Dutch buyers. This means that social (child/migrant labour), environmental and governance issues should be included;
- Develop practical training manuals to train the farmers (but also government extension staff) to produce according these guidelines;
- Provide assistance and guidance in the implementation of these guidelines (which should include recordkeeping);
- Monitor the farmers closely in both production as recordkeeping practices and let government extension staff be part of this;
- Introduce solar dryers to dry the chili consistently.

3. Institutional strengthening

As all the steps in the chain after the production require improvement in terms of quality control, traceability and therefore sustainability, it is recommended to either work with an organized farmer group directly or with processors who are already focusing on quality, food safety and sustainability. For the phases after the chili production and post harvesting, the following recommendations could be made:

- Explore possibilities to trade directly with the Mandalay wholesaler (who is also a processor) and develop controlling mechanisms;
- Organise the farmers in such a way that they can either trade directly with Dutch buyers or that this will be done through the Mandalay wholesaler;
- Analyse/benchmark the available testing facilities in Myanmar with the testing facilities in the region and Europe and look into possibilities to either improve the available testing facilities or set up easier testing procedures to get the products tested outside Myanmar.

5. Cinnamon

Myanmar is not known for its cinnamon production and only two places were indicated by the various regional DoA staff where cinnamon was supposed to grow and then only in very low quantities. One area was part of a government farm in Tayinthari in order to maintain cinnamon and to not let it disappear. The other place was on the traditional medicine garden in Pyin Oo Lwin, which serves as the traditional medicine input supplier for the government medicine factory in Mandalay. Both descriptions of the places conjectures that the quality of the available cinnamon could be good: as on the one hand they were government driven gardens, where chemicals are usually not used and being a supplier for a traditional medicine factory, the quality must be good. Therefore, as there was high interest of Dutch buyers in cinnamon and the possibility of high quality cinnamon available in Myanmar, made cinnamon be part of the second phase of the feasibility study of spices.

Figure 15 Cinnamon production at the traditional medicine garden in Pyin Oo Lwin

For the fieldwork, it was decided to go to the traditional medicine garden Phaung Taw of Pyin Oo Lwin, as the size of the planted cinnamon area (2 acre: 400 trees) was much higher than the one in Thayintaryi (6 trees). The interview was held with Ko Naing San Oo, the garden manager. As there were no farmers involved, no focus group discussion could be held.

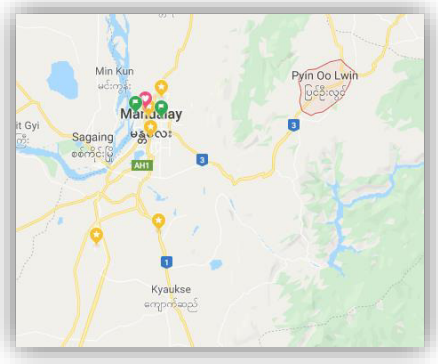


Figure 16 Fieldwork location cinnamon

5.1 Main findings

The traditional medicine garden Phaung Taw inn Pyin Oo Lwin was founded in 1996 and they planted the first cinnamon trees in 1997-1998. The bark of the cinnamon tree is ready to harvest after 5-7 years. The cinnamon variety is the zeylanicum variety. They choose this variety as it has a low moisture content and can therefore be dried easily. At the moment the garden has 400 cinnamon zeylanicum trees grown at 2 acres. They also have a few

cinnamon tamala trees, but from this variety they only use the leaves. Which apparently is the *caraway* (bay leave) leave.

Figure 17 Cinnamon production

Figure 18 Close-up of cinnamon harvesting

In this traditional medicine garden no chemical fertilizers and pesticides are used. From the zeylanicum variety the outer bark is removed with a knife and is dried in the shade. They only produce 60 - 70 viss (98-114 kg) per year as this is the demand of the medicine factory. But looking at the trees and how the bark is cut, the production capacity can be much higher. Although it is difficult to estimate the capacity.

The price paid by the medicine factory for *zeylanicum* is 3500 ks/viss (1.17 EURO/kg[10]). The farm manager mentions that the market rate for *zeylanicum* in the Mandalay market (zeycho) is 7999 ks/viss (2.85 EURO/kg). This cinnamon is coming from Kachin state, Wyne Maw township. Until now it was unclear that there were other cinnamon producing areas in Myanmar.

The farm manager is in close contact with surrounding farmers and on the question if they would be interested to start growing cinnamon, he responds very positive. Even though they are aware that it will take many years before harvesting can take place, as they will not completely change to cinnamon production. This will happen in phases. In terms of land, there is a lot of fallow land in the area of Pyin Oo Lwin, which could be used for cinnamon production. At the moment the farmers grow ginger, turmeric, paddy, wheat, sesame and corn. Farmers do not grow

Figure 19 Seedlings of Cinnamon Zeylanicum

[10] Rate is from 4.11.2018 Oanda currency converter.

cinnamon as they are not aware that there is a market for cinnamon. Besides available land and willingness of the farmers when there is a clear demand, they indicate that farmers need to be properly trained and supervised during production period. Also, in the medicine garden a lot of *zeylanicum* seedlings are growing wildly. Besides production for export, they see an opportunity to market cinnamon to the local market as a spice to use in the kitchen and not only traditional medicine. This could be marketed as 'healthy/medicinal food'.

5.2 Sustainability

As cinnamon is grown on such a small scale, the sustainability level is quite high: no chemicals are being used; no child labour is used; laborers are not being exploited (they receive government salaries); land is used properly etc. etc. For more details, see the sustainability matrix underneath.

	Sustainability issue	**No / minor risk**	**Medium risk**	**Major risk**	**Don't know**
1	**Socio-economic**				
1.1	Inadequate **decent (living) income** for **farmers** (e.g. as a result of low productivity, inferior product quality and low and/or volatile prices).				X
1.2	Inadequate **decent (living) wages** for (seasonal) **workers.** (*farm and processing level*)				X
1.3	**Health & Safety risks farmers** (e.g. as a result of exposure to hazardous chemicals, extreme weather conditions and other dangerous situations).	X			
1.4	**Health & Safety risks** (seasonal) **workers** (e.g. as a result of exposure to hazardous chemicals, extreme weather conditions and other dangerous situations). *(farm and processing level*)	X			
1.5	Inadequate **other labour conditions farmers.**				X
1.6	Inadequat**e other labour conditions** (seasonal) **workers** (e.g., secondary labour conditions, working times, payment for overwork, leave arrangements, access to sanitary facilities, training, maternity leave). *(farm and processing level)*				X

1.7	**Child labour** (both farmers and workers).	X			
1.8	**Forced labour** (both farmers and workers)	X			
1.9	**Debt traps**, resulting in **bonded labour** (both farmers and workers).				X
1.10	**Discrimination of workers** (e.g. based on race, ethnic background, religion, sex). *(farm and processing level)*				X
1.11	Inadequate **freedom of association and the right to collective bargaining** for workers *(farm and processing level)*				X
1.12	General abuse of **migrant workers** (both working and living conditions). *(farm and processing level*)	X			
1.13	Inadequate attention to **gender** (e.g. women have no meaningful participation in decision-making and leadership role, no equal access and control over natural resources, inputs, productive tools, advisory and financial services, training, markets and information).	X			
1.14	Inadequate attention to **indigenous peoples** (e.g. indigenous people have no meaningful participation in decision-making and leadership role, no equal access and control over natural resources, inputs, productive tools, advisory and financial services, training, markets and information).	X			
1.15	Conflicts related to **land ownership** and **access to natural resources** (e.g. land, fisheries, forests and water). This includes inadequate **compensation mechanisms**.				X
1.16	Inadequate measures to **mitigate climate change / increase resilience of spice production systems.**	X			
1.17	**Excessive crop loss** (e.g. as a result of inadequate post-harvest practices and/or risks of harvest failures).				X
1.18	Inadequate **access of farmers to finance** (credit and insurance).				X
1.19	General **adverse impacts on local communities** (e.g. as a result of adverse impacts on tangible and intangible cultural heritage, influx of migrants, access to healthcare and education).	X			

2	**Environmental**				
2.1	**Conversion of natural ecosystems** into production systems, including deforestation.	X			
2.2	**Soil degradation** (erosion, depletion).	X			
2.3	**Water and soil pollution** (e.g. as a result of agro-chemicals use and post-harvest cleaning practices).	X			
2.4	**Air pollution** (e.g. as a result of burning practices, fumigation).	X			
2.5	Contribution to **climate change** (e.g. as a result of use of fossile fuels, deforestation and/or dewatering of peat lands).	X			
2.6	Excessive **water use** (*at farm and processing level*).	X			
2.7	Inadequate **waste management** (*at farm and processing level*).	X			
2.8	Introduction of **invasive species** (including GMO).	X			
2.9	**Overexploitation** of spices collected in the wild.	X			
2.10	Contribution to **depletion of (other) natural resources.**	X			
2.11	**General adverse impacts** on protected areas, high conservation areas and/or endangered species.	X			
3	**Other**				
3.1	Inadequate **consumer safety** (e.g. as a result of product contamination).	X			
3.2	Occurence of **corruption and/or fraudulent practices**.				X
3.3	Occurence of **tax evasion and/or avoidance**.				X
3.4	Occurence of **anti-competitive agreements**.				X
3.5	Inadequate **diffusion of appropriate technologies and innovations**, particularly environmentally friendly technologies.				X
3.6	Inadequate **disclosure** about sustainability risks in supply chains and efforts to prevent or mitigate these.				X
3.7	Inadequate supply chain **traceability**.	X			
3.8	Inadequate **consultations with spices communities**, especially indigenous peoples, among other reasons in order to				X

	obtain their free, prior and informed consent.				
3.9	Inadequate **grievance mechanisms** in place.				X
3.10	Other, namely….				

5.3 SWOT

Strengths	Weaknesses
- Zeylanicum variety (high quality cinnamon) - Chemical free produced - Level of sustainability seems high - Zeylanicum seedlings available - Vertile and non-contaminated ground.	- Very low quantity cinnamon produced - No specific knowledge and experience to produce cinnamon systemically (for the Dutch market) of both farm manager and surrounding farmers - Pre-investment costs required - Long periods without revenues - No export experience.
Opportunities	**Threats**
- Land available - Willingness of farmers to start producing when there is a clear demand	-

5.4 Recommendations for follow-up actions (roadmap)

As the scale of cinnamon production is very low and the interviews held were quite minimal, in the follow up of this project definitely some more research needs to be done on the suitability of available land and also on the quality of the existing production. Therefore, the recommendations are only clustered under further analysis.

1. Further analysis

- Analyse the quality of zeylanicum variety in Pyin Oo Lwin;[11]
- Analyse the possible 'pig cycle risk' with countries as Indonesia[12], Sri Lanka and Vietnam possible already investing in cinnamon;
- Analyse the feasibility to invest now and get revenues only after many years;
- Analyse the possible available land in Pyin Oo Lwin to start cinnamon production;
- Assess the overall sustainability performance of the production of cinnamon;

[11] Samples have been taken and sent to the Netherlands for quality checking.
[12] Even though Indonesia is only producing the cassia variety, which is considered another spice.

- Develop a business plan for cinnamon production;
- Research the cinnamon production and quality in Wyne Maw township, Kachin state.

6. Conclusions and recommendations

The previous three chapters described the findings of the field work in relation to ginger, chili (chocolate bell variety) and cinnamon. These findings were also sent to the 10 Dutch spice companies who participated in the beginning of the project. Out of the 10 companies, 9 gave a reaction, of which 3 might possibly interested in a follow-up. The main reason that the other 6 companies are not interested in a follow-up is that the current way of producing is not according to any clear quality standard and the quantities are too low to be interested. Regarding quality, concerns rise about the level of pesticide usage, the presence of aflatoxin and the actual level of sustainability.

Ginger

Initially, 6 Dutch spices companies showed some interested in ginger from Myanmar. 5 companies gave feedback on the SWOT analysis. Based on this new information 3 companies stated that involvement in follow-up activities is not interesting for them. Uncertain product quality (compliance with food safety standards) is a bottleneck and they consider themselves too small to invest in improvements. The potential interest of another Dutch company is still unclear. The 5th company shows a clear interest in ginger from Myanmar providing that sensoric characteristics and product quality are adequate.

Recommendation

- Facilitate direct contact between Dutch companies with an unclear and a clear interest in ginger from Myanmar and suppliers (matchmaking[13]). Together they can explore the feasibility of complying with product and trade requirements and, ultimately, to export this ginger to the EU.
- Considering the fact that, compared with chillies and cinnamon, ginger production in Myanmar is already more developed and therefore has better prospects for exports, possibilities for a marketing campaign for the EU market and other forms of assistance (e.g. training, improvement of postharvest and testing facilities) should be considered. The Dutch Centre for the Promotion of Imports from developing countries (CBI) or similar import promotion organisations (e.g. International Trade Centre-Geneva, Import Promotion Desk-Germany) may be willing to facilitate such program.

Chili

Initially, 4 Dutch spices companies showed some interested in chillies from Myanmar. 3 companies gave feedback on the SWOT analysis. Based on this new information 2 companies stated that involvement in follow-up activities is not interesting for them. Uncertain product quality (compliance with food safety standards) is a bottleneck and they consider themselves too small to invest in improvements. With regard to 1 Dutch spices company involvement in

[13] Fresh Studio will take the lead in this and facilitate the first steps.

follow-up activities is not yet excluded but the potential interest is weak. The company mentions that the specific chillies variety of Myanmar cannot replace existing chillies. It would have to be marketed as a different variety, but this would have to be a long term effort.

Recommendation

- Facilitate direct contact between this potentially interested Dutch company and chillies suppliers in Myanmar (matchmaking). Together they can explore the feasibility of complying with product and trade requirements and, ultimately, to export these chillies to the EU.

Cinnamon

Initially, 8 Dutch spices companies showed some interest in cinnamon from Myanmar and all gave feedback on the SWOT analysis. Based on this new information 4 companies stated that involvement in follow-up activities is not interesting for them. Too small supplies and uncertain product quality (compliance with food safety standards) are major bottlenecks. 2 companies consider themselves too small to invest in improvements. 1 company mentions it is only interested once it is certain that Myanmar can supply the right quality for a good price. The potential interest of 2 other Dutch companies is unclear. With regard to another company involvement in follow-up activities is not yet excluded but the potential interest is weak.

Recommendation

- Facilitate direct contact between Dutch companies with an unclear or weak interest in cinnamon from Myanmar and suppliers (matchmaking). Together they can explore the feasibility of complying with product and trade requirements and, ultimately, to export this cinnamon to the EU.

6.1.1 Overall recommendations to develop sustainable spices in Myanmar

Recommendations and follow-up actions per spice were given in the previous chapters, but in general the overall institutional framework of spice production in Myanmar should be strengthened/improved to be able to comply with sustainable requirements of foreign and especially European spice companies. Therefore herewith some recommendations on institutional strengthening:

- Assess if Myanmar GAP guidelines and the Global GAP certificates are acceptable for Dutch buyers;
- Benchmark ESA guidelines with the current ginger and chili guidelines (quality standards) that are being used and assess the applicability of the ESA guidelines to the Myanmar situation;
- Develop/adjust the Myanmar GAP guideline to a guideline which complies with the requirements of Dutch buyers. This means that social (child/migrant labour), environmental and governance issues should be included;

- Analyse/benchmark the available testing facilities in Myanmar with the testing facilities in the region and Europe and look into possibilities to either improve the available testing facilities or set up easier testing procedures to get the products tested outside Myanmar.

6.1.2 Practical toolkit

Besides the institutional recommendations, a practical 'toolkit' is provided for the spice producers in Myanmar. During the field work and focus group discussions, questions were raised how to comply with Dutch/European quality standards and where to find answers. The willingness is there to grow for different markets, but then the 'how' question needs to be answered. Therefore a first step is given, in the form of a little toolkit in Annex 3.

6.1.3 Findings after the project

When the project started it was quite challenging to find spice actors and spice producing regions, but throughout the year and especially at the end of last year more and more actors approached Fresh Studio as they heard we were doing this feasibility study on spices. Interest in ginger from Shan State is growing; spice produce areas from more remote areas (Kachin state) are getting more connected to Yangon and just recently the United Kingdom, in cooperation with a local company, will invest US$3.1 million in a project aimed at boosting the earnings of thousands of farmers who grow spices. The DaNa Facility, a programme funded by Britain's Department for International Development (DFID), and Snacks Mandalay, a food processing company, agreed to carry out the project, which is also aimed at increasing the number of spice farmers in Mandalay region.

7. Annexes

7.1 Annex 1 Overview of spices with Myanmar/English term

7.2 Annex 2 Input from Dutch Spices Companies

7.3 Annex 3 Practical toolkit

Annex 1 Overview of spices with Myanmar/English term

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7. Annexes

7.1 Annex 1 Overview of spices with Myanmar/English term

7.2 Annex 2 Input from Dutch Spices Companies

7.3 Annex 3 Practical toolkit

Annex 1 Overview of spices with Myanmar/English term

1. Basil leaf - ပင်စိမ်းရွက်

2. Basil seed - ပင်စိမ်းစေ့
(ပင်ပွားစေ့လို့လည်း ခေါ်ကြပါတယ်)

3. Bay laurel leaf = ကရဝေးရွက်
(Indian bay leaf လို့ ခေါ်ပါတယ်)

4. Black Cumin - ဇီယာစေ့ (အနက်)

5. Black Pepper – ငရုတ်ကောင်းစေ့
(အနက်)

6. Caraway seed - ကရဝေးစေ့။

7. Balck Cardamon seed -
ဖာလာစေ့အနက်

8. Green Cardamon seed -
ဖာလာစေ့အစိမ်း

9. Celery - တရုတ်နံနံ

10. Cinnamon - သစ်ဂျုပိုး။

11. Clove - လေးညှင်းပွင့်။

12. Coriander Leaf = fresh
coriander green - နံနံပင်

13. Coriander seed - နံနံစေ့

14. Cumin seed - Sweet Cumin - ဇီယာစေ့

15. Curry leaf = ပျဉ်းတော်သိမ်ရွက်

16. Fennel leaf - စမုန်စပါးရွက်။

17. Fennel seed - စမုန်စပါးစေ့။

18. Fennel tuber - စမုန်စပါးဥ။

19. Fenugreek leaf - ပဲနုံ့သာရွက်။

20. Fenugreek Seed - ပဲနုံ့သာစေ့။

21. Galangal - ပဒဲကော။

22. Garlic - ကြက်သွန်ဖြူ။

23. Ginger - ချင်း။

24. Lemongrass - စပါးလင်။

25. Licorice - နွယ်ချို။

26. Mustard oil - မုန်ညင်းဆီ။

27. Mustard seed - မုန်ညင်းစေ့။

28. Nutmeg - ဇာတိပို့လ်သီး။

29. Nutmeg mace - ဇာပွင့်။

30. Paprika – Bell pepper or chili pepper ကနေ ထုတ်တဲ့ ငရုတ်သီးအရောင်မှုန့်။

31. Poppy seed - ဘိန်းစေ့။

32. Saffron - ကုံကမံ။

33. Sesame Seed- နှမ်းစေ့။

34. Star Anise - နာနတ်ပွင့်။

35. Tamarind Leaf - မန်ကျည်းရွက်။

36. Turmeric powder - နနွင်းမှုန့်။

Annex 2 Input from Dutch Spices Companies

Input from Dutch spices companies (quick scan)

1. Introduction

This annex summarizes the results of a 'Quick Scan' based on interviews with 10 Dutch spices companies, a representative (Mr. Jan Gilhuis) of the Sustainable Spices Initiative (Sustainable Trade Initiative) and the country manager for Myanmar (Mr. Hugo Verhoeven) of the Centre for the Promotion of Imports from developing countries (CBI). All spices companies are prominent members of the Royal Dutch Spices Association (KNSV) and together they represent the bulk of spices imports in the Netherlands (based on direct sourcing in producing countries). For reasons of confidentiality their names are not mentioned in this annex.

- None of these companies have experience with imports of spices from Myanmar. To them the country is 'terra incognita'. They never came across spices from Myanmar and they never met sales persons at for example trade fairs or spices conferences.

This Quick Scan was executed in phase 1 of this project. The objective was to select maximum 3 promising spices upon the other phases of the project should focus (SWOT analysis and formulation of conclusions and recommendations).

Based on the results of this Quick Scan and some additional data gathering in Myanmar 3 specific from Myanmar have been selected: chillies, ginger, cinnamon. In this annex first impressions from the above mentioned interviews will be described and a number of conclusions will be drawn. Also questions are included that should be answered by stakeholders in Myanmar.

2. Myanmar spices of interest

2.1 General interest in Myanmar spices

The spices from Myanmar mentioned below are included in export statistics from ITC ([1]). These have been discussed with the Dutch spices companies (Quick Scan). The findings are presented in this annex. Based on this quick scan spices are classified as follows:

- **Red** spices: based on input from Dutch spices companies these seem the most promising to include in this project.
- **Orange** spices: no intermediate conclusions about priority can be drawn yet. This depends on additional information to be obtained through fieldwork in Myanmar.
- **Blue** spices: should probably not get priority based on input from Dutch spices companies, although it is recommended to obtain answers to a few remaining questions.
- **Purple** spices: should not be included in this project.

[1] https://www.trademap.org.

This chapter provides background on this classification.

Black pepper	**Coriander**	**Mace/Nutmeg**
Cardamom	**Cumin**	**Sesame**
Chillies	**Fennel seeds**	**Star anise**
Cinnamon	**Garlic**	**Tamarind**
Cloves	**Ginger**	**Turmeric**

Based on the results of this Quick Scan and preliminary fieldwork in Myanmar chillies, cinnamon and ginger were selected as the most promising spices for export to the Netherlands. 4 Dutch spices companies were potentially interested in chillies from Myanmar, 8 were interested in cinnamon and 6 in ginger. This annex also provides intelligence on the other spices. Opportunities for these other spices may be explored in another context.

2.2 Black pepper

On the one hand, black pepper may be interesting for Myanmar:

- In terms of quantity, black pepper is the most important spice globally so, in principle, there is a huge potential demand.
- Some companies are potentially interested in black pepper from Myanmar for strategic reasons. As part of their risk management they are interested in an additional sourcing area, especially in view of possible disease outbreaks and climate change. At present only Vietnam, Brazil and Indonesia have substantial pepper exports, Cambodia is a newcomer.
- Compared with several other spices, the sensory requirements are a bit less critical and for producers it may be comparatively easy to comply. Black pepper is very suitable for inter-cropping, for example with coffee.
- Black pepper from Vietnam is currently often problematic because of too high levels of pesticides residues. It may be an opportunity if Myanmar would be able to produce this spice within EU MRL limits (or 'pesticides free' pepper). Considering the economic importance of pepper for Vietnam it is however likely that this country will take necessary measures and that this MRL issue will be short time problem only (and therefore only a short term opportunity for Myanmar). One company would be interested in organically certified black pepper from Myanmar.

On the other hand however, black pepper is generally traded as a commodity. Myanmar would have to compete with current dominant suppliers. Also the pig cycle applies. At present black pepper prices are very low but it can be expected that prices will increase again in a couple of years. It could be interesting to invest anti-cyclical in black pepper, but that would require stringent management from the Myanmar government, sector associations and/or farmer cooperatives.

Conclusion: At present it is **uncertain** if black pepper should get priority for the project.

Remaining questions:

- What potential black pepper quantities are or can be made available for exports? For example, one company is only interested if Myanmar is able to supply at least 1 20 ft container/month (such container can contain 17 tons pepper).

- What is known about the sensory characteristics of black pepper from Myanmar compared with other origins?
- Is Myanmar able to produce pesticides-free black pepper or at least pepper that can (easily) comply with EU MRL standards?
- Is Myanmar also able to produce crushed or ground pepper?
- Is Myanmar able to produce organically certified black pepper (with certificate from a reputable organisation)?
- Are there possibilities that a strong body (government, sector association, cooperative) manages anti-cyclical pepper production?

2.2 Cardamom

3 Dutch companies express potential interest in cardamom from Myanmar. This mainly for strategic reasons. The companies currently depend on Guatemala as the main sourcing area. This is risky. In addition, Cardamom from Guatemala sometimes has too high levels of quarternary ammonium, which is a desinfectant. MRL levels are sometimes not met. Cardamom from India often cannot meet food safety standards either. Other Dutch spices companies are not/less interested in cardamom because this spice is relatively unimportant for them (no imports or only small quantities). In general, the Netherlands / EU is not a major market for cardamom. The bulk of production goes to countries in the Middle East.

Conclusion: 3 Dutch companies show a clear interest in Myanmar cardamom, but on the other hand the Netherlands / the EU is only a relative small player in cardamom consumption. At present it is **uncertain** if cardamom should get priority for this project.

Remaining questions:

- What potential cardamom quantities are or can be made available for exports?
- What is known about the sensory characteristics of cardamom from Myanmar compared with other origins?
- Is Myanmar able to produce pesticides-free cardamom or at least cardamom that can (easily) comply with EU MRL standards?

2.3 Chillies

European consumers don't want very hot chillies. The desired Scovil Heat Unit (SHU) for chillies ranges from 10.000 to 30.000/40.000. The chillies market with regard to exports to the Netherlands is currently dominated by China and India. China exports the low heat chillies and India medium heat chillies. In both India and China there are problems to meet EU MRL and aflatoxin standards. In those countries the chillies must be produced under specific 'controled' conditions at specific locations ('mainstream' production cannot meet EU standards). Moreover, only 2 origins for chillies are sensative. Some companies therefore would welcome an addional origin . They however stress it will not be easy for Myanmar to compete with current powerful players from China and India. There may be opportunities if Myanmar is able to produce chillies in the 10.000-40.000 SHU range, is better able to meet MRL requirements and if it concerns 'special varieties' (clients increasingly request such varieties, this is a trend in niche markets).

Conclusion: At present it is **uncertain** if chillies should get priority for this project.

Remaining questions:

- What potential chillies quantities are or can be made available for exports?
- Do the Myanmar varieties fall in the 10.000 – 30.000/40.000 SHU range?
- Is Myanmar able to produce 'special variety' chillies with sensory characteristics that clearly deviate from Chinese and Indian chillies?
- Is Myanmar able to produce pesticides-free chillies or at least chilllies that can (easily) comply with EU MRL standards?
- Is Myanmar able to avoid aflatoxins problems (adequate post-harvest methods)?

2.4 Cinnamon

With the exception of 2 companies all Dutch spices companies interviewed would be (highly) interested in cinnamon from Myanmar. Some companies are mainly interested in the *Cinnamomum cassia* variety (mainly produced in Indonesia, China and Vietnam), others in the C*innamomum zeylanicum* variety (mainly produced in Sri Lanka) and others in both. Main reason is that current cinnamon producing countries pay insufficient attention to replaning/rejuvenation of cinnamon trees. After planting it takes several years (at least 7) for a tree to become productive. Cinnamon shortages and rising prices are expected in the future. According to one company this especially applies to the C*innamomum zeylanicum* variety. Because of the current high prices replanting activities can already be observed in among others Indonesia (*Cinnamomum cassia*).

In general, additional supply from Myanmar would be very interesting (depending on quality and especially taste). With regard to especially *Cinnamomum cassia* the coumarine content is an important attention point. This may not be too high because it is suspected to have carcinogetic properties. According to one company it would also be nice if cinnamon from Myanmar would have a different flavour. That could be a Unique Selling Point. Another company would especially be interested in organically certified *Cinnamomum zeylanicum.*

Conclusion: Based on the potential interest from Dutch spices companies cinnamon (both *Cinnamomum cassia* and *Cinnamomum zeylanicum)* should get **priority** for this project.

Remaining questions:

- Which cinnamon variety is produced in Myanmar (*Cinnamomum cassia* and/or *Cinnamomum zeylanicum*)?
- What potential quantities are or can be made available for exports? For example, Euroma is only interested if Myanmar is able to supply at least 10 tons / month.
- What is known about the sensory characteristics of cinnamon from Myanmar compared with other origins?
- Would it be feasible for Myanmar to invest in cinnamon trees considering the fact that such trees will only become productive after many years?
- Is Myanmar also able to produce ground cinnamon?
- What is known about the coumarine content (in *Cinnamomum cassia*) compared to other cassia producing countries?
- Is Myanmar able to produce organically certified cinnamon (with certificate from a reputable organisation)?

2.5 Cloves

6 Dutch spices companies mention they could be interested in cloves from Myanmar. This mainly because of risk management. Current major exporters are Madagascar, Comores, Zanzibar, Sri Lanka and Brazil. Exports from Brazil to the EU has become less attractive because import duties now have to be paid (Brazil does no longer get GSP preferences). An additional origin would be welcomed. Quality is however an important requirement. There would especially be opportunities if Myanmar is able to produce cloves with a high oil percentage and that are handpicked and selected (less contamination with 'foreign' materials and undamaged crown ([2])).

Conclusion: Based on the potential interest from Dutch spices companies cloves should get **priority** for this project.

Remaining questions:

- What potential quantities are or can be made available for exports?
- What is known about the oil content of cloves compared to other cloves producing countries?
- Is Myanmar able to produce handpicked and sorted cloves?
- Would it be feasible for Myanmar to invest in cloves trees considering the fact that such trees will only become productive after many years?
- Is Myanmar able to produce organically certified cloves (with certificate from a reputable organisation)?

2.6 Coriander

Only 3 Dutch spices companies have some interest in coriander, mainly because of risk management (an additional origin is welcome). However, for most companies coriander is a small product. And if they buy this product it is currently mainly sourced from Eastern Europe. European consumers generally prefer the particular flavour from this origin and there are no or less major price or quality issues there.

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[2] Less relevant for Polak because this company grinds the cloves.

Conclusion: Based on the moderate interest from Dutch spices companies coriander should **not get priority** for this project.

Remaining questions:

- What potential quantities are or can be made available for exports?
- What is known about the sensory characteristics of coriander from Myanmar compared with other origins?

2.7 Cumin

5 Dutch spices companies mention cumin as an interesting product from Myanmar. An additional origin is important in the context of their risk management. Cumin is mainly produced in Syria, Turkey and India. Cumin from Syria is problematic because of the war. For political reasons some clients don't want cumin from this country. Cumin from Turkey is sometimes associated with child labour. And in India there are problems with pesticides residues (MRLs) and allergenes (cumin gets contaminated with musterd and sesame that is often produced in combination with cumin in India).

Some companies mention cumin from Myanmar may be of better quality because the soil may be less contaminated with pesticides and contamination by other crops may be absent. On the other hand cumin grows best in (semi) arid regions because then less pesticides are required. It is questionable if such circumstances are present in Myanmar. In general quality (both sensory characteristics and food safety issues) are very important in the case of cumin.

Conclusion: Based on the potential interest from Dutch spices companies cumin should get **priority** for this project.

Remaining questions:

- What potential quantities are or can be made available for exports? For example one company would need minimum 10 tons / month.
- What is known about the sensory characteristics of cumin from Myanmar compared with other origins?
- Is Myanmar able to produce pesticides-free cumin or at least cumin that can (easily) comply with EU MRL standards?
- Is Myanmar also able to produce ground cumin?

2.8 Fennel seeds

Only one company is currently interested in Myanmar fennel seeds. The company is looking for additional origins. It is currently buying from Egypt only, which is risky. Other companies are not interested because fennel seeds is not or very little relevant for them. Like other seeds fennel is sensative for micro-biological contamination. Seeds are mostly dried in the open air and can for example become contaminated by bird droppings.

Conclusion: Based on the potential interest from Dutch spices companies in fennel seeds, this spice should **not get priority** for this project.

Remaining questions:

- What potential quantities are or can be made available for exports?

2.9 Garlic

4 Dutch spices companies would be interested in garlic from Myanmar. This mainly for reasons of risk management. At present China is the main garlic exporter because this country produces garlic with the right colour (white) and taste (not too strong). Companies would welcome an additional origin. Some clients don't want garlic from China and in that case more expensive garlic from the USA is currently sourced. The companies however stress it may be very difficult to penetrate the global garlic market because China is very powerful. It will be difficult to compete on price and quality.

Conclusion: Based on the moderate interest from Dutch spices companies in garlic and expected difficulties to compete with China, this spice should **not get priority** for this project.

Remaining questions:

- What potential quantities are or can be made available for exports?
- Is it known if garlic from Myanmar has similar sensory characteristics as garlic from China?
- Is Myanmar able to produce ground garlic, garlic powder and/or garlic flakes?

2.10 Ginger

6 Dutch spices companies would be highly interested in ginger from Myanmar . They currenly mainly source from Nigeria and China (and to a lesser extent Ethiopia). Especially Nigeria is challenging, for reasons of sustainability, but the taste from this country is highly appreciated by clients. Additional origins are therefore highly welcome. It would especially be interesting if Myanmar would be able to produce 'sustainable' (certified) ginger because that is not yet available in the market place ([3]). The specific taste is however an important requirement. Also compliance with food safety standards (especially aflatoxins, ochratoxins and SO2 levels([4])) may be challenging.

Conclusion: Based on the potential interest from Dutch spices companies, ginger should get **priority** for this project.

Remaining questions:

- What potential quantities are or can be made available for exports? For example one company would need minimum a minimum supply of 5 20 ft containers / year in the case of 'conventional' ginger. In case of 'sustainable' ginger smaller quantities for niche markets are acceptable.
- What is known about the sensory characteristics of ginger from Myanmar compared with other origins?
- Is Myanmar able to avoid aflatoxins and ochratoxins problems (adequate post-harvest methods)?
- In principle, would Myanmar be interested and able to work towards certified sustainable ginger?

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[3] The Sustainable Spices Initiative is potentially interested to host such initiative. In the past SSI tried to develop such programme, but it didn't suceed because such programmes were too difficult in Nigeria and China.

[4] Sometimes sulphite is added to ginger to combat bacteria and to get the right colour, but that may lead to too high SO2 levels.

- Is Myanmar also able to produce ginger powder?

2.11 Mace/Nutmeg

6 companies would be highly interested in mace and nutmeg from Myanmar. Indonesia, India, Sri Lanka and Papua New Guinee are currently the main producers and exporters. Grenada is no longer able to supply. With regard to specifically mace India currently buys a very large part of global supply and shortages are therefore foreseen. An additional origin for both nutmeg and mace may be important for risk management. With regard to nutmeg quality is however key (taste and high oil percentage) and possible aflatoxin problems are a major point of attention. Myanmar must at least be able to produce aflatoxins free nutmeg (that is much less an issue with regard to mace).

Conclusion: Based on the potential interest from Dutch spices companies, mace/nutmeg should get **priority** for this project.

Remaining questions:

- What potential quantities are or can be made available for exports?
- What is known about the oil content of nutmeg from Myanmar compared to other nutmeg producing countries?
- Is Myanmar able to produce aflatoxin free nutmeg (adequate post-harvest methods)?
- Is Myanmar able to produce ground nutmeg?
- Would it be feasible for Myanmar to invest in nutmeg trees considering the fact that such trees will only become productive after many years?
- Is Myanmar able to produce organically certified mace/nutmeg (with certificate from a reputable organisation)?

2.12 Sesame

No Dutch companies interviewed for this project show interest in sesame seeds from Myanmar.

Conclusion: Based on a lack of interest from Dutch spices companies sesame seeds should **not be concluded** in this project.

2.13 Star anise

6 companies would be interested in star anise from Myanmar. At present companies mainly source star anise from Vietnam and China (some clients however don't want star anise from China). An additional origin for star anise may be important for risk management. There are specific opportunities if star anise is undamaged and well sorted (no foreign materials such as sand present). Hand picked may be preferred. For one company undamaged star anise is however not relevant as this company grinds this spice anyway. Certified organic star anise may be interesting for niche markets.

Conclusion: Based on the potential interest from Dutch spices companies, star anise should get **priority** for this project.

Remaining questions:

- What potential quantities are or can be made available for exports?
- What is known about the sensory characteristics of star anise from Myanmar compared with other origins?
- Is Myanmar able to produce handpicked and sorted star anise?
- Is Myanmar able to produce organically certified star anise (with certificate from a reputable organisation)?

2.14 Tamarind

No Dutch companies interviewed for this project show interest in tamarind from Myanmar.

Conclusion: Based on a lack of interest from Dutch spices companies tamarind should **not be concluded** in this project.

2.15 Turmeric

4 Dutch spices companies are (moderately) interested in turmeric from Myanmar. They all stress it will be very difficult to compete with dominant Indian suppliers. There may be opportunities if Myanmar is able to supply certified organic turmeric or ground turmeric.

Conclusion: Based on the moderate interest from Dutch spices companies in turmeric and expected difficulties to compete with India, turmeric should **not get priority** for this project.

Remaining questions:

- What potential quantities are or can be made available for exports?
- What is known about the sensory characteristics of turmeric from Myanmar compared with other origins?
- Is Myanmar able to produce ground turmeric?
- Is Myanmar able to produce organically certified turmeric (with certificate from a reputable organisation)?

3. Potential Unique Selling Points

3.1 Compliance

By far the most important requirement is that spices from Myanmar are able to comply with EU food safety standards. Other origins sometimes have major difficulties in that respect (see chapter 2 of this annex). Possibly Myanmar has not applied pesticides as extentively as other spices origins. The soil may be less polluted and it may therefore be easier to meet EU food safety standards (regarding MRLs) and even to produce organic spices. Spices production is probably to a large extent new in Myanmar and needs to be developed from scratch. In such situation it may be easier to do it immediately in the right manner from food safety and sustainability point of view (e.g. paying attention to multi-cropping and preservation of biodiversity), easier than to adjust existing production methods and circumstances. New spices production should however be organised as a well managed project. If it is left to the market there will be pressure on farmers to maximise production / hectare. Input suppliers

will try to push application of all kinds of agro-chemicals. Then you will soon get similar problems as elsewhere (use of large quantities of pesticides leading to problems with compliance with MRL standards).

One Dutch spices company also mentions that possibly soil in Myanmar is not yet polluted by pesticides and thus that it may be easier to comply with MRL standards should be considered a short term advantage only. Other major spices producing countries are taking measures as well to comply with such standards because they realise they will otherwise lose markets. Organic production may however be an exception. If Myanmar chooses to promote this kind of production and enters this market benefits will probably last longer. It may therefore be a strategy to focus on organic spices.

Remaining questions:

- Is the assumption correct that the starting point for 'pesticides free' or organic spices production in Myanmar is comparativey favourable because soils are less polluted?
- What are possibilities to start spices production from scratch and to organise that as a well managed project?
- Does Myanmar have issued agricultural strategies to specifically promote organic production?

3.2 Steam sterilisation

This is a technique to comply with some EU food safety standards (microbiological contamination, including salmonella). Several major spices producing countries have set up such facilities or are planning to do so. Some Dutch spices companies would consider the presence of such facilities in Myanmar a Unique Selling Point, others however state they prefer to do this process by themselves. Others mention steam sterilisation will be become more important in the future. It must be stressed that steam sterilisation is a delicate method. It is important to do it in the right manner. On the one hand pathogenes must be killed, on the other hand colour and taste of the spice may not be affected. Several developing countries are not able to meet specific requirements in these areas of end users. Steam sterilisation is also costly. In addition, steam sterilisation is not necessary to treat all kinds of spices (e.g. important for ginger, not for cinnamon of nutmeg/mace).

Remaining questions:

- Are steam sterilisation facilities for spices available in Myanmar or are there plans to establish these?
- If already present what is known about adequate performance?

3.3 Certified laboratories

Most (not all!) Dutch spices companies increasingly require that suppliers provide test reports / certificates on food safety from certified laboratories (ISO). For some Dutch companies this is important because it reduces risks both for themselves and suppliers (no disputes with suppliers if containers must be rejected). Other companies however state they prefer to perform such tests themselves because they don't consider test reports from others reliable enough. Other companies do require such reports/certificates but they will re-test themselves anyway. Although for example Vietnam has a certified laboratory to perform such tests since 2 years, most clients require such test reports from European laboratories (e.g. Eurofins in Hamburg). Vietnam is not able to test on all

possible MRLs and in general there is a often a substantial default margin (test results from different laboratories therefore differ).

Remaining questions:

- Are certified laboratories that are able to conduct food safety and sensory tests on spices available in Myanmar (e.g. SGS?) or are there plans to establish these?
- If so, what kinds of tests are they able to do?

3.4 Traceability

At present 'one step back' traceability (1st tier) is required by EU legislation. However, Dutch spices companies would consider it a major advantage if products can be traced back to farmer level. That is important to safeguard food safety and to manage sustainability. It also generates possibilities for 'story telling'.

Remaining questions :

- For specific spices are there possibilities to generate full supply chain traceability (up to farmer level)?

3.5 Sustainability

This is increasingly important for Dutch spices companies (see also chapter 4 of this annex). They have developed or are currently developing CSR policies. Pesticides use and child labour are important topics and some companies are committed to apply sustainability certificates (e.g. Rainforest Alliance) as much as possible. Companies are under pressure of clients, civil society and the government to supply products produced in an environmentally and socially acceptable manner. In some cases sustainable production goes hand in hand with compliance with food safety standards (e.g. pesticides use) and higher yields /ha. There are specific opportunities in niche markets, such as for organic spices and sustainable ginger (see chapter 2).

The Sustainable Spices Initiative (SSI) is an important player in this context. Several spices companies are SSI member and together they execute all kinds of sustainability projects in spices. Involvement in such projects itself is often considered evidence that suppliers are working seriously towards more sustainable production. See https://www.idhsustainabletrade.com/initiative/sustainable-spices-initiative/ for more information.

Remaining questions:

- Are there any possibilities to distinguish Myanmar spices from a sustaibility point of view? Any stories to tell?
- To what extent are Myanmar spices suppliers able / interested to supply certified organic and/or Fairtrade spices?
- To what extent are Myanmar spices suppliers able / interested to supply certified sustainably produced spices (e.g. Rainforest Alliance)?
- To what extent would Myanmar suppliers be interested to become member of the Sustainable Spices Initiative and/or to get involved in SSI improvement projects?

3.6 Sensory characteristics

Every spice has its own specific requirements with regard to taste, odour, colour, oil percentage etcetera. All depends on the spices varieties used and physical cultivation characteristics and methods. Certain spices companies find it important that cloves and star anise are undamaged. Several Dutch spices companies would be interested if Myanmar would be able to produce something different. Others however find it more important that Myanmar can produce exactly the same as current suppliers from elsewhere. Unique sensory characteristics are less important for some specific companies because they produce mixtures/blends and mainstream products. Chapter 2 of this annex describes details. Several companies are willing to test samples free of charge.

Remaining questions:

- Does Myanmar produce spices with more or less unique sensory properties?

3.7 Price

If spices are traded as a commodity the price-quality ratio is the only factor of importance. In this case products don't have a distinctive value. Some Dutch buyers are involved in such commodity markets only. 'Newcomer' Myanmar would then have to compete with sometimes powerful, well established suppliers from countries like China, India and Indonesia. The question is to what extent Myanmar is willing and able to do that.
The alternative is to stay away from commodity trade, for example to offer a specialty product, a fully traceable product, a sustainably produced or organic product, a product 'with a story' or a product that is a strategic substitute for spices from a limited number of other origins. Several Dutch spices companies are willing to pay more for such spices as long as food safety requirements are met.

Remaining questions:

- Does Myanmar have issued agricultural strategies to enter global commodity markets or to become a 'niche' player with regard to specific products?

3.8 Availability

For some large buyers it is crucial that Myanmar will be able to supply large quantities during the entire year (see chapter 2). For other companies who want to be involved in spices cultivation itself the yield/hectare is a crucial factor. For others the ability to guarantee a continuous supply is especially important if the spices are not traded as a commodity. In general a commodity can be bought easily elsewhere, a special product cannot.

The availability of spices during a specific season is not an issue for most spices as these products are generally dried and can therefore be stored for a long time. An exception may be ginger if this is harvested in another season compared with Nigeria and China.

Remaining questions:

- What is the availability of spices dealt with in chapter 2 of this annex (with the exception of sesame and tamarind) during the entire year?

- When is the harvesting season of ginger?

4. Product and market requirements

4.1 Food safety and quality

As stated before the ability to comply with EU legislation on food safety is the most crucial. The European Spices Association has developed minimum requirements for a large number of spices. This is generally applied in addition to European food safety legislation. Some additional specific product-related issues and attention points:

- Maximum residue levels (of all kinds of chemicals, including pesticides). Several spices from specific countries are having difficulties to comply with standards (e.g. pepper from Vietnam, cumin from India). Often 'pesticides free' certificates are demanded and cultivation must be done under controled circumstances. Also consider other 'risky' chemicals than pesticides such as DEET (used by workers as mosquito repellent) and desinfectants (quarternary ammonium is sometimes detected in cardamom from Guatemala).
- Mycotoxins (e.g. aflatoxins and ochratoxins). These are major risks with regard to nutmeg, ginger and chillies. Adequate post-harvest methods are crucial.
- Microbiological contamination (e.g. salmonella). Depending on the specific products in which the spices are applied this may be an issue. Adequate post-harvest methods are crucial.However comparatively easy to deal with through steam sterilisation.
- Allergens. This is for example an issue with cumin (contamination with mustard or sesame).
- Poly Aromatic Hydrocarbons. Contamination can be caused during the drying of spices if this is performed in the vicinity of open fire. 'Sun-drying' is sometimes explicitly requested or demanded by Dutch spices companies. Other drying techniques may constitute a risk of contamination.
- Irradiation as a sterilisation technique is generally not allowed.
- Artificial additives are generally not allowed. For example cardamon is sometimes treated with oil to improve colour. In the past colourants were used in chillie powders (are mixtures) from India. Sulphite is sometimes added to ginger to fight bacteria and to improve colour, but this may lead to too high SO_2 levels. All such practices are not allowed.
- Adulteration is not allowed. For that reason most Dutch spices companies are only interested in 'whole' spices (not crushed, grounded or in blends). That is the trend in Europe. Whole products provide better possibilities for traceability, to control quality and food safety. It reduces the risk of adulteration. There are however some exceptions, such as turmeric ([5]), cinnamon and garlic (see chapter 2 of this annex).
- Fumigation with methyl bromide or ethylene oxide is not allowed. For example one company only allows fumigation with phosphine. In case of organic spices fumigation is not allowed at all. It is also important to check what kind of fumigation may have been applied during transportation prior to export to the Netherlands (e.g. no residues of methyl bromide may be found).
- Some Dutch spices companies find it important that star anise and cloves are undamaged (e.g. cloves with unbroken 'head').
- Spices may not be physically polluted with sand, stones, etc. (de-stoned and de-metalled).

[5] In Europe there are no possibilities to grind turmeric.

Several Dutch spices companies demand test reports / certificates from their foreign supliers. Some companies specifically describe suppliers how and where spices need to be tested. See chapter 3 of this annex.

In addition to food safety issues of course there are all kinds of specific sensory requirements. These differ highly per product, application and consumer preferences. The oil percentage is for example an important issue for nutmeg and cloves. The desired Scovil Heat Unit (SHU) for chillies should range from 10.000 to 30.000/40.000.

Several Dutch spices companies are willing to test samples of Myanmar spices to check if these comply with their food safety and sensory standards.

Remaining questions:

- To what extent can be expected that Myanmar spices can comply with these standards? Are major bottlenecks expected?
- Are suppliers able and willing to provide samples to be tested by Dutch spices companies?

4.2 Packaging.

The demands from Dutch spices companies are not always the same. The following can be said:

- 20-25 kg polypropylene bags are often prefered. Some companies don't want jute because jute particles may contaminate the product when the bags are opened and because it could affect the odour of the spice. Other companies however prefer jute because it allows the spice to 'breath' (and thus prevent fungi growth. Recycled bags are often not allowed.
- There is a trend to use big bags (e.g. 300 kg). Some companies are for example experimenting with big bags for cumin and black pepper.
- For nutmeg sometimes vacuum bags in carton are used.
- For undamaged star anise packaging in carton boxes without staples (to prevent risks of physical contamination) is sometimes prescribed.

Remaining questions:

- To what extent can be expected that Myanmar suppliers can meet the above mentioned packaging requirements? Are major bottlenecks expected?

4.3 Market requirements

The Dutch spices companies mention the following (additional) market requirements.

- **Terms of payment.** This can sometimes be negociated with suppliers. The general rule however applied by most companies is that payment will be done after receipt and approval of the container. Some mention that in case of future long-term partnerships possibly better conditions can be applied. This means that in the short term Myanmar suppliers must be able and willing to pre-finance their deliveries. An exception is one company that works directly with farmers and provides all kinds of assistance. This includes all kinds of finance arrangements, possibly including pre-finance. Another company generally pays 60% in advance and 40% after receipt and approval (in some cases this company is willing to pay 100% in advance). The company does this because it

wants to invest in very close relationships with suppliers. In case of scarcity of spices suppliers are then often willing to give preference to this company.

- **Long-term relationships.** The general aim of all Dutch spices companies is to establish long term partnerships with suppliers leading to mutual benefits. Some companies invest in their suppliers by audits and execution of improvement programmes. Such long-term cooperation with reliable suppliers is important to build trust for example in the area of product quality and terms of payment. For this reason Dutch companies generally have decreased their number of suppliers in the past few years. One company has a policy to increase procurement from local processors and to decrease doing business with traders
- **Minimum quantities.** This slightly differ per Dutch spices company. A 20ft or 40 ft container is often prefered because in case of smaller quantities handling and testing costs would become too high. One company prefers 40 ft containers for environmental reasons (to minimize the carbon footprint of transportation). 20ft containers are acceptable as an exception only. Smaller companies also accept pallets, possibly combined with other products in a container. Also organic spices or other 'specialty' products are sometimes accepted in smaller quantities (e.g. half 20 ft container, 5 tons).
- **Insurance.** Most Dutch spices companies arrange this themselves. Some companies however state that insurance up to delivery in Rotterdam must be arranged by suppliers (CFR = Cost and Freight). After Rotterdam insurance is arranged by these Dutch companies.
- **Defaults.** Defaults to deliver are generally not allowed. In case of new and unexperienced suppliers some companies however tend to be a bit more accommodating.
- **English.** This is required to do business.

Remaining questions:

- Are suppliers able and willing to pre-finance deliveries?
- Are suppliers willing to enter into -and invest in- a long-term relationship with Dutch spices companies? If so, why and how?
- Are suppliers able and willing to deliver at least full 20 ft containers?
- To what extent are suppliers capable to communicate in business English?

4.4 Sustainability

As mentioned in chapter 3 of this annex sustainable production is increasingly important for Dutch spices companies. In 2018 the Royal Dutch Spices Association, together with the Dutch Supermarket Association and the Dutch Food Producers Association, entered into an Agreement on International Corporate Social Responsibility with the Dutch government and a number of civil society organisations and Dutch trade unions. The objective of this agreement is to work towards more sustainable food supply chains, using the OECD guidelines for multinational enterprises as a reference.

Some Dutch spices companies have already developed their own standards and are sometimes member of the Sustainable Spices Initiative. Some companies have their own sustainability programmes to support sustainable production 'on the ground'. One company is considering to develop such program. Other companies are currently developing CSR policies. Another company just imposes sustainability standards as required by its clients.

The specific sustainability requirements therefore differ per company but especially prevention of child

labour (according to ILO definition) and reduction of pesticides use ([6]) are often mentioned. Other companies mention that all themes addressed in for example Rainforest Alliance certification schemes and Unilever's SAC standards are equally important. Other issues specifically mentioned are adequate livelihood of farmers, gender equality, traceability, replanting schemes for cinnamon (also to prevent erosion and to safguard future supply), good agricultural practices, minimum wages workers in processing facilities, fair prices for farmers (although market prices are generally followed). Increase of yield/ha is only a means to realise other sustainability objectives, not an objective in itself.

The role of 'mainstream' sustainability certification is not unambiguous. Some companies mention that the role of especially Rainforest Alliance (RFA) is declining, especially because clients are not willing to pay more for such certification. Other companies however have the ambition to increase their RFA certified supplies. This is also the result of agreements in the context of the Sustainable Spices Initiative (SSI). SSI has made an overview of credible sustainability certifications: the 'Sustainable Spices Basket of Standards' (http://www.standardsmap.org/ssi/SSI/Manual/IDH%20Guide%20to%20SSI%20Equivalency%20Tool%20incl%20annexes.pdf). One company has developed and is imposing its own sustainability standards. Some companies mention it is just a positive signal if suppliers participate in sustainability projects, e.g. initiated by SSI or other parties. Certification is then not necessary.

Organic certification is however still a powerful marketing tool for niche markets. The importance is increasing. Several Dutch spices companies are offering organically certified spices and they specifically mention organic spices from Myanmar could be a specific opportunity (providing that certification is done by a reputable certification body). Some companies are also offering Fairtrade certified spices. In addition, another company offers halal/kosher certified products.

Remaining questions:

- See paragraph 3.5 of this annex.

5. Potential interest in follow-up

- All organisations interviewed for this Quick Scan want to be informed about the outcome of this project. They all want to receive the final report.

- Depending on the specific spice, the challenge to be addressed and the scope of interventions some companies mention they may want to play a role in the implementation of future interventions. Support may range from sharing experience and testing samples to contribution to implementation of improvement programmes with Myanmar suppliers/farmers. One companiy mentions it could be interesting to set up a project with a farmers cooperative that will then exclusively produce for them ('contract farming'). In that case 100% traceability can be achieved.

- One company mentions that given the fast growth of the company it currently doesnot have sufficient capacity to become involved in such improvement programmes. This company just wants Myanmar spices that are already 'proven'. Another companycannot tell yet if the company

[6] Also important to comply with MRL standards.

is interested to invest in Myanmar. They already have large investments in India and Vietnam (spices cultivation and processing facilities).

- The Sustainable Spices Initiative (SSI) currently doesnot have any activities in Myanmar, but it may be possible to develop an SSI programme for this country if SSI members request to do so (e.g. programme to produce sustainably certified ginger). In principle Myanmar suppliers can become SSI member, but it is also possible to first formate a core SSI group in Myanmar itself. Funding for any SSI involvement must be found externally.

- The Centre for the Promotion of Imports from developing countries (CBI) has several programmes to support 'herbs and spices' suppliers in developing countries to export to the EU. Such programme doesnot yet exist for Myanmar. If the Dutch embassy in Myanmar wants CBI to develop such programme, for example as part of the implementation of the future roadmap, it can request to do so. In general however it seems difficult to develop new programmes for Myanmar (considering the political situation).

- Some companies stress that the current ethnic conflict in Myanmar may be a reason to not source from -or invest in- this country. The political situation must be stable otherwise it may be risky to invest in new suppliers.

Annex 3 Practical toolkit

Practical toolkit for spice producers in Myanmar

1. Introduction

This practical spices toolkit comes together with the report 'Roadmap towards sustainable spices production in Myanmar' produced by Fresh Studio Myanmar and CREM. The report provides general recommendations to develop sustainable spices in Myanmar and specific recommendations for chili, ginger and cinnamon on: further analysis; improvement sustainable production (incl. post-harvest) and institutional strengthening.

During the field work and focus group discussions, questions were raised how to comply with Dutch/European quality standards and where to find answers. The willingness is there to grow for different markets, but then the 'how' question needs to be answered. Therefore a first step is given, in the form of a little practical toolkit. The majority of information can be found on: https://www.cbi.eu/market-information/spices-herbs where general and specific information is given, but for your convenience provided in this toolkit.

In this toolkit you can find the following information:

- What competition do you face?
- Which trends offer competition?
- What requirements should your product comply with?
- Through what channels can you get your product into the European market?
- Specific factsheet on exporting chillies to Europe;
- Specific factsheet on exporting ginger to Europe;
- Specific factsheet on exporting cinnamon to Europe;
- Specific Myanmar GAP guideline for chillies;
- Quality minima requirements spices ESA;
- OECD-FAO Guidance for Responsible Agricultural Supply Chains;
- Sustainability risk assessment matrix for spices.

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What competition do you face on the European spices and herbs market?

The power of buyers in Europe has traditionally been strong, but with increasing global scarcity and high prices, the power balance is slowly shifting to suppliers in countries of origin. High prices and growing scarcity will attract new suppliers over time. The expectation is that the European market for most spices and herbs will continue to grow. As a result, the European market will continue to provide opportunities for suppliers that are able to meet the high requirements for quality and food safety.

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1 . Market Entry

New entrants: hard to enter but easier to sell

The strict buyer requirements that suppliers must comply with (such as quality, food safety and traceability) form a serious barrier to enter the market. Market entry requirements are increasingly becoming stricter because of technological advances and food safety scandals. In addition, non-legal requirements imposed by European buyers are also getting stricter and require attention from suppliers.

Tips:

- Stay abreast of market access requirements. For more information, refer to our study What requirements should my spices and herbs comply with? For specific information about standards on the European market, see ITC's Standard Map.
- ITC's Sustainable Spice Initiative Equivalency Tool compares various sustainability standards in Europe.

A growing sense of scarcity, increasing global demand and rising prices are changing the marketplace. Some buyers will focus more on whether their existing suppliers invest in increasing yields and improving quality. However, buyers will also be forced to look for other sources in order

to secure and complement supply. They will have to be more flexible in price and payment terms, and they will encourage new entrants to access the market. This situation provides opportunities for new suppliers from existing origins and even from new origins.

Tips:

- Develop a transparent export strategy. Be clear about your preferences such as longer-lasting relationships or selling for the highest price on spot markets. A long-term strategy offers the important advantage of stability, allowing you to build your business. This result can be reached by focusing on your most important buyers. One way of identifying them is by determining the 20% that is responsible for 80% of your turnover (the 80/20 rule).
- If you are unable to supply at least one container within your buyer's short time frame, it is unlikely to be cost-effective for you to supply to the European market. If you come up short, you can try to work together with other suppliers interested in supplying to the European market.

New suppliers may originate from existing supplying countries or from other regions. There is still reluctance to source from many sub-Saharan African countries (except for South Africa) due to concerns about the political and economic environment as well as the level of professionalism. However, the extensive availability of land and the low wages will make Africa a more important supplier in coming years.

New suppliers should pay attention to the preferences expressed by European buyers. Requirements for quality, food safety and traceability are generally non-negotiable and are largely based on law. Sustainability is also increasingly demanded. For example, buyers might ask you to join their own sustainability scheme or to obtain a certain certification. In some cases, the preference for a particular origin is also added, which is related to taste profiles.

Spices and herbs from a specific origin often have a particular taste or colour. This aspect is relevant for pepper, vanilla and ginger, for example. It can be hard for buyers to switch to other origins, as this process could change the taste or colour of their product or that of their clients. In addition, business relations between suppliers and European buyers may go back several generations, creating a reluctance to switch. More often, an additional supplier will be included in the existing supplier range. As a new supplier, this option is often your best chance.

Tips:

- Gain an idea of potential buyers' preferences for origins and the reasons behind them. Giving your buyer safeguards such as certification and appropriate management systems to ensure traceability and food safety will dispel some of the reservations about switching. Refer to our studies for more information on the origins of imported spices and herbs.
- If you are new to the European market, it is recommended that you visit trade fairs and conferences to make business contacts. Food Ingredients Europe, SIAL and BioFach (organic) are important trade fairs. For other trade fairs, visit the website of EventsEye.

2 . Product competition

Substitutes: preference for a natural product reduces risk

There are several main sources of substitution for spices and herbs: synthetic, fresh and conserved products, as well as extracts of spices and herbs. The threat of other spices and herbs (such as ginger for pepper) is small.

Synthetic spices and herbs

Some spices and herbs, such as vanilla and cinnamon, are susceptible to substitution with synthetic flavour and colours. Substitution is only a real threat in the food processing industry, particularly at the lower end of the market. Important advantages are that synthetic substitutes are cheaper than spices and herbs, that there are no supply problems, and that they are uniform and have stable product properties compared to natural products. The threat of permanent or temporary substitution is especially relevant for expensive spices and herbs that are in short supply, such as vanilla. Most food processing companies will, however, stick to the natural product. A large and growing share of the market prefers the real thing, as it is considered healthier and tastes better. Many brands are committed to using non-artificial additives in their products. Changing to synthetic spice substitutes would mean changing their recipes, packaging and marketing.

Tips:

- The higher end of the market is interesting to target for small and medium-sized enterprises that trade relatively small volumes. This segment has a strong preference for natural products and generally will only consider substitution when the supply of natural spices and herbs become constrained and prices increase.
- Manage expectations; be honest about your supply capability and inform your buyers immediately in the event of possible problems related to logistics and supply.

Fresh products

The threat of substitution for fresh products is mainly relevant for dried herbs (such as basil, thyme and parsley), but it can also be relevant for certain spices such as chillies and ginger. A large market segment is moving towards fresh products. In southern European countries, fresh products (especially herbs) are often preferred to dried ones and opportunities for dried products can be fewer.

Conserved products

There are various ways to conserve fresh products. The growing market for individually quick frozen (IQF) herbs and spices is an important development (for example, Herbafrost). IQF products combine freshness with convenience and improved shelf life. This is an important source of substitution for products that can be used fresh, but less so for tropical spices and herbs exported to Europe. The same applies to products conserved in other ways (such as different ways of freezing or spices and herbs in brine).

Extracts

Spice and herb extracts can be an important source of substitution for suppliers to the food processing industry. They can be used to add flavour or colour to products. Producers of extracts can therefore be competitors as well as buyers of spices and herbs.

Tip:

- Determine whether it is interesting to supply fresh, frozen or conserved spices and herbs. Be aware that this may require significant investment and a different approach. For example, fresh products will have different market access requirements (such as GlobalG.A.P.), logistics (such as controlled temperature transport and storage) and trade channels.

Spices and herbs that are important in European diets (such as pepper or sweet peppers) are less prone to substitution. New and exotic spices and herbs are increasingly used in Europe. They are, however, more sensitive to changing consumer trends than those used in traditional dishes. As a result, the risk of substitution is higher.

Tip:

- Food trends in Europe are developing rapidly, so it is important to keep up to date. For more information, refer to our study of Trends on the market for spices and herbs.

3 . Company competition

Position on the market

Many changes in the competitive environment

The degree of rivalry on the market is generally high for uniform, whole products with low added value, such as the market for spices and herbs. This segment is often dominated by major suppliers able to deliver large quantities and to compete on price. It will be harder for small and medium-sized enterprises from developing countries to compete in these segments. For speciality spices and herbs traded in smaller volumes (such as specific varieties, high quality or sustainable), the degree of rivalry here is lower.

In the higher end of the market, there is more room for product differentiation. The focus is less on price and more on quality, taste, colour and/or sustainability. This segment generally provides good opportunities for small and medium-sized enterprises that can meet the strict demands on this market. For processed products (such as crushed, ground, blended and packaged spices and herbs), there is a lot of competition from European processors and major processors from large supplying countries (for example, Vietnam).

Tips:

- To a certain extent, your competitive position can be predicted. For any commodity, the general market situation is a given, which will inform your negotiating position. Look for crop reports online or visit events where these reports are shared by sector exports. Refer to the crop reports by Jayanti and Nedspice to learn about the expectations for harvests worldwide and stock levels in consuming and producing countries. It can also be useful to develop harvesting calendars for your competitors worldwide. Use the following sources for inspiration and complement them with information from other sources: Nedspice, Spice Board India and Martin Spices.
- Exporters interested in supplying to the EU market should consider implementing

sustainable practices in their business. This is becoming a selection criterion for many buyers. Having your company or product verified or certified for compliance with sustainable principles can open new markets. This involves investments in time and money, and it should only be considered if it fits with your company's long-term strategy. Refer to our study of Sustainable spices and herbs in Europe for more information on the growing market for sustainable products.

- Try and differentiate your product to add value. You can do so by improving quality (improved cleanliness, other varieties or presentation). Another option is to customise your product (such as specific types of grinding).
- It is highly advisable first to be successful in supplying your domestic market with value-added products before considering the European market.

The degree of rivalry can differ per European region or market. Major European buyers, such as the Netherlands, Germany and the United Kingdom, import a large share of imports directly from countries of origin. Competition in these countries will come mainly from suppliers of other countries of origins. Other European countries will, to a large extent, rely on European traders for supply. This applies mainly to northern and eastern European countries. Competition in these countries will come from European suppliers as well.

Another thing that determines the degree of rivalry is whether you supply in bulk or consumer packs. Some countries such as the United Kingdom import a large share of crushed/ground spices and herbs in consumer packs from developing countries, mainly for ethnic markets. For the mainstream market, importers prefer to do their own processing (for example, Germany) or to rely on other European countries which are considered more reliable. The issue of reliability is becoming more important. Food fraud and adulteration are at the top of the agenda in the European spice sector. A growing share of spices and herbs, especially ground and crushed products that have been adulterated either intentionally (for example, with cheaper varieties, peanut shells or salt powder) or unintentionally (for example, by spillovers from chemicals such as fertilisers or pesticides, or by insects), were detected in the past year. In addition, reliability is an essential part of sustainable international trade.

Tips:

- Perform your own statistical analysis to monitor your country's trade with Europe or a specific Member State. For monitoring data on trade in specific spices and herbs within Europe, refer to our studies.
- Increasing your direct exports to countries that currently rely strongly on European countries might pose additional challenges. You could be asked to provide the same service as European buyers (short supply times, small orders, steam sterilisation, further processing, and so on).
- Adulteration can, in some cases, only be detected by specific testing. Such testing is expensive and not always interesting for buyers, who will only buy processed spices and herbs if they trust you. Building trust will take time, and requires you to act in a professional and transparent manner.

In January 2014, significant changes were made to the European Union's Generalised System of

Preferences (GSP). One relevant aspect for the spices and herbs market is that spices from China and Brazil will no longer benefit from preferential import tariffs. For many whole spices and herbs, the import tariff for all countries remains at 0%. For many products, this measure will not have an impact. For *whole* sweet pepper, vanilla, cloves and bay leaves, import tariffs are now higher for China and Brazil than for developing countries. This also applies to *crushed/ground* pepper, capsicums, vanilla, cloves, saffron, curry and thyme. For these products, the tariff depends on whether or not China and Brazil are suppliers.

It is also important to realise that can sometimes be difficult for European buyers to switch. They generally have specific requirements for taste, traceability, quality and food safety (in relation to pesticide residues, for example) that only few suppliers can meet. The recent changes in import tariffs can give suppliers which compete with China and Brazil an advantage. However, this relatively small price differential alone will often not be enough in order to motivate buyers to make the investments that are needed to support their search for other suppliers.

Tip:

- Refer to the TARIC consultation database to check the import tariffs for your own or competitive countries.

Position in the supply chain

Buyer power: still significant but slowly decreasing

Most spices and herbs are imported to Europe by specialised European importers, who may either be traders or packers and blenders. The size of these buyers varies, with few large multinational companies such as McCormick and Olam, many medium-sized businesses with a national or regional focus (Verstegen, Fuchs, Euroma) and numerous small companies. Such importers sell to the food industry and retailers. These two categories are becoming more powerful and dominant in the chain because of consolidation. The size of their operations allows them to dictate prices as well as requirements for quality and food safety that go beyond legislation. Importers will pass on these requirements and conditions to their suppliers (for example, to you as an exporter). Buyer power is stronger on commodity markets (such as lowly and uniform products) than on specialty markets (for example, sustainable and high-quality products). There is less focus on price on specialty markets, but the type of outlet can differ as well. Products are often sold by smaller and less consolidated buyers.

Tip:

- Keep up to date on prices. Commodity Online, Spices Board India and Public Ledger (paid service) publish up-to-date price information. The International Pepper Community and the Vietnamese Pepper Association provide prices specifically for pepper. An analysis of prices is often provided by market and crop reports, such as those published by Jayanti and Nedspice or public sources such as Business Standard.

In a global perspective, the power of European spice importers is decreasing, even if their requirements are becoming stricter. This development is mainly due to increasing scarcity on the world market, as a result of the increasing demand from emerging economies, which strengthens the position of exporters. For this reason, European importers find themselves squeezed between

stronger exporters on the one hand and the increasing power and requirements of their suppliers on the other. Emerging markets (such as China, India and Brazil) that have less stringent buyer requirements and that are often located closer to producing countries are becoming more attractive for suppliers. European legislation will not become less stringent, so European importers may need to pay higher prices to keep suppliers interested in the European market.

Tips:

- The European market remains interesting due to its size and the prices paid. However, local emerging markets can also provide excellent market opportunities. ITC's Trade Map can provide you with interesting statistics on global trade.
- If you do not meet the strict quality requirements imposed on northern and western European markets, consider supplying to eastern European markets. The same legal requirements apply, but they will often accept lower-quality spices and herbs (lower oil percentage, dull colour or slightly damaged), and they may not always ask for additional guarantees such as food safety management systems.

Direct sourcing by European buyers is increasing in order to gain more control of their supply chain and to secure supply. This also involves new buyers and manufacturing industries that previously bought from importers. European buyers that have the resources are working more closely with suppliers and are even setting up their own facilities in countries of origin. Direct sourcing will become more common as global scarcity continues. For small and medium-sized enterprises in developing countries that are involved in trading and processing, this can either represent an opportunity to work together or a threat of being cut out of the supply chain.

Supplier power: low but improving

Spices and herbs have traditionally been grown mostly by smallholders with limited resources, storage capacity and adequate processing facilities. In addition, as most suppliers provide a uniform product, it is easy switch. For this reason, their power as suppliers against exporters has been small. Supplier power is increasing, however, as a result of scarcity and better access to real-time price information. In addition, suppliers have become more professional through investments in facilities that provide a better holding capacity and a better organisation. This development is noticeable, for example, among Vietnamese pepper farmers and traders who currently control the market. The reasons for their strong position are the size of their operations, holding capacity, strong cooperation with the local sector and competitive prices.

Tip:

- With supplier power increasing, it is important to improve relationships with your farmers, collectors and other suppliers. Meet them in the field, order and pay on time, look out for interesting opportunities for them, and keep them up to date on your strategy and plans so they can anticipate them.

Increasing supplier power will lead to more cooperation between and integration of farmers, traders and processors in countries of origin. Cooperation and integration are important long-term survival strategies for traders and processors in countries of origin who might find their own position threatened by direct sourcing and backward integration from buyers in consuming

countries. Some parties are even engaging in forward integration and taking over European companies to enter the market with their own products. Under the right conditions, these vertical integration strategies could also provide farmers with advantages such as increased security of prices and markets, as well as presenting opportunities for added value. By contrast, there are examples of suppliers in countries of origin that are strong enough to compete with these foreign companies.

Tips:

- As a trader or processor, you can find yourself positioned between your own suppliers who are growing more powerful and buyers who are increasingly looking to secure supply. This changing dynamic can have a significant impact on your position within the supply chain. Assess your position in the supply chain and determine where you really are adding value or can add value in future.
- To improve your relationship with farmers, educate them on efficiency and agronomics. Training, particularly in the proper use of pesticides, fertilisers and sustainable agricultural practices, is important to improve yields and long-term profitability. Refer to the guidelines on Good Agricultural Practices for spices (IOSTA) and Good Manufacturing Practices for spices (IPC) for more information.
- To improve your relationship with your suppliers, it is recommended that you work with reliable collectors that have integrated sustainable practices (e.g. fair prices). If you are looking to gain more control over your supply chain, it is worth considering to set up your own collection stations.

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Which trends offer opportunities on the European spices and herbs market?

The European demand for spices and herbs continues to grow. This is due to trends such as healthy living, interest in new tastes, convenience and sustainability. Thanks to high demand, leading to increasing prices and a sense of scarcity, European buyers are continuously looking for new suppliers. You can also find opportunities in smaller or niche markets focusing on special varieties, improved quality and sustainability. However, you need to comply with strict requirements for quality, food safety and traceability to enter the European market.

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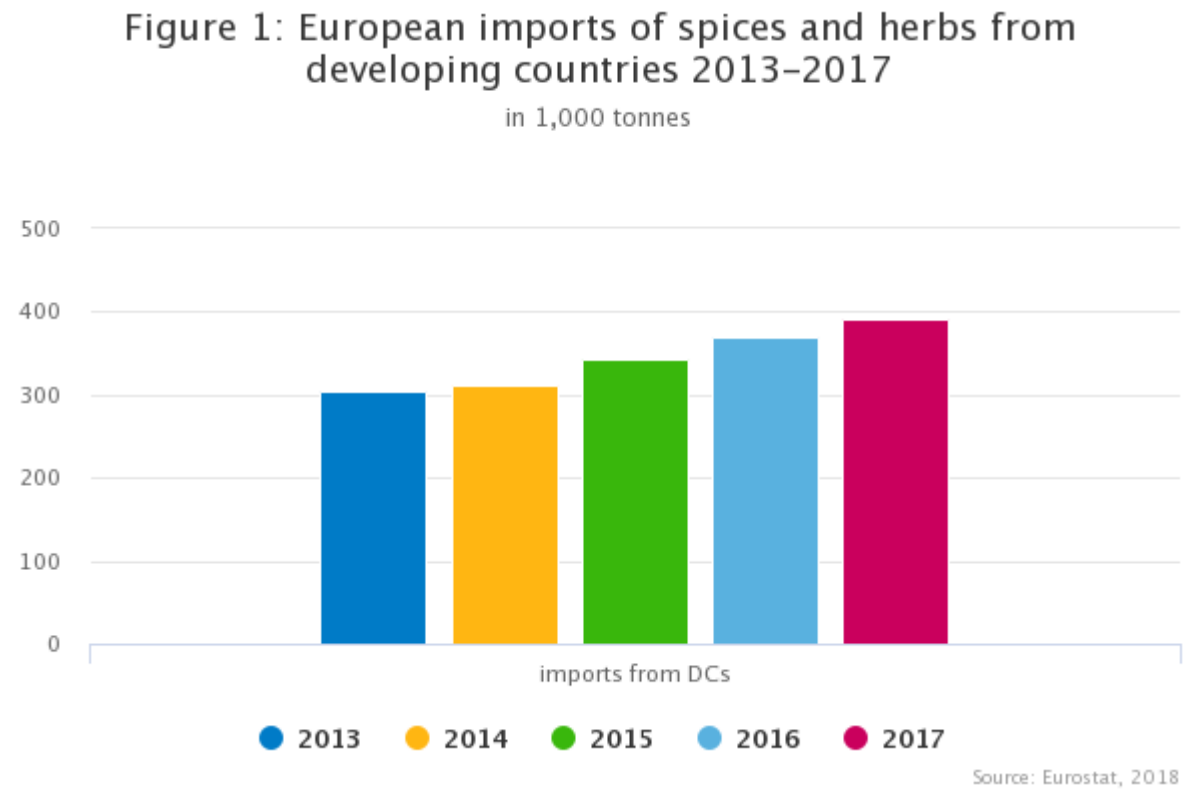
1 . Demand continues to increase

European imports of spices and herbs from developing countries have grown significantly in recent years, by 6.6% annually between 2013 and 2017 (see Figure 1). The global spices market is expected to grow by 5.1% between 2017 and 2021.



The European market for spices will continue to grow. However, due to the maturity of the industrial sector, the European growth is slower than in other regions according to Market Watch.

Most direct European imports come from developing countries (97% of the total imported volume). The positive market conditions therefore make it possible for you to benefit directly. Volume-driven, uniform product markets could provide opportunities, but competition is higher and margins are lower on such markets.

As a small to medium-sized enterprise, you will find good opportunities in supplying what are referred to as speciality spices and herbs that are traded in smaller volumes. It thus could be interesting to:

- supply special varieties (e.g. Mexican chillies, Tellicherry peppercorns)
- focus on product characteristics (e.g. better colour and taste)
- customise according to buyer's preferences (e.g. very coarse grinding)
- produce sustainably (e.g. organic, fair trade).

Tips:

- Directly target countries that now rely mostly on other European countries for their supply (countries other than the Netherlands, Germany, the United Kingdom, France and Belgium). These countries might, however, require further processing, packaging, smaller volumes and other services.
- Focus on local or regional markets as well, such as the Asia-Pacific region. This area's market is projected to grow at an annual rate of 7% from 2015 to 2020, the fastest-growing market for spices in the world.

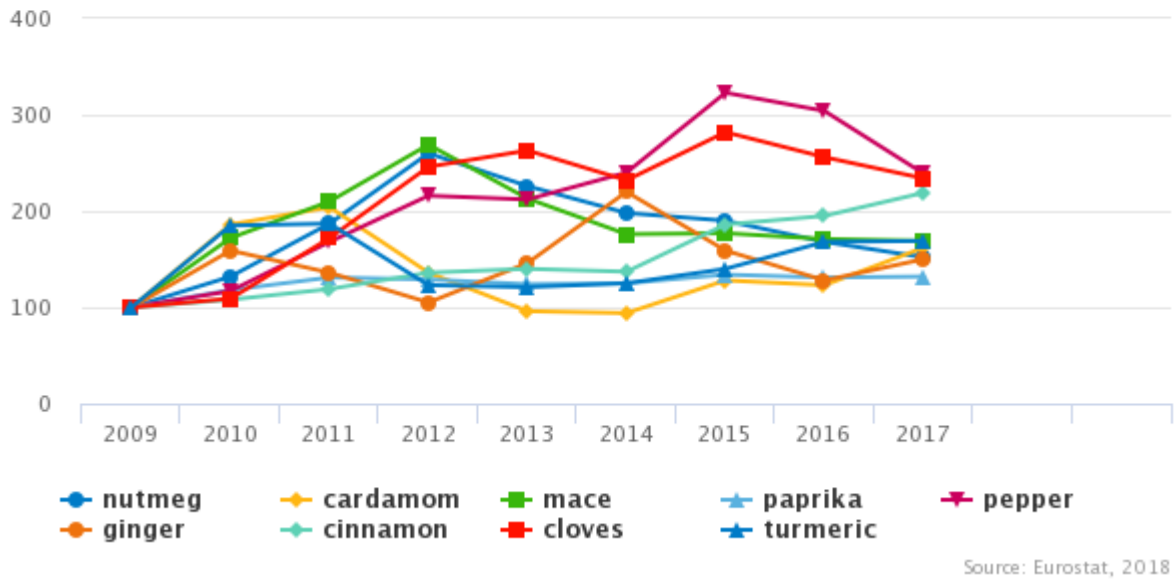
2 . Tight supply leads to high prices for most spices

The overall price trend in the global market for spices and herbs has been upward. The increase is mainly due to a growing demand, while production fails to keep pace. Figure 2 illustrates the general increase between 2009 and 2017.

An extreme example of this trend is vanilla. The European import prices of vanilla increased by nearly 40% annually between 2009 and 2017. This was due to production problems in the main producing country, Madagascar. The index of vanilla rocketed from 100 in 2009 to more than 1,400 in 2017. As a result, the data for vanilla were not included in Figure 2.

Figure 2: Price trends for the most important spices and herbs 2009–2017

(2009=100)



Source: Eurostat, 2018

Looking ahead, the spices and herbs sector is challenged to meet demand. As minor crops, spices and herbs often are not very high on the agenda of local and international support institutions. Since the growers are often smallholders, they have limited capacity to expand production. Moreover, many spices require specific growing conditions and specialised knowledge to grow them. Farmers who retire are not easily replaced. New plantings of spices and herbs might not be able to satisfy the global demand and replenish low stock levels.

Industry experts expect prices to remain high or continue to rise. Nevertheless, European demand is set for further growth. Spices and herbs are minor but important ingredients that contribute little to the total cost of the food in which they are used. The demand is relatively unaffected by price changes.

For exporters and growers this means that spices and herbs offer an outstanding opportunity to invest. Investments are needed in primary production, processing capacity and quality assurance. With a stable economic outlook, the European market will provide excellent opportunities for you to increase profitability and invest in your own company.

Moreover, managing risk is crucial in the spices and herbs business. Many farmers and exporters therefore focus on more than a single commodity. In case the price development of one spice or herb is doing badly, your other spices and herbs can make up for the losses.

Tips:

- Keep yourself up to date on the prices and the global supply situation of your spice(s). This will help you determine your competitive position and find the right moment to sell.
- Make sure that you have a good overview of short-term and long-term price developments as well.
- See ITC's Market Insider, Nedspice, Zobian and Public Ledger (paid service) for crop and price reports.
- Use sector experts in your network to complement price information.
- See our fact sheets for more product-specific prices and sources, as well as information on price developments. For example, you can consult our fact sheets on cinnamon, cardamom, pepper, vanilla, dried ginger, chillies or cloves.
- See our study of Exporting vanilla to Europe for more information about the import price fluctuations on the vanilla market.

3 . Growing popularity of ethnic food

Ethnic flavours and foods continue to appear in top food trends. In Europe, this is mainly due to the growing multicultural population as well as the fact that Europeans are more interested in exotic cuisines.

Spices are gaining in popularity: the consumption of turmeric and coriander seeds is a particular result of this trend. Turmeric is increasingly consumed because of the taste and because of its health benefits. Coriander seeds are increasingly applied in new forms of uses, for example in smoothies. What is interesting about these spices, is that they are popular in Asian cooking as well as in the Middle East.

At this moment, the following tastes are especially popular:

- Chinese (pepper, ginger, anise)
- Indian food (curry, chillies, cardamom, coriander)
- Flavours of Thai food (cassia, cinnamon, cloves, nutmeg)
- Vietnamese cuisine (ginger, chillies, fennel, pepper)
- Mexican food (chillies, cumin, oregano, coriander).

The ongoing search for new tastes by cooks, food manufacturers and consumers will ensure that the market for spices and herbs will continue to grow in the future. This situation is the case on western European markets as well as in regions such as southern and eastern Europe, where the demand for ethnic food is currently still small.

Especially the smaller food processors, retailers and brands specialised in ethnic food that have strong forces on the growing market for ethnic food. However, larger retailers and multinationals are also increasingly active on this market.

The size and composition of ethnic communities differ strongly by country, so opportunities will also be different. For instance, within western Europe, there are large differences between:

- the United Kingdom (Indian, Pakistani and Bangladeshi)
- the Netherlands (Indonesian, Turkish and Moroccan)
- Germany (Turkish, Iranian, Syrian)
- France (Moroccan, Algerian, other communities in North Africa, French-speaking countries in West Africa).

It is also important to realise that ethnic food tastes vary by region, country and even buyer. Indian food in the United Kingdom tastes different from that in Germany and uses different ingredients and mixes.

Tips:

- Note that the demand for specific spices and herbs differs by country. When selling spice mixes, you might have to adjust your product to the region or even the buyer to whom you are selling. See our study on Exporting value-added spices and herbs to Europe and other fact sheets such as pepper, dried ginger, cloves or nutmeg for more information.
- If you want to learn more about the European market for ethnic food, please see the following paid studies by Market Research and Mintel.
- See the McCormick Flavour Forecast 2018 for more information on the latest global trends in taste.
- There are specific trade fairs for ethnic food in Europe. Ethnic Food Europe is a good example.

4 . Clean labels and proteins fitting well in the health trend

Healthy living is one of the most important trends in Europe. Unhealthy food ingredients such as salt, sugar and synthetic additives, are increasingly being replaced by natural ingredients, such as spices and herbs. Examples are what Unilever and Schwartz are doing in ‘improving nutrition’ and ‘reduced salt’.

Because of the healthy living trend, consumers want to know exactly what they eat. They expect clear labels on the products that they buy, indicating the exact ingredients. Hence, allergen-free and gluten-free labelling are gaining popularity on the spices and herbs market.

Norms on allergens have not yet been standardised. Laboratories use different limits and testing methods. Results can therefore differ per laboratory. If you are considering organising allergen testing yourself, remember that your buyers often will expect you to work with the same laboratory as they do. This will enable you and your buyer to be tested according to the same methods, and hence obtaining matching test results.

There is also a growing demand for gluten-free spices and herbs. It is difficult for spices and herbs to be labelled as such, because there is a big risk of cross-contamination and residues. When grains are grown on a nearby field, or when the same processing plant is used for different products, the chance of contamination is almost inevitable.

Another important health trend in Europe is the intake of various protein products as an alternative to meat consumption. This trend is caused by a decreasing consumption of meat in Europe (see this article on meat consumption in Europe for more information). Spices and herbs play an important role in this because they can help imitate the taste of meat.

Tips:

- Target buyers in the growing healthy living, vegetarian and meat substitute segments, or develop products and ingredients to be sold on these markets. This strategy requires substantial product and market development, so work closely with buyers and sellers. Determine whether you can also service your local market with these products.
- Ask buyers for their recipes or look at recipes that are already on the market. Be aware

that the price of salt is significantly lower than most ingredients. As a result, the cost price of your product might increase when substituting salt with spices and herbs.

- Talk to buyers and visit trade fairs to obtain more information about the vegetarian food market. Veggie World is a European trade fair specifically aimed at this market.
- Refer to the database of the Dutch blender Verstegen for ideas on vegetarian and vegetable spice mixes.
- Allergen-free spices and herbs can be an interesting niche market. Several companies are already active in this market segment, such as Dutch Spices and EHL Ingredients.
- Check the website of the Food Standards Agency in the United Kingdom to learn more about up-to-date labelling standards; for example, regarding gluten-free labelling.

5 . Organic market for spices and herbs

The organic market for spices and herbs is growing and is expected to continue to grow in the future. This growth is mainly driven by consumer preference for a healthy lifestyle and its associated correlation with organic food. A second reason is the growing demand of food manufacturing companies, who use the organic label to distinguish their products in a competitive market.

Organically produced spices and herbs do not automatically mean that the products meet all requirements. Something can be organically grown, but still contain residues, and will not be accepted on the organic market. Make sure to meet all requirements set for spices and herbs as well.

The requirement for labelling foodstuffs as organic is that 95% of its ingredients are organic. In reality, the other 5% should be organic as well, unless you can demonstrate that an organic alternative for specific ingredients is difficult to obtain. An example for this is vanilla.

Tips:

- Want to learn more about the market for organic spices? Check the website of Cision PR Newswire for more information.
- For more information, see our study on Exporting value-added spices and herbs.

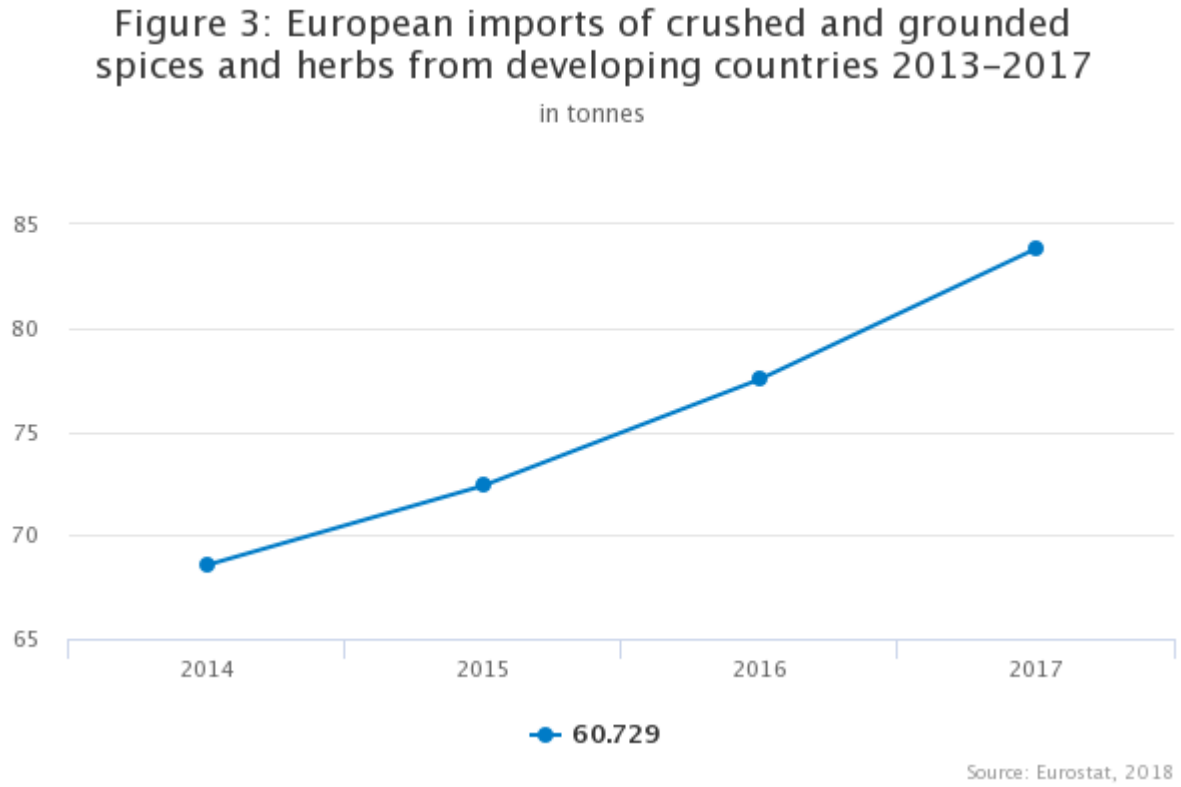
6 . European consumers are looking for convenience

The demand for easy-to-prepare and ready-cooked meals is increasing in Europe. European consumers are spending less and less time on preparing meals due to their busy schedules, while the number of single households is increasing.

Easy-to-prepare and ready-cooked meals stimulate demand for spices and herbs in two ways. Firstly, they rely on spices and herbs to retain and enhance food flavour (e.g. ready-to-use spices and herbs, seasonings and condiments). In addition, these convenience products increase the demand for processed spices and herbs (see Figure 3), such as crushed and ground spices and herbs, and spice and herb mixtures.

For you as an exporter in an origin country, the growing market for processed spices and herbs

provides opportunities. Grinding and crushing is already taking place on a large scale in developing countries, thanks to improved processing facilities and detection techniques.



The market for spice and herb mixtures is also growing. In 2017, about 11% of European imports of spice and herb mixtures was sourced directly from developing countries. Since 2013, this supply from developing countries grew annually by 6.3%.

However, the market for mixtures and crushed and ground spices and herbs remains small, and European processors are strong competitors. Therefore, your best chance is selling to buyers who are specifically interested in specialised ethnic food which is processed and/or packed in the country of origin.

Tips:

- Only consider crushing, grinding, blending and packing after you have taken value-adding steps such as cleaning and improving quality. The latter types of added value are easier to achieve, require less financial investment and earn you an interesting premium (usually around 5%).
- For more information, see our study on Exporting value-added spices and herbs.

7 . Importance of sustainability continues to grow

European buyers are paying more and more attention to their responsibility for the social and environmental impact of their activities. Sustainability used to be an issue for niche markets (of organic and fair-trade certified products), but it is now high on the agenda for the entire sector.

The most important European players are collectively working on making the spices and herbs supply chain more sustainable. One example is the Sustainable Spice Initiative, with members such as Unilever, Olam and Verstegen.

The sustainable segment provides excellent opportunities for small and medium-sized exporters to distinguish themselves. Whether you are successful depends on your approach, ambition and level of professionalism. It takes significant effort over a long period of time to be successful on this market. Nevertheless, small steps can already be taken towards a more sustainable approach. Refer to the tips below for more information.

It is important to realise that sustainability is still developing within the spices and herbs sector. Issues that would have given you a competitive advantage a few years ago are now considered common. Opportunities shift and it is important to move along with developments.

Tips:

- If you want to become more sustainable, start by addressing the most important issues mentioned above. From there on, look at more strategic choices. Determine with which core values you want to work (e.g. social, environmental or both).
- Monitoring your performance on sustainability through audits, verification or self-verification is a way to be rewarded for your efforts, either by opening up new markets and/or by receiving a price premium.
- Sustainability can provide opportunities for you locally as well as regionally, since sustainability is becoming more important all around the world. The quicker you move onto the market for sustainable products, the larger your competitive advantage will be.
- For more information on certification (like Fairtrade, organic and Rainforest Alliance), read our study about Exporting sustainable spices and herbs to Europe.
- See our study of Buyer requirements in Europe for spices and herbs for more information on certification and other related topics.

8 . European buyers move closer to the origin countries

European buyers are moving closer to the source of supplies in order to better control the supply chain and make it more traceable and make sure that the strict European requirements are met. This also enables them to avoid middlemen that add no value.

One of the consequences of buyers moving closer to origin countries is that European buyers are more willing to invest in long-term and close relationships with reliable suppliers. This also means that buyers are becoming more willing to invest in value addition in the countries of origin. This can provide interesting and long-lasting opportunities for you as an exporter.

Tips:

- Invest in quality and food safety. As requirements on the European market and your local market are becoming stricter, strive towards continuous improvements.
- Work together closely with both your buyers and suppliers. Look for European companies that can help to invest in the training and certification of farmers.
- See our study of Buyer requirements in Europe for spices and herbs for more information.

9 . Value addition in the countries of origin

European buyers are becoming more interested in local value addition through further processing and testing of the products.

In terms of costs, it can be more efficient to process spices and herbs in processing plants in origin countries. Especially steam sterilisation of spices and herbs can bring opportunities when done in origin countries. If you are able to offer this treatment at the source, you can earn a small premium.

For European buyers it is also very convenient when suppliers already have a connection with a European laboratory for testing of the spices and herbs. Every container or batch needs to have a certificate of analysis. Many European buyers will be willing to carry out the first tests and educate you in carrying out their own tests, but it is expected that you will eventually take care of this.

Tips:

- It is important for you to maintain a good relationship with your buyers based on trust and performance. If you can prove that you can perform value-adding activities, you can also suggest taking an extra step in processing.
- Ensure that you continue to add value in your supply chain by working together with other exporters and farmers in your region. It is very interesting for buyers if you can organise farmers and ensure their compliance with buyer requirements. It might also be hard for you to supply a full container (minimum order size), but this situation could be possible when working together. Further areas of collaboration include collection, quality testing, storage and transport.
- Keep in mind that mycotoxins and other contaminants are insensitive to sterilisation. Make sure that you check for these contaminants in all steps of the chain.
- Investments in steam sterilisation are expensive; small operators with limited access to capital will probably have to find an alternative solution. Look for local sterilisation companies that are able to provide this service for you.

A downside of steam sterilisation is that it has a negative effect on the volatile oil content of spices and herbs, and hence the flavour of the ingredient. European buyers would switch to other methods if they were equally safe, acceptable to consumers and not too expensive. At the moment, there are no alternatives to steam sterilisation that meet these requirements. However, research is being done, including the project commissioned by the European Union to GreenFooDec. Keep yourself up to date on these developments.

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What requirements should spices or herbs comply with to be allowed on the European market?

The primary focus in legal requirements for spices and herbs on the European market is on food safety and quality, and especially on avoiding contamination. For market requirements, corporate social responsibility (CSR) and sustainability have become important as well, following the wider European trend towards ethical and responsible consumption.

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1 . With which legal requirements must your product comply?

Food safety – hygiene, traceability and control

When exporting spices and herbs to the Europe, you need to comply with various legal requirements. The General Food Law is the legislative framework regulation for food safety in the European Union. The requirements mainly deal with food safety, as compliance to this legislation ensures that the spice or herb is safe to eat.

To guarantee food safety and to allow appropriate action in cases of unsafe food, your spices and herbs must increasingly be traceable throughout the entire supply chain. This means being increasingly aware of where your products come from and keeping records on this, and being able to provide any necessary information to potential buyers on the origin of your products.

An important tool to control food safety hazards throughout the whole supply chain is the implementation of food safety management based on Hazard Analysis Critical Control Points (HACCP) principles. HACCP planning consists of consecutive steps to:

- identify food safety hazards
- determine how you can control them (the CCPs, i.e. critical control points)
- implement corrective measures when you cannot guarantee the safety of the foods produced.

Also important is subjecting food products to official controls. If European companies or authorities find out that the safety of your product cannot be guaranteed, they will take the product off the market. Your product will then be registered in the European Union's Rapid Alert System for Food and Feed. In most cases, European importers will not pay for the product or demand their money back. Additionally, a food safety issue will damage your reputation on the market.

Due to repeated non-compliance, spices and herbs from certain countries (especially Indonesia and India) have been subject to additional and stricter customs controls in the European Union over the

past years. Measures imposed by the European Union include requiring a health certificate and an analytical test report.

At the moment, spices and herbs are not subject to additional controls. However, due to continuing problems with excessive levels of aflatoxins and pesticides, as well as salmonella contamination, it is likely that controls will become stricter in the future.

Tips:

- Have a look at the Quality Minima Document of the European Spice Association (ESA). This is the leading document for the most important European buyers, providing an overview of legal requirements as well as non-legal requirements (e.g. quality, food safety and labelling).
- European buyers will often ask you to implement a food-safety management system based on hazard analysis and critical control points (HACCP) principles. You can read more about HACCP and health control on the European Commission Trade Helpdesk website. Select your specific product code under product code 09.
- Check regularly whether there are any increased levels of controls for your product or country. The list of spices and herbs and their supplying countries is updated regularly. Check the website of EUR-Lex for the most recent list (see latest document under Amended by).
- Search in the European Union Rapid Alert System for Food and Feed (RASFF) database to see examples of spices and herbs withdrawn from the market and the reasons behind these withdrawals.

Avoid contamination

Contaminants are substances that may be present in spices and herbs as a result of the various production stages: growing, processing, packaging, transport and storage. Common forms of contamination are pesticides, mycotoxins, salmonella, polycyclic aromatic hydrocarbons and food additives.

- Pesticides: The European Union has set maximum residue levels (MRLs) for pesticides in and on food products. A problem for European buyers is that a large share of spice and herb crops worldwide do not comply with European Union limits. As a result, this issue is very important for them and a controlled use of pesticides by farmers is crucial. This also means that farmers at all times should stay in close contact with their European buyer on which pesticides and what amounts to use to comply with European limits.

Please note that buyers in several European countries use MRLs which are even stricter than the MRLs laid down in European legislation. Many supermarket chains have their own requirements for pesticides as well, stricter than legislation. If your buyers do business with these supermarkets, they will apply these requirements to your products as well.

- Mycotoxins: For piper nigrum, capsicums, nutmeg, mace, turmeric, ginger and mixtures containing one or more of the spices mentioned, the maximum level of aflatoxin is between 5.0 µg/kg for aflatoxin B1 and 10 µg/kg for the total aflatoxin content (aflatoxins B1, B2, G1 and G2). For the same products, the maximum level of ochratoxin A (OTA) is set at 15 µg/kg.

For capsicum, a limit of 20 µg/kg was determined in 2015. Unfavourable weather conditions during growth and harvest make it hard to control the level of ochratoxin A.

- Salmonella: There are no specific requirements laid down in European Union legislation for salmonella contamination of spices and herbs as there are for other products. However, according to Article 11 of the General Food Law, food products introduced to the European Union market must be safe. To this end, food business operators are also testing spices and herbs for salmonella.

Food safety authorities can withdraw spices and herbs from the market or prevent them from entering the European Union when salmonella is found.

- PAHs: Polycyclic aromatic hydrocarbons (PAHs) are chemicals that are formed by the incomplete burning of such things as coal, oil and gas, garbage and other fossil fuels. Artificial drying with fire can, for example, contaminate spices and herbs with PAHs when smoke is mixed with the product.

Traditional smoking and processing methods applied to smoked paprika and cardamom result in high levels of PAHs. However, these products are exempt from the maximum levels. Consumption of these spices is low, so this kind of contamination will not affect the health of consumers.

- Food additives: Some herbs and spices may contain colourings, flavourings or sweeteners. There is specific legislation for additives and flavourings that list which E numbers and substances are allowed. Many of the spices and herbs rejected by customs authorities or buyers have undeclared, unauthorised or excessive limits of extraneous materials.

The European Spice Association's (ESA) Quality Minima Document sets a maximum level of extraneous matter at 1% for spices and 2% for herbs. Spices and herbs (especially those ground and crushed) can be intentionally adulterated with cheaper varieties, salt, sand, synthetic varieties and products with a similar appearance, hence the limit on extraneous matter. Unintentional adulteration (e.g. spillovers from fertilisers and insects) also happens.

Food adulteration is an important issue for European buyers and the European Union and national governments are becoming stricter in enforcing food fraud monitoring.

To control contamination caused by micro-organisms, viruses, bacteria or insects, using irradiation on dried spices and herbs is permitted. EU legislation requires that the irradiated product is declared at all levels within the food chain and irradiation is only permitted in irradiation plants approved by the EU.

Tips:

- Read more about MRLs, mycotoxins, contaminants on the European Commission Trade Helpdesk. You can consult the Trade Helpdesk for a full list of requirements. Select your specific product code under Chapter 09.
- Do not interpret residues or detection limits yourself (e.g. margins of error in testing). Discuss at length with your buyers what levels are acceptable for them.
- To reduce pesticide levels, promote integrated pest management (IPM) among the farmers with whom you work. This agricultural pest control strategy uses complementary strategies such as good growing practices and chemical management. For more information on Integrated Pest Management, see the FAO website.
- Better understand growing, drying, processing and storage practices to prevent contamination, and discuss them with your suppliers. Valuable sources are the guidelines on the Code of Hygienic Practice for Spices and Dried Aromatic Plants (Codex Alimentarius) and Good Agricultural Practices (GAP) Spices (IOSTA).
- For information on safe storage and transport of spices and herbs, go to the website of the Transport Information Service.
- Many buyers in Europe expect a test report on the microbiological contamination of your

products. Providing this service makes it easier to find buyers in Europe.

- In the European Union, steam sterilisation is the preferred method to combat salmonella as well as other types of microbiological contamination. Providing this service yourself can be costly, but you may be able to receive a premium. Working together locally with reliable service providers is also an option.
- If you use additives, make sure that they are legal and agreed with your buyers. Also make sure to mention them in the list of ingredients.
- It is impossible for buyers to test spices and herbs for every possible extraneous material. As a result, they will tend to refrain from buying processed spices and herbs from outside the European Union or will buy only from suppliers that they trust. The burden of proof is with suppliers. You will have to build a track record, and provide transparency and references if you are to succeed on this market.

General requirements on packaging and labelling

Clear labelling of your spices and herbs is important for both bulk and pre-packed consumer products. Product labels should inform about composition, manufacturer, storage methods and preparation of the spice or herb. European labelling legislation applies to pre-packed consumer products and bulk products alike, but in a slightly different way. For consumer products, all information should be mentioned on the label while for bulk products it is allowed that some of the mandatory information is given in the commercial documents and does not need to be printed on the bag or label.

The allergen legislation demands that pre-packed food products should state clearly whether they contain allergens. Spices and herbs or mixtures thereof can contain extraneous material (e.g. gluten, mustard or sesame seeds, milk, nuts – see Annex IIIa) that can cause allergic reactions and therefore have to labelled as containing allergens.

Note that there is also non-product-specific legislation on packaging and labelling in the European Union Directive 2009/32/EC that apply to all goods marketed in the European Union.

Tips:

- Always inform your buyer when your products contain allergens, even when you are not taking care of final packing. For bulk goods, the list of ingredients should be given in the commercial documents.
- For a full overview of requirements for spices and herbs, consult the European Union's Trade Helpdesk. You can select your specific product codes under Chapter 9.
- Pay attention to potential cross-contamination within your company or in the supply chain. Cross-contamination might happen when different products are intentionally or unintentionally mixed during harvesting, processing or transport. Watch out especially for contamination with cereals containing gluten, peanuts (groundnuts), nuts, celery, mustard, sesame seeds and products containing these allergens.

2 . Which non-legal (additional) requirements do buyers often have?

In addition to legal requirements, you should also consider compliance with the following market requirements that can be selection criteria for European buyers.

Food safety certification

As food safety is a top priority in all European Union food sectors, many players request extra guarantees in the form of certification. Requirements by the retail sector and consumers regarding food safety and traceability are becoming stricter.

European spices and herbs companies are subject to stringent checks, as standards are becoming more detailed and demanding and compliance needs to be demonstrated by certification. These companies, in turn, pass part of this task on to their suppliers in origin countries, for example through elaborate supplier questionnaires and their own standard.

Many buyers in the European Union (for example, traders, food processors and retailers) require the implementation of an HACCP-based food safety management system.

The most important food safety management systems in the European Union are:

- BRC (British Retail Consortium)
- IFS (International Food Standard)
- FSSC 22000 (Food Safety System Certification)
- SQF (Safe Quality Food Standard).

These management systems are recognised by the Global Food Safety Initiative (GFSI), which means that any of them should be accepted by multiple retailers. However, in practice, some buyers still have preferences for a specific management system.

Tips:

- As European market entry requires a certified food safety management system, it is important to familiarise yourself with them.
- Before you consider certification according to one of these standards, check which one your potential buyer prefers. Different buyers may have different preferences for a certain management system. For example, British retailers often require BRC, while IFS is more commonly required in the rest of Europe.
- Choose a management system that is approved by the Global Food Safety Initiative.
- Have a look at the Standards Map for more information on the different Food Safety Management Systems.

Corporate social responsibility (CSR)

European buyers are increasingly paying attention to their corporate responsibilities regarding the social and environmental impact of their business and this is expected to continue to grow in the future. European buyers may expect you to comply with their supplier codes of conduct regarding social responsibility, which are often based on the International Labour Organization's standards. This can be the importer's own code of conduct or a code of conduct as a part of an initiative in which the importer is participating.

Common requirements include signing a suppliers' code of conduct in which you declare that you do your business in a responsible way. This procedure means that you (and your suppliers) respect local environmental and labour laws, stay away from corruption, and so on.

Important issues in the supply chain for spices and herb are the correct use of pesticides, child labour, healthy and safe working conditions and fair payment.

Many European buyers already include the most important issues in their supplier audits. They follow common standards such as:

- SEDEX
- ETI
- BSCI.

It is important to realise that European companies have different definitions, priorities and ambition levels with respect to corporate social responsibility. There is no single way to address these matters. The action to be taken may entail signing a code of conduct to ensure compliance with the most important issues, or establishing and addressing all the relevant concerns in your entire supply chain.

Tips:

- Exporters interested in supplying to the European market should at least address the most important issues of corporate social responsibility. Many buyers are already using this aspect as a selection criterion for new suppliers.
- List relevant issues through the use of existing standards. For example, ISO26000 for social responsibility and ISO14001 for environmental management, and ask your potential buyers what they consider the most important issues. Ask whether they are willing to provide their supplier audit form. This form will provide information on their most important issues.
- You can self-assess in order to determine to what extent you or the farmers you work with comply with different sustainability standards. See the International Trade Centre's Sustainable Spice Initiative Equivalency Tool for more information.
- Read our fact sheet about sustainable spices and herbs on the European market for more information about the market, as well as the different trends and developments for sustainable spices and herbs.

3 . What are the requirements for niche markets?

Besides requirements you have to comply with to be allowed on the European market or to find a buyer, complying with the following requirements could offer you a competitive advantage and make finding a buyer easier.

Sustainable Certification

As a next step to demonstrate compliance with corporate social responsibility criteria, certification is the most common way. Sustainable certification in the spices and herbs sector is still a niche market. However, European demand for sustainable food products continues to increase and is expected to grow in the future. There is a growing market for certified products with well-known consumer logos. A price premium needs to be paid for spices and herbs with a certificate to compensate for certification costs. These premiums are paid on some niche markets, but in large parts of the mainstream market buyers are unwilling to spend more.

The interest in sustainability is stimulated by existing initiatives, such as the Sustainable Spices Initiative (SSI), but also by relatively new product-focused initiatives such as the Sustainable Vanilla Initiative (SVI). This initiative was established by a group of leading companies in the vanilla

industry and represents over 70% of global vanilla bean purchases and has initially focused on collaboration with Madagascar. According to Innova Market Insights, the number one driver in confectionery and snacks is "mindful choices", supporting the trend towards more sustainability. Consumers are more than ever conscious about making responsible food choices, in terms of a healthy lifestyle as well as ethically responsibly produced food products.

Each certification addresses different issues (social, environmental, economic) and serves different niches. Social and environmental issues are increasingly being integrated in the various certifications. For an explanation and comparison of sustainability standards you can look at the International Trade Sustainable Spice Initiative Equivalency Tool.

Understanding the different certification standards is an important step towards accessing the EU market. Most common certifications are listed below:

- Rainforest Alliance and UTZ: Rainforest Alliance and UTZ are mainstream sustainability schemes in which social and environmental issues are addressed. In January 2018, the two organisations merged, forming one of the biggest sustainability organisations in the world.

Although interest in Rainforest Alliance from buyers is reportedly growing, the volume of spices and herbs that are Rainforest Alliance certified is still relatively low. One reason is that food processors (accounting for 80% of European sales) cannot certify composite processed food products according to a Rainforest Alliance standard.

In contrast, composite food products with organic and fair-trade certification are sold on the European market. Rainforest certified spices and herbs are therefore hidden ingredients with no added marketing value for food processors. Therefore, buyers are less willing to pay price premiums for Rainforest Alliance certified products.

- Organic: Organic spices and herbs are produced and processed using natural techniques. To market spices and herbs in the European Union as organic, they must be grown using organic production methods which are laid down in the New Organic Legislation. Some buyers are prepared to pay more for organic spices and herbs because they believe the cultivation of such products is better for the environment, and/or that these products are healthier than conventional products.

Although relatively small, the market for organic products in Europe is still growing and will continue to grow in the future. With this future growth, a stricter organic regulation and testing is also expected. Demeter is a biodynamic certification label and regarded as the highest grade of organic farming in the world. Certification is difficult to acquire and must be renewed annually. Currently, 480 producers of spices and herbs are Demeter certified.

- Fair-trade certification: Spices and herbs traded according to fair-trade principles ensure a certain price and premium for smallholders. This should help them make a living. Examples of standards are Fairtrade and FairWild (for spices and herbs collected in the wild).

Although growing, the market for fair-trade certified spices and herbs is still small. The largest share is sold as spices and herbs in the retail channel. The largest user of spices and herbs – the food processing industry – is currently not a big buyer of certified spices and herbs. There is increased cross-over between organic and fair trade.

A large share of the fair-trade products are also certified organic. Fair trade has different standards depending on the place in the supply chain. For traders and processors the Smallholder Producer Standard for Spices and Herbs and Trade Standard are used. The Standard for Herbs and Herbal Teas for Hired Labour is specifically for herbs destined for herbal teas grown by producers with numerous workers (i.e. hired labour).

Tips:

- Have a look at the International Trade Centre's Standards Map database to learn more

about the different organic standards. On the website of the International Federation of Organic Agriculture (IFOAM) you can find different organic labels that fall under this umbrella organisation.

- Several organic certifiers have developed their own fair trade standards. Examples are the 'organic and fair' schemes of the Institute for Marketecology (IMO), Ecocert and Control Union. In these schemes, the role of producers in developing countries in the supply chain can be larger than in the Fairtrade scheme where they are merely seen as service providers. The producer can lead the process, work together with the grower and become the certificate holder.
- Consult the International Trade Centre's Standards Map for more information on the Fairtrade and FairWild label.
- Find the local guidelines of Rainforest Alliance for various spices and herbs on the website of the Sustainable Spice Initiative. Traders and processors will have to comply with the Chain of Custody standard.
- Have a look at the website of Rainforest Alliance to see who the main retailers and companies are that use this sustainability certification.
- Most certification schemes have tools and other types of assistance to help you understand the criteria and educate you on how to become certified. For example, UTZ has a tool for steps to establish an internal control system.
- For more information on sustainability, see our study sustainable spices and herbs.

Gluten-free labelling

Buyers are more and more confronted with elaborate testing on allergens when importing spices and herbs to the Europe. There is a growing European demand for gluten-free products and therefore also for related labelling. Although spices and herbs do not contain gluten naturally, contamination can still take place, for example due to seasonings that contain gluten. When eliminating gluten in spices and herbs, using the corresponding gluten free label is interesting when aiming for this market segment.

Tip:

- Check the European Commission Regulation (EU) no. 828/2014 for harmonised requirements for the provision of information to consumers on the absence or reduced presence of gluten in food.

Allergen-free spices and herbs

Allergen-free spices and herbs are an increasingly important topic within the European spices and herbs market. Buyers are more and more confronted with elaborate testing on allergens, especially since cross-contamination is an issue in the sector. There is no clear EU regulation on this, each country has its own interpretation and sets different maximum levels. Particularly in countries where the requirements are strict (for example the Netherlands), it is expected that buyers will pass on (part of) the responsibility to their suppliers or at least work together with their suppliers to make sure that issues such as cross contamination are limited to a minimum.

Allergen-free spices and herbs can be an interesting niche market. There are already several suppliers, such as Dutch Spices and EHL Ingredients, that are active on this market.

Tips:

- Refer to the allergen legislation, which demands that pre-packed food products should state clearly whether they contain allergens.
- Always inform your buyer when your products contain allergens, even when you are not taking care of final packing. For bulk goods, the list of ingredients should be on the label or in the commercial documents. For a full overview of requirements for spices and herbs, consult the European Union's Trade Helpdesk. You can find your specific product codes in Section II (Vegetable products) under 09 (Coffee, tea, maté and spices).

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Through what channels can you get spices and herbs onto the European market?

In Europe, spices and herbs are mainly used by the food industry for processing in food products. Most opportunities for you as an exporter are in supplying spices and herbs in bulk. While spice mixtures are becoming more popular among consumers, it is still very difficult to compete with European processors. As an exporter, you can sell your spices and herbs either to a specialised trader or to a European processor / packer. Of these, the latter channel is becoming more important in the sector. In some cases it may be possible to sell directly to end-users such as food and beverage manufacturers.

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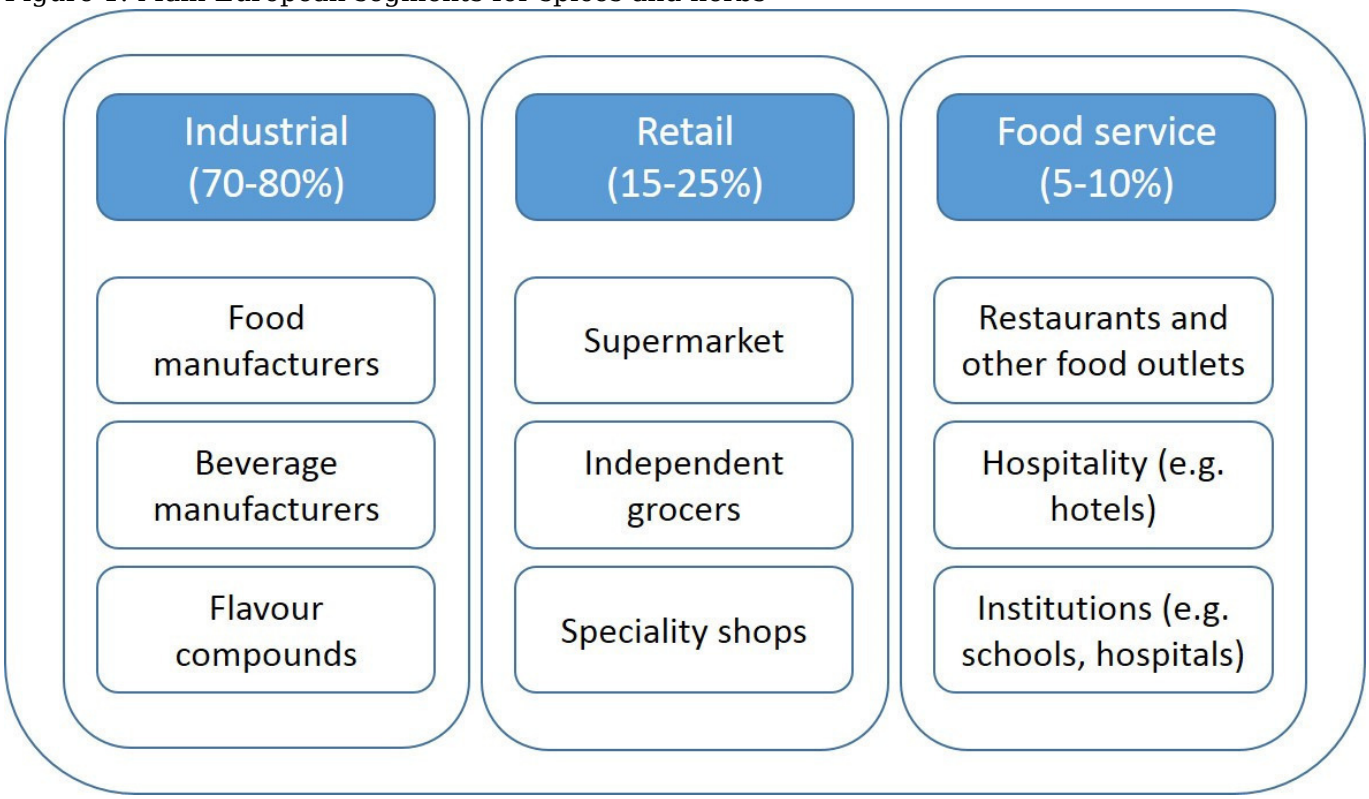
1 . Which market segments to target?

The main European segments for spices and herbs, including examples, are illustrated in Figure 1.

Figure 1: Main European segments for spices and herbs



The industrial segment remains the largest user of spices and herbs

The industrial segment is by far the largest and therefore the most important to target. You can usually reach it through specialised spice importers and blenders. The food manufacturing industry is the largest user, in particular the meat, bakery and confectionery industries. In the beverage industry, especially the herbal tea manufacturers are important users of spices and herbs. The flavour compounds industry makes ingredients for other industries and in turn uses, spices and herbs as ingredients. However, this industry generally depends on extracts and oils already produced from spices in origin.

The share of turnover from small and medium-sized enterprises in the European food and drinks industry was almost 50% in 2017. This figure illustrates the diversity of the European food sector as well as the interest in products of different quality and origin. As a result, there are opportunities for you as an exporter.

In the industrial food sector, there is a clear trend towards ready-to-eat food and convenience food. This fact increases the industrial market for spices and herbs. European spice processers provide the food sector with ready-to-use spice mixtures, which are either used in processed food products or further processed into consumer sachets of specific spice and herb mixtures.

Figure 2 shows the different segmentations within the industrial sector. The figure shows that you will have to focus on a specific segment of the market, depending on whether you are able to supply higher- or lower-quality spices.

Figure 2: Segmentation based on presentation, quality and price within the industrial sector

Tips:

- See our study of value-added spices and herbs for more information.
- Check the website of Food Drink Europe to learn more about the food processing industry in Europe.

The food retail sector is the second-largest segment in Europe and is highly concentrated

The retail and food-service segments are dominated by European (often national) brands, such as Fuchs, Verstegen and Euroma, and multinational brands such as McCormick. Private label (supermarket) brands are important as well. Production for all these brands is conducted by European spice packers and blenders. Since supermarkets often require large quantities and have very specific requirements regarding packaging, it is very difficult to supply them directly. Products

already packed in origin countries are mainly found in European ethnic markets.

The retail sector can be further segmented into supermarkets, independent grocers and specialty shops. Most retailers sell individually packed spices or herbs, or they sell specific mixtures. Overall, spice and herb mixtures are becoming more popular in the retail segment, partly due to the increasing interest in ethnic food.

Supermarkets (multiple retailers) account for 60–90% of the retail segment, depending on the country, and are rather concentrated. The market share of the top three supermarkets ranges from 30% to 50% in most European countries. Important supermarkets located throughout Europe include:

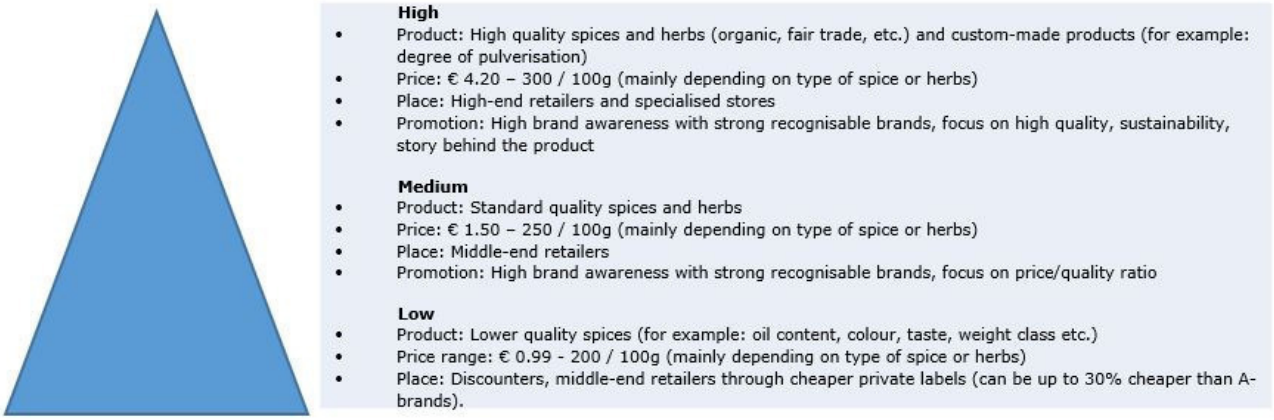
- Tesco
- Lidl
- Aldi
- Spar

Where scalability is very important for supermarkets, it is less so for speciality shops. Here, high quality is more important. However, their market share is substantially lower. Speciality shops focused on high-quality spices are, for example:

- De Kruidenbaron (the Netherlands)
- Just Ingredients (the United Kingdom)
- Apfelbacher's Gewürz-Express (Germany)

Figure 3 shows the different segmentations within the retail sector. The figure shows that you will have to focus on a specific segment of the market, depending on whether you are able to supply higher- or lower-quality spices.

Figure 3: Segmentation based on presentation, quality and price within the retail sector



Tips:

- See our study of Trends for spices and herbs for more information on the European market developments.
- Check the website of the Dutch company Verstegen for examples of spice mixtures on the European market.

The food service industry is an important segment for high-quality spices and

herbs

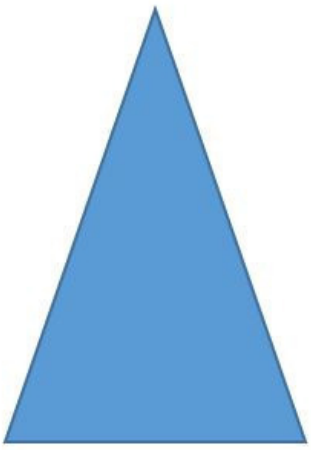
The food service industry represents a smaller share of the European market for spices and herbs. The industry focuses on quality, taste and colour. If you can provide high-quality and/or certified spices and herbs, this sector is interesting to you.

This industry is always looking for exciting new tastes and combinations. Spices and herbs, especially those not very well known in Europe, can therefore play a significant role in the search for the latest trends in this segment.

End-users of the food service industry generally buy their products in specialised food-service distributors in Europe, who offer larger packaging sizes ("catering packs"). This industry consists of businesses, institutions and companies responsible for meals prepared outside the home. It includes hotels, restaurants, cafeterias, companies, schools and hospital canteens, and catering businesses. The size of these organisations ranges from small providers to large multinational enterprises. They use whole and processed spices and herbs in addition to mixes, sauces and wet pastes, similar to the variety in the retail segment.

Figure 4 shows the different segmentations within the food service sector. The figure shows that you will have to focus on a specific segment of the market, depending on whether you are able to supply higher- or lower-quality spices.

Figure 4: Segmentation based on presentation, quality and price within the food service segment



High

- Product: High-quality spices and herbs (organic, fair-trade, etc.) and custom-made products (for example, degree of pulverisation)
- Price: € 4.20–300 / 100g (mainly depending on the type of spice or herb)
- Place: High-end outlets: restaurants, hotels and leisure industries
- Promotion: focus on high-quality, sustainability, exceptional product characteristics (taste, colour) and new varieties
- Product: Standard-quality spices and herbs

Medium

- Product: Standard-quality spices and herbs
- Price: € 1.50–250 / 100g (mainly depending on the type of spice or herb)
- Place: Mid-end outlets: food and hospitality industries, institutions such as universities, international institutions and prisons
- Promotion: Focus on price/quality ratio

Low

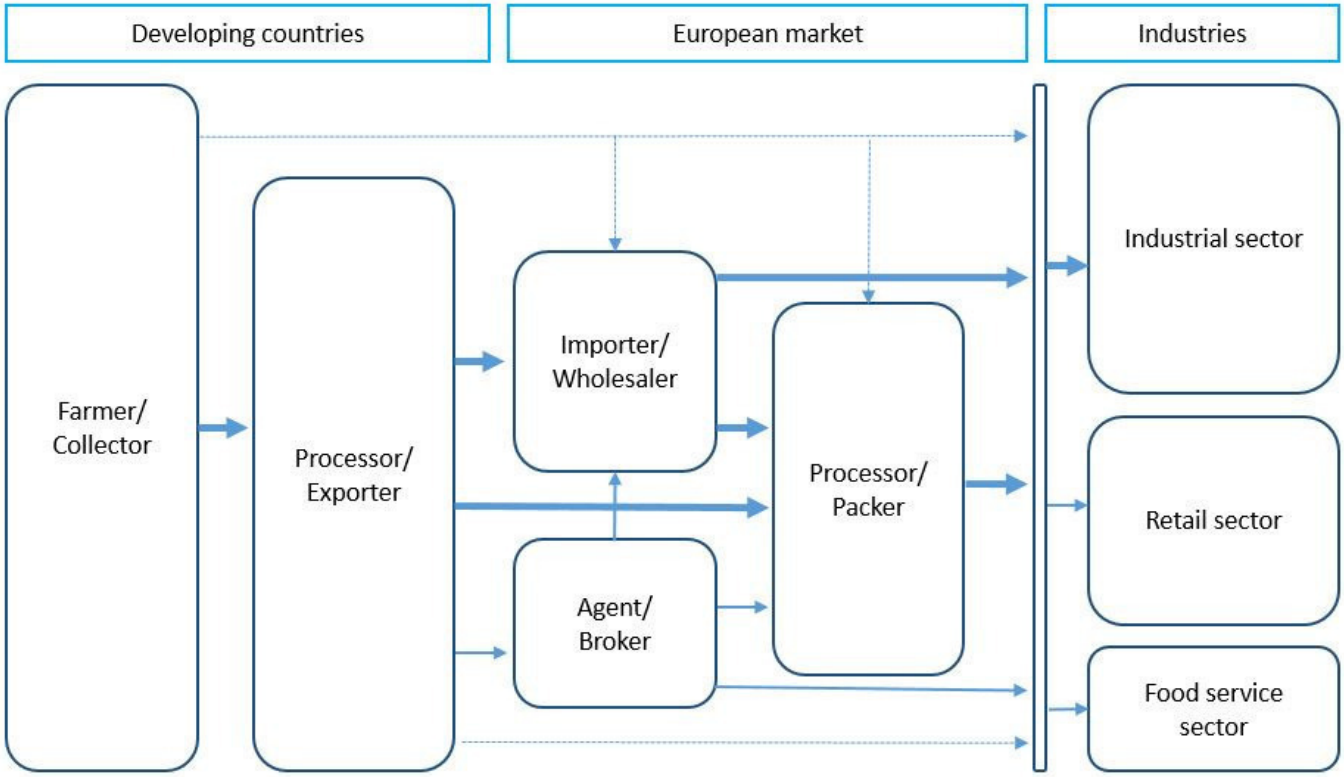
- Product: Lower-quality spices (for example, oil content, colour, taste, weight class, etc.)
- Price range: € 0.99-200 / 100g (mainly depending on the type of spice or herb)
- Place: Low-end food outlets and the hospitality sector

Tips:

- See our study of Sustainable spices and herbs for more information on the development of this market.
- Collect information on food trends. Knowing how the taste of European buyers is developing can offer opportunities. For example, the International Trade Centre (ITC) gives an annual overview of the latest trends.

2 . Through which market channels can you get spices and herbs on the market?

Figure 5: Visual presentation of market channels for spices and herbs*



As an exporter, you can use several channels to bring your spices or herbs on the European market. However, you should realise that if you are unable to supply at least one container within your buyer's short time frame, it is unlikely for you to supply to the European market. If you are unable to do so, you can work together with other suppliers interested in supplying to the European market.

Importers/wholesalers

Traders act as middlemen between exporters and their customers. They buy bulk quantities of spices and herbs and resell them at an increased price. An importer may also work with or perform processing and consumer packing activities.

In most cases, importers have long-standing contacts with their suppliers. They source from different origins to ensure supply year-round. To justify their presence, traders are specialising in certain commodities that spice processors and packers find harder to handle. Examples include black pepper because of the price volatility and the risks involved, or chilli peppers, which require a large scale of operation. Other examples are dried onions and garlic, which have specific quality concerns. Traders also tend to move closer to the countries of origin, in order to secure their share of good-quality supply.

Agent/broker

Brokers and agents are intermediaries who bring buyers and sellers together. They charge a commission for their services. European buyers can be trading companies, but they are mostly processors. Agents and brokers are interesting in the event that you have a specialised product (such as high quality or sustainable) for which buyers are harder to find. The role of the agent is slowly diminishing due to the increased transparency demanded by the market.

Processors/packers

Processors/packers purchase crude spices and/or herbs and perform cleaning, grading, grinding, blending and packaging. They distribute the ground or processed products to industrial users after this initial processing. Some of them manufacture end products to supply directly to retail or food service industries. These activities are often integrated into one company.
Increasingly, processors/packers import their spices and herbs directly from supplying countries.

This development is driven by several motives. One of these is processors and packers having better control over the entire value chain, which benefits the quality, safety and sustainability of the spices and herbs. Secondly, it facilitates more value addition in origin countries, like steam-sterilisation and testing of the ingredients, hence providing further benefits through such things as outsourcing risks and reducing costs. In addition, processors/packers try to commit suppliers and secure long-term sources of supply.

It is important to note that processors can be more demanding in terms of supply volume and continuity than traders, as they depend on continuous supply to produce their final products.

Processing in the supplying countries is providing more and more opportunities. However, European buyers are very reluctant to source further processed products from countries of origin due to concerns about quality, food safety and adulteration. As a supplier, you should be able to deliver constant quality, taste, aroma and colour. You should also be able to compete against European suppliers through an excellent knowledge of the taste preference on their domestic market.

Based on the segmentation presented in the first part of this document, different channels are relevant, as outlined below.

Industrial

Food processors purchase their raw materials from processors or traders. The food-processing industry demands large quantities of spices and herbs to manufacture food products. In some cases, spices and/or herbs are purchased directly from producers in developing countries. The food-processing industry is most suited for companies that can meet the high standards demanded in terms of service level and sales volume (in addition to requirements for quality and food safety).

Retail

The retail sector buys single spices and herbs from traders and processors, as well as further processed food products (for example, seasonings, wet pastes, meat or bakery products) from the industrial sector. Large retail chains often work with preferred suppliers and have demands in terms of order size and frequency, continuity and service. As a result, it is hard for exporters from developing countries to supply to these buyers directly. Smaller retailers provide some opportunities for direct selling, especially ethnic retailers.

Food service

Food service providers mainly source locally from European producers, importers, wholesalers, food processors and retailers. Providers in the high-end segment (see Figure 4) might be interested in sourcing speciality products directly from suppliers.

Tips:

- See our studies of Tips to find buyers and Tips to do business on the market for spices and herbs.
- See our study of Buyer requirements for the spices and herbs market to learn more about specific buyer requirements in Europe.
- See our study of value-added spices and herbs for additional insight into the opportunities for small and medium-sized enterprises from developing countries.
- European spice and herb companies are often interested in exporting from countries with opposite seasons. As the production for that year stops in Europe, companies are willing to source from other regions where production is starting.

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Exporting dried chillies to Europe

The growing popularity of spicy food has resulted in an increasing demand for dried chillies in Europe. Spain is the most important trader and processor of dried chillies in Europe. The country mainly imports whole chillies and supplies processed chilli products to other European markets. Other interesting markets are Germany, the United Kingdom and the Netherlands.

Contents of this page

1 . Product description

Chillies refer to the chilli pepper (also chile or chili pepper), which is the fruit of plants from the Capsicum genus, members of the nightshade family Solanaceae. The chilli pepper originates in the Americas. Chillies are available whole, as flakes, as ground powder, preserved in oil or made into hot sauces.

Dried chillies are traded under two different Harmonised System (HS) codes. The HS code for dried chillies that are neither crushed nor ground is 090421. Crushed and ground chillies are included in a HS code with all other capsicums, including sweet peppers (090422).

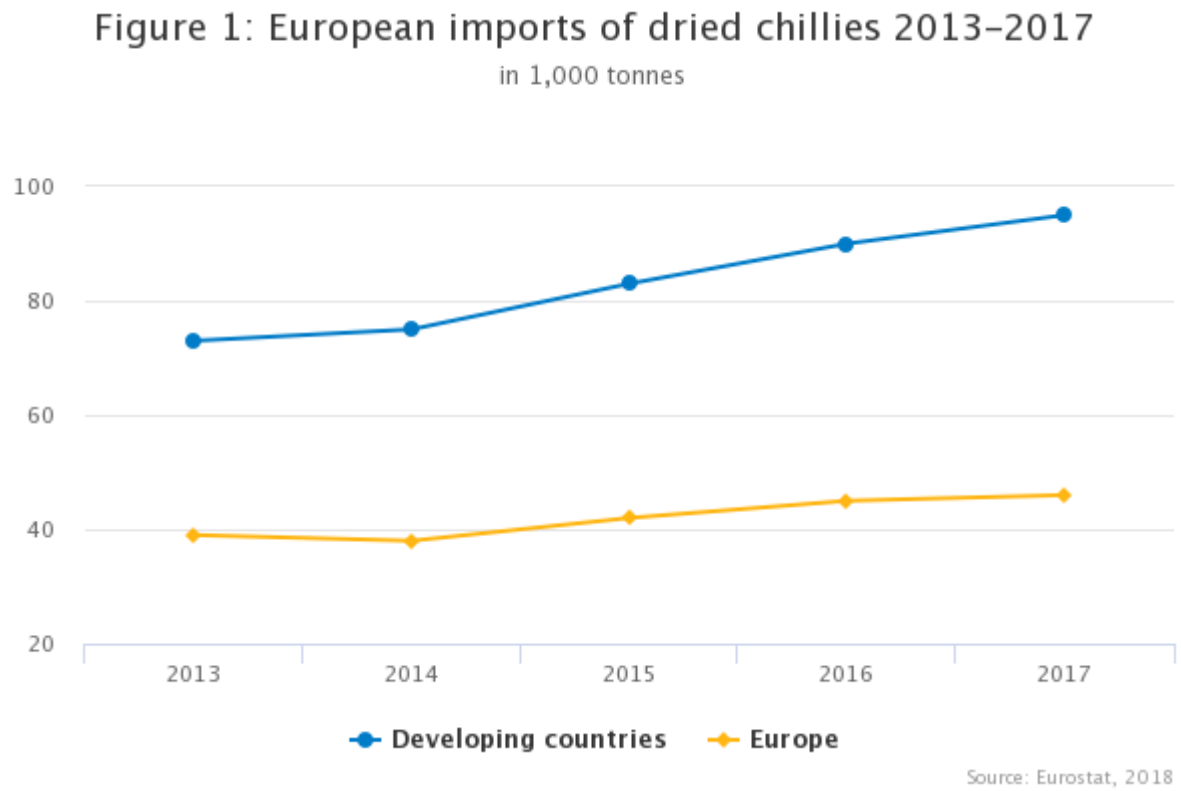
This fact sheet focuses only on dried chillies (both whole and ground). Fresh chillies are not included in this fact sheet.

2 . What makes Europe an interesting market for dried chillies?

The global and European demand for dried chillies and chilli sauces is growing, mainly due to the increasing demand for exotic food in western cuisine.

Steady growth of imports

European imports of dried chillies increased in the last years. Data show that imports increased annually by 6% in volume and by 7% in value between 2013 and 2017. In 2017, 67% of imports originated in developing countries. Please note that Figure 1 below excludes imports from countries other than European or developing countries. In 2017, these sources only accounted for 1% of the total European imports.



As an exporter, you can benefit from this steady growth in imports. Contact European chilli traders and invest in establishing long-term trade relationships with them. It is important that you can deliver stable supplies that meet the requirements for food safety and product quality.

Tips:

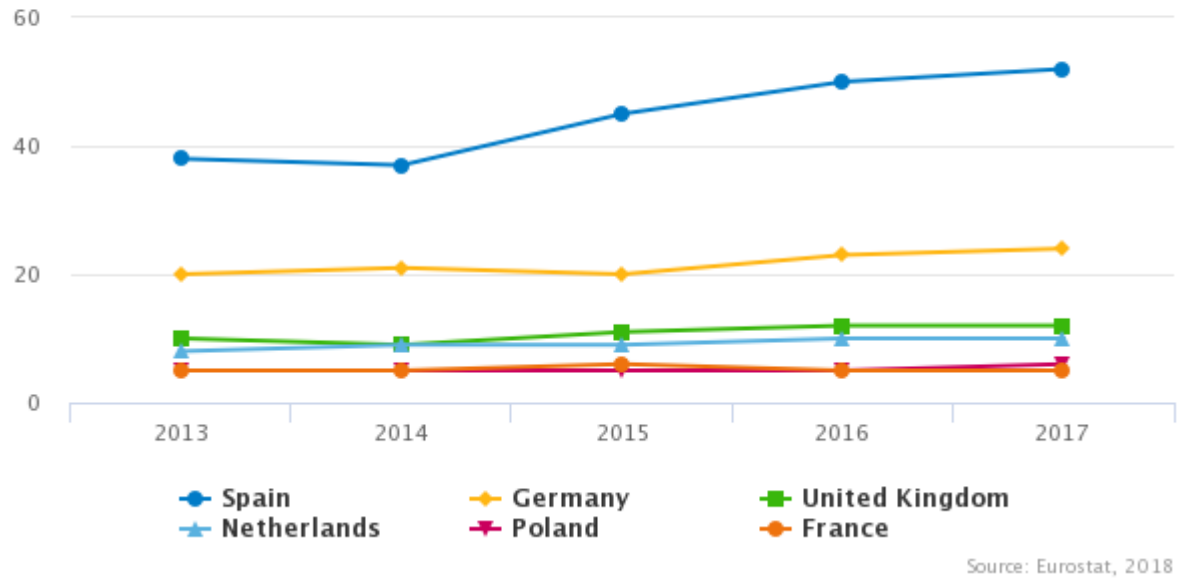
- See our tips on Finding buyers and Doing business for more information about investing and maintaining relationships with traders.
- See our study of Buyer requirements for more information on the specific requirements in Europe.

Spain, Germany and the United Kingdom are the most interesting target countries

Figure 2 gives an overview of the leading importers of dried chillies in Europe. The main importers of dried chillies are Spain, Germany and the United Kingdom.

Figure 2: Leading European importers of dried chillies 2013–2017

in 1,000 tonnes



Source: Eurostat, 2018

Interesting markets for you as an exporter include the following:

- Spain is the main European importer of dried chillies. The country is responsible for 36% of all European imports. Spain's imports increased annually by 8% in volume between 2013 and 2017. However, it is also a relatively large producer. See the next section for more information about the strong role of Spain on the European chillies market.
- Germany offers good opportunities as the secondlargest importer of chillies in Europe. In 2017, 67% of its imports originated in developing countries. Imports increased by 4% annually in both value and volume between 2013 and 2017.
- The United Kingdom is the thirdlargest importer of dried chillies. In comparison to Germany and the Netherlands, the United Kingdom is a small exporter and a large consumer. This fact is mainly due to the large Indian community in the country; dried chillies are often used in traditional Indian recipes.
- The Netherlands is an important importer of dried chillies. Its imports increased annually by 6% in volume and by 7% in value between 2013 and 2017. The Netherlands plays an important role as a trade hub in Europe. See the next section for more information.
- France and Poland are also important and stable importers of dried chillies. Between 2013 and 2017, both French and Polish imports increased annually by 3% in value.
- There are some relatively small importing countries which are growing rapidly and are increasingly importing chillies directly from developing countries. Examples include Italy (growing by 14% annually over the last five years), Bulgaria (12%) and Romania (11%).

Tips:

- Conduct additional market research to gain an insight into the differences between the various European markets mentioned above. For example, create a free account for statistical databases such as Eurostat or ITC Trade Map.
- Visit or participate in trade fairs to test whether the market is open to your product, obtain market information and find potential buyers. The most relevant trade fairs in Europe for you are Food Ingredients Europe, Biofach (for organic products), SIAL and Anuga.

Strong role for European market players, but the role of suppliers from countries of origin is increasing

European producers, traders and processors play a relatively strong role on the European market for chillies. While imports from developing countries play an important role in supplying Europe with dried chillies, Spain is also an important supplier. Although Spain is the largest chillies importer and an important consumer, the country exported more dried chillies than it imported in the last years. Imports were 52 thousand tonnes, while exports amounted to 56 thousand tonnes.

Other important European traders are the Netherlands and Germany. Their re-exports are relatively high compared to other importing countries. For example, the Netherlands re-exported 60% of its dried chilli imports to other European countries in 2017.

European exporters or re-exporters add a lot of value to re-exported chillies by further processing and packaging. Currently, European processors are mainly doing the processing and heat treatments of spices and herbs. However, companies in the countries of origin are now also taking over such activities. This trend offers opportunities for you, if you can comply with European buyer requirements – in particular regarding heat treatment, since that process is becoming an important buyer requirement.

European processors focus on improving activities:

- downstream, such as blending or developing new tastes, which means that they might be interested in new and exotic spices and herbs;
- upstream, by strengthening the cooperation with exporters in developing countries. Such cooperation entails transfer of knowledge and resources or European companies integrating companies in developing countries.

Tips:

- Search for European processors in the member lists of the national spice associations in Europe. Go to the member section of the European Spice Association (ESA) for an overview of associations.
- See our study of Fresh chilli peppers for more information on the trade and market trends for fresh chillies.
- See our study of Buyer requirements for spices and herbs for more information.

Growing popularity of ethnic cuisines and spicy food

The demand for ethnic food in Europe is rising. Since dried chillies are an important ingredient in Asian dishes, it is becoming increasingly popular on the European market.

Examples of ethnic recipes that are popular in Europe and contain chillies are:

- "IndoChinese stir-fried chicken with dried chillies";
- "Keralan chicken curry with chillies and coconut milk".

Integral to ethnic cuisine is spicy food. In the last years, the demand for chilli and hot sauces increased significantly. As a result, brands have developed new flavours and sauces. For example, Heinz launched the "Heinz Chili Sauce Range" with products such as:

- Fiery Sriracha: a hot Thai sauce with chillies;

- PeriPeri: a hot sauce with lemon and chillies;
- Sweet Chilli: a sweeter chilli sauce.

Tip:

- See our study of Trends for spices and herbs for more information about trends on the European market for spices and herbs.

Sustainability is becoming an important requirement

Sustainable sourcing is an important trend in Europe, especially in the United Kingdom, the Netherlands and Germany. As a supplier, you will increasingly face sustainability requirements from your buyer. Many buyers see sustainable sourcing as a must.

Several of the large spice traders and processors are part of the Sustainable Spices Initiative. As part of the initiative, the companies have made a commitment to source their spices sustainably. Sabater Spices, the largest Spanish importer and processor of chillies, was the first Spanish company to join the Sustainable Spice Initiative (SSI) in 2013. Other companies and other parties that have joined are Unilever, McCormick, Olam, Intertaste and Nedspice.

As a supplier or exporter, you can certify your chillies to comply with sustainable sourcing requirements. While certification gives you a competitive edge, certification for dried chillies is still very rare and chilli products with certification are not sold in most mainstream supermarkets. In addition, most buyers on the mainstream market are unwilling to pay more for certified products. As a result, it is important to discuss the opportunities for certification with your buyers before you decide to invest in it.

However, because of the growing importance of sustainability, this demand is expected to increase. In Europe, the most important certifications are Rainforest Alliance, UTZ, Organic and Fair Trade. In January 2018, Rainforest Alliance (headquarters in USA) merged with fellow standards organisation UTZ (headquarters in the Netherlands), forming a new social and environmental standards organisation.

Tips:

- Check the website of the Sustainable Spice Initiative to find European companies that are interested in sustainable sourcing.
- See our study of Exporting sustainable spices and herbs to Europe for additional information. This document also includes longterm expectations of the market for certified sustainable products.
- Determine whether it is feasible for you to certify your dried chillies. Can you find enough buyers for your product to offset your investments? You can look for buyers online; for example, on the website of the International Trade Centre, or by looking for exhibitors at the organic trade fair BioFach.
- See our study of Buyer requirements for spices and herbs for additional information on requirements for sustainable sourcing and certification standards.

3 . Which requirements should dried chillies comply with to be allowed on the European market?

You can only export dried chillies to Europe if you comply with the buyer requirements for spices and herbs.

Legal requirements for all spices and herbs

If you do not comply with European legal requirements, your product can be refused at the border or withdrawn from the market. When exporting to Europe, you have to comply with the legally binding requirements for the following topics.

- food safety: traceability, hygiene and control as specified in the General Food Law
- mycotoxins contamination: for chillies, maximum levels of mycotoxins are set for aflatoxin (between 5 µg/kg for aflatoxin B1 and 10 µg/kg for the total aflatoxin content B1, B2, G1 and G2). For ochratoxin, the maximum level is 15 µg/kg
- maximum residue levels of pesticides: residues of anthraquinone residues may be found in spices and herbs such as smoked capsicums as a result of artificial drying with fire. The smoke contains anthraquinone, which can end up in the product if appropriate precautionary measures are not taken
- microbiological contamination: the presence of salmonella is the main reason for banning dried chillies from the European market
- food additives and adulteration: spices and spice blends are rejected by custom authorities for containing undeclared, unauthorised or excessive levels of extraneous materials
- maximum levels of polycyclic aromatic hydrocarbons: contamination with PAHs stems from bad drying practices
- irradiation: this process is allowed but not commonly used, as consumers do not always accept such treatments. Discuss this option with your buyer.

European buyers are increasingly requiring their suppliers to use steam sterilisation in order to combat the microbiological contamination of dried chillies. You could earn a significant premium if you can supply dried chillies that are sterilised at the source. However, investments in the necessary equipment can be very costly, at up to €1 million.

Steam sterilisation could be damaging to the crop, as it can harm the taste of the dried chillies. Research is conducted into alternatives to this method. Currently, it is still the cheapest and safest method to combat microbiological contamination.

Tips:

- Comply with the requirements listed above. Your buyer will transfer the costs for cleaning contaminated dried chillies to you if you do not.
- Check the Rapid Alert System for Food and Feed (RASFF) database for examples of dried chillies withdrawn from the market and the reasons behind these withdrawals.
- Compare your company with your potential buyer to find a strategic fit. Can you comply with extralegal requirements for food safety and sustainability? What quantities of supplies can you deliver? Which type of product do you supply, mainstream or niche?
- Always discuss with your potential buyers whether they want steam sterilisation. If you cannot sterilise your dried chillies yourself, look for local sterilisation companies that can provide this service for you.
- Comply with food safety requirements during drying, storage, processing (such as sieving, mixing, grinding or crushing), packaging and transport. If you do not comply, steam sterilisation will not work.
- You also need to prevent contamination with mycotoxins and other contaminants, because

steam sterilisation cannot take these substances out.

- Keep up to date on the development of alternatives to steam sterilisation by checking online sources such as GreenFooDec.

Additional requirements

Consider complying with the following non-legal requirements to ease market access. By complying with these requirements, you can create a competitive advantage for your company or product offering. European buyers can use these requirements as selection criteria for their new suppliers.

- food safety certification: the most important food safety management systems in Europe are British Retail Consortium (BRC), International Featured Standards (IFS Food), Food Safety System Certification (FSSC 22000) and the Safe Quality Food programme (SQF). Each of these standards is part of the Global Food Safety Initiative. Always verify your buyer's preference for a specific food safety management system, as some may prefer one system over the other. For example, BRC is developed by retailers in the United Kingdom and more commonly demanded on this market. If you want to target the United Kingdom, BRC may be more important;
- Corporate Social Responsibility (CSR): companies have different requirements for CSR, such as signing their code of conduct or following common standards including the Supplier Ethical Data Exchange (SEDEX), Ethical Trading Initiative (ETI) or Business Social Compliance Initiative code of conduct (BSCI).

Requirements for niche markets

Complying with the following standards can be essential to access specific market segments and buyers in Europe.

- sustainable product certification: the major certification systems are Organic, Fair Trade and Rainforest Alliance;
- selfverification: suppliers assess their own compliance with the sustainability code of buyers. Examples include Unilever's Sustainable Agricultural Code (SAC) or the Olam Livelihood Charter.

Quality requirements

Product quality is a key issue for buyers in Europe. You need to comply with the Quality Minima Document from the European Spice Association (ESA).

The Quality Minima Document specifies the chemical and physical parameters that dried chillies needs to comply with when sold in Europe before crushing and grinding.

- ash: maximum 10%
- acidinsoluble ash: maximum 1.6%
- moisture: maximum 11%

The ESA has not developed cleanliness specifications. As a result, European buyers often use the specifications for cleanliness stated by the American Spice Trade Association (ASTA).

Tips:

- Use detection and prevention methods to ensure that your dried chillies are not contaminated with metal, stones or animal droppings.
- You can also use more sophisticated cleaning methods in order to add value to your product, such as steam sterilisation.
- Check ISO standard 75431:1994 for general guidelines on the grading, handling and

packing of dried chillies.

- Follow ESA's Quality Minima Document on the chemical and physical parameters that your unprocessed dried chillies need to comply with when they are sold in Europe.

Labelling requirements

Pay extra attention to the labelling of your product, as this aspect is important for European buyers.

For bulk dried chillies, your product label must include:

- the name of the product;
- details of the manufacturer (name and address);
- batch number;
- date of manufacture;
- expiry date;
- weight of contents;
- other information that the exporting and importing countries require, such as the bar, producer and/or packer code, as well as all extra information that can be used in order to trace the product back to its origin.

Tips:

- See our study of Consumer packed spices and herbs for requirements for consumer packaging and labelling.
- See the website of the European Commission for additional information on food labelling legislation. This requirement only applies to final products that are sold directly to consumers.

Packaging requirements

Chillies are commonly packaged in jute or polypropylene bags (ground chillies in particular). Polythene cannot be used, as the flavour components diffuse through it. The packaging must not be a source of contamination and must protect the product quality during transport and storage.

Tips:

- Always ask your buyer for their specific packaging requirements.
- Store your packaged dried chillies in a dry, cool place to prevent quality deterioration.
- If you offer Organic certified dried chillies, physically separate them from chillies that are not certified.

4 . What competition do you face on the European market for dried

chillies?

China, India and Spain are your main competitors

India is the largest producer of dried chillies in the world. According to production data, India produced around 1.4 million tonnes in 2016. However, a large part of this production is used for the national demand; chillies are an integral part of Indian cuisine. For this reason, other large producers such as China play a larger role in the supply to Europe.

China is the main supplier of dried chillies to Europe with a market share of 43% in 2017. Its supplies showed an annual increase of 9% in volume between 2013 and 2017, growing from 43 thousand tonnes to 61 thousand tonnes.

As discussed above, Spain is also an important European producer of dried chillies and is therefore a significant supplier to European countries with a market share of 19%. Supplies from Spain increased annually by 7% in volume between 2013 and 2017.

Other smaller suppliers are:

- Peru (market share of 7% in 2017)
- India (6%)
- Thailand (3%).

Tips:

- See our study of Competition for spices and herbs for an overview of competitive sources and tips.
- Use FAO STAT to learn more about the production statistics of dried chillies.

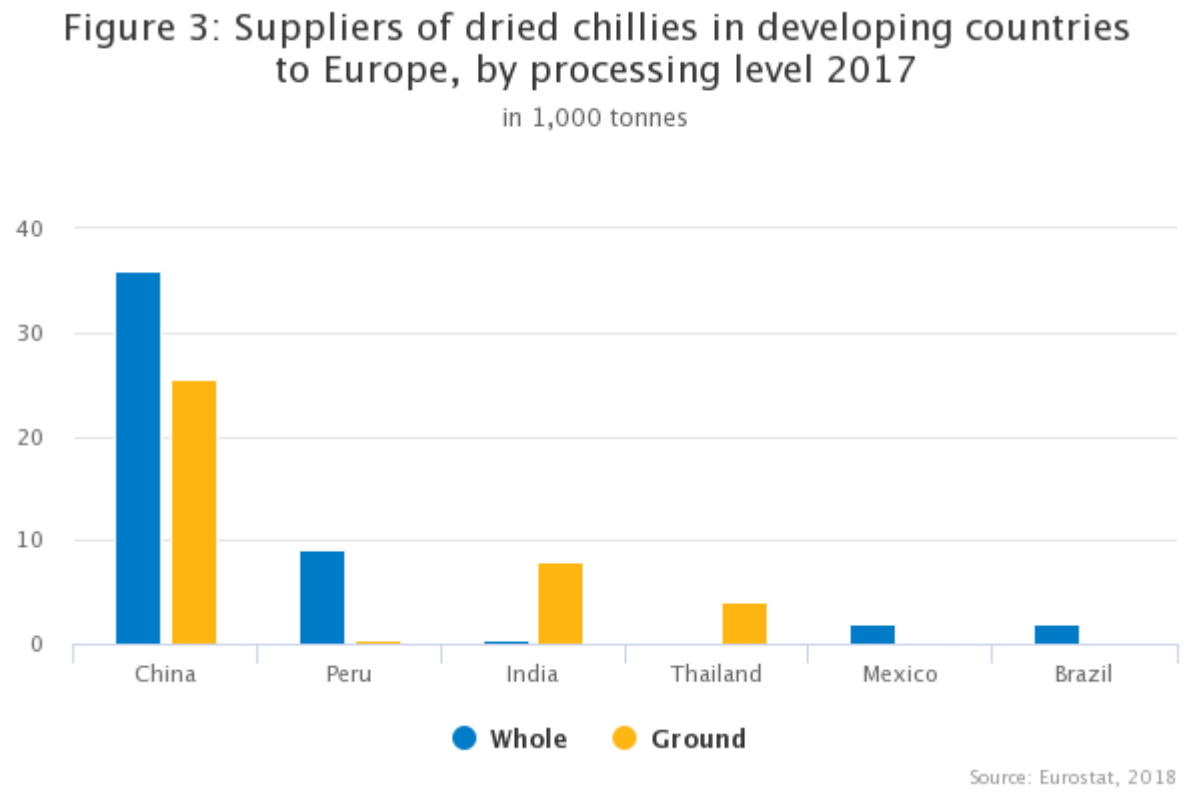
Growing European imports of ground dried chillies lead to opportunities for local value addition

Ground dried chillies offer opportunities for value addition in the country of origin. These opportunities are growing, as long as you can comply with quality and buyer requirements. Over the last five years, imports of ground dried chillies from developing countries grew by 11%. At the same time, imports of whole chillies from developing countries grew by 4%.

One of the difficulties of exporting ground chillies is that you will need to control the heat level. This process is often achieved by mixing various varieties with different heat levels.

In 2017, suppliers from developing countries exported 95 thousand tonnes of dried chillies to Europe with a value of €194 million. Of this amount, 56% consisted of whole chillies, while 44% were ground.

Figure 3 below gives an overview of the main suppliers to Europe in terms of whole and ground dried chillies.



China is the main supplier from a developing country, with a 61% share of all imports of ground chillies from developing countries. Between 2013 and 2017, European imports from China increased annually by 14% in volume India and Thailand are also important suppliers from developing countries with a share of 19% and 10% respectively. While India's supplies increased by 5% annually over the past five years, Thailand's supplies increased as well by an impressive 12%.

Exports of ground chillies from smaller supplying countries are growing as well, such as (on an annual basis):

- Turkey (+47%)
- Tunisia (+29%)
- Zimbabwe (126%).

Together, these countries accounted for 3% of the European imports of ground chillies.

Tips:

- Stay up to date on worldwide harvests and stock levels. Look for crop reports, which are often shared by industry players during specific spice events. Nedspice and ITC Trade map also publish upto-date information on national and international prices for dried chillies.
- Explore opportunities to cooperate with European processors, especially large ones that have the size and resources to invest. You can find European processors in the member lists of national spice associations in Europe. See the member section of the European Spice Association (ESA) for an overview of associations.
- Check the Food and Agriculture Organization of the United Nations (FAOSTAT) website for production data.

Through which channels can you get dried chillies on the European market?
See our study of Market channels and segments for spices and herbs for an overview of channels,

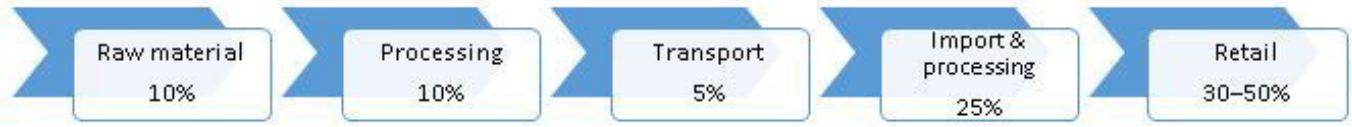
segments, trends and developments. The channels for dried chillies do not differ significantly from this general overview.

5 . What are the end-market prices for dried chillies?

The global prices of dried chillies are fluctuating. These fluctuations are dependent on several factors, as mentioned in the list below.

The retail prices of ground chillies can go up to €62,57 per kilo when sold in small containers within the spice and herb section of supermarkets (May 2018). Dried chilli flakes can go up to €100 per kg, while whole chillies can be priced up to several hundred euros per kg.

Figure 4: Indicative price breakdown for dried chillies sold in the spice and herb section of supermarkets



Source: ProFound

Figure 4 gives an indicative price breakdown for dried chillies. Actual margins may differ, since these prices are influenced by various factors such as:

- country of origin as well as current and expected future harvest situation. For example, at the end of 2016, the prices in India decreased significantly as most of the cold storages in the country were full. By contrast, the prices in China increased significantly at the end of 2016 due to reduced production;
- quality of the raw material. For example, the higher the quality of your processed chillies, the better your competition on the market and the higher your price could be;
- level of processing. For example, there is a difference whether you can supply whole chillies or ground chillies; for high-quality ground chillies, you are often able to receive a higher price;
- level of demand. For example, prices are affected by the growing demand for chillies in Europe.

Tips:

- Check how the prices for chillies on the market develop. Search the internet for recent reports. Nedspice, PBA Brokerage, Indian Spice Board and the International Trade Centre regularly publish useful reports on crops and prices.
- Keep up to date about currency developments on such websites as Oanda.

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Exporting dried ginger to Europe

Europe is an interesting market for exporters of dried ginger. The demand is expected to grow in the coming years and prices are rising or relatively stable. China is the main supplier of both whole and ground ginger to Europe, and it is your main competitor on the European market.

Contents of this page

1 . Product description

Ginger is the irregularly shaped root (rhizome) of the ginger plant (*Zingiber officinale*). The plant is cultivated in the tropics. The main producing countries are China, India, Nigeria and Peru.

Ginger is mainly used in:

- oriental and Indian cooking;
- bakery and confectionery products;
- liqueurs.

This fact sheet focuses only on dried ginger (both whole and crushed/ground). Fresh ginger is not included in this fact sheet, since it belongs to the fresh fruit and vegetables market. It is included in our studies of Fresh fruit and vegetables. The markets for fresh and dried ginger are closely connected, however, and fresh ginger exports are even larger than dried.

Drying of fresh ginger generally takes place in the countries of origin.

Within the Combined Nomenclature (CN) classification, dried ginger is covered under the following codes.

- 0910.1100: ginger, neither crushed nor ground
- 0910.1200: ginger, crushed or ground

2 . What makes Europe an interesting market for dried ginger?

Growing imports of dried ginger in Europe

The worldwide consumption of ginger is increasing. The global and European market for ginger is

expected to show significant growth until at least 2020. Especially in the winter of 2016-2017, the European demand for ginger peaked due to the colder weather. Consumers buy ginger during the winter because of its health properties. For example, consumers use ginger as a sore throat remedy. The growing ginger market in Europe provides opportunities for you as an exporter. Buyers are increasingly willing to invest in long-term relationships or collaborations with their suppliers to ensure sufficient supplies.

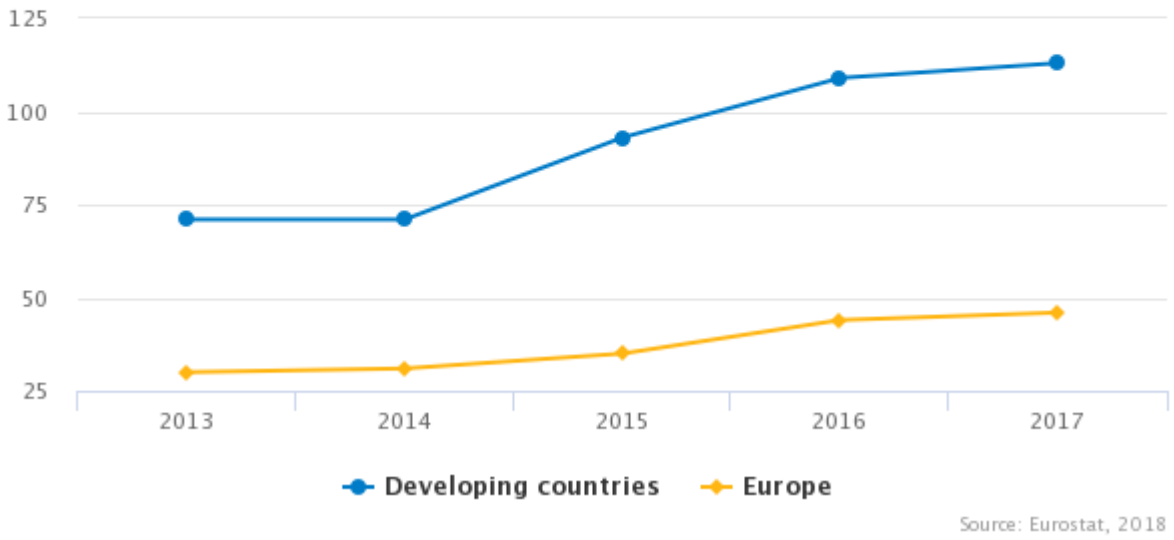
In 2017, the total European imports of dried ginger reached 160 thousand tonnes. Since 2013, the import volume has increased by 12% annually. The import value increased in that same period by 13% annually, reaching €250 million in 2017.

In 2017, more than 70% of the total European imports were sourced directly from developing countries. Please note that Figure 1 below excludes countries other than European or developing countries. In 2017, these other countries accounted for only 0.12% of the total European imports.

Since ginger cannot be produced in Europe, the European supplies illustrated in Figure 1 are based on re-exports. European re-exports accounted for 29% of the total imports in 2017.

Figure 1: European dried ginger imports from developing countries and other European countries (re-exports) 2013-2017

in 1,000 tonnes



Source: Eurostat, 2018

Tips:

- Invest in establishing long-term trade relationships with your buyers. Demonstrate that you can deliver stable supplies which meet the requirements for food safety and product quality.
- See the final section of this fact sheet for more information on prices.

The Netherlands, the United Kingdom and Germany are the most interesting markets for dried ginger in Europe

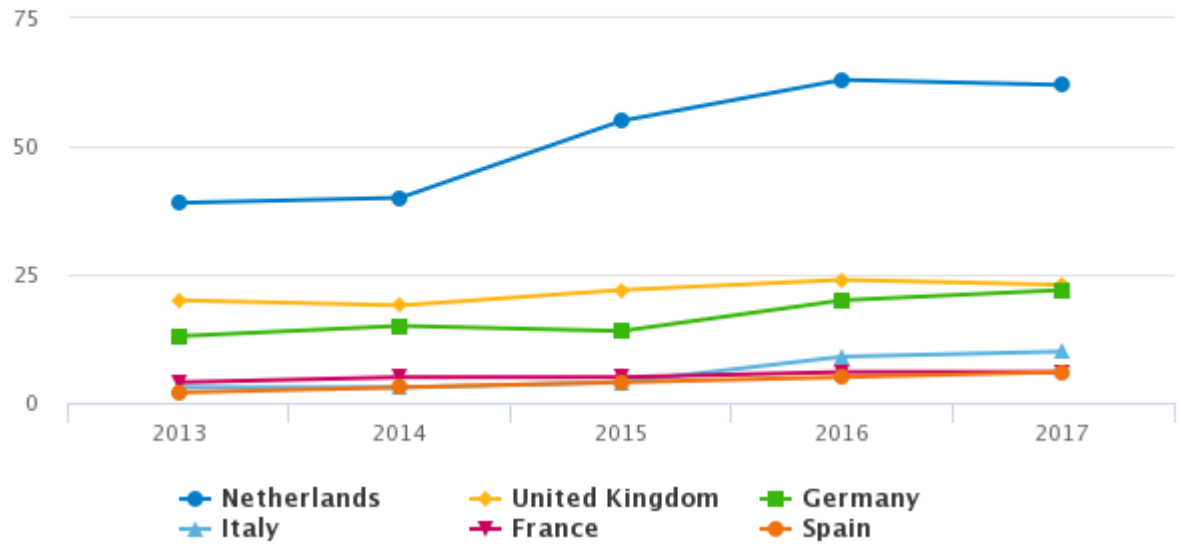
Figures 2 and 3 show the leading European importers of dried ginger and their consumption (consumption is calculated as imports minus exports). Please note that the data in these figures are

an indication of the European ginger market, and that they include both industrial and private consumption. Actual consumption may differ, due to long-term storage of stocks and unregistered trade. In addition, consumption includes the use of ginger in the food processing industry. This fact is important, since a large share of ginger is used in this industry; namely for bakery products (such as gingerbread and cookies), Asian food products and various drinks (e.g. ginger ale or ginger beer).

Figures 2 and 3 illustrate that the most interesting markets for you are the Netherlands, the United Kingdom and Germany. You can find a more extensive analysis of the most interesting markets below.

Figure 2: Leading European importers of dried ginger 2013-2017

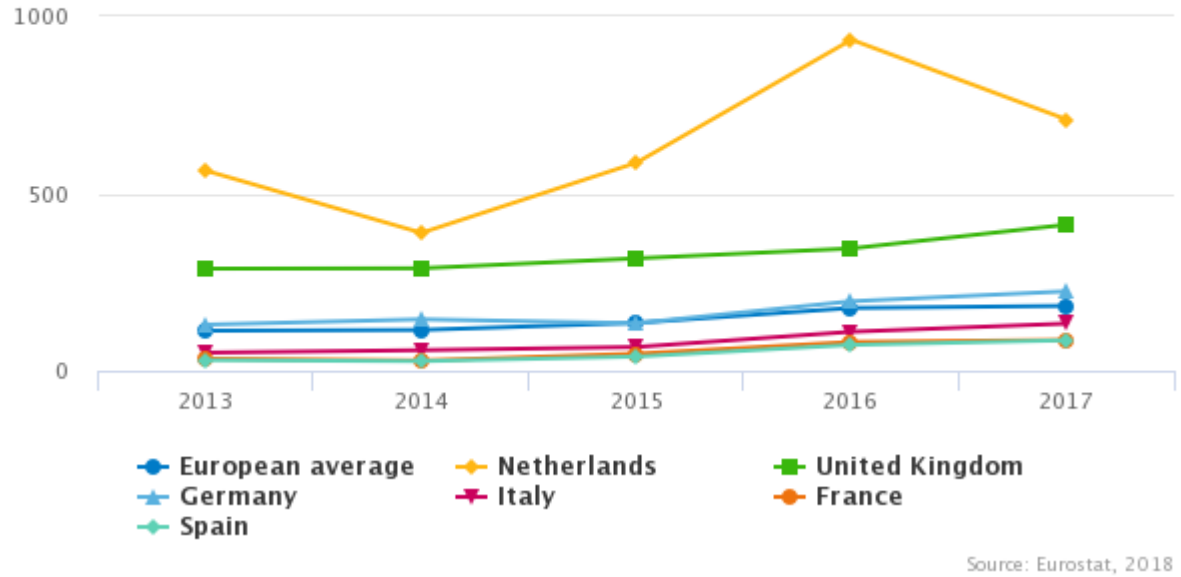
in 1,000 tonnes



Source: Eurostat, 2018

Figure 3: Per capita dried ginger consumption by leading importers 2013-2017

in grams per capita



Source: Eurostat, 2018

Interesting markets for you as an exporter include the following:

- The Netherlands is the largest importer and trader of ginger in Europe. Its imports have increased significantly in volume by 13% annually between 2013 and 2017. In 2017, 97% of Netherlands imports were sourced directly in developing countries. The country has a high and relatively unstable per capita consumption. Since 2014, consumption increased significantly. This instability and sharp increase could be caused by the country's important role as a trade hub for intra-European trade, since consumption is calculated as imports minus exports. While consumption is not expected to be that instable, imports and re-exports of ginger varied significantly during the last years, due to stockpiling. The volume of stock is not accounted for in these figures.
- Since the United Kingdom sources 93% of its ginger from developing countries, it is an interesting export market for your products. The country is also the secondlargest importer of ginger in Europe, which could be caused by the relatively substantial population of Asian descent. Its consumption per capita is significantly higher than the European average and has been increasing slightly since 2014.
- Germany is the thirdlargest importer of ginger. Its total imports in volume increased by 14% annually since 2013. The German per capita consumption is slightly higher than the European average.
- France is a large importer of ginger and its imports have increased in volume by 13% annually since 2013. In 2017, the imported volume in France reached 6,400 tonnes.
- Italy is an important trade hub for ginger. Since 2013, imports of ginger in Italy have increased significantly by an annual rate of 39%.
- Spain is a fastgrowing market for ginger. Imports into the country increased by 29% between 2013 and 2017.
- Many other smaller importers are increasingly importing ginger directly from developing countries over the last five years. Examples are Portugal (growing by 33% of imports annually), Austria (25%), Sweden (20%), and Poland (17%).

Tips:

- Visit or participate in trade fairs to test whether the market is open to your product, obtain market information and find potential buyers. The most relevant trade fairs in Europe are Food Ingredients Europe, BioFach (for organic products), Anuga and SIAL.
- See our tips on Finding buyers and Doing business for additional information.

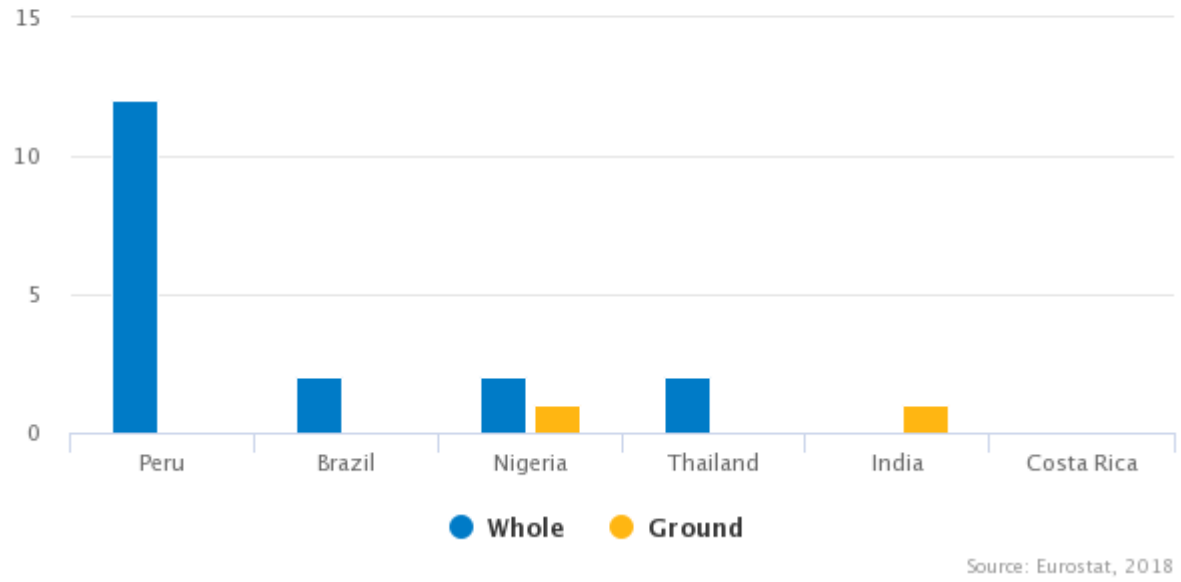
Local value addition is becoming more important

European exporters or re-exporters add value to dried ginger by further processing and packaging. However, the processing of ginger is also done in the country of origin. Especially heat treatments, such as steam sterilisation, are becoming an important buyer requirement.

The trend in local value addition is illustrated in Figure 4, which depicts ground ginger as a form of value addition.

Figure 4: Main developing country dried ginger suppliers to Europe (excluding China) by level of processing 2017

in 1,000 tonnes



Source: Eurostat, 2018

Supplies of ground ginger are relatively low (8% of the total ginger imports in 2017) but the volume increased on average by 10% annually between 2013 and 2017.

China has been excluded from the figure, as its supplies are out of proportion compared to the other supplies. Of all ground ginger imported from developing countries, 29% comes from China. However, China still mainly exports whole ginger to Europe.

Several countries have increased their exports of ground ginger to Europe. Between 2013 and 2017 Peru's exports to Europe increased from 1.4 tonnes to 285 thousand tonnes (+280% annually), Indonesia's by 45%, Thailand's by 26% and Burkina Faso's by 280%.

Tip:

- Explore opportunities to work together with European processors, especially large ones that have the size and resources to invest. You can find these processors in the member lists of national spice associations in Europe. Go to the member section of the European Spice Association (ESA) for an overview of associations.

Search for healthier ingredients

The growing demand for dried ginger on the European market is stimulated by consumers searching for healthier ingredients.

Healthy living is one of the most important trends in Europe. Consumers perceive food ingredients such as salt, sugar and synthetic additives as unhealthy. These products are increasingly replaced by other products that also add flavour, such as spices and herbs.

Consumers use dried ginger for its promoted beneficial effects to health. For example, journals and food bloggers state that the consumption of ginger helps with digestive problems, the flu and stress.

Dried, ground ginger is sold by retailers in the spices segment; for example:

- REWE in Germany;
- Albert Heijn in the Netherlands.

Due to its popularity, ginger is also increasingly used as a health supplement as well as in other food products such as tea and snacks. Examples are:

- Ginger root health supplement at Holland & Barrett (the United Kingdom);
- Organic ginger tea at Albert Heijn (the Netherlands);
- Ginger Nuts (biscuits) at Morrisons (the United Kingdom).

Tips:

- See the website of Food Ingredients Europe, an important international trade fair for the food ingredient and health sector in Europe.
- Have a look at the website of FoodNavigator to learn more about food health trends and other developments in the food sector.
- Do not make any health claims regarding the consumption of ginger if you cannot use reliable and scientific sources. European legislation is very strict in terms of health claims on consumer packaging.
- Be aware of the buyer requirements for natural ingredients for health products if you want to sell your ginger as a health product. These buyer requirements are stricter than the requirements for food.

Growing popularity of ethnic cuisines

The demand for ethnic food in Europe is rising. Since dried ginger is an important ingredient in Asian dishes, it is becoming increasingly popular on the European market.

Examples of Asian recipes that are popular in Europe and that contain ginger are:

- hot meals such as “Ginger and Hoisin Glazed Pork” and “Ginger Beef Stir-fry”;
- snacks such as ginger cookies, often consumed during the Chinese New Year.

There are two main causes for the increase in the popularity of ethnic cuisines:

- The multicultural population in Europe is growing. In 2014, 20% of newly immigrated Europeans were of Asian descent.
- Other Europeans are increasingly interested in exotic cuisines. They are linked with the rest of the world through the internet and travelling. They can easily search for Asian recipes online and bring back recipes from their holidays to Asia.

Tip:

- See our study of Trends for spices and herbs for more information on trends on the European market for spices and herbs.

Sustainability is on the rise

Sustainable sourcing is an important trend in Europe, especially in the United Kingdom, the

Netherlands and Germany.

As a supplier, you will be increasingly faced with sustainability requirements from your buyer. Many buyers see sustainable sourcing as a must.

By certifying your ginger, you can proof your compliance with sustainable sourcing. However, certified ginger is still a niche market. It represents only a small section on the total European market for ginger. In addition, most buyers in the mainstream market are unwilling to pay more for certified products. As a result, it is important to discuss the opportunities for certification with your buyers before you become certified.

Certification does give you a competitive edge. For dried ginger, the main certifications are Organic and Fairtrade. For Organic certified ginger, the most interesting markets are Germany and the Netherlands. For Fairtrade certified ginger, the most interesting market is the United Kingdom. However, ginger represents only 3% of all spices and herbs certified by Fairtrade International in Europe (31 tonnes in 2015). Such data are unavailable for organic ginger.

Tips:

- Determine whether it is feasible for you to certify your ginger. Can you find enough buyers for your product to offset your investments? You can look for buyers online; for example, on the website of the International Trade Centre or by looking for exhibitors at BioFach, the organic trade fair.
- Work together with European buyers, non-governmental organisations, national or international governmental organisations to make it economically feasible for you to receive certification. Further information is available on websites such as the Sustainable Spice Initiative, the Netherlands Enterprise Agency, the German Ministry for Economic Cooperation and Development and Cordaid.
- See our study of Buyer requirements for spices and herbs for additional information on certification standards.
- See our study of Exporting sustainable spices and herbs to Europe for additional information. This document also includes long-term expectations of the market for certified sustainable products.
- See the website of the International Federation of Organic Agriculture Movements (IFOAM) for more information on Organic certification in Europe.

3 . Which requirements should dried ginger comply with to be allowed on the European market?

You can only export dried ginger to Europe if you comply with buyer requirements for spices and herbs. Below, you will find more information on requirements that are specific to dried ginger.

Legal requirements

When exporting dried ginger to Europe, you have to comply with the following legally binding requirements.

- Food safety: traceability, hygiene and control as specified in the General Food Law;
- mycotoxins contamination: for ginger, the maximum level of aflatoxin is between 5.0 µg/kg (aflatoxin B1) and 10 µg/kg (total aflatoxin content B1, B2, G1 and G2). For ochratoxin, the maximum level is 15µg/kg;

- maximum residue levels of pesticides: if your ginger contains more pesticides than allowed, it will be withdrawn from the European market;
- microbiological contamination: your ginger is banned from the market if salmonella is found;
- food additives and adulteration: spices and spice blends are rejected by custom authorities if they contain undeclared, unauthorised or excessive levels of extraneous materials;
- maximum levels of polycyclic aromatic hydrocarbons (PAHs): contamination with PAHs stems from bad drying practices;
- irradiation: this process is allowed but not commonly used.

European buyers are increasingly requiring their suppliers to use steam sterilisation in order to combat the microbiological contamination of ginger. You could earn a significant premium if you can supply ginger that is sterilised at the source. However, investments in the necessary equipment can be very costly, at up to € 1 million.

Research is being conducted into alternatives to steam sterilisation, as this treatment negatively affects the taste of ginger. Currently, it is still the cheapest and safest method to combat microbiological contamination.

Tips:

- Check the Rapid Alert System for Food and Feed (RASFF) database for examples of ginger withdrawn from the market and the reasons behind these withdrawals. Withdrawals of ginger do not occur often. However, you should keep in mind that withdrawals can occur and avoid them at all costs. A withdrawal will influence the reputation of your ginger as well as the reputation of your country as a ginger supplier.
- Comply with the requirements listed above. Your buyer will transfer the costs for cleaning contaminated ginger to you if you do not.
- Always discuss with your potential buyers whether they want steam sterilisation. If you cannot sterilise your ginger yourself, look for local sterilisation companies that can provide this service for you.
- Comply with food safety requirements during drying, storage, processing (such as sieving, mixing, grinding or crushing), packaging and transport. If you do not comply, steam sterilisation will not work.
- You also need to prevent contamination with mycotoxins and other contaminants, because steam sterilisation cannot take these substances out.
- Keep up to date on the development of alternatives to steam sterilisation by checking online sources such as GreenFooDec.

Additional requirements

Consider complying with the following non-legal requirements to ease market access. European buyers can use these requirements as selection criteria.

- food safety certification as a guarantee: the most important food safety management systems in Europe are British Retail Consortium (BRC), International Featured Standards (IFS), Food Safety System Certification 22000 (FSSC 22000) and the Safe Quality Food programme (SQF). Always verify your buyer's preference for a specific food safety management system, as some may prefer one system over the other. For example, BRC is developed by retailers in the United Kingdom and more commonly demanded on this market. If you want to target the United Kingdom, BRC may be more important;

- Corporate Social Responsibility (CSR): companies have different requirements for CSR, such as signing their code of conduct or following common standards including the Supplier Ethical Data Exchange (SEDEX), Ethical Trading Initiative (ETI) or the Business Social Compliance Initiative code of conduct (BSCI).

Requirements for niche markets

If you want to enter a nice market such as organic of Fairtrade, it is essential that you comply with the following standards.

- sustainable product certification: the major certification systems are Organic, Fair Trade and Rainforest Alliance;
- selfverification: suppliers assess their own compliance with the sustainability code of buyers. Examples include Unilever's Sustainable Agricultural Code (SAC) or the Olam Livelihood Charter.

Quality requirements

Product quality is a key issue for buyers in Europe. You need to comply with the Quality Minima Document published by the European Spice Association (ESA). This document is leading for the national spice associations affiliated with the ESA and for most key buyers in Europe.

The Quality Minima Document specifies the chemical and physical parameters dried that ginger needs to comply with when sold in Europe before crushing and grinding (after drying).

- ash: maximum 8%
- acidinsoluble ash: maximum 2%
- moisture: maximum 12%
- volatile oil: minimum 1.5 ml/100 gr
- SO2: maximum 150 ppm

The ESA has not developed cleanliness specifications. As a result, European buyers often use the specifications for cleanliness stated by the American Spice Trade Association (ASTA).

Tips:

- Check ISO standard 5564-1982 for general guidelines on the grading, handling and packing of ginger.
- Check ESA's Quality Minima Document for more information on the chemical and physical parameters that your unprocessed ginger needs to comply with when it is sold in Europe.

Labelling requirements

Correct labelling is important for European buyers. To this end, pay extra attention to labelling your product.

For bulk ginger, you have to include the following information:

- the name of the product
- details of the manufacturer (name and address)
- batch number
- date of manufacture
- product grade
- producing country
- harvest date (month-year)
- net weight.

Other information that exporting and importing countries may require include the bar, producer and/or packager code, as well as any extra information that can be used in order to trace the product back to its origin.

Tip:

- See our study of the European market for consumer packed spices and herbs to find requirements for consumer packaging and labelling. In Europe, there are very strict requirements for the packaging and labelling of consumer products, which differ from the requirements mentioned here.

Packaging requirements

For shipping, bulk whole dried ginger roots should be packaged in jute sacks (36-65 kg). It is less common but also possible to pack the roots in wooden boxes or linen corrugated cardboard boxes (60 kg).

Ginger processed in the form of slices or powder is packaged in multi-wall laminated bags of different weights ranging from 1 to 25 kg. Common weight classes are 12.5 kg and 25 kg.

Tips:

- Always ask your buyer for their specific packaging requirements.
- Store packaged ginger in a dry, cool place to prevent quality deterioration.
- If you offer Organic certifiedhttps://answers.practicalaction.org/ourresources/item/ginger-processing ginger, physically separate it from ginger that is not certified.
- See the website of Practical Actions to learn more on improving preharvest handling and processing for ginger.
- Make sure that the materials which you use for packaging are impermeable to moisture and air. Sealing machines can be used to seal the bags.

4 . What competition do you face on the European market for dried ginger?

Your main competitors are other suppliers from developing countries. In 2017, these suppliers exported 113 thousand tonnes of dried ginger to Europe, accounting for €153 million. Of these imports, 93% was whole ginger.

China is Europe’s main supplier of ginger and also your most important competitor. The country accounted for 79% of all supplies from developing countries to Europe in 2017.

Other suppliers of ginger from developing countries are:

- Peru (11% of total supplies by developing countries in 2017)
- Nigeria (3.2%)
- Brazil (2%)
- Thailand (1.7%).

Peru's market share has increased significantly, though its supplies are small compared to China.

Fresh ginger is an important substitute for dried ginger. Fresh ginger is used for cooking, at home or in restaurants, and in food and beverage manufacturing.

The production of ginger in China is mainly mechanised. Other small suppliers, such as Peru, conduct their production manually. As a result, China is able to produce and export large quantities of ginger compared to the other suppliers from developing countries. This fact makes it difficult to compete with China if you are a smaller supplier. If you want to compete with China, you should be able to:

- deliver stable supplies of ginger, both in quantity and in quality;
- comply with delivery times;
- comply with food safety requirements.

You can also explore opportunities on niche markets such as organic and Fairtrade, or for specific applications such as beverages, which have specific requirements.

If you want to sell your ground ginger to Europe, you are competing directly with European processors. Your buyers could ask you to provide the same service as European re-exporters. You will have to make sure that you comply with their requirements such as short supply times and steam sterilisation.

Tips:

- See our study of Competition on the European spices and herbs market. Competition on the ginger market does not differ significantly from competition on the market for other spices and herbs.
- Check the harvesting calendars at the website of Nedspice to understand the different harvesting periods in large producing countries. This information is important to know, as harvesting periods in different gingerproducing countries vary considerably, which has a major impact on your competitive position throughout the year.
- Stay up to date on worldwide harvests and stock levels. Look for crop reports, which are often shared by industry players during specific spice events. Nedspice and ITC Trade Map also publish upto-date information on national and international prices for ginger.
- Explore opportunities to cooperate with European processors, especially large ones that have the size and resources to invest. You can find European processors in the member lists of the national spice association in Europe. See the member section of the European Spice Association (ESA) for an overview of associations.
- Check the Food and Agriculture Organization of the United Nations (FAOSTAT) website for ginger production data.

5 . Through which channels can you get dried ginger on the European market?

See our study of Channels and segments on the European market for spices and herbs. The channels for ginger do not differ significantly from those for other spices and herbs.

Tip:

- See our Tips for finding buyers on the European market for spices and herbs.

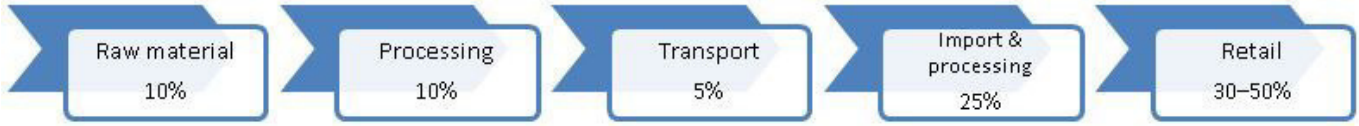
6 . What are the end-market prices for dried ginger?

Ginger is an annual crop. Its prices fluctuate between one harvesting season and the next. The price of dried ginger also depends on the price of fresh ginger.

In early 2018, dried ginger prices were relatively stable, in combination with ample supply of good quality ginger. In the beginning of 2017, international prices ranged between US$ 6,000 and US$ 7,000 per tonne.

Global market prices for ginger are strongly influenced by the largest producer of both fresh and dried ginger, China. However, traders often prefer ginger from more expensive suppliers in Peru and Brazil, for example. They prefer these suppliers because of their higher quality.

Figure 5: Indicative price breakdown for ginger



Source: ProFound, 2016

Figure 5 gives an indicative price breakdown for ginger. European retail prices for ginger are much higher than global trade prices. However, exporters from developing countries do not necessarily profit from these trade prices. European processors and retailers add large price margins.

The margins that you can receive as an exporter may differ. These margins are influenced by various factors such as:

- Country of origin;
- Current and expected future harvest situation;
- Quality of the raw material;
- Level of processing;
- Level of demand;
- Trends in prices.

Margins and profits can be higher for you as an exporter if you are able to add value locally. For example, by further processing or certification, you can create a competitive edge and benefit more.

Tips:

- See the websites of Spices Board India, Nedspice and ITC Trade Map for up to date information on national and international prices for ginger.
- Establish longlasting relationships with your buyers. Buyers are willing to pay higher prices to suppliers that are able to help secure supply and comply with delivery times as well as food safety requirements. They will also be more willing to invest in your partnership.

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Exporting cinnamon to Europe

The European market currently provides excellent opportunities for trading in cinnamon, due to continued rises in import levels and favourable prices. Europe is mainly a cassia market, but opportunities for Ceylon cinnamon are present in specific countries and segments. The United Kingdom, Italy and Belgium import a much larger share of Ceylon cinnamon than the European average. There are also good prospects for sustainable suppliers and those supplying processed cinnamon.

Contents of this page

1 . Product description

There are two main types of cinnamon traded in Europe: (1) Ceylon cinnamon (*Cinnamomum zeylanicum*) and (2) cassia (*Cinnamomum cassia*). The former comes from the bark of the cinnamon tree and is regarded to be of high quality. It is finer and has less coumarin than cassia. Cassia, the bark of the evergreen cassia tree, is a similar spice to cinnamon but the coarser and less fragrant and therefore considered to be of lower quality. In the following text, the word cinnamon is used as a general term for both species. When a specific species is meant, this is indicated specifically (as cassia or Ceylon cinnamon).

The statistical data in this document are based on Combined Nomenclature (CN) codes. The CN uses Harmonised System (HS) codes to classify products. The codes used for this study are listed below. The second code includes cassia. The cinnamon-tree flowers mentioned there are covered in this study and their share in the trade is expected to be insignificant. The third code, for crushed and ground cinnamon, includes both cassia and Ceylon cinnamon.

CN Code	Description
09061100	Cinnamomum zeylanicum blume, neither crushed nor ground

09061900	Cinnamon and cinnamon-tree flowers (excluding Cinnamomum zeylanicum blume), neither crushed nor ground
09062000	Cinnamon and cinnamon-tree flowers, crushed or ground

2 . Product specification

Quality

Product quality is a key issue for buyers in Europe and includes food safety as well as product quality. The European Spice Association (ESA) has published the Quality Minima Document, which is leading for the national spice associations affiliated with the ESA and therefore for most importers in Europe. It specifies the legal European requirements for *unprocessed* cinnamon (excluding crushed/ground cinnamon and cinnamon treated for microbial reduction) as well as additional buyer requirements not laid down in legislation. The document can be used to find out which chemical and physical parameters unprocessed cinnamon (both Ceylon cinnamon and cassia) needs to comply with when sold in Europe before crushing and grinding:

- Ash: maximum 7%
- Acid Insoluble Ash: maximum 2%
- Moisture: maximum 14%
- Volatile oil: minimum 0.7-0.1% (depending on botanical species)

Cinnamon is graded in accordance with the relevant national standard of the country of production. In addition, ISO standard 6538-1997 (cassia) and 6539-2014 (Ceylon cinnamon) provide some general guidelines on the grading, handling and packing of cinnamon.

Quality is mainly determined by the volatile oil content. There are different quality grades depending on the type of product. For example, Indonesian cassia quills come in three main grades:

- KA: 2.5% - 3.0%
- KB: 2.0 – 2.5%
- KC: below 2.0%

Labelling

Incorrect labelling is a major source of frustration for European buyers. Therefore, you must be sure to do this properly. See our study on European market for value-added spices and herbs for information on consumer packaging requirements. Bulk products have to include the following information:

- the name of the product
- details of the manufacturer (name and address)
- batch number
- date of manufacture
- grade of the product
- producing country
- harvest date (month-year)
- net weight
- any information that exporting and importing countries may require: bar, producer and/or packer code, any extra information that can be used to trace the product back to its origin.

Packaging

Whole cinnamon must be packed in new, clean, sound and dry bags of jute, cloth laminated with polyethylene or polypropylene or high-density polyethylene bags/pouches. Cinnamon powder can be packed in new, clean, sound and dry containers made of glass, tin, or aluminium or in pouches made of laminated, metallised, multilayered food grade plastic material. The containers have to be

free from insect infestation, fungus contamination, undesirable or bad smells and substances that may damage the contents. Strong smelling foods, detergents and paints have to be stored in the same room, as they will spoil the delicate aroma and flavour of the cinnamon.

3 . Buyer requirements

What legal requirements must cinnamon comply with?

Please be aware that your product will have to comply with European legislation the moment it enters the European Union. Compliance is therefore a must. Consequently, only consider exporting to Europe when you are able to comply.

Food safety: Traceability, hygiene and control

Food safety is a key issue in European food legislation. The General Food Law is the legislative framework regulation for food safety in Europe. To guarantee food safety and to allow appropriate action in cases of unsafe food, food products must be traceable throughout the entire supply chain and risks of contamination must be limited. One important aspect for controlling food safety hazards is to define critical control points (HACCP) by implementing food management principles. Another important aspect is that your food products can be subjected to official controls. Products that are not considered safe will be denied access to Europe. Some products are subject to increased controls but cinnamon is currently not on the list.

Tips:

- European buyers will often ask buyers to implement a food (safety) management system based on HACCP-principles (see under Common requirements).
- Check for increased levels of controls regarding your product. The list of spices and herbs and their supplying countries is updated regularly. Check the EUR-Lex website for the most recent list (see latest document under Amended by).
- Read more about HACCP in the EU Export Helpdesk

Contamination of cinnamon

Contaminants are substances that can be present as a result of the various stages of its growing, processing, packaging, transport or storage.

Mycotoxins

Although there are no specific maximum limits set for mycotoxin contamination in cinnamon may develop especially during prolonged storage in poor conditions without temperature and moisture control. Styrene occurs naturally in cinnamon (0.1 mg/kg). The level of styrene can increase significantly (up to 40 mg/kg) when cinnamon is subjected to high temperatures and humidity during drying, storage and transport. Styrene is not considered dangerous at normal levels of daily intake. Therefore, no limits have been set in the European Union. However, if levels rise above 20 mg/kg it affects the flavour of cinnamon caused by a foreign, solvent-like odour. Affected batches are less attractive for buyers.

Tips:

- Implement better drying, processing and storage practices and discuss them with suppliers. Valuable sources are the guidelines on Good Agricultural Practices for Spices from the International Organisation of Spice Trade Associations

- Make sure that during transport, cinnamon is either dried or there is sufficient ventilation. For more information refer to the website of the Transport Information Service.
- To read more about styrene contamination read the article of the German Food Safety Authority

Pesticides

Pesticides are generally not used for growing cinnamon. However, contamination can occur due to the proximity to other crops that are treated with pesticides. The European Union has set maximum residue levels (MRLs) for pesticides in and on food products. Products containing more pesticides than allowed will be withdrawn from the European market.

Tips:

- You can use the MRL database of the European Union in which all harmonised MRLs can be found. You can search on your product or pesticide used and the database shows the list of the MRLs associated to your product or pesticide.
- Read more about MRLs in the EU Trade Helpdesk.

Salmonella

The reason for the most rejections of cinnamon by European custom authorities is the presence of salmonella (whole, crushed and ground). There are no specific salmonella requirements defined in European legislation for spices and herbs as there are for other products. However according to Article 11 of the General Food Law, food products placed on the European market must be safe. Therefore cinnamon is banned from the market if salmonella is found. In Europe steam sterilisation is the preferred method to combat salmonella as well as other types of microbiological contamination, especially for cinnamon destined for the retail market. Whether this is demanded depends on your buyer, the use made of the cinnamon and the type of cinnamon involved. Steam sterilisation is more important for Cinnamomum zeylanicum than for cassia. Buyers often want their cinnamon to be steam sterilised but change their minds when they realise how much this treatment costs.

Tips:

- Salmonella can occur at all stages including growing, harvesting, processing, storage, packaging, and sale. The maintenance of good manufacturing and hygiene practices, together with appliance of HACCP principles, is therefore of great importance during growing, harvesting, and processing.
- Steam sterilising yourself can be costly but you can receive a premium. Working together locally with reliable service providers can be an option.
- Many buyers in Europe will expect a test report on microbiological contamination. Providing this service will make it easier to find buyers in Europe.
- Read more about contaminants in the EU Trade Helpdesk.

Food additives and adulteration

Many of the spice and herbs rejected by custom authorities or buyers have undeclared, unauthorised or too high limits of extraneous materials. There is specific legislation for food additives (such as colours, flavours and thickeners) that lists which E-numbers and substances are allowed to be used. Spices and spice blends cannot contain added colours. The use of sulphur dioxide (SO2) fumigation in the processing of Ceylon cinnamon is allowed but the maximum residue level is 150 mg/kg. Its use is not allowed for other cinnamon varieties.

Cinnamon can also be intentionally adulterated with such substances as low-grade bark. An important reason for intentional adulteration – which is a serious malpractice – is economic gain. Unintentional adulteration, due for example to fertiliser spill-over or insects, may also be encountered. Food adulteration is an important issue for European buyers. According to a panel of industry experts consulted for this study, this type of food fraud is quite common in spices and herbs. The European Union and national European governments are also becoming stricter in the enforcement of food fraud legislation. The Dutch government increased the fines on operators wilfully tampering with food from €4,500 to a maximum of €810,000 in April 2015.

Tips:

- In case you use additives make sure it is legal and agreed with your buyers. Also make sure to mention them in the list of ingredients.
- You will have to build up a track record, provide transparency and references if you want to sell processed cinnamon to European buyers. It is impossible for buyers to test cinnamon for every possible extraneous material. They will therefore tend to refrain from buying processed cinnamon outside Europe or will buy only from suppliers they trust. The burden of evidence is on suppliers.
- Refer to the Adulteration Awareness document of the European Spice Association for further information on food adulteration.
- See our study on buyer requirements for natural food additives and the website of the European Commission for more information on requirements for food additives.
- Read more about contaminants in the EU Trade Helpdesk.

Irradiation

Irradiation of spices & aromatic herbs is allowed. It is a safe way to kill organisms and affects the taste of spices and herbs less than steam sterilisation. The maximum overall average absorbed radiation dose is 10 kGy. Consumers generally prefer non-irradiated products. Therefore, this method is not widely used.

Tips:

- Irradiation is less damaging for the taste of spices and herbs than steam sterilisation. However, consumers in Europe generally prefer non-irradiated products. Therefore, this method is not widely used. In other buying countries (for example the United States) there are fewer objections to irradiation. Ethylene oxide fumigation for combating microbiological contamination is prohibited in Europe. It is however allowed in the United States.

- Read more about irradiation on the website of the European Commission. The burden of evidence is on suppliers.

What are additional requirements buyers often have?

Food safety management and traceability

As food safety is a top priority in all European food sectors, you can expect many players to request extra guarantees from you in form of certification. Many European buyers (e.g. traders, food processors, retailers) require the implementation of a (HACCP-based) food safety management system. The most important food safety management systems in Europe are BRC, IFS, FSSC22000 and SQF. All the mentioned management systems are recognised by the Global Food Safety Initiative (GFSI), which means are accepted by major retailers.

Tips:

- European market entry is more likely than not to include implementing a food safety management system, and it is therefore important to familiarise yourself with them.
- Different buyers have different preferences for a certain management system. Check which one is preferred (e.g. British retailers often require BRC, IFS is more commonly required on the mainland).
- Read more on Food Safety Management Systems at the Standards Map.

Corporate social responsibility

European buyers increasingly pay attention to their corporate responsibilities regarding the social and environmental impact of their business, especially in northwestern Europe. This also affects you as a supplier. Important issues in the cinnamon supply chain are soil degradation, waste water treatment and the impact on biodiversity. European companies have different definitions of CSR and different priorities and ambition levels in this field. Hence, there is no single way to address CSR issues. The right approach could range from signing a code of conduct to ensure compliance with the most important requirements to mapping out and addressing all the CSR issues in your entire supply chain.

Tip:

- Exporters interested in supplying the European market should at least address the most important CSR issues. Many buyers already use this as a selection criterion for new suppliers. Prioritise CSR in your operations by considering your impact on various social and environmental factors, what you can feasibly do to improve your impact and what is appreciated by European buyers. List the relevant CSR issues with, ISO26000 provides guidance.

What are the requirements for niche markets?

Sustainable product certification

There is a growing market for certified products with well-known consumer logos. Organic products focus on land use and inputs. Fairtrade focuses specifically on improving the living conditions of smallholders in developing countries by paying them a premium. Rainforest Alliance, a mainstream sustainability scheme with a focus on social as well environmental issues has recently developed a standard for several spices and herbs.

Processors and exporters can play an important role in the certification process by coordinating the activities of smallholders. If they handle certified sustainable cinnamon they will have to be certified themselves to ensure a reliable chain of custody. There are specific certifications for traders, such as Fairtrade's Trade Standard or the Rainforest Alliance's Chain of Custody standard.

Tips:

- To find companies in Europe or in your own country that supply organic spices and herbs: see The International Trade Centre and Organic Bio. Refer to the Fairtrade producer database to find certified suppliers. The price list will give you an indication of the price you will have to pay farmers for Fairtrade or Fairtrade/Organic spices and herbs.
- Refer to the ITC Sustainable Spice Initiative Equivalency Tool for an explanation and comparison of sustainability standards.

Supplier assessment

As an alternative to product certification, European buyers conduct a supplier assessment. They use supplier assessment questionnaires that contain questions on both quality and CSR, for example on child labour. Such supplier assessments are used widely.

Suppliers can also assess their own compliance with a sustainability code of their buyer; for example, with Unilever's Sustainable Agricultural Code (SAC) or the Olam Livelihood Charter. In addition, Olam has recently also launched an ambitious sustainability programme called AtSource.

Tip:

- Refer to Unilever's Implementation Guides for further information.

4 . Trade and Macroeconomic Statistics

The European cinnamon market continues to provide opportunities for exporters from developing countries to do business. Imports and prices will continue to increase in the coming years.

Imports of cinnamon remained stable throughout the economic recession that swept through Europe from 2008 onwards and continues to affect the European economy. In addition, imports do not drop when prices rise. Cinnamon is a minor but important ingredient that contributes little to the total cost of the food in which it is used. The demand is inelastic to price changes.

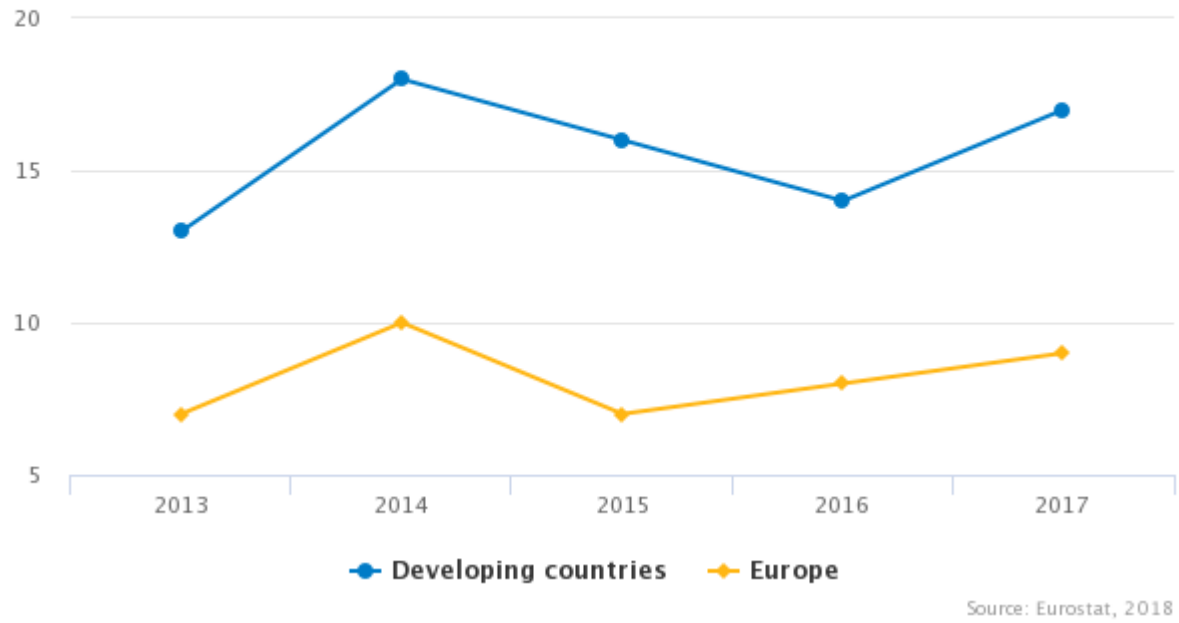
Tip:

- The profitable market conditions make it a good time to invest in your business. Invest or look for investments to improve post-harvest processing, quality, extra cleanliness (depending on your current level of professionalism). It can get you a significant premium (2-5%).

Imports

Figure 1: European imports of cinnamon 2013–2017*

in 1,000 tonnes



Source: Eurostat, 2018

* Countries other than European or developing countries are negligible and excluded from this graph. In 2017, these only accounted for 0.4% of total European imports.

Between 2013 and 2017, the volume of European imports increased by 6% per year. In the same period, the value of imports increased by 19% per year. This indicates a strong price increase. The average unit import price fluctuated around €3 per kg over the last five years. In 2017, this went up to almost €3.50 per kg, due to the rising prices.

European imports of cinnamon from developing countries amounted to 17 thousand tonnes in 2017, with a value of €51 million. In 2017, developing countries accounted for 64% of European imports of cinnamon. The remainder comprised of European re-exports (9,231 tonnes).

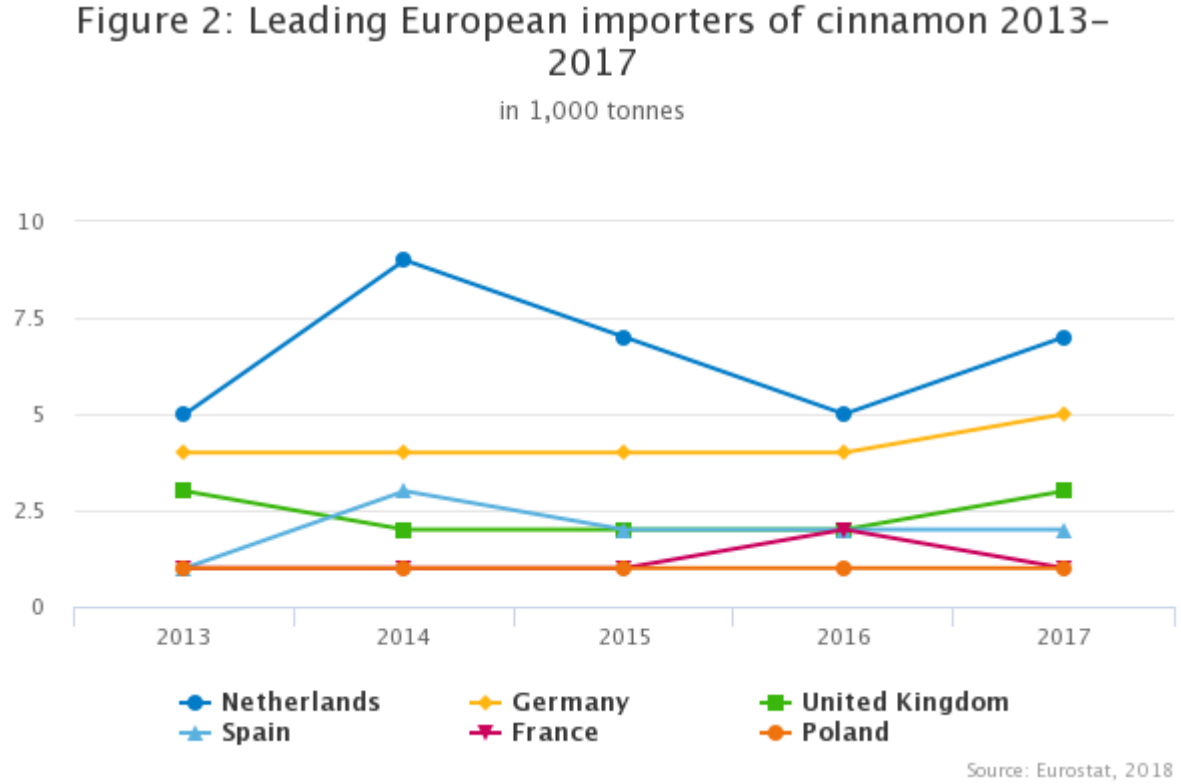
The cinnamon tree takes a long time to become productive (up to 15 years for cassia), which gives this product a long price cycle. Consideration of the long-term price development shows clearly that prices have been low for a long time and have only become more attractive for farmers in recent years.

An important reason for the price increase is the rising global demand in such countries as India, China and Brazil in combination with slowly growing production (see the section on Production below). Stock levels have also fallen significantly, which causes prices to react more directly to market trends and to fluctuate more strongly in the short term. Although prices are expected to increase in the long term, price drops are still possible from time to time. Exporters with significant stocks of cinnamon and farmers will base their decisions concerning product retention on the current price levels.

Tips:

- Keep up to date on prices. You can use online sources such as International Trade Centre (ITC) Market Insider or IEG Vu (paid service).
- With global demand increasing it is becoming harder for European buyers to secure supply. It is therefore a good time to establish long-lasting relationships with serious buyers. Buyers are willing to pay higher price to suppliers that are able to help secure supply, comply with delivery times as well as food safety requirements. They will also be more willing to invest in your partnership.
- Be careful however not to commit to prices far in advance. This could have an adverse effect on your profitability, in view of the current favourable price trends.
- Refer to the section *Exports* to learn more about (re-)exports by European countries.

Figure 2: Leading European importers of cinnamon 2013–2017



Of the leading importers of cinnamon, the Netherlands, Germany and the United Kingdom import high shares of cinnamon from developing countries (49–93% of total imports). As such, these countries offer good opportunities for exporters of cinnamon.

Most European countries increased cinnamon imports from 2013 to 2017. Exceptions are the United Kingdom and smaller importers Greece, Iceland and Finland.

European imports of cinnamon cover whole cassia and whole *Cinnamomum zeylanicum*, as well as ground cinnamon (see section on suppliers below). Cassia and *Cinnamomum zeylanicum* have different flavour profiles. The latter is often considered to be the 'real' cinnamon and of better quality.

Only in Belgium, Italy and the United Kingdom the majority of imports consists of is *Cinnamomum zeylanicum*. Other European countries import larger shares of cassia. The cheaper cassia is a good substitute in many applications at times of economic recession and rising prices. In most applications, the taste difference will not be noticed by consumers. Besides, the bitter taste of cassia has become more popular in recent years.

The Netherlands imports large volumes of whole other cinnamon (including cassia) but hardly exports any of this. This means it is used for processing and/or consumption. The Netherlands does however re-export a large part of the whole *Cinnamomum zeylanicum* it imports.

European processors may focus on improving their downstream activities, such as blending and the development of new tastes, or on the upstream activities, strengthening their cooperation with exporters in developing countries. Such cooperation can consist of transfer of knowledge and resources or European companies integrating companies in developing countries.

European processors add a lot of value. The average price of crushed/ground cinnamon exported by European countries to other European countries is twice as high than that coming from developing countries.

Tips:

- Explore opportunities to work together with European processors, especially large ones that have the size and resources to invest. Find European processors in the member lists of the national spice association in Europe. Refer to the member section of European Spice Association (ESA) for an overview of associations.
- Make a statistical analysis to get an insight into the differences between leading European importers. Create a free account for statistical databases such as Eurostat and ITC Trademap. Complement your statistical analysis with an analysis of your own position to ensure a strategic fit with your buyer concerning such matters as scale, level of organisation, product (mainstream or niche) and ability to comply with extra-legal food safety and sustainability requirements.

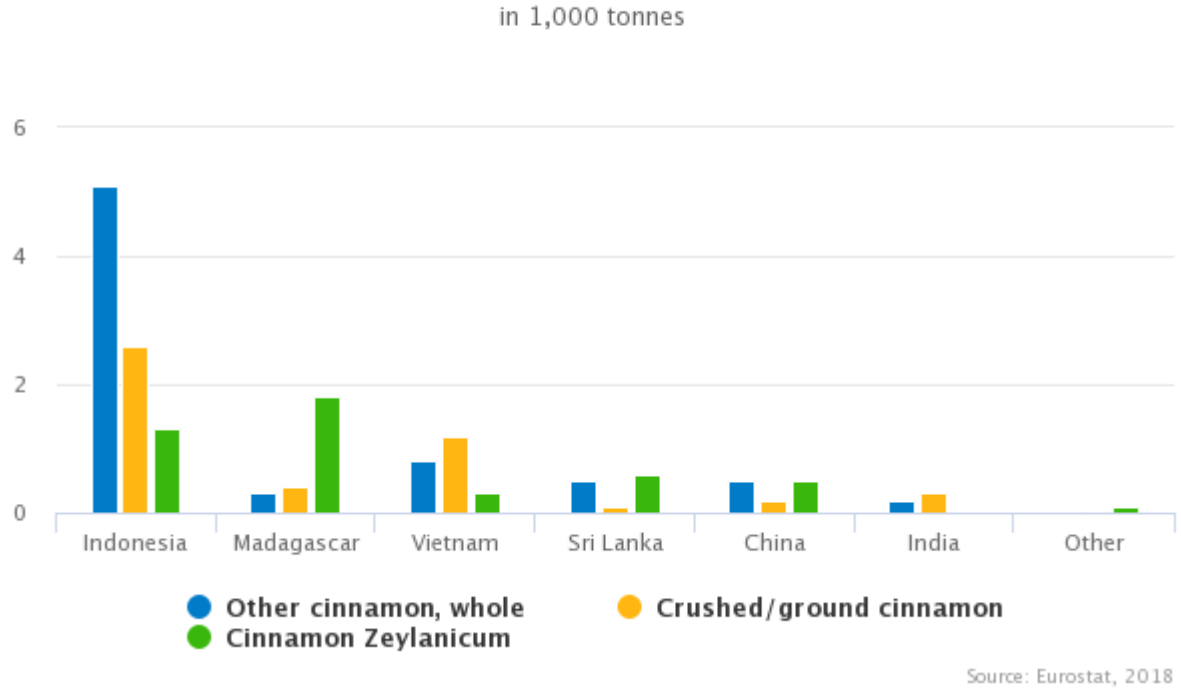
Suppliers

The developing countries supplying cinnamon to Europe form a select group of countries (Figure 3). Changes often result from the quality of harvests worldwide, global price levels and the development of demand and production in the country of origin.

Tip:

- Adulteration (i.e. mixing with extraneous material) and using lower quality product when not agreed upon are two practices that European suppliers often fear when dealing with suppliers of ground product from developing countries. Only use these practices when specifically agreed upon and when in accordance with European law.

Figure 3: Developing country suppliers of cinnamon to Europe, by level of processing, 2017*



* Excluding Norway, Switzerland and Iceland as data on whole and crushed cinnamon is incomplete for these countries.

In 2017, 44% of European imports from developing countries consisted of 'other' whole cinnamon, 27% was Ceylon cinnamon and the remaining 29% was crushed/ground cinnamon.

The market for crushed/ground cinnamon is opening as European buyers are increasingly buying cinnamon processed at the place of origin. European imports of crushed/ground cinnamon from European countries are increasing at a faster rate (+10% per year between 2013 and 2017) than imports from developing countries (+5%).

Indonesia is currently the largest developing country supplier of crushed/ground cinnamon. In 2017, this country accounted for 23% of European imports of crushed/ground cinnamon. Indonesian exports of crushed/ground cinnamon to Europe slightly decreased by 1% per year between 2013 and 2017. Exports from smaller suppliers grew by 9–28% annually. The exception was India, where exports of crushed/ground cinnamon decreased by 4% from 2013 to 2017.

Tips:

- Harvesting periods of different cinnamon producing countries differ strongly. This has a large influence on your competitive position throughout the year. Refer to the harvesting calendars by Nedspice to see the different harvesting periods of large producing countries.
- Addressing quality issues is a great way to add value and open up markets and should be explored before other methods of adding value.
- It is more costly to clean contaminated ground cinnamon than those in whole form. Your buyer will transfer costs to you if your products do not comply with requirements.
- See our studies on value added spices and herbs and oleoresins for more information.

Exports

European exports amounted to 12.7 tonnes with a value of €53 million in 2017. The volume of exports rose by an average of 14% per annum between 2013 and 2017. In the same time frame, the value of exports rose by 21% annually due to the strong increase in the global price of cinnamon.

In 2017, 92% of all European exports of cinnamon ended up in other European countries. The main exporters are:

- The Netherlands (57% of total exported volume)
- Germany (13%)
- France (5%)

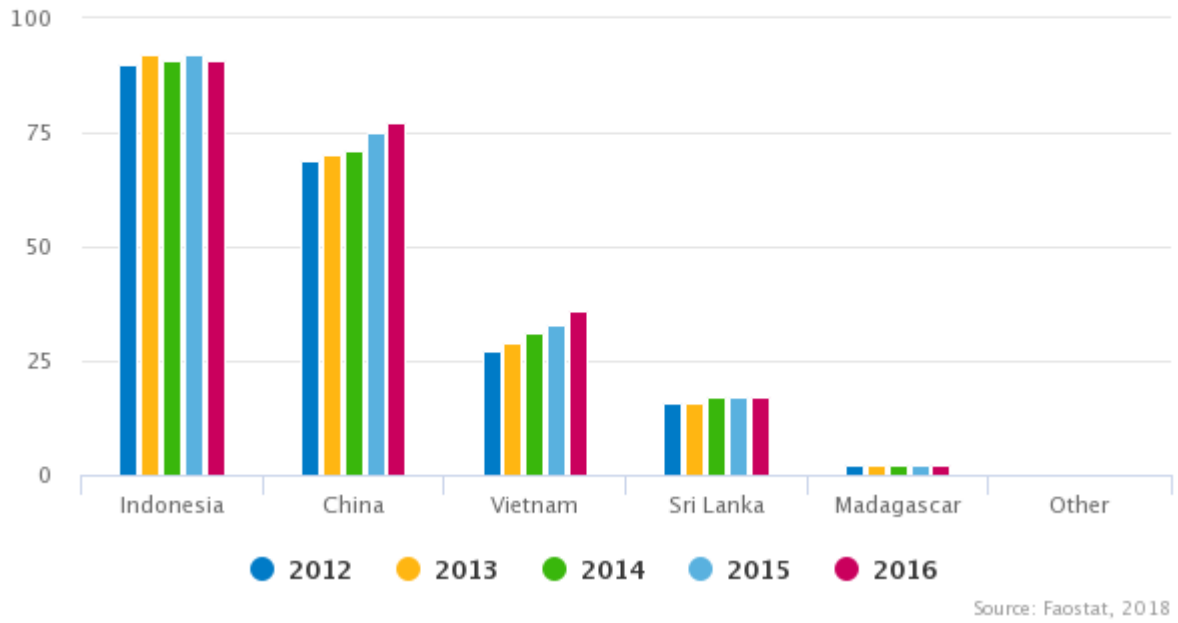
Tips:

- Investigate buyer requirements in your target market and deal with buyers' potential reservations in advance. Buyers who do not deal directly with suppliers in countries of origin may have reservations regarding quality, food safety and supply security.
- Get references from your other European buyers. You should also be aware that you may be asked to provide the same service levels as European buyers (short supply times, small orders, steam sterilisation, further processing, etc.).

Production

Figure 4: Global production of cinnamon 2012–2016

in 1,000 tonnes



Source: Faostat, 2018

In 2016, global cinnamon production amounted to 224 thousand tonnes, representing an average annual increase of 2.3% since 2012. The increase in global demand led to lower global stock levels and rising prices.

Tips:

- Refer to FAOSTAT for production statistics of cinnamon production.
- Look for crop reports to learn about the expectation regarding harvest worldwide and the level of stocks in consuming and producing countries. These are often shared by industry players during specific spice events.

Cinnamon processing and heat treatments such as steam sterilisation are increasingly being done in countries of origin. Heat treatment is quickly becoming an important buyer requirement. At the moment European processors still do most of the heat treatment.

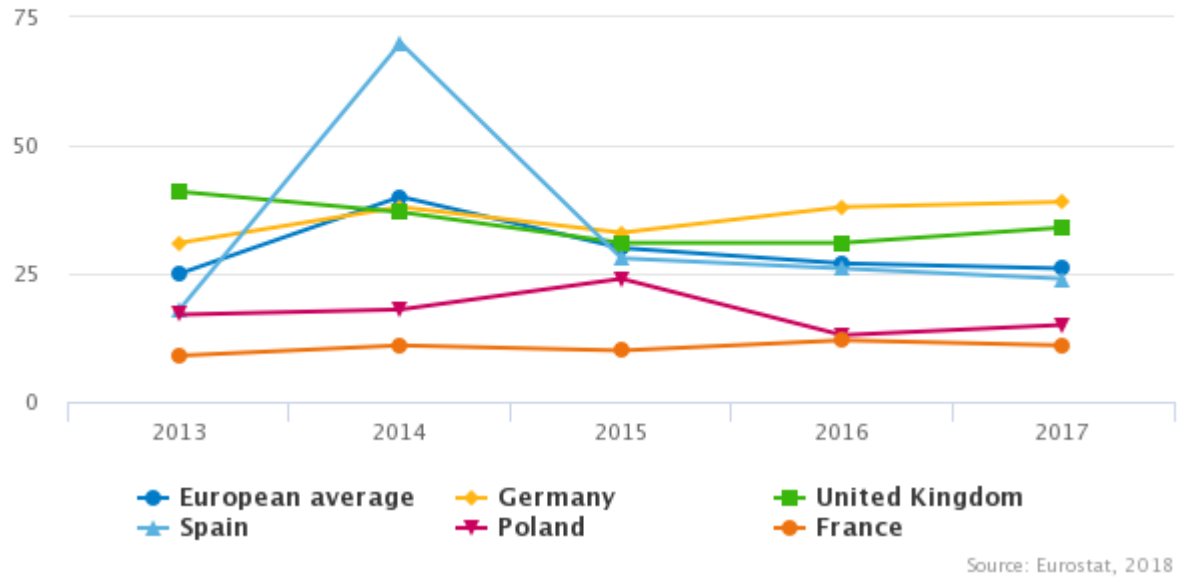
Tip:

- Cinnamon farmers often harvest their entire crop once prices rise. In order to secure supply, train your farmers to integrate more long-term practices.

Consumption

Figure 5: Per capita cinnamon consumption of leading importers 2013–2017

in grammes per capita



* Consumption is calculated as Imports – Exports. The figure thus includes both industrial and household use of cinnamon.

Apparent consumption of cinnamon in Europe amounted to 12,700 tonnes in 2017. Since 2013, it increased by 14% annually.

Cinnamon is consumed throughout Europe. The per capita consumption is especially high in northwest Europe where cinnamon is traditionally widely used in different sweet products (e.g. cookies, rolls, cakes) as well as savoury ones (e.g. spice mixes).

Tip:

- Check the economic forecasts for European Member States by the European Commission to see which countries will provide an attractive economic climate in the coming years.

5 . Market Trends

Internationalisation of eating habits: cinnamon is commonly used in foods and beverages throughout Europe, e.g. in bakery products, cereals, sweet, tea and curries. In Europe, a large South Asian community uses cinnamon in its cuisine. This community (most notably in Western Europe) is still growing steadily, also in other regions. Therefore, demand in these segments is likely to increase.

Tip:

- Refer to our study on trends in the spice and herb market for more information on trends.

Limited innovation in processing: cinnamon harvesting is labour intensive and can account for up to 60% of the total cost of production. The peeling of the bark from stems is usually done by hand by skilled peelers. Machines are being developed that might bring down processing costs, but usually this affects the quality of the cinnamon. As the quality of cinnamon is also judged by its appearance (broken or entire quills) hand-peeled cinnamon is aimed at the high-end market.

Tip:

- Investments in new technology are not always necessary. Small improvements in processing (e.g. drying) can already lead to a significant increase in quality. It makes sense to help your suppliers with these practices. Practical Action offer advice on cinnamon drying and a list of suppliers of drying equipment. Other valuable resources are the guidelines on Good Agricultural Practices for Spices from the International Organisation of Spice Trade Associations.

Steam sterilisation is an effective way of combating microbiological contamination. It can earn suppliers a significant premium if they are able to supply steam-sterilised cinnamon, sterilised at source. Investment in sterilisation equipment can be very costly (up to €1 million). An important downside of steam sterilisation is that it negatively affects the volatile oil content, which produces the flavour. In addition, it can change the colour and properties of cinnamon. For example, the food thickening properties of cassia are impaired by steam sterilisation. It therefore depends strongly on your buyer whether he/she will require steam sterilisation and is willing to pay for it.

Tips:

- Determine whether your (potential) buyers want steam sterilisation before considering providing the service.

- Keep up-to-date with the development of steam sterilisation alternatives GreenFooDec.

Sustainability is on the rise: sustainable sourcing is an important trend in Europe, especially in the United Kingdom, the Netherlands and Germany. Important issues in the supply chain are child labour, healthy and safe working conditions and loss of biodiversity. As a supplier you will be increasingly faced with sustainability requirements from your buyer. Although sustainable cinnamon is still a niche market, demand for products certified for compliance with sustainability standards is increasing. Organic and Fairtrade cinnamon have been on the market for some time. Cassia Co-op was the first to introduce Rainforest Alliance-certified cassia to the European market, in 2013. A major challenge for the market for certified sustainable spices and herbs is that they have to be sold at a higher price to cover some or all of the certification costs. This has resulted in an ongoing debate in the sector concerning the best way forward in implementing sustainability in the mainstream market. The option of third-party certification is still under debate. As mentioned above, self-verification is expected to become more common in the future in the mainstream market.

Tips:

- Governmental and non-governmental organisations in developed countries often have programmes and subsidies available for investments in sustainability. You should therefore look for partners in the promotion of sustainability with the aid of these funds. Further information is available on such websites as the Sustainable Spice Initiative, Netherlands Enterprise Agency, German Ministry for Economic Cooperation and Development and Cordaid.
- SMEs in developing countries will find it hard to operate independently in this field. A certain scale is often required to make certification economically feasible. European companies may be willing to invest in the training of farmers in the country of origin and in helping them to obtain certification. As small farmers often do not have the capacity needed to process, store and export their product, exporters can play a vital role in this process. Working with NGOs and national or international governmental organisations is also a good way of attracting capital.

Coumarin consumption subjected to more stringent scrutiny: coumarin is a moderately toxic, fragrant organic chemical compound found in cinnamon, especially in cassia. In response to health concerns, the amount of coumarin in foodstuffs is limited by European legislation. A recent study by the Danish food safety authority has shown that the famous Danish cinnamon roll significantly exceeds the limit for daily intake. The Danish Bakery Association was able to react to these concerns by getting cinnamon rolls reclassified as traditional food so that they can maintain their current product composition. The effect on the demand for cinnamon (especially in Denmark) is not measurable, but consumers are likely to be more cautious in future.

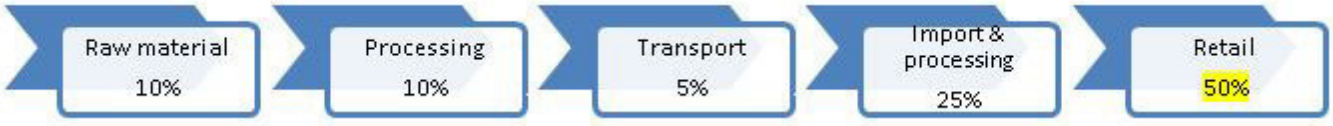
Tips:

- See our study on exporting Sustainable Spices and Herbs to Europe for more information about long-term expectations of the market for certified sustainable products.
- To keep up with the latest news regarding European food regulation, hygiene and food

alerts, regularly check the website of the European Food Safety Agency.

6 . Price

Figure 6: Indicative price breakdown of cinnamon, sold in spices and herbs section of supermarkets



Source: ProFound

Please be aware that this price breakdown for cinnamon is only a general indication. It is influenced by many different factors. These include the country of origin, the current and expected future harvest situation, quality of the raw material, level of processing, level of demand and the trend in prices.

In mid-2016, ground cassia (sold in small consumer packages weighing 35-50 grams) in the multiple retail market was priced at around €16–53 per kilo depending on brand, quality and outlet. Whole cassia is often more expensive (up to €74 per kilo). An important reason is that the labour costs for production of cinnamon sticks are significantly higher than those for ground cinnamon. In addition, cinnamon sticks come from younger trees. The retail price of sustainable or organic cinnamon can be significantly higher than that of conventional cinnamon. For example, organic cinnamon can attract a premium of 20-40%. Margins are generally lower for cinnamon with Rainforest Alliance certification.

Tip:

- Keep up to date on prices. The Indian Spice Board publishes weekly and monthly prices for cinnamon (Indian as well as international prices). An analysis of prices is also often provided by market and crop reports such as those published by McCormick and Nedspice or public sources such as Business Standard.

International prices are often given in US dollars. The changing value of the Euro thus affects European importers who have long-term contracts with their suppliers. Whether fluctuating exchange rates are beneficial for exporters from developing countries depends on the value of their own currency relative to that of the US dollar.

Tip:

- Keep up to date on exchange rates, with the aid of websites such as Oanda.

7 . Useful sources

- European Spice Association - http://www.esa-spices.org - provides information on its national spice association members

- Food Ingredients Europe - http://www.foodingredientsglobal.com- important international trade fair for the food ingredient and health sector in Europe
- SIAL - http://www.sialparis.com - large international food fair held in France every year
- Biofach - http://www.biofach.de - largest European organic food trade fair held in

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Good Agricultural Practices

(Chili)

Myanmar Name - ငရုတ်

English Name - Chili

Scientific Name - *Capsicum annum, Capsicum frutescens*

Family - Solanaceae

Introduction

Chili is an important spice crop. The world largest chili growing and producing countries are India, China, Turkey, Nigeria, Mexico, Indonesia, Korea, Italy, Romania, Tanzania, and Egypt. In Myanmar, according to the 2014-2015 data, Mandalay, Magway, Ayeyarwaddy and Sagaing Regions are the most chili growing areas and cultivated (27736) ha of wet chili and 275540 ha of dry chili. The yield resulted in (77463) tons of wet chili and (120834) tons of dry chili for one year.

The pure and qualified seed, which is suitable to the market demand and regional weather and soil condition, should be used. The variety and the cultivation technique should be the one that use the least pesticides and should cooperate with the system that reduces environmental damage.

Myanmar GAP aims to reduce the hazard of products from handling during processing, harvesting and after harvesting.

Myanmar GAP is the one that considers the food safety, product quality, less environmental damage and healthy of labours and their social welfare.

The performance of Myanmar GAP is the practice that follows the GAP and it makes agri-products qualified and safety, and the economically benefit.

The products produced by Myanmar GAP must be able to be checked back.

Myanmar GAP based on ASEAN GAP, GLOBAL GAP and should be followed to produce the crops safely not only for Myanmar and also to export to ASEAN and International countries. That's why, GAP was made in Myanmar.

1. Land Preparation

- The growing area should be free from chemical and biological hazard. Laboratory test must be done. Record should be taken by field map.
- Chili can be grown in a wide range of soil and sandy loam is the best for chili. The optimum pH level is 5-5.7. Deep-harrow should be thoroughly done and irrigation and drainage canals should be systematically made.

2. Water

- The quality of water for agriculture should be tested.
- Water wasted by husbandry zone, hospital, industrial, municipal and the one that can pollute environment should not be used. If sewage is wanted to be recycled, it is needed to follow WHO Guideline.
- Care should be taken not to loss moisture during transplanting nursery plants to fields in chili cultivation.
- It is needed to keep moisture till the plants recover and drainage should be done in special care up to the flowering stage.
- Since low moisture in the soil can brings drop of flowers and fruits, irrigation should be done depending on the plant condition. (Note: over-flooding can result in plant death.)
- If grown in seed bed, good water management, sprinkler, and drip irrigation system can enhance the plant growth and development. Special care should be taken not to lost moisture in field during transplanting. Irrigation should be done in plant recovering stage and flowering starting stage.
- Flowing of water through the fields or area can improve the quick movement of soil-borne diseases. You should aware of contaminating diseases into the fields below the areas that were contaminated before.
- Water requirement – it is important to irrigate in a suitable condition. Less or excess water can affect the plant. In sandy soil, low amount of water with frequent irrigation is needed and high amount of water with less frequent irrigation is needed in loam soil. Less amount of water can result in yield reduction, less photosynthesis, decreasing growth rate, unable to flowering, less fruit setting, less fruit development, small fruit size, low quality and dropping of flower. Excessive amount of water can cause insufficient oxygen in soil, wilting of plant, infection of diseases in root, and slow plant development rate etc.

3. Seed/ nursery plant

- The chili variety, which is suitable to the growing area condition and free from pests and diseases, should be chosen and grown.
- -The area where seeds/nursery plants and vegetative parts are collected and date and number should be recorded.
- The current varieties grown in Myanmar are Moe-htaung (the tip of the chili turns towards the sky), Aut-side (the tip turns towards the ground), Mi-thar-su (family) and long fruit variety.
- The seed from the chili which is adaptable to water and soil condition of the growing area, free of white fly and have beautiful fruits.
- Depending on planting system, 50 to 70 grams of seed is required for sowing. Should be plant market demanded cultivars for economically benefits.

(4) Fertilizer and their amendment

- Do not allow to include dangerous chemicals and other Biological substances in the fertilizers or other soil amendments for each growing crop.
- Use natural fertilizers only after well decomposed.
- Do not make mixing and store of fertilizers or other soil amendment and decomposition of organic substances in places where it can cause degradation of soil and water resources.
- For purchasing and buying for fertilizers or other soil amendment, they must be legally registered. Moreover its record is also need.
- For chili, natural fertilizers and chemical fertilizers should be systematically applied if necessary. For example; compound (15:15:15) should be applied on soil bed as basal fertilizer.
- Weed control should be done 20 days after transplanting. One month later, half of urea one bag should be applied.
- Pitching off and branch selection should be made. 60 days after planting, the next half of urea should be applied for plant supporting again.

(5) Agricultural chemicals and other chemical substances

- Integrated pest management (IPM) should be practiced for minimizing use of chemical inputs.

- Care should be taken to avoid environmental pollution and public health problems according to the law for pesticide and fertilizer.
- If necessary for using chemical substances, legally registered chemicals must be used. And also pesticides produced from plant and Biological pesticides should be used.
- After spraying, harvesting time should be accurate according to the time regarded for each type of chemical group.
- The training for systematic handling of pesticides must be attended.
- The buying, storing, using, applying and throwing or removing of agro chemical might be written in the note book.
- Fuel, lubricant and other non-agricultural chemicals might be handled, stored and removed to be as least pollution as to the crops.

(6) **Care and management for plant**

To grow quualified chili, the following ways described below should be done.

(6.1) Seed Raising

- The selected area for raised bed should be prepared by covering and burning of hay, dry grass and wastes to be free from soil born pests and diseases.
- The raised-bed should be carefully prepared by adding and mixing furadum 3G. The seeds should be raised for 6 inches apart from each line. Or should be planted in the nursery bag in which mixed soil was added.
- The cover is needed for raised bed in the hot season. The seeds should be mixed with Cevin powder to protect the danger of soil borne pest and ants.
- The bed should be watered regularly to maintain soil moisture. If temperature is 25 degree Celsius and above, the seed can sprout in about 7 to 8 days and it takes 15 days and above to sprout in cold season. After the young plant sprout, the shading shelf should be needed to protect from sun burning and frost chilling. The plants should be transplanted after the age of 25 days.
- After transplanting, the first shoots below and flowers between two branches should be cut off for 2 to 3 times.

(6.2) **Bed preparation and planting**

- The selected area for raised bed should be prepared by burning of hay, grass hay and wastes for cleaning of soil born pests and diseases. Before planting, the bed should be made for the size of 3 feet width, 25 feet length and 6 feet height.
- The raising bed should be prepared by adding furadum 3G and covering with reflecting plastic to achieve advantages of attaining soil moisture, dying soil born pests, protection from weed, fully receiving the added fertilizers and controlling from pests. The first transplanted nursery plants should be watered regularly to avoid from drought. After appearing of branches, the first flower and branches below it should be cut off.

(7) **Agriculture and other related tools**

- Materials used for picking of chili, storage materials nd others should be clean and not make the product dirty.
- Wastes, chemical and other dangerous materials must be definitely marked. The chili must not be added or stored with these things.
- The using tools for producing crops, storage materilals and other things are not to make the crops diryty.
- Wastes, chemical and other dangerous materials must be definitely marked and crops should not be put and store in that.
- Boilers, sieves and materials used in drying chili should be washed and cleaned before and after using and stored carefully.

8. Harvesting and product preparation

Picked green chili and dried chili should be kept on table or block so as to avoid direct touch from ground or floor or store floor.

- Water used to boil harvested chili needs to be clean.
- Chili should be selected and packed according to the grading standard.
- Chili should be picked or harvested early morning in cold weather condition. Harvesting should not be done during raining and in wet condition just after raining.
- The long stalk of the fruit should be picked together with the fruit during harvesting. Picking from the end (between stalk and fruit) is to be avoided.

For the purpose of dry chili, care should be taken not to harvest unripe and over ripe fruits. Over ripe fruits can decrease the fruit quality.

- For the purpose of green chili, harvest should be done when the fruit mature and become dark green or start green color.
- Harvesting should be done 5 days interval. Frequent picking can result in high yield and long plant life. Picking the ripe fruits can do low yield and make the plant life short.
- To get the good qualified dry chili, the well-matured fruits in reddish color should be harvested 6-10 weeks after flowering.
- Chili drying shelf and the floor must be sprayed by pesticides and fungicides to avoid fungal infection. Spraying should not be done within 2 weeks before picking chili if chemical is used.
- To be shine and to protect fungal infection and to reduce white butterfly, immerse in 60 ºC boiling water for 3-5 minutes and then, dispose to sun.
- In dispose to sun, display chili on mat or shelf.
- Dry chili should be sold only after testing Aflatoxin.
- Aflatoxin is a poisonous mold like chemicals produced from Mycotoxin. Aflatoxin derived from Aspergillus. It can grow in average 16 ºC. In seeds, it can live in water content of 0.82 Aw and resistant to temperature 13 ºC to 37 ºC.
- Infection of aflatoxin in crops can depends on moisture content, types of crops, crop temperature, good aeration of store (oxygen in air), microbiological molds in crops, damaging physical appearance of crops. It was found that the second most content of Aflatoxin is in dry chili. In each country, the content of Aflatoxin in crop for human and animal feed is separated and codified based on the nature of that country for the control and measurement. WHO (World Health Organization) pronounced the content of Aflatoxin for any food for adult is 20 ppb, for child is 0 ppb, for animals is 55 ppb.

- If the food which contains high content of Aflatoxin was consumed, the former diseases are Pancreas cancer and immunity toxicity.

- Regular cleaning need to be done in fields.
- To protect fruit stalk rot Disease.
- To destroy plant debris.
- To practice crop rotation method.

- Good control of pests and diseases.
- To keep the certain moisture percent in drying chili after harvesting.
- Not to do water pouring and water injection to dry chili for getting more weight and export to market.

9. Storage and transportation

- Chili should be stored and carried separately with chemical and biological danger.
- Transport vehicles should be checked if clean, chemical, other materials and pesticides before use.
- Green chili must be stored in 7-10 ºC. Storing under 7 * ºC can cause cold injuries, and water marks.
- If dry chili is stored, it needs moisture 10 % of dry chili, and cold and dry place.
- In packaging, the method which can protect the fruits from injuries should be used. The materials inside the packaging must be clean. The quality should protect any damages of products from inside and outside damage.

10. Building infrastructure

- In packaging, handling and storing of the produces, special infrastructure or special places should be built to decrease damage. Regular maintenance should be done.
- Avoid storing the produces with other materials, including fuel, pesticides and fertilizers, machinery tools.
- The building which includes cover and roof is needed to dry chili.

11. Control of animals and pests

- Pests and agricultural animals should not be in harvesting, packaging, and stored places.
- Protection and control of pests and diseases should be done before raining. After raining, protection and control should be done as quick as possible.
- Heavy rain and flooding can cause floating and run off pesticides for soil borne pesticides together with water.
- Read the instruction of systematic insecticide and nematicide and use during the growth of chili and tomato plants.

- Bacteria and Fungi can seriously affect in wet condition. Only copper based bactericides are registered for bacteria in fields and they are just for protection.
- Bacteria can easily affect in chili and tomato and cause serious damage of yellowing leaf and dropping of leaf.

The Major Pests in Chili

Major Diseases in Chili

No.	Disease Name	Pathogen	Symptom and Sign	Time of Infestation	Control Method

No.	Pest Name	Scientific Name	Sign	Damage Time	Control Method
1	Thrip	*Thrips tabaci*	Shoot dying, decoloration and deformation of flowers as water soaked. Leaves rolling and curling can be seen.	Can be infected from the stage of nursery plant to harvesting time.	Control weed, burn residual plants and spray systematic insecticide.
2	Aphids	*Aphis gossypii*	Deformation, decoloration and sooty mold diseases can be seen to flowers and leaves. Plants can be short and development can be slow.	Can be infected at the time of flowering and vegetative growth.	In order to have good ventilation, branch cutting should be done. Systematic insecticide should be sprayed.
3	Red Spider Mites	*Tetranychus spp.*	Leaf surface is chewed and sucked. The small white spots can be seen. If the damage is more and more, leaves can be yellow and dried.	Can be infected throughout the plant life time.	Insecticide that can control these pests should be sprayed.

1	Dieback, Anthracnose	*Colletrotrichum capsici*	Chili flowers start to wilt to dry and then drop. This disease is passing to flower receptacle and then to the branch that can cause die back to chili plants. In the infected chili plants, the half of or the whole branch can be seen as drying. In the mature chili, water soaking area start to emerge and then wider and small dark spots can rise upon dark red brown necrosis. Fungus spores can infect to the plants through wounds area of plant.	Can start infection in the time of flowering and fruit setting.	Make sure the ventilation is and treated the seed with Homai fungicide to plant. Before the time of flowering, Azoxystrobin, Thiophanate methyl, Carbendazin or Chlorothalonil should be sprayed. The diseased plant parts should be destroyed by burning.
2	Bacterial Wilt	*Pseudomonas solanacearum*	Lower leaves start to wilt in adult plants, and upper leaves, in the young plants. After a few days, the whole plant suddenly wilts without showing the sign of yellowing. When the stem cutting of infected plant is dipped in the water, milky color bacterial ooze emergence can be seen.	In tropical and subtropical region, the disease can mainly affect rainy season. In the field, the disease can severely infect if the field has high moisture content and water flooding.	Crop rotation of Different family type should be practiced.. The nursery plants should be soaked in Kasumin in the ratio of Kasumin and water to 1:1000 times for 5 minutes. The field should be cleaned regularly. After harvesting, the field should be ploughed to turn soil from top to down. Copper can be applied to

					control this disease.
3	Fruit Rot	*Gloeosporium piperatum*	Can infect in both harvesting fruits and ripening fruit of tree. In fruit, the sign is brown block and then the fruit slightly shrink. Finally, fruits can shrink, dried and rot.	The fungus spores on host plant can spread via wind and water and then the disease can cause.	If diseased chilies are occurred, all should be burned and destroyed. Before flowering, Azoxystrobin, Thiophanate methyl, Carbendazim and Chlorothalonil should be sprayed.
4	Frog Eye Spot	*Cercospora capsici*	Lesions can be seen mostly in the lower leaves of the plant, near the ground. In the middle of lesion, the plant cell becomes chlorosis and grey. The lesions become expand more and more when it is close to harvest.	Can infect from young plant.	Avoid excess application of Nitrogen. Spray copper involved chemical like Carbemdazim, Benomyl, and Thiophanate methyl.
5	Damping - off	*Pythium spp.*	In nursery plants, water soaking area can be seen near the hypocotyl and root. If infection, the seed no longer sprout. If the seed sprout, it dies soon.	Mostly infected in nursery stage.	Care must be taken not to excess moisture and to be good at ventilation. If infection was occurred, one of Azoxystrobin, Metalaxy, Mancozreb, and

					Captan can be sprayed.
6	Chili Leaf Curl Virus		The disease is caused by virus and leaves twiss, leaves vein shrink, leaves blotchy and leaves thickening can be occurred. In early stage, internal buds are small in size and become cluster.	Any growth stages between sowing to harvesting can be infected.	Spreading is carried out by white fly. Control measures are removal of affected plants and spraying of pesticides recommended by departments.

12. Recommendation and records

- The Producer must keep the records concerned with good agricultural practices for at least 2 years.
- Personal cleanliness of workers, who involve in chili drying process, must be special-cared and they must have good health. Labour's record document must be kept.
- Records must be kept in a certain format for the current work.

13. Checking back

- Distinct mark and registration mark must be put on the pack in order to check the crop production places back.
- Export places and date must be recorded for individual crop.

14. Training

- The producer and workers are to attend GAP training so as to have skill and techniques in respective specialization. The training which based integrated crop management should be attended, too.

15. Performance review

- All the performance must be reviewed at least once a year by the group consisting of technician in respective sectors to be sure that the producers really follow the practicing ways.
- If there is any complain, you have to solve yourself and must keep the records.

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16. Personal cleanliness and labours' welfare

- Instructions for labours' personal cleaning must be written down and put on the places where is distinct and easily visible.

- Sanitation and waste water are to be thrown carefully.

- Labours' health and welfare should be emphasized.

- To protect labours' health and welfare, environmental pollution, safe and qualified produce, good care and management should be done based on the crop.

European Spice Association
Quality Minima Document

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European Spice Association Quality Minima Document

Content

1. An Introduction to the European Spice Association

The European Spice Association, ESA, is the umbrella organisation of the European spice industry. Members of ESA are the national federations of the spice industry in the member countries of the European Union, Switzerland and Turkey. Associated membership of ESA is also available to national or international associations or organizations representing exporters/traders at origin and processors, packers/traders or associations from European countries (other than the European Union) that are able to satisfy the membership requirement.

Companies within the European Union (EU), European Free Trade Association (EFTA) and Turkey with a major involvement in the processing, packing and/or marketing of herbs and spice products may apply for direct membership of ESA.

Objectives of the Association:

- Represent the interests of its members with the representative bodies and departments of the European Union, as well as international institutions and organizations;
- Promote the interests of members in respect of the products concerned and to protect the image of the products and the sector;
- Promote the consumers' and customers' interest;
- Investigate subjects of common interest to the members in the scientific, legislative, technological and economic fields.

ESA is member of the International Organisation of Spice Trade Associations (IOSTA) and supports its objectives.

For further information on the European Spice Association Quality Minima Document, please contact the ESA office:

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2. Scope of the Quality Minima Document

This document describes the quality minima for dried herbs and spices, which should be demanded by buyers when these products are purchased for further processing within the EU.

This document applies to “business to business” transactions; it does not extend to products for direct sale to the final consumer.

All products that have already been further processed (for example grinding, microbial reduction) are not in the scope of this document, unless otherwise stated.

3. Purpose of the ESA Quality Minima Document

The purpose of this document is to ensure that herbs and spices, as agricultural commodities, have been grown, harvested and further treated to ensure that the products meet the requirements of this quality minima document.

To achieve this objective ESA supports the principles of Good Agricultural Practice (GAP) and Good Manufacturing Practice (GMP). These principles serve all parties involved in the supply chain as they focus on prevention and control rather than reconditioning which is not always technologically possible.

The harvest, cultivation, transport and post-harvest conditions should ensure the material is stored and handled in such a way as to prevent adulteration, contamination and the growth of micro-organisms.

4. Definitions

4.1. Extraneous matter:

All matter from the specific plant other than the desired part. Investigations by visual checks, not microscopic.

4.2. Foreign matter:

All matter that is foreign to the plant. Foreign matter can be hazardous or non-hazardous. Hazardous material includes other foreign vegetable matter with allergenic or toxic properties, sharp objects in addition to glass, metal, stones, wood etc.

4.3. Traces:

Low levels of volatiles (in general < 0.5 %) for which analytical quantification by using ISO 6571 is not accurate and reliable. The sensorial flavouring properties should be agreed between buyer and seller.

4.4. Good Agricultural Practice (GAP) in the Use of Pesticides (Codex Alimentarius Definition):

"GAP" includes the nationally authorised safe uses of pesticides under actual

conditions necessary for effective and reliable pest control. It encompasses a range of levels of pesticide applications up to the highest authorised use, applied in a manner, which leaves a residue, which is the smallest amount practicable.

Authorised safe uses are determined at the national level and include nationally registered or recommended uses, which take into account public and occupational health and environmental safety considerations. Actual conditions include any stage in the production, storage, transport, distribution and processing of food commodities and animal feed.

The term 'pesticides' is used to summarize a group of active ingredients, which are used for the control of crop pests, crop diseases and weeds, stock protection, animal ectoparasites and pests in public health. Residues should be the smallest amount practicable, legal limits must not be exceeded.

4.5. Traceability:

The traceability of food and any other substance intended to be, or expected to be, incorporated into a food shall be established at all stages of production, processing and distribution.

Food business operators shall be able to identify any person from whom they have been supplied with a food or any substance intended to be, or expected to be, incorporated into a food.

Food business operators shall have in place systems and procedures to identify the other businesses to which their products have been supplied. (see Article 18 of Regulation (EC) No 178/2002, page 4 of this document).

This means

- each processor should be able to ensure that foodstuffs entering the premises are traceable to the supplier;
- each processor should be able to ensure that foodstuffs leaving the control of the business are traceable to the immediate customer.

4.6. Codex Classification of Foods and Animal Feeds (CAC/MISC)

Definition of herbs and spices at:
(http://www.codexalimentarius.net/web/standard_list.do?lang=en)

5. Relevant ESA documents:

Available at: www.esa-spices.org are:

- ESA definition of culinary herbs and spices
- ESA list of culinary herbs and spices
- ESA Adulteration Awareness Paper

6. European Spice Association Specifications of Quality Minima for Herbs and Spices

SUBJECT	
Sampling	ISO 948 For mycotoxins: See the relevant Commission Regulation at: www.esa-spices.org
CHEMICAL/ PHYSICAL ANALYSIS	
Ash	For values see appendix I; for analysis see appendix II
Acid Insoluble Ash	For values see appendix I; for analysis see appendix II
Moisture	For values see appendix I; for analysis see appendix II
Volatile Oil	For values see appendix I; for analysis see appendix II
Water Activity	Water activity is a key parameter that affects microbiological growth. Therefore ESA recommends a target value of max. 0.65.
Bulk Density	Due to methodology variability both method and value should be agreed between buyer and seller.
Microbiology	The product shall be free from microorganisms at such levels which may represent a hazard to health. If the product is treated to reduce microbial loads before being imported into destination country the treatment will be such as to render/ensure the microbiological safety of consumers. Specific requirements to be agreed between buyer and seller.
CONTAMINANTS/ RESIDUES	
Pesticides	Shall be utilised in accordance with good agricultural practice. Application and residue limits must comply with existing EU and/or national legislation.
Heavy Metals	Must comply with national / EU legislation (e.g. cadmium, lead).
Mycotoxins	Herbs and spices must be grown, harvested, handled and stored in such a manner as to prevent the occurrence of mycotoxins. If found, levels must comply with existing national and / or EU legislation.
Allergens	Refer to ESA Position Statement

Treatments	Only legally permitted processing procedures may be applied in any treatment used for product quality or safety. EC approved fumigants may be used in accordance with manufacturers' instructions but this must be indicated on the accompanying documents. Ethylene oxide (ETO) treatment has been banned under European legislation. This ban covers both material with treated within and outside of the EU (i.e. the use of material that has been ETO treated before importation is also illegal). Irradiation, at present, does not have full consumer acceptability, so the treatment has to be agreed between buyer and seller. If it is agreed irradiation is only permitted in EU approved irradiation plants. However EU legislation requires that the irradiated product is declared at all levels within the food chain. Members of ESA support the use of environmentally friendly fumigants (Montreal protocol) and non-toxic processes (e.g. microbial reduction under pressure, steam treatment). All products subject to processing (for example grinding, microbial reduction) are not in the scope of this document, unless otherwise stated.
PURITY	
Botanical Species	In compliance with Food Law Regulations. If not regulated: ESA list of Culinary Herbs and Spices, or to be agreed between buyer and seller.
Adulteration	Must be free from.
Infestation	Should be free in practical terms from live and/or dead insects, insect fragments and rodent contamination visible to the naked eye (corrected if necessary for abnormal vision).
Extraneous matter	Herbs max. 2%, Spices max. 1% by weight
Foreign Matter	The European food operator has to evaluate if products fully comply with safety requirements before selling them to the final consumer. If not, additional processing will be necessary.
SENSORY PROPERTIES	Must be free from off odour or off flavor.
PACKAGING	The packaging must not be a source of contamination or migration, should be food grade and must protect the product quality during transportation and storage.

Appendix I Chemical / physical parameters; dry base for ASH, AIA, V/O

PRODUCT[1)]	**ASH % W/W MAX ***	**AIA % W/W MAX ***	**H_20 % W/W MAX ***	**V/O ml/100g MIN ***	**NOTES**
ANISE	9.0	2.5	12	1.0	
BASIL	16	2.0	12	0.5	
CARAWAY	8.0	1.5	13	2.5	
CARDAMOM	9.0	2.5	12	4.0	
CELERY SEED	12	3.0	11	1.5	
CELERY LEAVES	20	1.0	8.0	Traces**	
CHERVIL	17	2.0	8.0	Traces**	
CHILLI	10	1.6	11	-	
CHIVES	13	2.0	8.0	Traces**	
CINNAMON (CEYLON) (CASSIA)	7.0	2.0	14	0.7 – 1.0 (ISO 6539 ISO 6538) Depending on botanical species	The use of SO_2 is only permitted for Ceylon cinnamon, Annex III part B Directive 95/2/EC Styrene off notes can be prevented through the control of moisture content throughout the supply chain.
CLOVES	7.0	0.5	12	14	
CORIANDER SEED Microcarpum Macrocarpum	7.0	1.5	12	0.6 Traces**	
CORIANDER LEAVES	15	1.0	8.0	Traces**	
CUMIN	14	3.0	13	1.5	
DILL SEED	10	2.5	12	1.0	
DILL TOPS	15	2.0	8.0	Traces**	
FENNEL	10	2.0	12	1.5	
FENUGREEK	7.0	1.5	11	Traces**	
GALANGAL (ground)	9.0	4.0	10	Traces**	
GARLIC PRODUCTS	6.0	0.5	6.5	-	Due to the hygroscopic nature of these products lower moisture content may be required

* see Appendix II;
** see page 4

PRODUCT[1)]	**ASH % W/W MAX ***	**AIA % W/W MAX ***	**H_20 % W/W MAX ***	**V/O ml/100g MIN ***	**NOTES**
GINGER	8.0	2.0	12	1.5	
JUNIPER BERRIES	5.0	1.0	16	1.4	
LAUREL LEAVES	7.0	2.0	8.0	1.0	
LEMON GRASS	8.0	2.5	10	Traces**	
MACE	4.0	0.5	10	5.0	
MARJORAM	10	2.0	12	0.7	
MUSTARD	6.5	1.0	10	-	
NUTMEG	3.0	0.5	10	5 - 6.5 Depending on grade	
ONION PRODUCTS Allium cepa	5.0	0.5	6.0 - 8.0 (depending on origin)	-	Due to the hygroscopic nature of these products lower moisture content may be required.
OREGANO	10	2.0	12	1.5	
PAPRIKA POWDER	10	2.0	11	-	
PARSLEY	14	1.5	7.5	Traces**	English origin is not covered.
PEPPER BLACK	7.0	1.5	12	2.0	
PEPPER WHITE	3.5	0.3	12	1.5	
PEPPER GREEN (dried)	3.0	0.3	13*	1.0	* If freeze dried: 8 %
PIMENTO Jamaica Other origins	4,5 5.0	0.4 1.0	12 12	3.0 2.0	
PINK PEPPER (Schinus)	7.0	1.8	14*	2.0	* If freeze dried: 8 %
POPPY SEEDS	8	1	8	n.a.	

* see Appendix II;
** see page 4

PRODUCT[1)]	**ASH % W/W MAX ***	**AIA % W/W MAX ***	**H_20 % W/W MAX ***	**V/O ml/100g MIN ***	**NOTES**
ROSEMARY	8.0	1.0	10	1.0	
SAFFRON WHOLE	8.0	1.0	12	-	
SAFFRON GROUND	8.0	1.5	10	-	
SAGE	12	2.0	12	1.5	
SAVOURY - Mountain Type (wild grown)	12	1.0	12	0.5	
SAVOURY – Garden Type (cultivated)	12	4	12	1.5	
SPEARMINT	12	2.5	13	0.5	
STAR ANISE	3.0	0.5	8.0	7.0	
TARRAGON	12	1.5	8.0	0.5	
THYME	12	3.5	12	1.0	
TURMERIC WHOLE GROUND	8.0 9.0	2.0 2.5	12 10	2.5 1.5	

1) The parameters listed shall apply to the whole product unless otherwise specified.

* see Appendix II
** see page 4

Appendix II Recommended analytical methods

Unless otherwise agreed between buyer and seller, ESA recommends the following methods:

1. Spices and condiments – Sampling EN ISO 948 – 2009

2. Spices and condiments – Preparation of a ground sample for analysis ISO 2825 - 1981

3. Spices and condiments – Determination of extraneous matter and foreign matter content ISO 927 – 2009 *(see definition chapter 5)*

4. Spices and condiments – Determination of total ash ISO 928 – 1997

5. Spices and condiments – Determination of acid insoluble ash ISO 930 – 1997

6. Spices and condiments – Determination of moisture content – (Entrainment method) ISO 939 - 1980

7. Spices and condiments – Determination of volatile oil EN ISO 6571 2009

8. Analysis of spices and condiments – Determination of loss in mass of capsicum and allium species and of dried vegetables by vacuum oven drying – DIN 10236 (German standard)

These methods are available at the national standardisation bodies or at www.iso.org (click on ISO store)

Appendix III Other documents for information

To help suppliers meet the requirements of the ESA quality minima the following documents may be beneficial:

1. Code of hygienic practice for spices and dried aromatic plants CAC/RCP 42 – 1995, Codex Alimentarius Commission

2. Manual on the Packaging of dried herbs and spices – prepared by the International Trade Centre, ITC, Geneva 1999, ISBN 92-9137-114-9

3. With respect to cleaning and reconditioning, ESA supports the principles of Section 8 “Cleaning and Reconditioning” of the Clean Spices Booklet issued by ASTA, October 2000

4. Guidelines for the application of the Hazard Analysis Critical Control point (HACCP) system Alinorm 93/13 A App. II Codex Alimentarius

Appendix IV Legal requirements for herbs and spices in the EU

Legal requirements for herbs and spices in the EU

In Europe there is European or national legislation applicable to herbs and spices. For example, the following legal requirements set by the EU-Commission apply to herbs and spices (Documents are available at http://europa.eu.int/eur-lex/lex/).

General legislation:

- Regulation (EC) No 178/2002 of 28 January 2002 laying down the **general principles and requirements of food law**, establishing the European Food Safety Authority and laying down procedures in matters of food safety (O.J. L 31, 1.2.2002)

  This regulation addresses amongst others, risk analysis (Art. 6), precautionary principle (Art. 7), food safety requirements (Art. 14), traceability (Art. 18).

Labelling:

- REGULATION (EU) No 1169/2011 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 25 October 2011 on the provision of **food information to consumers**, amending Regulations (EC) No 1924/2006 and (EC) No 1925/2006 of the European Parliament and of the Council, and repealing Commission Directive 87/250/EEC, Council Directive 90/496/EEC, Commission Directive 1999/10/EC, Directive 2000/13/EC of the European Parliament and of the Council, Commission Directives 2002/67/EC and 2008/5/EC and Commission Regulation (EC) No 608/2004 (O.J. L 304, 22.11.2011)

  This Regulation allows the consumer to make an informed choice that suits both their dietary and food intolerance needs. ESA recommends that particular attention is paid to potential for cross contamination within the food chain. This includes items such as cereals containing gluten, peanuts (ground nuts), nuts, celery, mustard, sesame seeds and products thereof. These are within the legislation (see Annex II of the Regulation) identified amongst others as potential allergens within our industry. Also due to allergenic reactions of some consumers the addition of sulphur dioxide also has to be declared if the level is above 10 ppm.

  Foodstuffs that have been treated with ionising must be labelled "irradiated" or "treated with ionising radiation".

- COMMISSION REGULATION (EC) No 41/2009 of 20 January 2009 concerning the composition and labelling of foodstuffs suitable for people intolerant to gluten (OJ L 16, 21.1.2009)

- Regulation (EC) No 1332/2008 of 16 December 2008 on **food enzymes** and amending Council Directive 83/417/EEC, Council Regulation (EC) No 1493/1999, Directive 2000/13/EC, Council Directive 2001/112/EC and Regulation (EC) No 258/97 (O.J. L 354, 31.12.2008)

- COMMISSION IMPLEMENTING REGULATION (EU) No 1321/2013 of 10 December 2013 establishing the Union list of authorised **smoke flavouring primary products for use as such in or on foods** and/or for the production of derived smoke flavourings (O.J. L 333 12.12.2013)

- Council Regulation (EC) No 834/2007 of 28 June 2007 on **organic production and labelling of organic products** and repealing Regulation (EEC) No 2092/91 (O.J. L 189, 20.06.2007)

- COMMISSION REGULATION (EC) No 889/2008 of 5 September 2008 laying down **detailed rules for the implementation of Council Regulation (EC) No 834/2007 on organic production and labelling of organic products with regard to organic production, labelling and control** (O.J. L 250, 18.09.2008)

- Council Regulation (EC) No 967/2008 of 29 September 2008 amending Regulation (EC) No 834/2007 on **organic production and labelling of organic products** (O.J. L 264, 3 October 2008)

- COMMISSION REGULATION (EU) No 271/2010 of 24 March 2010 amending Regulation (EC) No 889/2008 laying down detailed rules for the implementation of Council Regulation (EC) No 834/2007, as regards the **organic production logo** of the European Union (O. J. L 84 of 24 March 2010)

- COMMISSION REGULATION (EU) No 471/2010 of 31 May 2010 amending Regulation (EC) No 1235/2008, **as regards the list of third countries from which certain agricultural products obtained by organic production must originate to be marketed within the Union**

Contaminants:

- Regulation (EC) No 1881/2006 of 19 December 2006 setting maximum levels for **certain contaminants** in foodstuffs (O. J. L 364, 20.12.2006)

  This regulation covers amongst others, mycotoxins and heavy metals such as cadmium, lead, and mercury.

  For **aflatoxins** EU legislation covers only the spices Capsicum spp (dried fruits including chilies, chili powder, cayenne and paprika), Piper spp. (fruits thereof including white and black pepper), Myristica fragrans (nutmeg and mace), Zingiber officinale (ginger), Curcuma longa (turmeric). For other spices national (aflatoxin) legislation is applicable.

- COMMISSION REGULATION (EU) No 165/2010 of 26 February 2010 amending Regulation (EC) No 1881/2006 setting maximum levels for certain contaminants in foodstuffs as regards **aflatoxins** (O. J. L 50, 27.2.2010)

  The Regulation extends the scope to mixtures of spices containing one or more of the abovementioned spices. Moreover it sets maximum limits for oilseeds such as mustard seeds, sesame seeds and poppy seeds.

- COMMISSION REGULATION (EU) No 594/2012 of 5 July 2012 amending Regulation (EC) 1881/2006 as regards the maximum levels of the contaminants ochratoxin A, non-dioxin-like PCBs and melamine in foodstuffs (O.J. L 176, 6.7.2012)

  The Regulation sets maximum limits for ochratoxin A in spices, including dried spices, as follows:

  Piper spp (fruits thereof, including white and black pepper), *Myristica fragrans* (nutmeg and mace), *Zingiber officinale* (ginger), *Curcuma longa* (turmeric) *Capsicum* spp. (dried fruits thereof, whole or ground, including chillies, chilli powder, cayenne and paprika) and mixtures of spices containing one of the abovementioned spices.

- COMMISSION REGULATION (EU) 2015/1933 of 27 October 2015 amending Regulation (EC) No 1881/2006 as regards **maximum levels for polycyclic aromatic hydrocarbons** in cocoa fibre, banana chips, food supplements, dried herbs and dried spices (O.J. L 282 of 28.10.2015)

- Regulation (EC) No. 401/2006 of 23 February 2006 laying down the **methods of sampling and analysis for the official control of levels of mycotoxins in foodstuffs** (O.J. L 70, 9. March 2006)

  In this Regulation methods of sampling as well as precision criteria for methods of analysis for official control by enforcement authorities are defined.

- COMMISSION REGULATION (EU) No 178/2010 of 2 March 2010 amending Regulation (EC) No 401/2006 as regards groundnuts (peanuts), other oilseeds, tree nuts, apricot kernels, liquorice and vegetable oil (OJ L 52, 3.3.2010)

  This Regulation establishes the official sampling plan for OTA.

- **Guidance document for competent Authorities for the Control of Compliance with EU Legislation on Aflatoxins**

  The document focuses mainly on the official control of aflatoxin contamination in food products. At:

  http://ec.europa.eu/food/food/chemicalsafety/contaminants/docs/guidance-2010.pdf

- COMMISSION RECOMMENDATION of 3 December 2013 on the **reduction of the presence of dioxins**, furans and PCBs in feed and food (O.J. L 323, 4.12.2013)

  The recommendation sets action levels for dioxins in fresh and dried herbs.

Additives:

- Regulation (EC) No 1333/2008 of the European Parliament and of the Council of 16 December 2008 on **food additives**

  This Regulation replaces the 3 EC Directives on food additives (colours, sweeteners and other food additives). The annexes of the Directives have been merged into one annex.

- COMMISSION REGULATION (EU) No 1129/2011 of 11 November 2011 amending Annex II to Regulation (EC) No 1333/2008 of the European Parliament and of the Council by establishing a Union list of **food additives** (O.J. L 295, 12.11.2011)

  Spices and spice blends are included in the Annex as foodstuffs which may not contain added colours.

  Specific limits for SO_2 are provided for dried ginger (150 ppm) and onion, garlic and shallot pulp (300 ppm).

  SO_2 in cinnamon (*Cinnamomum zeylanicum*) is permitted as additive (150 mg/kg).

- Regulation (EC) No 1332/2008 of the European Parliament and of the Council of 16 December 2008 on **food enzymes** and amending Council Directive 83/417/EEC, Council Regulation (EC) No 1493/1999, Directive 2000/13/EC, Council Directive 2001/112/EC and Regulation (EC) No 258/97

  This regulation requires that food enzymes are officially registered and permitted for use in foodstuffs. They are regarded as food ingredients and must be declared on the label.

- Regulation (EC) No 1334/2008 of the European Parliament and of the Council of 16 December 2008 on **flavourings and certain food ingredients with flavouring properties for use in and on foods** and amending Council Regulation (EEC) No 1601/91, Regulations (EC) No 2232/96 and (EC) No 110/2008 and Directive 2000/13/EC

  This regulation fixes limits for active principles in composite food. Active principles may be incorporated into food by herbs and spices or flavourings or other food ingredients with flavouring properties.

- COMMISSION REGULATION (EC) No 669/2009 of 24 July 2009 implementing Regulation (EC) No 882/2004 **as regards the increased level of official controls on imports of certain food of non-animal origin** (O.J. L 194 of 25.7.2009)

  This Regulation lays down rules concerning the increased level of official controls to be carried out pursuant to Article 15(5) of Regulation (EC) No

882/2004 at the points of entry into EU on imports of the feed and food of non-animal origin listed in Annex I to this Regulation.

Irradiation:

EU overview at: http://ec.europa.eu/food/food/biosafety/irradiation/comm_legisl_en.htm

- Directive 1999/2/EC of 22 February 1999 on the approximation of the laws of the Member States concerning **foods and food ingredients treated with ionizing radiation** (O.J. L 66, 13.3.1999)

  Condition for authorising food radiation:

  1. Food irradiation may be authorised only if:

     - there is a reasonable technological need,
     - it present no health hazard and is carried out under the conditions proposed,
     - it is of benefit to the consumer,
     - it is not used as a substitute for hygiene and health practices or for good manufacturing or agricultural practice.

  2. Food irradiation may be used only for the following purposes:

     - to reduce the incidence of food-borne disease by destroying pathogenic organisms,
     - to reduce spoilage of foodstuffs by retarding or arresting decay processes and destroying spoilage organisms,
     - to reduce loss of foodstuffs by premature ripening, germination or sprouting,
     - to rid foodstuffs of organisms harmful to plant or plant products.

- Directive 1999/3/EC of 22 February 1999 on the establishment of a Community **list of foods and food ingredients treated with ionizing radiation** (O.J. L 66, 13.3.1999)

- Communication from the Commission on **foods and food ingredients authorized for treatment with ionizing radiation** in the Community (O.J. C 241, 29.8.2001)

- Commission Decision of 23 October 2002 adopting the list of **approved facilities in third countries for the irradiation of foods** (O.J. L 287, 25.10.2002) amended by Decision of 7.10.2004 (O.J. L 314, 13.10.2004) and Decision of 4.12.2007 (O.J. L 323, 8.12.2007)

- List of Member States' **authorizations of food and food ingredients which may be treated with ionizing radiation** (O.J. C 56, 11.3.2003)

- **List of approved facilities for the treatment of foods and food ingredients with ionising radiation in the Member States** (According to Article 7(4) of Directive 1999/2/EC of the European Parliament and the Council on the approximation of the laws of the Member States concerning foods and food in-

gredients treated with ionising radiation (1)) (This text cancels and replaces the text published in the Official Journal of the European Union C 336 of 17 November 2011, p. 14) (2012/C 265/04) (O.J. C 265, 1.9.2012)

- Commission Decision of 7 October 2004 **amending** Decision of 23 October 2002 adopting **the list of approved facilities in third countries for the irradiation of foods** (O.J. L 314, 13.10.2004) and amendments

- Commission Decision of 22 March 2010 amending Decision 2002/840/EC **as regards the list of approved facilities in third countries for the irradiation of foods** (O.J. L 75 of 23 march 2010)

Pesticides:

- Regulation (EC) No 396/2005 on **maximum residue levels of pesticides in or on food and feed of plant and animal origin** and amending Council Directive 91/414/EEC *(*O. J. L70, 16. 03. 2005)

  This Regulation harmonizes legislation on pesticide residues within the EU.

- Regulation (EC) No 299/2008 of the European Parliament and of the Council of 11 March 2008 amending Regulation (EC) No 396/2005 on maximum residue levels of pesticides in or on food and feed of plant and animal origin, as regards the implementing powers conferred on the Commission

- COMMISSION REGULATION (EU) No 212/2013 of 11 March 2013 **replacing Annex I to Regulation (EC) No 396/2005** of the European Parliament and of the Council as regards additions and modifications with respect to the products covered by that Annex (O.J. L 68, 12.3.2013)

  Spices and the aromatic herbs can be found in the categories VEGETABLES FRESH OR FROZEN – **Fruiting vegetables** – Solanacea (paprika) and **Leaf vegetables and fresh herbs** and SPICES.

- COMMISSION REGULATON (EC) No 149/2008 of 29 January 2008 amending Regulation (EC) No 396/2005 of the European Parliament and of the Council by **establishing Annexes II, III and IV setting maximum residue levels for products covered by Annex I thereto.**

  Dehydration factors may be applied to dried peppers and dried herbs and all active substances listed in the Annexes of Regulation 396/2005 or not.

  http://www.esa-spies.org/download/dehydrationfactorsjournalofconsumerrotectionandfoodsafety.pdf

  Based on these provisions ESA has proposed dehydration factors to be applied when assessing pesticide residues in dried peppers and dried herbs. These dehydration factors have been presented to the EU Commission for consideration and inclusion into Annex VI of Regulation 396/2005. They have been published on the ESA website and in the Journal of Consumer Protection and Food Safety, German Federal Office for Consumer Protection and Food Safety (BVL), Heft 4, November 2008).

- COMMISSION REGULATION (EC) No 839/2008 of 30 August 2008 amending Regulation (EC) No 396/2005 of the European Parliament and of the Council **as regards Annexes II, III and IV on maximum residue levels of pesticides in or on certain products.**

- COMMISSION REGULATION (EC) No 260/2008 of 18 March 2008 amending Regulation (EC) No 396/2005 of the European Parliament and of the Council by **establishing Annex VII listing active substance/product combinations covered by a derogation as regards post-harvest treatments with a fumigant**

The pesticide database of the EU Commission can be found at:

http://ec.europa.eu/food/plant/pesticides/eu-pesticides-database/public/?event=homepage&language=EN and at
http://ec.europa.eu/food/plant/protection/pesticides/database_pesticide_en.htm

Hygiene:

- Regulation (EC) No 852/2004 of the European Parliament and of the Council of 29 April 2004 on the **hygiene of foodstuffs** (OJ L 139, 30.4.2004)

  This regulation stipulates that Food business operators producing or harvesting plant products are to take adequate measures, to ensure hygienic production, transport and storage conditions for, and the cleanliness of, plant products. Food business operators are to keep and retain records relating to measures put in place to control hazards in an appropriate manner, commensurate with the nature and size of the food business. Food business operators are to make relevant information contained in these records available to the competent authority and receiving food business operators on request.

  As regards the **hygiene of imported food**, the following hygiene requirements are applicable:

  The operators:

  - Are to ensure that the products are protected against contamination and to use potable water, or clean water, whenever necessary to prevent contamination;
  - Are to comply with appropriate Community and national legislative provisions relating to the control hazards in primary production and associated operation;
  - Are to keep clean and, where necessary after cleaning, to disinfect, all the equipment, containers and places the spices are in contact with;
  - Are to take account of the results of any relevant analyses carried out on samples taken from plants or other samples that have importance to human health
  - Are to take appropriate remedial action when informed of problems identified during official controls;

- Guidance Document – Implementation of certain provisions of Regulation (EC) No 852/2004 on the hygiene of foodstuffs. At: http://ec.europa.eu/food/food/biosafety/hygienelegislation/guidance_doc_852-2004_en.pdf

- Corrigendum to Regulation (EC) No 882/2004 of the European Parliament and of the Council of 29 April 2004 on official controls performed to ensure the verification of compliance with feed and food law, animal health and animal welfare rules (O.J. L 191, 30.4.2004)

Import controls:

- COMMISSION REGULATION (EC) No 669/2009 of 24 July 2009 implementing Regulation (EC) No 882/2004 of the European Parliament and of the Council as regards the **increased level of official controls on imports of certain feed and food of non-animal origin** and amending Decision 2006/504/EC (O.J. L 194, 25.7.2009)

- COMMISSION REGULATION (EU) No 212/2010 of 12 March 2010 amending Regulation (EC) No 669/2009 implementing Regulation (EC) No 882/2004 of the European Parliament and of the Council as regards the increased level of official controls on imports of certain feed and food of non-animal origin (OJ L 65, 13.3.2010)

- COMMISSION REGULATION (EU) No 878/2010 of 6 October 2010 **amending Annex I** to Regulation (EC) No 669/2009 as regards the increased level of official controls on imports of certain food and feed of non-animal origin (O.J. L 264 of 7.10.2010)

Rapid Alerts:

Rapid Alerts at: http://ec.europa.eu/food/food/rapidalert/archive_en.htm

Relevant ESA documents are available at: www.esa-spices.org

Appendix V Dehydration Factors

Product	Dehydration Factor
Basil	7
Celery leaves	10
Chervil	5
Chives	7
Coriander leaves	13
Dill tops	7
Garlic	3
Laurel leaves	7
Lovage leaves	7
Marjoram	7
Onion	9
Oregano	6
Parsley leaves	6

Mint	7
Capsicums	10
Rosemary	7
Sage	7
Savory herb	7
Tarragon	7
Thyme	7

OECD-FAO Guidance for Responsible Agricultural Supply Chains

OECD

Food and Agriculture Organization of the United Nations

OECD-FAO Guidance for Responsible Agricultural Supply Chains

This document and any map included herein are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area. The names of countries and territories used in this joint publication follow the practice of the FAO.

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Foreword

The OECD-FAO Guidance for Responsible Agricultural Supply Chains (the Guidance) has been developed to help enterprises observe existing standards for responsible business conduct along agricultural supply chains. These standards include the OECD Guidelines for Multinational Enterprises, the Principles for Responsible Investment in Agriculture and Food Systems, and the Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security. Observing these standards helps enterprises mitigate their adverse impacts and contribute to sustainable development.

The Guidance targets all enterprises operating along agricultural supply chains, including domestic and foreign, private and public, small, medium and large-scale enterprises. It covers agricultural upstream and downstream sectors from input supply to production, post-harvest handling, processing, transportation, marketing, distribution and retailing. Several areas of risk arising along agricultural supply chains are addressed: human right, labour rights, health and safety, food security and nutrition, tenure rights over and access to natural resources, animal welfare, environmental protection and sustainable use of natural resources, governance, and technology and innovation.

The Guidance comprises four sections:

- *a model enterprise policy outlining the standards that enterprises should observe to build responsible agricultural supply chains*
- *a framework for risk-based due diligence describing the five steps that enterprises should follow to identify, assess, mitigate and account for how they address the adverse impacts of their activities*
- *a description of the major risks faced by enterprises and the measures to mitigate these risks*
- *guidance for engaging with indigenous peoples.*

The Guidance was developed by OECD and FAO through a two-year multi-stakeholder process. It was approved by the OECD Investment Committee, the OECD Committee for Agriculture, and the Cabinet of FAO Director-General. A Recommendation on the Guidance was adopted by the OECD Council on 13 July 2016. While not legally binding, the Recommendation reflects the common position and political commitment of OECD members and non-member adherents.

The OECD has also developed tailored guidance to help enterprises build responsible supply chains in other sectors, specifically: extractives, and particularly minerals from conflict-affected and high-risk areas; garment and footwear; and finance.

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Acronyms and abbreviations

CAO	Compliance Advisor Ombudsman of IFC and MIGA
CBD	Convention on Biological Diversity
CEDAW	Convention on the Elimination of All Forms of Discrimination Against Women
CFS	Committee on World Food Security
CFS-RAI	Principles for Responsible Investment in Agriculture and Food Systems of the Committee on World Food Security
CSR	Corporate Social Responsibility
EIA	Environmental Impact Assessment
ESHRIA	Environmental, Social and Human Rights Impact Assessment
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FDI	Foreign Direct Investment
FPIC	Free, Prior and Informed Consent
ICESCR	International Covenant on Economic, Social and Cultural Rights
IFAD	International Fund for Agricultural Development
IFC	International Finance Corporation
IFPRI	International Food Policy Research Institute
ILO	International Labour Organization

ITPGR	International Treaty on Plant Genetic Resources for Food and Agriculture
MIGA	Multilateral Investment Guarantee Agency
MNE	Multinational Enterprise
NCP	National Contact Point
NGO	Non-governmental Organisation
OECD	Organisation for Economic Co-operation and Development
OIE	World Organization for Animal Health
PRAI	Principles for Responsible Agricultural Investment that respects rights, livelihoods and resources developed by FAO, International Fund for Agricultural Development (IFAD), United Nations Conference on Trade and Development (UNCTAD) and World Bank
RBC	Responsible Business Conduct
VGGT	Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
US	United States
USD	United States Dollar
WB	World Bank
WHO	World Health Organization

Preface

The OECD-FAO Guidance for Responsible Agricultural Supply Chains responds to a critical need for practical guidance on responsible business conduct for enterprises operating in the agricultural sector. Investments in agriculture have grown in recent years and are expected to continue to grow as the sector expands to meet increasing demand. As investments in the sector have grown, so too has the awareness that they need to be responsible. Standards of responsible business conduct along agricultural supply chains are essential to ensure that the benefits are widespread and that agriculture continues to fulfil its multiple functions, including food security, poverty reduction, and economic growth.

The OECD-FAO Guidance was developed over the period October 2013 to September 2015 under the guidance of a multi-stakeholder Advisory Group, including representatives from OECD and non-OECD members, the private sector, and civil society. The Advisory Group is chaired by David Hegwood, Chief of Global Engagement and Strategy, Bureau for Food Security at USAID. The three Vice Chairs represent the various stakeholder groups: Mella Frewen, Director General of FoodDrink Europe; Bernd Schanzenbaecher, Founder and Managing Partner of EBG Capital; and Kris Genovese, Senior Researcher at the Centre for Research on Multinational Corporations (SOMO) and Co-Coordinator of OECD Watch.

In the course of its work, the Advisory Group held three in-person meetings and three consultations via conference call. It held its first meeting on 16 October 2013 and subsequent meetings on 26 June 2014 and 16 March 2015. It also held a joint meeting with the Advisory Group on Meaningful Stakeholder Engagement in the Extractive Sector on 18 June 2015 to discuss free, prior and informed consent. Conference calls were organised on 10 February 2014, 28 May 2014 and 7 January 2015. An online public consultation was held in January and February 2015 to receive comments from a wider range of stakeholders on the draft Guidance.

The OECD-FAO Guidance also benefitted from the conclusions of the Global Forum on Responsible Business Conduct held in 2014 and 2015. On 27 June 2014, a special session on responsible agricultural supply chains identified the major risks faced by enterprises when investing in agricultural supply chains and discussed the measures that governments and enterprises could take to mitigate such risks and ensure that agricultural investment benefits home and host countries as well as investors. On 19 June 2015, a panel discussion explored the roles and responsibilities of various types of enterprises operating along agricultural supply chains and the ways they could collaborate to carry out due diligence.

The diversity of perspectives represented within the Advisory Group contributed to the development of a guidance document that emphasises respect for the rights of all stakeholders adversely impacted by operations along agricultural supply chains, defines

the roles and responsibilities of enterprises operating along these supply chains, and proposes practical approaches to mitigate the risks faced by enterprises. We are confident this OECD-FAO Guidance will be a useful tool to guide enterprises in conducting their due diligence. We believe it will also promote the observance of the existing standards that were considered in its development.

David Hegwood

Chair of the Multi-stakeholder Advisory Group
and Chief, Global Engagement and Strategy, Bureau for Food Security, USAID

Recommendation of the Council on the OECD-FAO Guidance for Responsible Agricultural Supply Chains

13 July 2016

THE COUNCIL,

HAVING REGARD to Article 5 b) of the Convention on the Organisation for Economic Co-operation and Development of 14 December 1960;

HAVING REGARD to the Declaration on International Investment and Multinational Enterprises [C(76)99/FINAL], the Decision of the Council on the OECD Guidelines for Multinational Enterprises [C(2000)96/FINAL as amended by C/MIN(2011)11/FINAL] (hereafter the "Decision on the Guidelines"), the Convention on Combating Bribery of Foreign Public Officials in International Business Transactions, the Recommendation of the Council on Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas [C/MIN(2011)12/FINAL as amended by C(2012)93], and the Recommendation of the Council on the Policy Framework for Investment [C(2015)56/REV1];

RECALLING that the common aim of governments recommending the observance of the Guidelines for Multinational Enterprises (hereafter the "Guidelines") is to promote responsible business conduct;

RECALLING FURTHER that the Decision on the Guidelines provides that the Investment Committee shall, in co-operation with National Contact Points, pursue a proactive agenda in collaboration with stakeholders to promote the effective observance by enterprises of the principles and standards contained in the Guidelines with respect to particular products, regions, sectors or industries;

CONSIDERING the efforts of the international community, in particular the Committee on World Food Security and the Food and Agriculture Organization of the United Nations (FAO), to promote responsible investment in agriculture and food systems and the responsible governance of tenure of land, fisheries and forests;

RECOGNISING that building responsible agricultural supply chains is critical to sustainable development;

RECOGNISING that governments, enterprises, civil society organisations and international organisations can draw on their respective competences and roles to build responsible agricultural supply chains that benefit society at large;

NOTING that due diligence is an on-going, proactive and reactive process through which enterprises can ensure that they observe government-backed standards for responsible agricultural supply chains related to human rights, labour rights, health and

safety, food security and nutrition, tenure rights, animal welfare, environmental protection and the use of natural resources, governance and technology and innovation;

HAVING REGARD to the OECD-FAO Guidance for Responsible Agricultural Supply Chains [C(2016)83/ADD1] (hereafter "the Guidance"), that may be modified as appropriate by the Investment Committee and the Committee for Agriculture in co-operation with the FAO;

NOTING that this Guidance proposes a model enterprise policy outlining the content of existing standards for responsible agricultural supply chains and a five-step framework for due diligence describing the steps that enterprises should follow to identify, assess, mitigate and account for how they address the actual and potential adverse impacts associated with their activities or business relationships;

On the proposal of the Investment Committee and the Committee for Agriculture:

I. **RECOMMENDS** that Members and non-Members adhering to this Recommendation (hereafter the "Adherents") and, where relevant, their National Contact Points to the Guidelines (hereafter the "NCPs"), actively promote the use of the Guidance by enterprises operating in or from their territories with the aim of ensuring that they observe internationally agreed standards of responsible business conduct along agricultural supply chains in order to prevent the adverse impacts of their activities and contribute to sustainable development, and in particular poverty reduction, food security and gender equality;

II. **RECOMMENDS**, in particular, that Adherents take measures to actively support the adoption of the model enterprise policy by enterprises operating in or from their territories and the integration into corporate management systems of the five-step framework for risk-based due diligence along agricultural supply chains set out in the Guidance;

III. **RECOMMENDS** that Adherents and where relevant their NCPs, with the support of the OECD Secretariat including through its activities with the United Nations and international development organisations, ensure the widest possible dissemination of the Guidance and its active use by various stakeholders, including on-farm, downstream and upstream enterprises, affected communities and civil society organisations, and regularly report to the Investment Committee and the Committee for Agriculture on any dissemination and implementation activities;

IV. **INVITES** Adherents and the Secretary-General to disseminate this Recommendation;

V. **INVITES** non-Adherents to take due account of and adhere to the present Recommendation;

VI. **INSTRUCTS** the Investment Committee and the Committee for Agriculture to monitor the implementation of the Recommendation and to report to Council no later than five years following its adoption and as appropriate thereafter.

1. Introduction

Background

The agricultural sector,[1] with more than 570 million farms in the world, should continue attracting further investment. This is notably the case for South Asia and Sub-Saharan Africa where agricultural capital stock per worker is relatively low at USD 1 700 and USD 2 200 respectively, compared to USD 16 500 in Latin America and the Caribbean and USD 19 000 in Europe and Central Asia (FAO, 2012 and 2014). In the coming decade, prices for agricultural products are projected to remain at a higher level than in the years preceding the 2007-08 price spike as the demand for food increases driven by growing populations, higher incomes, and changing diets. The demand for non-food agricultural products is also increasing (OECD/FAO, 2015).

Enterprises operating along agricultural supply chains can make a significant contribution to sustainable development by creating employment and bringing expertise, technology and financing capacities for increasing agricultural production sustainably and upgrading in supply chains. This can enhance food and nutritional security and help achieve the development goals of the host country. Internationally agreed principles of responsible business conduct (RBC)[2] aim to ensure that enterprises contribute to sustainable development. They are already used by a significant number of enterprises. The risks of not observing these principles may be exacerbated as new actors, such as institutional investors, are increasingly involved in agricultural supply chains and as a growing number of investors target new markets, including in countries with weak governance frameworks.

Providing guidance to enterprises involved in agricultural supply chains on how to observe existing RBC standards[3] is essential to prevent adverse impacts and ensure that agricultural investments benefit enterprises,[4] governments and communities and contribute to sustainable development, and in particular poverty reduction, food security and gender equality. The range of enterprises targeted by this Guidance for Responsible Agricultural Supply Chains (hereafter "the Guidance") includes enterprises directly involved in agricultural production, such as small-scale producers, as well as other actors involved through business relationships,[5] such as investment funds, sovereign wealth funds or banks.[6]

Purpose

The Guidance intends to help enterprises observe existing standards for RBC along agricultural supply chains,[7] including the OECD Guidelines for Multinational Enterprises (OECD Guidelines). It aims to prevent risks of adverse environmental, social and human rights impacts, providing a potentially useful complement to the work of the National Contact Points (NCPs) which are tasked with furthering the effectiveness of the OECD Guidelines (see Box 1.1). It can help governments, particularly NCPs, in their efforts to promote the OECD Guidelines and in clarifying existing standards in the agricultural sector.

The Guidance refers to existing standards to help enterprises observe them and undertake risk-based due diligence. It only refers to the parts of the OECD Guidelines and other standards that are most relevant to agricultural supply chains and does not aim to substitute them. Enterprises should thus refer directly to each of these standards before making any claims regarding their observance. Not all adherents to the Declaration on International Investment and Multinational Enterprises, of which the OECD Guidelines form an integral part, or members of the FAO endorse the standards considered in this Guidance.

Scope

The Guidance considers existing standards that are relevant for responsible business conduct along agricultural supply chains, including:

- The OECD Guidelines for Multinational Enterprises (OECD Guidelines)
- The Principles for Responsible Investment in Agriculture and Food Systems of the Committee on World Food Security (CFS-RAI Principles)
- The Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security of the Committee on World Food Security (VGGT)
- The Principles for Responsible Agricultural Investment that Respects Rights, Livelihoods and Resources developed by FAO, International Fund for Agricultural Development (IFAD), UN Conference on Trade and Development (UNCTAD) and the World Bank (PRAI)
- The Guiding Principles on Business and Human Rights [Implementing the UN 'Protect, Respect and Remedy' Framework] (UN Guiding Principles)
- The International Labour Organization Tripartite Declaration of Principles concerning Multinational Enterprises and Social Policy (ILO MNE Declaration)
- The Convention on Biological Diversity (CBD), including the Akwé: Kon Voluntary Guidelines
- The Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters of the UN Economic Commission for Europe (Aarhus Convention).

The above standards meet the following three criteria established by the Advisory Group:[8] they have been negotiated and/or endorsed through an inter-governmental process; they are relevant to agricultural supply chains; and they target in particular the business/investor community. The four key standards considered in this Guidance are further described in Box 1.1. The Guidance also considers the following standards that do not meet these criteria but that are being widely used to the extent that they are consistent with the standards listed above:

- The International Finance Corporation's Performance Standards
- The Principles of the UN Global Compact.

Additional instruments, such as UN human rights treaties, are also referred to when they are relevant for the implementation of the above standards. In addition, enterprises may find it useful to refer to other standards that have not been considered in this Guidance as well to more specific tools and guidance: a list of those is available online.[9]

Box 1.1. **Description of the key standards considered in the Guidance**

OECD Guidelines for Multinational Enterprises *(OECD Guidelines)*: The OECD Guidelines are one of four parts of the 1976 OECD Declaration on International Investment and Multinational Enterprises, by which Adherents commit to provide an open and transparent international investment environment and to encourage the positive contribution of multinational enterprises (MNEs) to economic and social progress. There are currently 46 Adherents to the Declaration - 34 OECD and 12 non-OECD economies.[1] The OECD Guidelines have been revised several times, most recently in 2011. They are the most comprehensive set of government-backed recommendations on what constitutes RBC. They cover nine major areas of RBC: information disclosure, human rights, employment and industrial relations, environment, bribery and corruption, consumer interests, science and technology, competition, and taxation. They are addressed by governments to MNEs operating in and from the Adherents. Each Adherent must set up a NCP to further the effectiveness of the Guidelines by undertaking promotional activities, handling inquiries, and contributing to the resolution of issues that arise relating to the implementation of the Guidelines in specific instances. The Guidelines are the first international instrument to integrate the corporate responsibility to respect human rights as set out in the UN Guiding Principles and to incorporate risk-based due diligence into major areas of business ethics related to adverse impacts.[2]

Principles for Responsible Investment in Agriculture and Food Systems *(CFS-RAI Principles)*: The principles were developed through intergovernmental negotiations led by the Committee on World Food Security (CFS) from 2012 to 2014 and involved civil society organisations, private sector, academics, researchers, and international organisations. They were endorsed by the CFS on 15 October 2014 at its 41st session. They are voluntary and non-binding and address all types of investment in agriculture and food systems. They contain ten core principles related to: food security and nutrition; sustainable and inclusive economic development and poverty eradication; gender equality and women's empowerment; youth; tenure of land, fisheries, and forests and access to water; sustainable management of natural resources; cultural heritage, traditional knowledge, diversity and innovation; safe and healthy agriculture; inclusive and transparent governance structures, processes, and grievance mechanisms; impacts and accountability. An additional section describes the roles and responsibilities of stakeholders.

Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security *(VGGT)*: The VGGT are the first global guidelines on the governance of tenure. They were developed through intergovernmental negotiations led by the CFS and also involved civil society organisations, the private sector, academics and researchers, and international organisations. They were endorsed by the CFS at its 38th (Special) Session on 11 May 2012. The VGGT have received global recognition and their implementation has been encouraged by the G20 and in the Rio +20 Declaration. On 21 December 2012, the UN General Assembly: welcomed the outcome of the 38th (Special) Session of CFS which endorsed the VGGT; encouraged countries to give due consideration to their implementation; and requested relevant UN entities to ensure their speedy distribution and promotion.[3] These Guidelines provide a reference framework to improve the governance of tenure of land, fisheries and forests that supports food security and contributes to the global and national efforts towards the eradication of hunger and poverty. Recognising the central role of land in development, they promote secure tenure rights and equitable access to land, fisheries and forests. They set out principles and internationally accepted practices that may guide the preparation and implementation of policies and laws related to tenure governance. These Guidelines build on and support the *Voluntary Guidelines to Support the Progressive Realization of the Right to Adequate Food in the Context of National Food Security,* which were adopted by the FAO Council in November 2004.

Box 1.1. **Description of the key standards considered in the Guidance** *(cont.)*

Principles for Responsible Agricultural Investment that Respects Rights, Livelihoods and Resources *(PRAI)*: The Inter-Agency Working Group (IAWG) composed of IFAD, FAO, UNCTAD and World Bank held a roundtable during the UN General Assembly in September 2009 on 'Promoting Responsible International Investment in Agriculture' to present the seven principles and subsequently published a synoptic version in February 2010. The seven principles focus on: land and resource rights; food security; transparency, good governance and the enabling environment; consultation and participation; responsible agro-enterprise investing; social sustainability; and environmental sustainability.[4] At its Seoul Summit in November 2010, the G20 encouraged 'all countries and companies to uphold the Principles for Responsible Agricultural Investment' as part of its multi-year action plan on development. The IAWG submitted a report on the PRAI and a Plan of Action on Options for Promoting Responsible Investment in Agriculture to the G20 in 2011 and the G8 in 2012.[5] The G20 agreed with a twin track approach as the way forward to both pilot the PRAI and use the lessons learned to inform various consultation processes. In October 2012, the IAWG submitted a progress report on its action plan with particular reference to the field-testing of the PRAI with host countries and enterprises.[6] Recently, the 2013 Saint Petersburg Accountability Report on G20 Development Commitments 'welcomed the progress of the pilot projects field-testing the PRAIs in some African and South-East Asian countries'.

1. As of February 2016, these are Argentina, Brazil, Colombia, Costa Rica, Egypt, Jordan, Latvia, Lithuania, Morocco, Peru, Romania, and Tunisia.
2. Due diligence applies to all the chapters of the Guidelines, except science and technology, competition and taxation.
3. *www.un.org/News/Press/docs//2012/ga11332.doc.htm*.
4. The text of the PRAI can be downloaded at *www.responsibleagroinvestment.org*.
5. Inter-Agency Working Group on the Food Security Pillar of the G20 Multi-Year Action Plan on Development, 'Options for Promoting Responsible Investment in Agriculture', Report to the High-Level Working Group, September 2011.
6. Inter-Agency Working Group on the Principles for Responsible Agricultural Investment, Synthesis report on the field-testing of the Principles for Responsible Agricultural Investment, October 2012.

Intended users

While acknowledging that farmers are the largest investors in primary agriculture, the Guidance targets all enterprises operating along agricultural supply chains as detailed in Figure 1.1, including domestic and foreign, private and public, small, medium and large-scale enterprises, referred to as 'enterprises' throughout the Guidance.[10] It can also be used by governments, particularly NCPs, to better understand and promote existing standards in agricultural supply chains. Furthermore, it can help affected communities understand what they should expect from the above-mentioned actors and thus ensure that their rights are respected.

Process

The Guidance was developed by FAO and OECD through an inclusive consultation process led by a multi-stakeholder Advisory Group established in October 2013.[11] The Advisory Group comprises representatives from OECD and non-OECD members,

institutional investors, agri-food companies, farmers' organisations, civil society organisations and international organisations. Its tasks are as follows:

- Provide substantive inputs for the development of the Guidance.
- Assist with the process of broadly consulting with other relevant stakeholders, including by providing inputs and participating in multi-stakeholder processes, in particular the meetings of the CFS-RAI Open-Ended Working Group.
- Provide substantive inputs on follow-up measures to effectively promote and implement the Guidance.

The FAO and OECD Secretariats coordinated the consultation process in co-operation with the Advisory Group and under the leadership of its Chair and Vice-Chairs. The OECD Working Party on Responsible Business Conduct, a subsidiary body of the Investment Committee, and the Working Party on Agricultural Policies and Markets, a subsidiary body of the OECD Committee for Agriculture, have been regularly consulted.

Key concepts

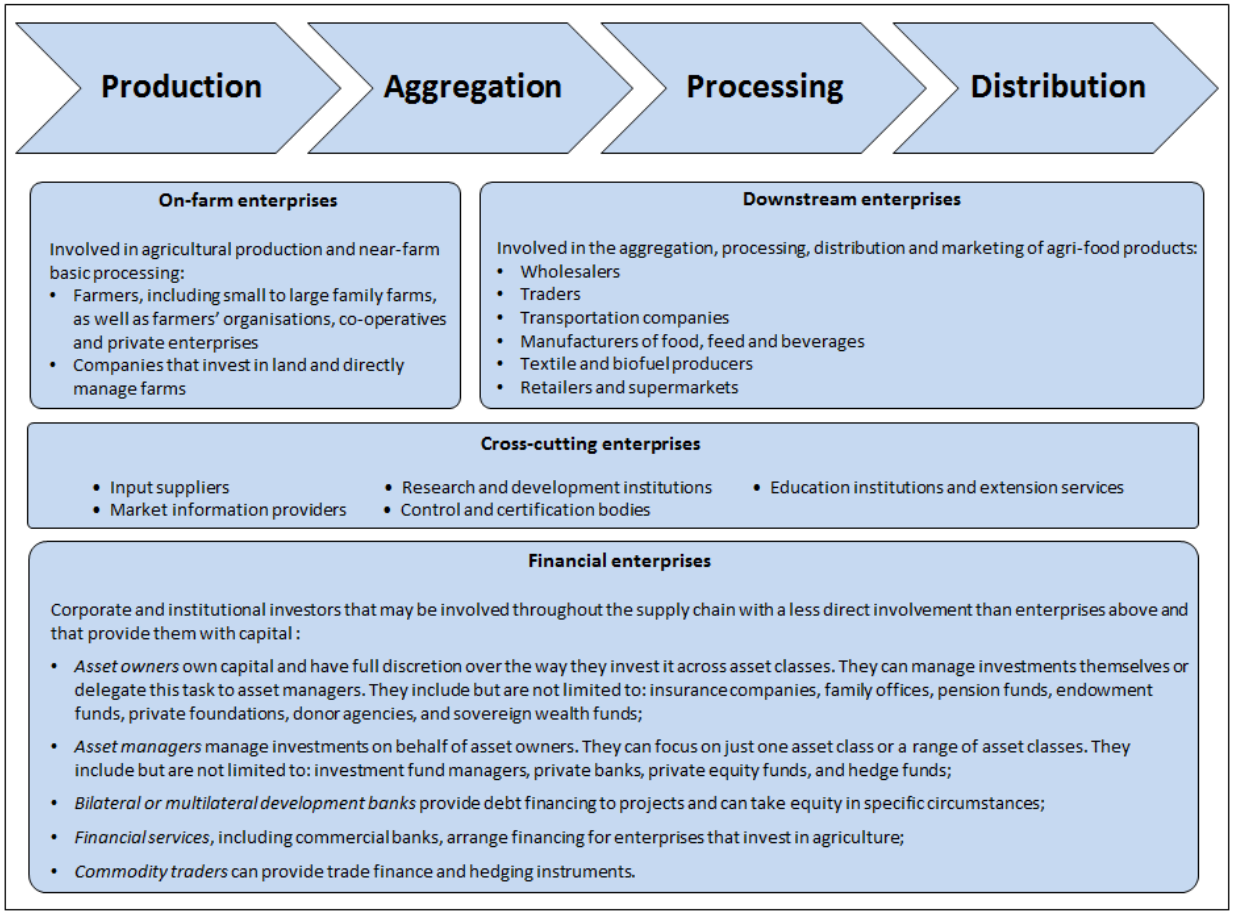
Agricultural supply chains

Agricultural supply chains refer to the system encompassing all the activities, organisations, actors, technology, information, resources and services involved in producing agri-food products for consumer markets. They cover agricultural upstream and downstream sectors from the supply of agricultural inputs (such as seeds, fertilisers, feeds, medicines, or equipment) to production, post-harvest handling, processing, transportation, marketing, distribution, and retailing. They also include support services such as extension services, research and development, and market information. As such, they consist of a wide range of enterprises, ranging from smallholders, farmers' organisations, co-operatives and start-up companies to MNEs through parent companies or their local affiliates, state-owned enterprises and funds, private financial actors and private foundations. Some actors have entered the sector in recent years.

The structure of supply chains and the enterprises involved at each stage vary significantly across products and geographies.[12] Mapping enterprises that operate along agricultural supply chains should thus be undertaken on a case-by-case basis, with a view to better understanding relationships and information and financial flows among these enterprises and to better designing audits. For the purpose of this Guidance, a simplified supply chain structure is proposed in Figure 1.1.

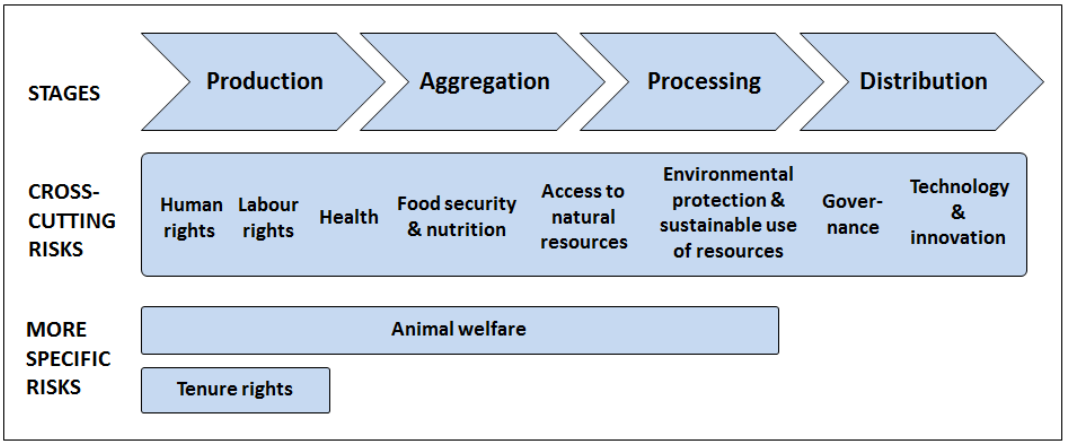
Enterprises are related through diverse relationships and arrangements. Downstream enterprises can engage in various types of relationships with on-farm enterprises to secure access to agricultural products. They can impose standards and specifications on producers with little involvement beyond a buying contract. But they can also be more actively involved, particularly through contract farming, in order to co-ordinate production and ensure quality and safety.[13] Financial enterprises may be involved in a more indirect way by providing capital to on-farm and downstream enterprises, through greenfield or brownfield investments, joint ventures or mergers and acquisitions. These categories are often difficult to delineate in practice. For instance, co-operatives often own or manage agricultural equipment as well as downstream assets (e.g. sugar mill) and could thus be considered not only as on-farm enterprises but also as downstream enterprises.

Figure 1.1. **Various stages of agricultural supply chains and enterprises involved**



Note: This diagram is for reference only and does not aim at being comprehensive.

Figure 1.2. **Risks at various stages of agricultural supply chains**



Depending on their situation along the supply chain, enterprises may focus on specific risks (Figure 1.2). For instance, on-farm enterprises face higher risks related to tenure rights. Thus they should focus particularly on undertaking good-faith, effective and meaningful consultations with tenure rights holders.

Due diligence

Due diligence is understood as the process through which enterprises can identify, assess, mitigate, prevent and account for how they address the actual and potential adverse impacts of their activities as an integral part of business decision-making and risk management systems.[14] It concerns adverse impacts caused or contributed to by enterprises as well as those adverse impacts that are directly linked to their operations, products or services through a business relationship (see Box 1.2 for further details).

Box 1.2. **Addressing adverse impacts**

Under the OECD Guidelines, enterprises should 'avoid causing or contributing to adverse impacts on matters covered by the Guidelines, through their own activities, and address such impacts when they occur.' They should also 'seek to prevent or mitigate an adverse impact where they have not contributed to that impact, when the impact is nevertheless directly linked to their operations, products or services by a business relationship. This is not intended to shift responsibility from the entity causing an adverse impact to the enterprise with which it has a business relationship.' For instance, a financial institution may contribute to an adverse impact caused by its investee company in which it has a majority or controlling holding.

An enterprise '*causes*' an adverse impact if there is causality between the operations, products or services of the enterprise and the adverse impact. Causation can occur through action as well as omissions, in other words, a failure to act. '*Contributing to*' an adverse impact should be interpreted as a substantial contribution, meaning an activity that causes, facilitates or incentivises another entity to cause an adverse impact. An enterprise can also contribute to an adverse impact if the combination of its activities and that of another entity result in an adverse impact. *'Directly linked'* is a broad concept and covers adverse impacts associated with business relationships. The term business relationship includes an enterprise's relationships with business partners, entities in the supply chain and any other non-state or state entities directly linked to its business operations, products or services. Entities with which an enterprise has a business relationship are referred to as *'business partners'* throughout the Guidance.

The OECD Guidelines underline that 'enterprises should 'encourage, where practicable, business partners, including suppliers and sub-contractors, to apply RBC principles compatible with the OECD Guidelines.' They further state that 'an enterprise, acting alone or in co-operation with other entities, as appropriate, should use its leverage[1] to influence the entity causing the adverse human rights impact to prevent or mitigate that impact.' Factors determining the appropriate action include 'the enterprise's leverage over the entity concerned, how crucial the relationship is to the enterprise, the severity of the impact, and whether terminating the relationship with the entity itself would have adverse human rights impacts.'

Thus, enterprises are expected to use their leverage over entities directly linked to their operations, products or services to support the implementation of this Guidance. For instance, if their business partners may be sourcing from or linked to any business partner violating legitimate tenure rights, they should work with them on corrective action and, to the extent possible, terminate the business relationship if no remedial action is taken.

1. Leverage is considered to exist where the enterprise has the ability to effect change in the wrongful practices of the entity that causes the harm.

Source: OECD Guidelines, II.A.11-13; II.A, para 14; and IV.43; OECD (2014).

Enterprises assess risks by identifying the factual circumstances of their activities and business relationships and evaluating those facts against applicable rights and duties under national and international law and standards, RBC recommendations of international organisations, government-backed tools, private voluntary initiatives and their own internal policies and systems. Due diligence can help enterprises and their business partners ensure they observe international and domestic law and RBC standards.

The nature and extent of due diligence will be affected by factors such as the size of the enterprise, the context and location of its operations, the nature of its products or services, and the severity of actual and potential adverse impacts.[15] While small and medium enterprises, particularly smallholders, may not have the capacity to carry out due diligence as recommended in this Guidance, they are encouraged to remain involved in the due diligence efforts of their customers in order to improve their capacity and be able to carry out proper due diligence in the future.

The OECD Guidelines recommend carrying out risk-based due diligence, meaning that the nature and extent of due diligence should correspond to the type and level of risk of adverse impacts.[16] The severity of actual and potential adverse impacts should determine the scale and complexity of the necessary due diligence. Higher risk areas should be subject to enhanced due diligence. When enterprises have large numbers of suppliers, they are encouraged to identify general areas where the risk of adverse impacts is most significant and, based on this risk assessment, prioritise suppliers for due diligence.[17] A risk-based approach should not prohibit enterprises from engaging in certain contexts or with certain business partners, but should assist them in effectively managing the risks of adverse impacts in high-risk contexts.

As detailed in Section 3, the various components of due diligence can be incorporated into the following five-step framework (Box 1.3).

Box 1.3. **Five-Step Framework for Due Diligence**

- Step 1: Establish strong enterprise management systems for responsible supply chains.
- Step 2: Identify, assess and prioritise risks in the supply chain.
- Step 3: Design and implement a strategy to respond to identified risks in the supply chain
- Step 4: Verify supply chain due diligence.
- Step 5: Report on supply chain due diligence.

Source: OECD (2013), *OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas: Second Edition*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264185050-en.

As the same enterprise may cover various stages of the supply chain, ensuring good co-ordination across different departments of the enterprise can help implement due diligence. With due regard to competition and data privacy issues, enterprises can carry out due diligence by collaborating within the industry to ensure that the process is mutually reinforcing and reduce costs through:

- industry-wide co-operation, for instance through initiatives created and managed by an industry organisation to support and advance adherence to international standards[18]
- cost-sharing within industry for specific due diligence tasks
- co-ordination between industry members who share the same suppliers
- co-operation between different segments of the supply chain, such as upstream and downstream enterprises.

Partnerships with international and civil society organisations can also support due diligence. Industry-driven programmes are most credible when they involve not only business but also civil society organisations, trade unions and relevant experts and allow building consensus among them. However, enterprises retain individual responsibility for their due diligence.

Structure

The structure of the Guidance draws from the OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas,[19] which clarifies how the OECD Guidelines apply to a specific sector by proposing due diligence steps and risk mitigation measures. Following this introduction, the present Guidance includes:

- Section 1. A model enterprise policy which outlines the content of existing standards for responsible agricultural supply chains.
- Section 2. A framework for risk-based due diligence along agricultural supply chains.
- Annex A. A description of the risks and measures for risk mitigation along agricultural supply chains, drawing from existing standards.
- Annex B. Guidance for engaging with indigenous peoples.

2. Model enterprise policy for responsible agricultural supply chains

This model enterprise policy provides the major standards that enterprises should observe to build responsible agricultural supply chains. It does so by outlining parts of the content of the relevant international standards for responsible agricultural supply chains.[20] Some of these standards, e.g. for human and labour rights and food safety, have already been incorporated in the legislation of many countries.

This model enterprise policy can be adopted by enterprises as it is, or relevant parts can be incorporated into and tailored to their existing policies on corporate social responsibility, sustainability, risk management, or other equivalent alternatives. The use of "we" indicates the self-commitment of enterprises. When designing their policy, enterprises should also ensure that they comply with all applicable national laws and consider any other relevant international standards. Adopting a policy for responsible agricultural supply chains is the first step of the risk-based due-diligence framework outlined in Section 3 that describes how such a policy can be implemented.

Recognising the risks of significant adverse impacts arising along agricultural supply chains, and recognising our responsibility to respect human rights and our capacity to contribute to sustainable development, and in particular poverty reduction, food security and nutrition, and gender equality, we commit to adopt, implement, widely disseminate and incorporate in contracts and agreements with business partners the following policy for responsible agricultural supply chains. We will encourage, where practicable, our business partners to apply this policy and, if they cause or contribute to adverse impacts, we will use our leverage to prevent or mitigate these impacts.

1. Cross-cutting RBC standards

Impact assessment

We will continuously assess and address in decision-making the actual and potential impacts of our operations, processes, goods and services over their full life-cycle with a view to avoiding or, when unavoidable, mitigating any adverse impacts. Impact assessments should involve a representative number of all relevant stakeholder groups.[21]

Disclosure

We will disclose timely and accurate information related to foreseeable risk factors and our response to particular environmental, social and human rights impacts to potentially affected communities, at all stages of the investment cycle.[22] We will also provide accurate, verifiable and clear information that is sufficient to enable consumers to make informed decisions.[23]

Consultations

We will hold good-faith, effective and meaningful consultations with communities through their own representative institutions before initiating any operations that may affect them and we will continue to hold consultations with them during and at the end of operations. We will bear in mind the different risks that may be faced by women and men.[24]

We will hold effective and meaningful consultations with indigenous peoples through their own representative institutions in order to obtain their free, prior and informed consent[25] consistent with achieving the ends of the United Nations Declaration of Rights of Indigenous Peoples and with due regard for particular positions and understanding of individual states.[26]

Benefit sharing

We will ensure that our operations contribute to sustainable and inclusive rural development,[27] including, as appropriate, through promoting fair and equitable sharing of monetary and non-monetary benefits with affected communities on mutually agreed terms, in accordance with international treaties, where applicable for parties to such treaties, e.g. when using genetic resources for food and agriculture.[28]

Grievance mechanisms

We will provide for legitimate, accessible, predictable, equitable and transparent operational-level grievance mechanisms in consultation with potential users. We will also co-operate in other non-judicial grievance mechanisms. Such grievance mechanisms can enable remediation when our operations have caused or contributed to adverse impacts due to non-adherence to RBC standards.[29]

Gender

We will help eliminate discrimination against women, enhance their meaningful participation in decision-making and leadership roles, ensure their professional development and advancement, and facilitate their equal access and control over natural resources, inputs, productive tools, advisory and financial services, training, markets and information.[30]

2. Human rights

Within the framework of internationally recognised human rights,[31] the international human rights obligations of the countries in which we operate as well as relevant domestic laws and regulations, we will:

- Respect human rights,[32] which means avoid infringing on the human rights of others and address adverse human rights impacts with which we are involved.
- Within the context of our own activities, avoid causing or contributing to adverse human rights impacts and address such impacts when they occur.[33]
- Seek ways to prevent or mitigate adverse human rights impacts that are directly linked to our operations, products or services by a business relationship, even if we did not contribute to those impacts.[34]

- Carry out human rights due diligence as appropriate to the size, nature and context of our operations and the severity of the risks of adverse human rights impacts.[35]
- Provide for, or co-operate through legitimate processes in, the remediation of adverse impacts on human rights when we identify that we have caused or contributed to these impacts.[36]
- Within the context of our own activities, ensure that all persons' human rights are respected, without distinction of any kind, such as race, colour, sex, language, religion, political or other opinion, national or social origin, property, birth or other status.[37]

3. Labour rights

We will respect international core labour standards in our operations, namely the freedom of association and the right to collective bargaining, including for migrant workers, the elimination of all forms of forced or compulsory labour, the effective abolition of child labour and the elimination of discrimination in respect of employment and occupation.[38]

In our operations, we will also:

- Ensure occupational health and safety.
- Ensure decent wages, benefits and working conditions, that are at least adequate to satisfy the basic needs of workers and their families, and strive to improve working conditions.[39]
- Promote the security of employment and co-operate in government schemes to provide some form of income protection to workers whose employment has been terminated.[40]
- Seek to prevent abuses of migrant workers.[41]
- Adopt approaches, measures, and processes to enhance women's meaningful participation in decision-making and leadership roles.[42]

We will contribute to the realisation of the right to work,[43] by:

- striving to increase employment opportunities, both directly and indirectly[44]
- ensuring that relevant training is provided for all levels of employees, to meet the needs of the enterprise and the development policies of the host country, including by increasing the productivity of the youth and/or their access to decent employment and entrepreneurship opportunities[45]
- ensuring maternity protection at work.[46]

4. Health and safety

We will promote public health[47] by:

- adopting appropriate practices to prevent threats to human life, health, and welfare in our operations, as well as threats deriving from the consumption, use or disposal of our goods and services, including by adhering to good practices in food safety[48]
- contributing to the protection of the health and safety of affected communities during the life-cycle of our operations.[49]

5. Food security and nutrition

We will strive to ensure that our operations contribute to food security and nutrition. We will give attention to enhancing the availability, accessibility, stability and utilisation of safe, nutritious and diverse foods.[50]

6. Tenure rights over and access to natural resources

We will respect legitimate tenure right holders[51] and their rights over natural resources, including public, private, communal, collective, indigenous and customary rights, potentially affected by our activities. Natural resources include land, fisheries, forests, and water.

To the greatest extent possible, we will commit to transparency and information disclosure on our land-based investments, including transparency of lease/concession contract terms, with due regard to privacy restrictions.[52]

We will give preference to feasible alternative project designs to avoid or, when avoidance is not possible, minimise the physical and/or economic displacement of legitimate tenure right holders, while balancing environmental, social, and financial costs and benefits, paying particular attention to adverse impacts on the poor and vulnerable.

We are aware that, subject to their national law and legislation and in accordance with national context, states should expropriate only where the rights at issue are required for a public purpose and should ensure a prompt, adequate and effective compensation.[53]

When holders of legitimate tenure rights are negatively affected, we will seek to ensure that they receive a prompt, adequate and effective compensation of their tenure rights being negatively impacted by our operations.[54]

7. Animal welfare

We will support animal welfare in our operations,[55] including by:

- striving to ensure that the 'five freedoms' for animal welfare are implemented, i.e. freedom from hunger, thirst and malnutrition, physical and thermal discomfort, pain, injury and disease, fear and distress, and freedom to express normal patterns of behaviour[56]
- ensuring high standards of management and stockmanship for animal production, that are appropriate to the scale of our operations, in accordance with or exceeding OIE's principles.[57]

8. Environmental protection and sustainable use of natural resources

We will establish and maintain, in co-ordination with responsible government agencies and third parties as appropriate, an environmental and social management system appropriate to the nature and scale of our operations and commensurate with the level of potential environmental and social risks and impacts.[58]

We will continuously improve our environmental performance by:

- preventing, minimising and remedying pollution and negative impacts on air, land, soil, water, forests and biodiversity, and reducing greenhouse gas emissions

- avoiding or reducing the generation of hazardous and non-hazardous waste, substituting or reducing the use of toxic substances,[59] and enhancing the productive use or ensuring a safe disposal of waste
- ensuring the sustainable use of natural resources and increasing the efficiency of resource use and energy[60]
- reducing food loss and waste and promoting recycling
- promoting good agricultural practices, including to maintain or improve soil fertility and avoid soil erosion
- supporting and conserving biodiversity, genetic resources and ecosystem services; respecting protected areas,[61] high conservation value areas and endangered species; and controlling and minimising the spread of invasive non-native species
- increasing the resilience of agriculture and food systems, the supporting habitats and related livelihoods to the effects of climate change through adaptation measures.[62]

9. Governance

We will prevent and abstain from any form of corruption and fraudulent practices.[63]

We will comply with both the letter and spirit of the tax laws and regulations of the countries in which we operate.[64]

We will refrain from entering into or carrying out anti-competitive agreements among competitors and will co-operate with investigating competition authorities.[65]

To the extent to which they apply to enterprises, we will act consistently with the Principles contained in the OECD Recommendation of the Council on Principles of Corporate Governance.[66]

10. Technology and innovation

We will contribute to the development and diffusion of appropriate technologies, particularly environmentally-friendly technologies and those that generate direct and indirect employment.[67]

3. Five-step framework for risk-based due diligence along agricultural supply chains

Enterprises should implement the following five-step framework to undertake risk-based due diligence along agricultural supply chains: (i) establish strong enterprise management systems for responsible agricultural supply chains; (ii) identify, assess and prioritise risks in the supply chain; (iii) design and implement a strategy to respond to identified risks; (iv) verify supply chain due diligence; and (v) report on supply chain due diligence. The first step includes the adoption of an enterprise policy for RBC that can draw from the model enterprise policy in Section 2 of the Guidance. While all enterprises should conduct due diligence, the implementation of this five-step framework should be tailored to their position and the type of involvement in the supply chain, the context and location of their operations, as well as their size and capacities. To the extent possible, this section differentiates the responsibilities of various types of enterprises (on-farm, downstream and financial enterprises) at each step.

Step 1. Establish strong enterprise management systems for responsible agricultural supply chains

1.1 Adopt, or integrate into existing processes, an enterprise policy for RBC along the supply chain (hereafter 'enterprise policy for RBC')

This policy should incorporate the standards against which due diligence is to be conducted, drawing from international standards and the model enterprise policy above. It can consist of one single policy or several stand-alone policies (e.g. enterprise policy on human rights) and can include the commitment to adhere to existing industry-specific standards, such as certification schemes.[68] If long-standing policies are in place, a gap analysis can determine gaps in comparison with the model enterprise policy in Section 2 and existing policies can be updated accordingly.

The enterprise policy for RBC should:

- be approved at the most senior level of the enterprise. Senior level responsibility should be assigned for its implementation.
- be informed by relevant internal and external expertise, and as appropriate, stakeholder consultations
- stipulate the enterprise's expectations in terms of RBC of employees, business partners and other parties directly linked to its operations, products or services
- be publicly available and communicated to all employees, business partners and other relevant parties

- be reflected in operational policies and procedures necessary to embed it throughout the enterprise[69]
- be reviewed and adapted on a regular basis in light of the increasing knowledge about risks in the supply chain and international standards.

While some risks of adverse impacts arise at specific stages of the supply chain, such as the production and processing stages for land tenure and animal welfare, the enterprise policy for RBC should cover the risks arising throughout the entire supply chain.

1.2. Structure internal management to support supply chain due diligence

Senior management should be visibly and actively involved in implementing and ensuring compliance with the enterprise policy for RBC. Employees and business partners should be trained and provided incentives to comply with it. An individual with relevant technical and cultural skills should be designated to be responsible for due diligence with the necessary support team. Adequate financial resources should be made available. An internal reporting structure should be set, maintained and communicated within the enterprise at key junctures. RBC practices should be consistent throughout the operations of the enterprise. These measures should be tailored to the purpose, activity, products and size of the enterprise, taking into consideration its financial capacities.

1.3. Establish a system of controls and transparency along the supply chain

Monitoring the implementation of the enterprise policy for RBC is critical to the credibility and effectiveness of the policy and to good relationships with stakeholders, including governments. It entails:

- Creating internal verification procedures to undertake regular independent and transparent reviews of compliance with the policy. Such procedure can consist of a traceability system[70] which implies: creating internal documentation of due diligence processes, findings and resulting decisions; maintaining internal inventory and transaction documentation that can be used retrospectively to identify actors in the supply chain; making and receiving payments through official banking and ensuring that all unavoidable cash purchases are supported by verifiable documentation; and maintaining the information collected for a period of several years. Upstream enterprises should establish mass balance or physical segregation traceability,[71] for instance through a chain of custody, while downstream enterprises should identify their upstream suppliers and the sourcing countries of their upstream sub-suppliers. Due diligence information passed on from upstream to downstream enterprises can increase transparency and facilitate traceability.
- Establishing permanent business relations as the best means for a continual flow of information. Channels for communicating with various stakeholders can warn of possible deviations from the policy and relevant standards. The execution and follow-up of periodic audits and of environmental, social and human rights impact assessments (ESHRIAs)[72] can also help assess compliance but should not substitute for such information flows.

1.4. Strengthen engagement with business partners

A policy for RBC, drawing from the enterprise policy for RBC, should be incorporated into contracts and agreements with business partners. It should be tailored to

their capacities. Long-term relationships with business partners can increase leverage to encourage the adoption of such policy and improve transparency. Implementation plans developed in co-ordination with business partners and involving local and central governments, international organisations, and civil society, can also improve compliance, in particular by offering capacity-building trainings. For instance, enterprises can build the capacities of small-scale farmers that might have difficulties meeting stringent requirements that can be costly.

1.5. Establish an operational-level grievance mechanism in consultation and collaboration with relevant stakeholders

A grievance mechanism[73] can help alert enterprises to deviations from relevant standards and help them identify risks, including by allowing for improved communication with relevant stakeholders. It can be established at the level of a project, an enterprise or an industry. It should be used as an early-warning risk-awareness system and as a mechanism to prevent conflicts and provide redress. For instance, grievance mechanisms established by existing industrial relations systems and collective bargaining agreements can constitute effective and credible mechanisms to respect labour rights.

Grievance mechanisms should be easily accessible by workers and all those actually or potentially affected by the adverse impacts deriving from the enterprise's failure to uphold RBC standards. Enterprises should publicise their existence and modalities of access, actively encourage their use, guarantee that their users remain anonymous and free from reprisal, and regularly verify their effectiveness. They should keep a public registry of complaints received, and lessons learnt through grievance mechanisms should be incorporated in the enterprise policy for RBC, relations with business partners and monitoring systems.

Grievance mechanisms should complement judicial and other non-judicial mechanisms, such as NCPs, with which enterprises should also engage.

Step 2. Identify, assess and prioritise risks in the supply chain

2.1. Map the supply chain

This requires identifying the various actors involved, including, when relevant, the names of immediate suppliers and business partners and the sites of operations. For instance, the following details can be requested from on-farm enterprises: name of the producer unit; address and site identification; contact details of the site manager; category, quantity, dates and methods of production; number of workers by gender; list of risk management practices; transportation routes; and risk assessments that have been undertaken.

Enterprises, particularly financial enterprises and consumer-facing enterprises that are several tiers removed from agricultural production, may not be able to map all their suppliers and business partners initially. However, they should systematically work towards a complete picture of their business relationships. The extent of information collected on business partners depends on the severity of risks and on how closely linked to the identified risks they are.

2.2. Assess the risks of adverse environmental, social and human rights impacts[74] of the operations, processes, goods and services of the enterprise and its business partners over their full life cycle

Such assessments should identify the full extent of actual and potential adverse impacts in the supply chain either caused or contributed to by the enterprise or directly linked to its operations, products or services by a business relationship. They should cover environmental, social and human rights impacts. They may be required and regulated by domestic laws. Their scope and frequency should reflect the severity of the risks and the performance of business partners in managing them. They can be used for disclosure purposes but also in a more practical and forward-looking way to address specific risks, strengthen supplier dialogue, and improve supplier performance.

Drawing from existing standards, Annex A (Section 1.3) provides details on what stages and impacts these assessments should include. In addition, these assessments should identify:[75]

- relevant rights holders and stakeholders, particularly women, likely to be affected by the operations on an ongoing basis[76]
- any business partner that risks not undertaking proper due diligence
- any 'red flags' as described in Box 3.1. In such situations, enhanced due diligence may be needed, which could include on-the-ground verification of qualitative circumstances for red flag locations, products, or business partners
- any reasonable inconsistency between the factual circumstances of the operations and the enterprise policy for RBC.

Several **types of assessments** can help identify red flags. Context risk assessments categorise sourcing regions and countries as low, medium or high risk for specific risk areas by assessing the regulatory framework, political context, civil liberties and socio-economic environment. Site-level risk assessments aim to understand the factual circumstances of the operations of business partners in order to assess the scope, severity and likelihood of risks at the site level. They should form the basis of the pre-qualification process of new business partners. A standard risk assessment should be applied to business partners operating in low risk contexts. An enhanced risk assessment should be applied to all business partners operating in medium and high risk contexts. Assessments can include undertaking stakeholder consultations, monitoring by a third party, such as civil society organisations, and organising visits of the farms and/or processing facilities.

Risk assessment should be an **ongoing process** in order to maintain a true picture of the risks over time, taking into account changing circumstances. The following situations should trigger new risk assessments: sourcing from a new market; changes in the operating environment of a business partner (e.g. change in government); supplier begins sourcing from medium or high risk areas; start of a new business relationship; change in ownership of a business partner; development of a new product; or change in business model.

Box 3.1. **Examples of situations that warrant enhanced due diligence: Red flags**

- **Red flag locations - Operations are planned in or agricultural products originate from areas:**
  - affected by conflicts or considered as high-risk areas[1]
  - considered as weak governance areas[2]
  - where national or local governments do not observe internationally agreed RBC standards or do not provide support to the enterprise to ensure the observance of these standards, such as by proposing agricultural land on which local communities have legitimate tenure rights and have not been consulted, or which is located in protected areas
  - where violations of human rights or labour rights have been reported
  - where tenure rights are weakly defined or contested
  - where communities face food insecurity or water shortages
  - affected by environmental degradation or defined as protected areas.
- **Red flag products**
  - The production of the agricultural commodity is known to have adverse environmental, social or human rights impacts in certain contexts.
  - The agri-food product does not conform to health and food safety standards.
- **Red flag business partners**
  - Business partners are known not to have observed the standards contained in this Guidance.
  - They are known to have sourced agricultural products from a red flag location in the last twelve months.
  - They have shareholder or other interests in enterprises that do not observe the standards contained in this Guidance or that supply agricultural products from or operate in a red flag location.

1. Conflict-affected and high-risk areas are identified by the presence of armed conflict, widespread violence or other risks of harm to people. Armed conflict may take a variety of forms, such as a conflict of international or non-international character, which may involve two or more states, or may consist of wars of liberation, insurgencies, or civil wars, etc. High-risk areas may include areas of political instability or repression, institutional weakness, insecurity, collapse of civil infrastructure and widespread violence. Such areas are often characterised by widespread human rights abuses and violations of national or international law (OECD, 2013).
2. This may include areas showing poor performance as per the World Bank Worldwide Governance Indicators or Transparency International Corruption Perception Index. It could also include countries that have not committed to or started to implement the provisions of the United Nations Convention Against Corruption.

Risk assessments depend on the **type of enterprise:**

- On-farm enterprises may establish on-the-ground assessment teams for generating and sharing verifiable, reliable and up-to-date information on the qualitative circumstances of agricultural production. These enterprises would need to ensure that they respect legitimate land tenure right holders, including by holding good-faith, effective and meaningful consultations with local communities. If involved in livestock production, they should support animal welfare in their operations. They should provide the results of their risk assessments to downstream enterprises.

- Downstream enterprises should not only identify risks in their own operations but also, to the best of their efforts, assess the risks faced by their suppliers. They can assess the latter by assessing the due diligence carried out by their suppliers or by directly assessing the operations of their suppliers, for instance by conducting farm visits. Participating in industry-wide schemes that assess the compliance of business partners with RBC standards and provide relevant information can support these assessments.

- Financial enterprises may have hundreds to thousands of clients. It may not always be feasible to conduct risk assessments for each of them. Under the OECD Guidelines, all enterprises are expected to identify general areas where the risk of adverse impacts is most significant and to prioritise due diligence accordingly. The appropriate scope of due diligence responsibilities of a financial institution depends on the nature of its operations, products and services.[77]

Step 3. Design and implement a strategy to respond to identified risks

3.1. Report the findings of the risk assessment to the designated senior management

3.2. Adopt a risk management plan

This plan can include the risk mitigation and prevention measures suggested in Annex A. It can propose various scenarios depending on how closely the enterprise is linked to adverse impacts (see Box 1.2 for further details):

- If the enterprise is causing adverse impacts, it should provide remedy[78] for actual adverse impacts and prevent potential adverse impacts. This may entail suspending operations temporarily while undertaking measurable efforts to prevent any future adverse impacts, or suspending operations permanently if these impacts cannot be mitigated.

- If the enterprise is contributing to adverse impacts, it should cease its contribution to adverse impacts and use its leverage to mitigate any remaining adverse impacts. This may entail suspending operations temporarily. The enterprise should also take preventive measures to ensure that these adverse impacts will not re-occur.

- If the enterprise has not contributed to the adverse impact, when the impact is nevertheless directly linked to its operations, products or services by a business relationship, it should use its leverage to mitigate or prevent the adverse impact. This may lead to disengaging with a business partner after failed attempts at mitigating risks or when risk mitigation is deemed as not feasible or unacceptable. Factors that are relevant to determining the appropriate response include: the severity and probability of

the adverse impact, the enterprise's ability to influence and/or build leverage over the business partner or other relevant actors (e.g. government), and how crucial the business partner is to the enterprise.

All types of enterprises may be directly causing, contributing to or directly linked to adverse impacts. The following examples illustrate what this can entail in practice:

- *Causing:* The three types of enterprises, on-farm, downstream and financial enterprises, can directly cause adverse impacts. However, some adverse impacts may be directly caused only by on-farm, and to a lesser extent, downstream enterprises, such as impacts on land tenure rights and animal welfare. If, in a risk assessment, an on-farm enterprise is found infringing the land rights of legitimate rights holders, it should provide remedy for such impacts, e.g. return the land to the legitimate rights holders or ensure that they receive a fair and prompt compensation.
- *Contributing to:* If a large food retailer requires tight delivery schedules of seasonal and fresh agricultural products, such as strawberries, it may lead its suppliers to suddenly increase their workforce to meet the demand, and thus generate abuses of temporary migrant workers. The food retailer should thus cease its contribution to this adverse impact by, for instance, easing the pressure on its supplier or increasing purchasing prices to take into account the cash flow constraints of its suppliers.
- *Directly linked to:* A pension fund can invest in an investment fund that in turn invests in a farm that relies on child labour for some of the most labour intensive tasks, such as vanilla harvesting. The pension fund is thus directly linked to adverse human rights impacts. It should use its leverage to prevent or mitigate the adverse impact, for instance by expressing its intention to divest from the investment fund if child labour is not addressed at the farm level.

3.3. Implement the risk management plan, monitor and track performance of risk mitigation efforts and report back to the designated senior management

This entails consulting with affected stakeholders, including workers and their representatives, and business partners, to clarify concerns and agree on the strategy for mitigating risks.

Step 4. Verify supply chain due diligence

Enterprises should take steps to verify that their due diligence practices are effective, i.e. that risks have been adequately identified and mitigated or prevented. Two scenarios arise:

1. If the risk has been mitigated or prevented, the enterprise should conduct on-going due diligence proportionate to the risk.
2. If the risk has not been mitigated or prevented, the verification process should identify why this is the case, such as the lack of effective risk mitigation strategy, or inadequate timing, resources or lack of will to mitigate risks. A new risk assessment should be undertaken.

The verification process should:

- Ensure that the voice of women is adequately represented.

- Be proportionate to the risk.
- Generate recommendations to improve due diligence practices.
- Take into account the capacities of various enterprises as such processes can be costly. Due diligence may be assessed through affordable mechanisms for small enterprises, such as locally-driven social compliance initiatives.[79]

The verification process may include audits, on-site investigations, and consultations with government authorities, civil society, members of the affected community, and workers' organisations at local, national and international level. The independence and quality of audits are critical to their effectiveness.[80] Auditors should be independent, competent and accountable. Enterprises may consider incorporating audits into an independent institutionalised mechanism responsible for accrediting auditors, verifying audits, publishing audit reports, implementing modules to build capabilities of suppliers to conduct due diligence, and helping follow up on grievances of interested parties.

Complementary and mutually-reinforcing verification processes based on common standards, undertaken at appropriate points in the supply chain, can help avoid assessment fatigue and increase efficiency.[81] For instance, auditors may recognise the conclusions of audits carried out by other independent third parties. Enterprises may wish to focus on 'choke points', i.e. points at which a narrow set of stakeholders is operating in the supply chain - as opposed to every enterprise in the supply chain being assessed. They can identify choke points by taking into consideration:

i) key points of material transformation in the supply chain, such as processing or packaging

ii) number of actors at a given point in the supply chain: audits could focus on points in the supply chain where relatively few actors are active or where most agri-food products are aggregated

iii) greatest points of leverage of downstream enterprises

iv) points where schemes and audit programmes already exist to leverage these systems and avoid duplication.

For instance, a possible choke point for the coffee supply chain in Ethiopia could be the Ethiopian Commodity Exchange where a limited number of traders sell the coffee produced by numerous small producers (case ii. above). In more fragmented coffee supply chains, choke points could be processing factories, wholesalers or exporters. The focus on these choke points should not substitute a thorough due diligence carried out throughout the supply chain.

Step 5. Report on supply chain due diligence

Enterprises should publicly report on their supply chain due diligence policies and practices, with due regard taken of business confidentiality and other competitive concerns. They should provide affected stakeholders and business partners with clear, accurate and timely information on actual and potential adverse impacts identified through ongoing impact assessments and on the steps and measures taken to mitigate or prevent them. Reports may also include information on the enterprise management systems and the verification reports of due diligence practices. Once released, they should be accessible to all relevant stakeholders.

Beyond public and formal reporting, communication can take a variety of forms, including in-person meetings, online dialogues, and consultation with affected stakeholders. Communication needs to be appropriate to the impacts and audience in terms of its form, frequency, accessibility, and the adequacy of information provided.

Notes

1. While the Constitution of the Food and Agriculture Organization of the United Nations (FAO) includes fisheries and forestry in the definition of agriculture, the present Guidance focuses mostly on crops and livestock.

2. Responsible Business Conduct (RBC) means that businesses should: a) make a positive contribution to economic, environmental and social progress with a view to achieving sustainable development and b) avoid and address adverse impacts of their own activities and prevent or mitigate adverse impacts directly linked to their operations, products or services by a business relationship.

3 Throughout this Guidance, standards refer to recommendations contained in various types of instruments, including conventions, declarations, principles and guidelines.

4. As underlined in the 2015 report of the World Economic Forum *'Beyond supply chains - Empowering responsible value chains'*, observing RBC standards can benefit enterprises as changing market dynamics increase the importance of sustainability efforts. Customers are becoming more sensitive to sustainability. Younger consumers in particular demand sustainable products and practices and will pay more to get them. Increasingly scarce natural resources and rising commodity prices make resource efficiency and waste reduction crucial variables for enterprises to remain profitable. The regulatory environment and non-governmental organisations are pushing for more transparency, which drives non-compliance costs and can create a backlash from the marketplace.

5. See the definition of due diligence further below for a definition of 'business relationship'.

6. See the section 'intended users' for a more detailed description.

7. Additional resources are available at: *http://mneguidelines.oecd.org/rbc-agriculture-supply-chains.htm and www.fao.org/economic/est/issues/investment/en.*

8. See the sub-section 'process' for further details on the composition and the role of the Advisory Group in developing this Guidance.

9. Additional information is available at: *http://mneguidelines.oecd.org/rbc-agriculture-supply-chains.htm*.

10. While the OECD Guidelines do not provide a precise definition of multinational enterprises (MNEs), they indicate that MNEs usually comprise companies or other entities established in more than one country (OECD Guidelines, I.4). The CFS-RAI Principles target 'business enterprises, including farmers' (paras. 50-52).

11. The terms of reference of the Multi-Stakeholder Advisory Group defining its objectives, tasks and organisational structure were endorsed by the OECD Working Party on Responsible Business Conduct in June 2013 and by the OECD Working Party on Agricultural Policies and Markets in July 2013.

12. For specific examples, see: Botswana agrifood value chain project: Beef value chain study by the FAO in 2013; A farm gate-to-consumer value chain analysis of Kenya's maize marketing system by Michigan State University in 2011; Value chain analysis of the cashew sector in Ghana by GIZ in 2010; or Rwanda's essential oils value chains: A diagnostic by UNIDO in 2012.

13. Contract farming involves production carried out on the basis of an agreement between the buyer and the producer. It covers a wide range of contracts and differs by type of contractor, type of product, intensity of coordination between farmers and investors, and the number of stakeholders involved. For further information, see *www.fao.org/ag/ags/contract-farming/faq/en/#c100440*.

14. For further details, see the OECD Due Diligence for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas, 2011.

15. Drawing from OECD Guidelines, II.15.

16. OECD Guidelines, II.A.10.

17. OECD Guidelines, II.16.

18. Such programmes include among others: Principles and criteria for sustainable palm oil production which certifies palm oil producers, processors or traders, as well as manufacturers, retailers, banks and investors involved in palm oil supply chains; standards of the roundtable on sustainable biofuels which certifies biofuel operators; Principles and criteria for responsible soy production certifying soy growers and soy growers' groups; Better Sugar Cane Initiative (Bonsucro) Standards for sugarcane producers; and Principles for Responsible Investment in Farmland for institutional asset owners and managers. Monitoring platforms such as Sedex can also help monitor suppliers' performance.

19. The OECD Recommendation on the Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas was adopted by Council at Ministerial level on 25 May 2011 and subsequently amended on 17 July 2012 to include a reference to the Supplement on Gold.

20. The model enterprise policy does not aim to substitute existing standards. Enterprises should refer directly to each of these standards before making any claims regarding their observance. References to the standards cited throughout the document are indicated after the last element mentioned and not after each of the elements cited. They aim to help enterprises refer to the initial text of the standards considered in this Guidance for further details on the content of such standards.

21. OECD Guidelines, II.10 and VI.3; CFS-RAI Principle 10; VGGT 12.10; UN Guiding Principles, para. 17; CBD, Article 14; Akwé: Kon Guidelines; IFC Performance Standard 1, paras 5 and 8-10.

22. OECD Guidelines, III.1-3, VI.2.a & VIII.2; CFS-RAI Principles 9.ii and 10; UN Guiding Principles, para. 21; IFC Performance Standard 1, para. 29; Aarhus Convention, Article 5. See Annex A, 1.1 and 1.3 below. Specific guidance on material information to be shared with affected stakeholders can be found in the OECD Due Diligence Guidance for Meaningful Stakeholder Engagement in the Extractive Sector.

23. OECD Guidelines, VIII.2.

24. OECD Guidelines, II.14 & VI.2.b; CFS-RAI Principle 9.iii-iv; VGGT, 9.9 and 12.11; UN Guiding Principle, para. 18; PRAI Principles 1 and 4; Akwé: Kon Guidelines, 11, 13-17 and 57; IFC Performance Standard 1, para. 26-27 and 30-33. See also ILO Convention No. 169 on Indigenous and Tribal Peoples, 1989. See Annex A, 1.2 below. Further guidance on stakeholder engagement can be found in the OECD Due Diligence Guidance for Meaningful Stakeholder Engagement in the Extractive Sector.

25. See Annex B for further guidance on engagement with indigenous peoples and free, prior and informed consent (FPIC).

26. As underlined in the introduction, as a joint endeavour of OECD and FAO, this Guidance considers several standards other than the OECD Guidelines, particularly the CFS-RAI Principles, which include references to FPIC not found in the OECD Guidelines. This paragraph quotes CFS-RAI Principle 9.iv. See also IFC Performance Standard 7, paras. 12-17; Akwé: Kon Guidelines, 29 and 60; VGGT, 3B.6, 9.9 and 12.7; UN Declaration on the Rights of Indigenous Peoples, Articles 10, 11 and 32; and ILO Convention No. 169 on Indigenous and Tribal Peoples, Article 16.

27. OECD Guidelines, II.A.1; CFS-RAI Principle 2.iv, v and vii; VGGT, 12.4; Akwé: Kon Guidelines, 40.

28. CFS-RAI Principles 2.iv-vii and 7.i & iii; VGGT, 12.6; PRAI Principles 5-6; Akwé: Kon Guidelines, 46; IFC Performance Standard 7, paras 14 and 17-20 and Standard 8, para 16. See also CBD Article 8(j), Nagoya Protocol Articles 5-7, ITPGR, Article 9.2. Benefits can be monetary and non-monetary: see Annex to the Nagoya Protocol. See also Annex A, 1.4 for further details.

29. OECD Guidelines, IV, para 46 and VIII.3; CFS-RAI Principle 9.v; VGGT, 3.2, 12.14, 25.1 & 25.3; UN Guiding Principle 31; PRAI Principle 1; Akwé: Kon Guidelines, 63; ILO MNE Declaration, 58-59; IFC Performance Standard 1, para 35, and IFC Performance Standard 5, para 11. See also Annex A, 1.5. The OECD Due Diligence Guidance for Meaningful Stakeholder Engagement in the Extractive Sector provides further guidance on grievance mechanisms.

30. CFS-RAI Principle 3; Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW).

31. For more details on internationally recognised human rights, you can refer to OECD Guidelines, VI. 39.

32. OECD Guidelines, II.A.2 and IV; CFS-RAI Principles 1, 9.iv and 10 and Paras 3, 19.i, 47.v, 50 and 51; UN Guiding Principles, para. 11. See Annex A, 2.

33. OECD Guidelines, IV.1 and 2.

34. OECD Guidelines, IV.3; VGGT, 3.2; PRAI Principle 1; Akwe: Kon Guidelines, 57; UN Global Compact, Principles 1-2.

35. OECD Guidelines, IV.5; UN Guiding Principle 17.

36. OECD Guidelines, IV.6; UN Guiding Principle 22.

37. Universal Declaration of Human Rights, Article 2; CFS-RAI Principles 3.ii. As highlighted in Annex A, the OECD Guidelines (V.1.e) state that enterprises should 'be guided throughout their operations by the principle of equality of opportunity and treatment in employment and not discriminate against their workers with respect to employment or occupation on such grounds as race, colour, sex, religion, political

opinion, national extraction or social origin, or other status'. Commentary 54 specifies that the term "other status" for the purposes of the Guidelines refers to trade union activity and personal characteristics such as age, disability, pregnancy, marital status, sexual orientation, or HIV status.

38. OECD Guidelines, V.1-3; CFS-RAI Principle 2.i-ii; ILO MNE Declaration, para 8; UN Guiding Principles, 12; IFC Performance Standard 2; Children's Rights and Business Principle 2. All ILO members have to respect these core labour standards that constitute the four fundamental principles of the ILO Declaration on Fundamental Principles and Rights at Work, regardless of which ILO convention they have ratified.

39. OECD Guidelines, V.4.b and V.4.c; CFS-RAI Principle 2.iii; ILO MNE Declaration 37-40; IFC Performance Standard 2, paras 10, 23, 25, 28-29; Children's Rights and Business Principles 3 and 4.

40. ILO MNE Declaration, 16 and 25-28. For further details, see Annex A, 3 on decent working conditions.

41. ILO Recommendation 198, Article 7.a; IFC Performance Standard 2, para 11.

42. CFS-RAI Principle 3.iv.

43. Universal Declaration of Human Rights, Article 23.

44. OECD Guidelines, II. A.4; ILO MNE Declaration, paras. 16 and 19; CFS-RAI Principle 2.iii.

45. CFS-RAI Principles 2,iii and 4.ii; ILO MNE Declaration 30-32.

46. ILO Maternity Protection Convention, 2000 (No. 183); Convention on the Elimination of All Forms of Discrimination Against Women, article 11 (2).

47. CFS-RAI Principle 8.iv.

48. OECD Guidelines, VIII.1, 6-7; CFS-RAI Principles 2.viii and 8.i, iii and iv; PRAI, 5.2.1.

49. Akwé Kon Guidelines, 50; IFC Performance Standard 4.

50. CFS-RAI Principle 1 and 8.i; VGGT 12.1, 12.4 and 12.12; PRAI Principle 2.2. See Annex A, 5. The four elements of food security, i.e. food availability, accessibility, stability and utilisation, are reflected in the World Food Summit Plan of Action of 1996 adopted by 112 Heads or Deputy Heads of State and Government who commit to *'implement policies aimed at eradicating poverty and inequality and improving physical and economic access by all, at all times, to sufficient, nutritionally adequate and safe food and its effective utilisation; and pursue participatory and sustainable food, agriculture, fisheries, forestry and rural development policies and practices in high and low potential areas, which are essential to adequate and reliable food supplies at the household, national, regional and global levels.'*

51. The VGGT 4.4 define legitimate tenure rights as follows: *'Consistent with the principles of consultation and participation of these Guidelines, States should define through widely publicized rules the categories of rights that are considered legitimate.'*

52. VGGT, 2.4, 3.2, 9.1, 11.4 and 12.3; CFS-RAI Principles 5 and 9.ii and Para 51; UN Principles for Responsible Contracts appended to the UN Guiding Principles and endorsed by the UN Human Rights Council, Principle 10.

53. VGGT, 9.1, 12.4, 16.1 and 16.3; IFC Performance Standard 5, paras. 2 and 8 and Standard 7, para. 15; Children's Rights and Business Principle 7. The phrase 'prompt, adequate, and effective compensation' is considered customary international law for the type of compensation owed in order to effect a lawful expropriation. See Annex A, 6. Note that the standards mentioned in this Guidance align with the commitments to zero tolerance for land displacements of any legitimate tenure rights recently taken by major food and beverage enterprises.

54. VGGT, 16.1 and 16.3; PRAI Principle 6.2.1; IFC Performance Standard 5, paras. 9-10, 12, 19, 27-28, and Performance Standard 7, paras 9 and 14. As per IFC Performance Standard 7, para. 14, land-based compensation should be provided in lieu of cash compensation where feasible and continued access to natural resources should be ensured or equivalent replacement resources identified. As a last option, cash compensation should be provided and alternative livelihoods should be identified.

55. CFS-RAI Principle 8.ii. See Annex A, 7.

56. Fundamental principles developed by the World Organisation for Animal Health (OIE). For further information, see the Farm Animal Welfare Council's Five Freedoms at *www.fawc.org.uk/freedoms.htm*.

57. England's regulations 2000 (S.I. 2000 No. 1870) and Regulation 3(1) on the welfare of farmed animals.

58. OECD Guidelines, VI.1; CFS-RAI Principle 10; VGGT 4.3, 11.2, 12.6 and 12.10; PRAI Principle 7; IFC Performance Standard 1.1.

59. A list of toxic substances can be found in: the list of hazardous agrochemicals of the World Health Organization (WHO); the WHO recommended classification of pesticides by hazard class Ia (extremely hazardous) or Ib (highly hazardous); the Stockholm Convention on Persistent Organic Pollutants (POPs) of 2004; the Rotterdam Convention on the prior informed consent procedure for certain hazardous chemicals and pesticides in international trade of 2004; the Basel Convention on the control of transboundary movements of hazardous wastes and their disposal of 1992; the Montreal Protocol on substances that deplete the ozone layer of 1999; and the list 'Substitute It Now' (SIN) for pesticides.

60. Although most instruments that have been endorsed through an intergovernmental process refer to 'resource use efficiency', the paragraph 9 on water consumption of IFC Performance Standard 3 goes further by requiring the enterprise to 'adopt measures that avoid or reduce water usage'.

61. IFC Performance Standard 6, para 20, defines legally protected area as an area that meets the definition of the *International Union for Conservation of Nature (IUCN)*: 'A clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values.' This includes areas proposed by governments for such designation.

62. OECD Guidelines, VI.6; CFS-RAI Principles 1.i and 6; PRAI Principle 7; IFC Performance Standards 3 and 6; CBD; Convention on international trade in endangered species or wild flora and fauna CITES of 1975. See also Annex A, 8.

63. OECD Guidelines, II.A.5 & 7, II.A.15, and VII; CFS-RAI Principle 9.i; VGGT, 6.9, 9.12 & 16.6; UN Global Compact Principle 10. See Annex A, 9.1. In addition, the International Standards on Combating Money Laundering and the Financing of Terrorism and Proliferation developed by the Financial Action Task Force and endorsed by 180 countries in 2003 are relevant for financial institutions. Preventive measures, including customer due diligence and record keeping, are particularly useful to combat corruption.

64. OECD Guidelines, XI.1-2. See Annex A, 9.2.

65. OECD Guidelines, X.2-3. See Annex A, 9.3.

66. The G20/OECD Principles of Corporate Governance are the international corporate governance benchmark for policy makers, investors, corporations and other stakeholders worldwide. They have been adopted as one of the Financial Stability Board's (FSB) key standards for sound financial systems and have been used by the World Bank Group in more than 60 country reviews worldwide. They serve as the basis for the guidelines on corporate governance of banks issued by the Basel Committee on Banking Supervision. *www.oecd.org/corporate/principles-corporate-governance.htm*.

67. OECD Guidelines, IX; CFS-RAI Principle 7, iv; ILO MNE Declaration, 19; CBD, Article 16; UN Global Compact Principle 9.

68. IFC Performance Standard 6, para. 26.

69. OECD Guidelines, IV, Commentary 44; UN Guiding Principles, para. 16.

70. The Commission of the Codex Alimentarius defines traceability as the ability to follow the movement of a food through specified stage(s) of production, processing and distribution.

71. *Mass balance traceability* controls the exact volume of assessed and certified material entering the supply chain. An equivalent volume of the product leaving the supply chain can be sold or certified. Certified and non-certified components may be mixed. *Physical segregation traceability* identifies and traces certified materials and products through the supply chain. *Chain of custody* refers to the chronological documentation or paper trail showing the seizure, custody, control, transfer, analysis, and disposition of physical product.

72. More information in this regard can be found in Annex A, 1.3.

73. For further information, you can refer to: Annex A, Section 1.5; IFC, 2009; and the OECD Due Diligence Guidance for Meaningful Stakeholder Engagement in the Extractive Sector.

74. As detailed in IISD guide to negotiating investment contracts (IISD, 2014), Environmental Impact Assessments (EIAs) are now firmly established practice for projects in a wide range of economic sectors. About two thirds of the approximately 110 developing countries had enacted some form of EIA legislation by the mid-1990s. Social Impact Assessments are less common but increasingly becoming part of EIA process and practice. Generally agreed-upon principles for social impact assessments are lacking, but the International Association for Impact Assessment has

published a coherent set of guidelines. Other variants include sustainability assessments that integrate social, economic and environmental perspectives or cumulative impact assessments. There is a growing practice of conducting environmental and social impact assessments together. Impact assessments may also cover impacts on animal welfare.

75. Risk analysis tools such as those developed by the World Wildlife Fund (WWF) can help identify risks. They include the supply risk analysis tool (*www.supplyrisk.org*) and the water risk filter (*htttp://waterriskfilter.panda.org*).

76. More information can be found in Annex A, 2 and 6.

77. For example, whether the financial service is primarily used to establish ownership over, finance or support the *general performance* of the client (e.g. general corporate loans or financing), or only its *specific performance* (e.g. project financing) may bear over the scope of the due diligence process recommended by the OECD Guidelines. In the first case, the financial institution is likely expected to respond to all adverse impacts associated with the activities of the client. In the last case, it may only be expected to respond to the impacts of the activities it finances or supports.

78. As per the UN Human Rights Office of the High Commissioner in *The Corporate Responsibility to Respect Human Rights, An Interpretive Guide,* remedy is not only the process of providing remedy for an adverse impact but also the substantive outcomes that can counteract, or make good, the adverse impact. These outcomes may take a range of forms, such as apologies, restitution, rehabilitation, financial or non-financial compensation, and punitive sanctions (whether criminal or administrative, such as fines), as well as the prevention of harm through, for example, injunctions or guarantees of non-repetition.

79. The programme undertaken by the Sustainability Initiative of South Africa (SIZA) offers a good example of a local social compliance programme. This ethical trading programme was developed by the local growers' association. It created a unifying set of standards for South Africa's fruit producers, based on domestic laws, the reference code and reference audit process and methodology of the Global Social Compliance Programme, and ILO conventions. The major retailer works with local organisations to build capacities. By empowering local counterparts, the retailer looks to ensure that its investments in the social performance of its agricultural supply chain in South Africa are sustainable.

80. Following the Rana Plaza disaster, the French NCP underlined the importance of independent and high-quality audits in the following report: NCP report on the Implementation of the OECD Guidelines in the Textile and Clothing Sector following a referral from Nicole Bricq, Minister of Foreign Trade, Recommendation #6 on pages 57-58, 2 December 2013, *www.tresor.economie.gouv.fr/File/398811*.

81. For instance, SGS has developed a Global Social Compliance Programme to reduce audit fatigue.

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Annex A

Measures for risk mitigation and prevention along agricultural supply chains

This Annex identifies the risks of adverse impacts arising along agricultural supply chains and proposes measures to mitigate and prevent them, drawing from the same standards as the model enterprise policy. Proposed measures may reinforce each other. For instance, respecting labour rights, including by providing decent wages and working conditions, can support access to adequate food and help achieve the highest attainable standard of physical and mental health. The implementation of the proposed measures should be tailored to the position and the type of involvement of each enterprise in the supply chain, the context and location of its operations, as well as its size and capacities.

1. Cross-cutting RBC standards

1.1 Disclosure

Risks

A lack of transparency can create distrust and deprive enterprises of the possibility to resolve minor problems before they escalate into large conflicts, while maximum information sharing can reduce transaction costs for all stakeholders (FAO, 2010). Unless information is provided in a linguistically and culturally adequate, measurable, verifiable and timely manner, including through regular consultation meetings and the general media, enterprises run the risk of not being fully understood by potentially affected stakeholders or of failing to reach out to all relevant parties (IFC, 2012). In the absence of clear and enforceable laws on transparency and disclosure, enhanced due diligence is warranted (OECD, 2006).

Risk mitigation measures

- **Provide timely and accurate information** to the public, without endangering the competitive position or duties to beneficial owners of the enterprise, about:
  - purpose, nature, and scale of the operations
  - lease agreements and/or contracts and their terms
  - activities, structure, ownership and governance of the enterprise
  - financial situation and performance of the enterprise
  - RBC policies and implementation process, including the stakeholder engagement process and the availability of grievance and redress mechanisms

  - environmental, Social and Human Rights Impact Assessments (ESHRIAs), including foreseeable risk factors, such as potential environmental, social, human rights, health and safety impacts of the enterprise's operations on various stakeholders as well as on sacred sites or lands and waters traditionally used or occupied by indigenous peoples and local communities
  - environmental, social and human rights management plans and characteristics of products.[1]

- **Diffuse information** through all appropriate means of notification (print, electronic and social media, including newspapers, radio, television, mailings, local meetings, etc.), taking into account the situation of remote or isolated and largely non-literate communities and ensuring that such notification and consultation take place in the language(s) of the affected communities.[2]
- In the event of imminent threat to human health or the environment, **share immediately** and without delay all information which could enable authorities and the public to take measures to prevent or mitigate harm arising from the threat.[3]
- **Tailor disclosure policies** to the nature, size and location of the operations, with due regard taken of costs, business confidentiality and other competitive concerns.[4]

1.2 Consultations

Risks

A lack of consultations with stakeholders likely to be affected by the operations prevents enterprises from realistically assessing the project viability and from identifying effective and context-specific response measures. Inclusive and fully transparent consultations can lower transaction costs, reduce opposition and create trust among stakeholders.

Risk mitigation measures

- Develop and implement a **stakeholder engagement plan** tailored to the risks, impacts and development stage of the operations and to the characteristics and interests of affected communities. Where applicable, the plan should include differentiated measures to allow the effective participation of those identified as disadvantaged or vulnerable.[5]
- Hold early and ongoing good-faith, effective and meaningful **consultations with potentially affected communities**, with due regard for the international standards cited in Annex B. Such consultations should also be held for any modifications to the operations.[6]
- Organise consultation and decision-making processes **without intimidation**, in a climate of trust, prior to taking decisions, and respond to the contributions taking into consideration existing power imbalances between different parties.[7]
- Where necessary, strive to provide **technical and legal assistance** to affected communities to participate in project development in non-discriminatory ways, together with representative institutions of affected communities and in co-operation with these communities.

- Take **full and fair consideration of the views expressed** during the consultations, allow for sufficient time between notification and public consultation on proposed operations for affected communities to prepare their response, and inform those affected about how their concerns have been considered.[8]
- **Document and implement agreements** resulting from consultations, including by establishing a process by which community views and concerns can be properly recorded. While written statements may be preferred, the views of the community members could also be recorded on video or audio tape, or any other appropriate way, subject to the consent of communities.[9]
- To the extent possible, verify that **community representatives** do in fact represent the views of the stakeholders they represent and that they can be relied upon to faithfully communicate the results of consultations to their constituents.
- When carrying out **impact assessments**, establish mechanisms for the participation of the communities, including vulnerable groups, in designing and conducting the assessments, identify actors responsible for liability, redress, insurance and compensation, and establish a review and appeals process.[10]

1.3 Impact assessment

Risks

Enterprises can avoid or, when unavoidable, mitigate the actual and potential adverse impacts of their operations, processes, goods and services by assessing the risks of such impacts over their full life-cycle on an ongoing basis. Such assessments can allow them to develop a comprehensive and forward-looking approach to the management of risks, including the risks arising from the operations of their business partners.[11]

Risk mitigation measures

- Include in an impact assessment the **following stages**:
  1. Screening, i.e. determining which proposals should be subject to the impact assessment, to exclude those unlikely to have adverse impacts and to indicate the level of assessment required.
  2. Scoping, i.e. defining the focus of the impact assessment and key issues to be studied.
  3. Impact analysis.
  4. Identification of mitigation measures, including, as appropriate under the circumstances: not proceeding with the operations; finding alternatives to avoid adverse impacts; incorporating safeguards in the design of the operations; or providing monetary and/or non-monetary compensation for adverse impacts.
- Cover, as appropriate, the following **likely impacts** (it may be relevant to cover not only adverse impacts but also positive impacts in order to enhance the latter) when undertaking an environmental, social and human rights impact assessment (ESHRIA):
  - environmental impacts, such as those on soil, water, air, forest, and biodiversity[12]

- social impacts that may affect the well-being, vitality and viability of affected communities, including quality of life as measured in terms of income distribution, physical and social integrity and protection of individuals and communities, employment levels and opportunities, health and welfare, education, and availability and standards of housing and accommodation, infrastructure, services
- human rights impacts, that may affect for instance the enjoyment of the economic, social, cultural, civil and political rights of affected communities
- impacts on the cultural heritage, way of life, values, belief systems, language(s), customs, economy, relationships with the local environment and particular species, social organisation and traditions of affected communities
- impacts on women with due regard to their role as food providers, custodians of biodiversity and holders of traditional knowledge[13]
- impacts on animal welfare.

- Invite **affected communities** to be involved in conducting the impact assessment, solicit information from them, and provide them with regular feedback throughout all stages of the impact assessment.[14]
- Assess the risks and impacts in the context of the **project's area of influence** where the project involves physical elements, aspects, and facilities that are likely to generate impacts.[15]

1.4 Benefit sharing

Risks

To avoid the risk of creating local opposition and to reduce transaction costs, enterprises should explore ways to maximise the positive impacts of their operations on local communities. Engaging in consultations on the benefits of their operations among various stakeholders can build trust, help ensure local acceptance and create long-term alliances among parties while preventing conflict. Ensuring that operations benefit these stakeholders can also facilitate the identification of acceptable locations for operations and can draw on local knowledge to ensure an optimal use of the agro-ecological potential (FAO, 2010; UN, 2009).

Benefit sharing is separate (and may be additional) to compensation for unavoidable adverse impacts; it aims to build a partnership between the enterprise and indigenous peoples or local communities in recognition of their contribution to the operations. In specific circumstances, indigenous peoples or local communities may be entitled to share the benefits arising from operations if enterprises use their land, resources or knowledge.[16] Such benefits can be monetary or non-monetary[17] as agreed between the enterprise and the relevant community as part of the consultation process. The decision as regards the types of benefits can be informed by ESHRIAs.[18]

There are, however, also risks associated with benefit sharing. Enterprises face risks of conflict with indigenous peoples when, after negotiating benefit-sharing agreements, benefits are not actually shared with the whole community but captured by a specific group of stakeholders. Benefit sharing may be agreed with some, but not all, relevant communities, leading to the exclusion of certain communities. Such risks can be mitigated through meaningful stakeholder engagement in the due diligence process.

Risk mitigation measures

- Strive to **identify opportunities** for development benefits, such as through: the creation of local forward and backward linkages and of local jobs with safe working environments; the diversification of income-generating opportunities; capacity development; local procurement; technology transfer; improvements in local infrastructure; better access to credit and markets, particularly for small and medium-sized businesses; payments for environmental services; allocation of revenue; or the creation of trust funds.[19]
- Ensure that operations are **in line with the development priorities** and social objectives of the host government.[20]
- Share **monetary and non-monetary benefits** arising from operations involving indigenous peoples' lands, resources and knowledge, on the basis of the consultation process and ESHRIAs, in a way that does not unfairly benefit specific groups, but that fosters equitable and sustainable social development.[21]

1.5 Grievance mechanisms

Risks

Operational-level grievance mechanisms designed as early-warning risk-awareness systems offer a locally based, simplified, and mutually beneficial way to settle issues between enterprises and affected communities, including tenure rights holders, by helping resolve minor disputes quickly, inexpensively, and fairly before they are elevated to formal dispute resolution mechanisms, including judicial courts (IFC, 2009). They can provide valuable feedback to enterprises by: serving as an early warning system for larger problems; yielding insights from individuals that spotlight opportunities for improvement in company operations or management systems; and indicating possible systemic changes to ensure particular grievances do not recur (CAO, 2008).

Risk mitigation measures

- **Scale** the grievance mechanism according to the risks and adverse impacts of the operations, with a view to seeking to resolve concerns promptly, using an understandable, transparent, culturally appropriate and readily accessible consultative process, without retribution to the party that originated the issue or concern.[22]
- **Engage with affected stakeholders** about the mechanism design and performance to ensure that: it meets their needs; they will use it in practice; and there is a shared interest in ensuring its success.[23]
- Avoid using grievance mechanisms established by enterprises to **preclude access** to judicial or non-judicial grievance mechanisms, including the NCPs under the OECD Guidelines, or to undermine the role of trade unions in addressing labour-related disputes.[24]

In addition, the effectiveness criteria for non-judicial grievance mechanisms contained in the UN Guiding Principles (Principle 31) provide an important reference point: non-judicial grievance mechanisms, both state-based and non-state-based, should follow the criteria detailed in Table A.1 to be effective.

Table A.1. **Characteristics of effective grievance mechanisms**

Legitimate	Enable trust from the stakeholder groups for whose use they are intended, and be accountable for the fair conduct of grievance processes.
Accessible	Be known to all stakeholder groups for whose use they are intended, and provide adequate assistance for those who may face particular barriers to access.
Predictable	Provide a clear and known procedure with an indicative time frame for each stage, and clarity on the types of process and outcome available and means of monitoring implementation.
Equitable	Seek to ensure that aggrieved parties have reasonable access to sources of information, advice and expertise necessary to engage in a grievance process on fair, informed and respectful terms.
Transparent	Keep parties to a grievance informed about its progress, and provide sufficient information about the mechanism's performance to build confidence in its effectiveness and meet any public interest at stake.
Rights-compatible	Ensure that outcomes and remedies accord with internationally recognised human rights.
A source of continuous learning	Draw on relevant measures to identify lessons for improving the mechanism and preventing future grievances and harms.
Based on engagement and dialogue	Consult the stakeholder groups for whose use they are intended on their design and performance, and focus on dialogue as the means to address and resolve grievances.

Source: UN Guiding Principles, Principle 31.

2. Human rights

Risks

Enterprises run the risk of not respecting human rights when they cause or contribute to adverse human rights impacts within the context of their own activities and fail to address such impacts when they occur. They should prevent or mitigate adverse human rights impacts that are directly linked to their business operations, products or services by a business relationship.[25] The corporate responsibility to respect human rights exists independently of states' abilities and/or willingness to fulfil their own human rights obligations and does not diminish these obligations.[26] If national laws are not sufficiently developed or enforced, enterprises should use enhanced due diligence in identifying and addressing the risk of adverse human rights impacts.

The interdependence of all human rights, including economic, social, cultural, civil and political rights, should be borne in mind. Enterprises should regularly review their responsibilities related to human rights to qualitatively understand if they may not be respecting human rights, including those that are not specifically addressed in this Guidance.

Risk mitigation measures

- **Identify right holders** potentially affected by the operations of the enterprise and its business partners. This generally entails undertaking an in-depth fact-finding review of the enterprise's actual or potential operations and relationships, and then qualitatively evaluating those operations against human rights standards to identify actors whose rights may be affected. Proactive consultations with relevant stakeholders are necessary to fully understand all the potential adverse impacts of the enterprise's operations and relationships.[27]
- **Carry out human rights due diligence** by assessing actual and potential human rights impacts,[28] integrating and acting upon the findings, tracking responses, and communicating how impacts are addressed. Human rights due diligence is an on-going exercise, recognising that human rights risks may change over time as the operations and operating context evolve.[29]
- Ensure that **all stakeholders involved are treated fairly**, particularly groups in vulnerable situations such as women, youth, and minorities, recognising their respective situations, constraints and needs.[30]
- Recognise the vital role played by women in agriculture and take appropriate measures to eliminate **discrimination against women** and to help ensure their full professional development and advancement,[31] including by facilitating equal access and control over natural resources, inputs, productive tools, advisory and financial services, training, markets and information.[32]

3. Labour rights

Risks

Enterprises can bring substantial benefits to host countries and societies by contributing to economic and social welfare through improving living standards and creating attractive employment opportunities, and by facilitating the enjoyment of human rights and labour rights. In addition to ensuring core labour standards for their own workers, they can help improve the working conditions of informal workers, including in subsistence farms.

States Parties to the International Covenant on Economic, Social and Cultural Rights (ICESCR) recognise the rights to the enjoyment of just and favourable conditions of work (Article 7) and to form trade unions (Article 8). The International Covenant on Civil and Political Rights (ICCPR) also protects the right to form and join trade unions. International labour conventions[33] also address work-related rights.[34] While human rights treaties such as the ICESCR and ICCPR are addressed to states, enterprises may negatively impact the enjoyment of the rights they contain. Thus, they have an important role to play in supporting the progressive realisation of these rights. Respecting the labour rights contained in these conventions, including the eight fundamental ILO conventions, can help enterprises minimise negative impacts and maximise positive impacts. For instance, establishing a genuine dialogue with freely chosen workers' representatives enables both workers and employers to better understand each other's challenges and find ways to resolve them (ILO, 2006).

However, respecting labour rights in the agricultural sector may be a challenge, as both independent and waged employment often remains informal, and many agricultural

workers are excluded from the scope of labour laws (UN, 2009). 60% of child labourers aged 5-17 work in agriculture (ILO, 2011a). The working and living conditions of plantation workers have also been a continued source of concern, notably compulsory pregnancy testing, debt bondage, and health risks linked to the widespread misuse of pesticides (UN, 2009).

Marginalised groups, such as women, youth and indigenous and migrant workers, as well as workers employed on a casual, piecework or seasonal basis, and informal workers, often face abusive or insalubrious working conditions (UN, 2009). The situation of women raises specific risks: in developing countries, 43% of the agricultural labour force is composed of women but the agro-industry tends to code female tasks as unskilled, employ women for labour-intensive tasks and pay them less than men with fewer opportunities for advancement (ILO, 2011b).

Violations of core labour rights may encourage disruptive social tensions that may affect the enterprise's performance. An enterprise using discriminatory employment and occupation practices limits its access to talents from a wider pool of skills and competencies. The sense of injustice and resentment generated by discrimination is likely to affect workers' performance (ILO, 2008).

Risk mitigation measures[35]

Workers' protection

- Be guided throughout operations by **the principle of equality of opportunity and treatment in employment** and do not discriminate against workers with respect to employment or occupation on such grounds as race, colour, sexual orientation or gender identity, religion, political opinion, national extraction or social origin, or other status, unless selectivity concerning worker characteristics furthers established governmental policies that specifically promote greater equality of employment opportunity or relates to the inherent requirements of a job; make qualifications, skill and experience the basis for the recruitment, placement, training and advancement of staff at all levels.[36]
- Respect the **minimum age** for admission to employment or work in order to secure the effective abolition of child labour.[37]
- Refrain from employing or benefitting from **forced labour**, which consists of any work or service not voluntarily performed that is exacted from an individual under threat of force or penalty.
- **Monitor** the primary supply chain on an ongoing basis in order to identify any significant changes or new risks or incidents of child and/or forced labour, and work with primary suppliers to take corrective action and remedy them.[38]

Decent working conditions

- Observe **standards of employment** and industrial relations not less favourable than those observed by comparable employers. Where comparable employers may not exist in the country in which the enterprise operates, provide the best possible wages, benefits and conditions of work within the framework of government policies. These should be at least adequate to satisfy the basic needs of the workers and their families.[39]

- Endeavour to provide **stable employment** for workers, and observe freely negotiated obligations concerning employment stability and social security.[40]
- In considering changes in operations that would have major employment effects, provide **reasonable notice of such changes** to workers' representatives, and, where appropriate, to the relevant governmental authorities, and co-operate with them to mitigate to the maximum extent practicable adverse effects.[41]

Workers' representation and collective bargaining

- Recognise the importance of a **climate of mutual understanding and confidence** that is favourable to the aspirations of the workers.[42]
- Recognise that workers, without discrimination whatsoever, have the right to **establish and join organisations** of their own choosing without previous authorisation.
- Establish systems for regular **consultation and co-operation** between employers and workers and their representatives on matters of mutual concern, as well as with competent authorities to ensure adherence to national social development policies.
- Establish systems to provide regular **information** to workers and their representatives to support meaningful negotiations on employment conditions and to enable them to obtain a true and fair view of the enterprise performance.[43]
- Refrain from **discriminatory or disciplinary action** against workers who make bona fide reports to management or, as appropriate to the competent public authorities on practices that contravene the law, the OECD Guidelines, or the enterprise's policies.
- Do not threaten to **transfer** the whole or part of an operating unit from the country concerned or to transfer workers from the component entities in other countries in order to influence unfairly negotiations with workers' representatives or to hinder the exercise of workers' right to organise.
- Do not retaliate, interfere with or discriminate against **workers' representatives**.[44]
- Enable authorised workers' representatives to negotiate on **collective bargaining or labour management relations**.
- Include in collective agreements provisions for the **settlement of disputes** arising over their interpretation and application and for ensuring mutually respected rights and responsibilities.[45]

Local employment

- To the greatest extent practicable and without discrimination, **employ local worker**s, including in managerial positions, and provide training with a view to improving skill levels, in co-operation with workers' representatives and, where appropriate, relevant governmental authorities.[46]

Training

- Ensure that **relevant training** is provided to workers at all levels to meet the needs of the operations, where appropriate, in co-operation with relevant governmental

authorities and employers' and workers' organisations. Such training should, to the extent possible, develop generally useful skills and promote career opportunities.

- When operating in developing countries, participate in programmes encouraged by governments and supported by employers' and workers' organisations that aim to encourage **skill formation** and development and to provide vocational guidance.[47]
- Provide appropriate training, education and mentorship programmes for **youth** to increase their capacity and/or access to decent work and entrepreneurship, and promote access to training by women.[48]
- Wherever feasible, **make the services of skilled resource personnel available** to help in training programmes organised by governments as part of a contribution to national development.[49]

4. Health and safety

Risks

Agricultural activities often involve some of the most hazardous activities for workers and many agricultural workers suffer from occupational accidents and illnesses. Exposure to bad weather, close contact with dangerous animals or plants, extensive use of chemical products, difficult working postures and lengthy hours, and the use of hazardous tools and machinery all lead to health problems (IFPRI, 2006). For instance, the estimated number of pesticide poisonings ranges between 2 and 5 million per year, of which 40 000 are fatal (ILO, 2005 and 2011b). Land use changes, the loss of natural buffer areas, such as wetlands, mangroves, and upland forests that mitigate the effects of natural hazards (flooding, landslides, and fire), or the diminution or degradation of natural resources, including decreasing quality, quantity, and availability of freshwater, may result in increased vulnerability and community safety-related impacts (IFC, 2012).

Human health can be at risk with unsafe levels of biological, chemical or physical hazards in food. These hazards originate from the environment (e.g. toxic metals, dioxins and naturally occurring toxins), agricultural practices (e.g. residues of veterinary drugs and pesticides), or a poor handling of product (e.g. pathogenic molds). Physical hazards include filth, pests, hair, or plastic. Food safety management systems, including a complete 'farm to fork' control system that incorporates biosecurity measures and the use of safe water, can prevent these risks.

Human health is also closely linked to animal health. The "One Health" concept is founded on an awareness of the major opportunities that exist to protect public health through policies aimed at preventing and controlling pathogens at the level of animal populations, at the interface between humans, animals and the environment. This concept has been endorsed by several governments and led to measures aiming to prevent diseases affecting both people and animals and to ensure a responsible use of antibiotics for both.[50] 60% of the pathogens that cause infectious diseases in humans are of animal origin. These diseases, known as zoonoses, can be transmitted by domestic or wild animals. Animal diseases that are transmissible to humans present a public health risk worldwide. An effective and economical solution to protect humans is to combat all zoonotic pathogens through their control at the animal source.

The ICESCR provides for the progressive realisation of the right to the enjoyment of the highest attainable standard of physical and mental health (Article 12). The Committee

on Economic, Social and Cultural Rights[51] interprets this right as 'an inclusive right extending not only to timely and appropriate health care but also to the underlying determinants of health, such as access to safe and potable water and adequate sanitation, an adequate supply of safe food, nutrition and housing, healthy occupational and environmental conditions, and access to health-related education and information'. The Committee states that 'the right to health, like all human rights, imposes three types or levels of obligations on States Parties: the obligations to respect, protect and fulfil. In turn, the obligation to fulfil contains obligations to facilitate, provide and promote.'[52]

While human rights treaties such as the ICESCR are addressed to states, enterprises may negatively impact the progressive realisation of the right to the enjoyment of the highest attainable standard of physical and mental health or undermine State Party actions to progressively realise it. Thus, they have an important role to play in supporting the progressive realisation of this right. In addition to the direct health risks detailed above, agricultural operations and food systems may affect individuals' health more indirectly.

Risk mitigation measures[53]

- Evaluate the **risks and impacts** to the health and safety of the affected communities throughout the operations.
- Establish **preventive and control measures** that are consistent with good international industry practice,[54] and commensurate with the nature and magnitude of the identified risks and impacts, trying to avoid, and, if unsuccessful, to minimise risks and impacts.
- Avoid or minimise workers, third party and community exposure to **hazardous materials and substances** that may be released by the operations, including by modifying, substituting, or eliminating the condition or material causing the potential hazards, and by exercising reasonable efforts to control the safety of deliveries, transportation and disposal of hazardous materials and wastes.
- Avoid or minimise the potential for community exposure to water-borne, water-based, water-related, vector-borne and communicable **diseases** that could result from operations, taking into consideration differentiated exposure to and higher sensitivity of vulnerable groups.
- Assist and collaborate with affected communities, local government agencies, and other relevant parties, in their preparations to respond effectively to **emergency situations**, especially when their participation and collaboration are necessary to respond to such emergency situations.[55]
- Consider observing global **food safety standards**, such as the Codex Alimentarius,[56] and global animal health standards, such as OIE standards.[57]
- Promote traceability to ensure food safety but also to facilitate social and environmental management and increase trust.[58]

5. Food security and nutrition

Risks

Under the ICESCR (Article 11), adequate food is part of the right to an adequate standard of living.[59] The States Parties to the ICESCR undertake to take steps to progressively realise the right to an adequate standard of living, including adequate food.

The ICESCR also recognises the fundamental right of everyone to be free from hunger. Recognising this right, States Parties should consider taking the measures needed to improve methods of food production, conservation and distribution and taking into account the problems of both food-importing and food-exporting countries. The Committee on Economic, Social and Cultural Rights has interpreted these rights to be realised 'when every man, woman and child, alone or in community with others, have physical and economic access at all times to adequate food or means for its procurement.' It states that 'the right to adequate food, like any other human right, imposes three types or levels of obligations on States Parties: the obligations to respect, to protect and to fulfil' and that 'as part of their obligations to protect people's resource base for food, States Parties should take appropriate steps to ensure that activities of the private business sector and civil society are in conformity with the right to food'.[60]

The FAO Voluntary Guidelines to support the progressive realisation of the right to adequate food in the context of national food security provide guidance to governments in realising the right to adequate food, which may include promoting the availability of food in a quantity and of a quality sufficient to satisfy the dietary needs of individuals, as well as the physical and economic accessibility to adequate food, free from unsafe substances and acceptable within a given culture, or the means of its procurement. The Guidelines encourage governments to take measures to ensure that all food, whether locally produced or imported, freely available or sold on markets, is safe and consistent with national food safety standards. They also suggest that governments establish comprehensive and rational food-control systems that reduce the risk of food-borne disease using risk analysis and supervisory mechanisms to ensure food safety in the entire food chain, including animal feed.

While the FAO Voluntary Guidelines are addressed to states, enterprises have an important role to play. Agricultural investments have increased following food price hikes in 2008, particularly to respond to a growing demand for food - it is estimated that global food production will need to increase by 60% by 2050 in order to meet projected demand. While such investments hold the promise of increasing production, reducing poverty, and fostering economic development, they may also undermine access to food in various ways. One of the most prominent adverse impacts can result from acquiring large tracts of land and, in the process, displacing communities from it, or hindering their access to it (FAO, 2010).

Risk mitigation measures

- To the extent possible, **consider the impacts of operations** on the availability and access to food, local employment, dietary preferences and stability of food supply, including by involving local governments and other relevant stakeholders.

- When appropriate, **identify food-related concerns** of different stakeholders and evaluate strategies for meeting investment objectives while respecting the food-related concerns of different stakeholders, through consultations with relevant stakeholders.

- To the extent possible, **adjust project design** to address concerns about negative impacts on food security and nutrition, by for instance: considering feasible alternative investments if proposed investments lead to the physical and/or economic displacement of local communities; reclaiming degraded lands or choosing land that has not been previously used for agriculture yet is not environmentally sensitive; or improving

agricultural productivity through sustainable intensification in order to contribute to food security and nutrition.

- To the extent possible, **consider contributing** to improving access to food and the resilience and nutrition[61] of local populations by: increasing the production of safe, nutritious and diverse foods and promoting the nutritional value of food and agricultural products; facilitating access to inputs, technology, and markets; generating employment in downstream activities; or setting up community storage facilities to reduce post-harvest losses and price volatility.[62]

6. Tenure rights over and access to natural resources

Risks

Land tenure risk, arising when several land claims overlap, represents a statistically significant risk in concession investments in emerging economies (Munden Project, 2013). Indeed, among 39 large-scale agri-business investments analysed by the World Bank and UNCTAD, land tenure was identified as the most common cause of grievances for affected communities, particularly due to disputes over land over which communities had informal land use rights and to a lack of transparency, especially on conditions and process for land acquisition (WB, 2014). In 2013, half of the issues raised in letters of complaints received by the IFC and MIGA Compliance Advisor Ombudsman (CAO)[63] related to land. In addition, since 2000, nearly a quarter of all cases handled by the CAO have had both a land and a water component. Increased pressure on these resources leads to concerns over their access, quantity, and management, and both land and water are often entwined with a sense of culture and identity. In CAO's land-related complaints, the dominant grievances raised by individuals are land acquisition (22%), compensation (33%), and resettlement (32%) (CAO, 2013).

The food and beverage industry is second only to the extractive industry in being the recipient of accusations from civil society organisations for failing to give adequate consideration to rights related to access to land and water (EC, 2011).[64] Land should not be perceived solely as a productive asset. Its environmental and socio-cultural roles should be recognised as well; land can be a source of various ecosystem services, including drinking and irrigation water, and a safety net and an old age insurance for farmers. Land can also play a major role in the social, cultural or religious practices of indigenous peoples and local communities.

Although states have the primary responsibility to protect tenure rights, enterprises should assume that the legal framework may not always be adequate. Indeed, an estimated 70% of the land ownership units in developing countries are not formally registered (UN HABITAT, 2015; McDermott *et al*., 2015). Thus, enterprises should ensure proactively that they respect legitimate tenure rights. In particular, the following risks should be considered:

- Risks arise when national laws do not reflect the full extent of legitimate tenure rights or when such laws are not implemented effectively. For instance, national land titling and registration systems may be inadequate, failing to protect the tenure rights of land users, particularly women, and providing enterprises with incomplete information regarding relevant land claims. Land tenure rights can be complicated further when the land is used only seasonally and may appear unused, for instance if it has been abandoned by internally displaced persons or if it is used for pasture, forage or shifting

agriculture. Enterprises may then exclude from consultations certain right holders (whether statutory or customary, primary or secondary, formal or informal groups or individuals) that may be adversely affected by their activities (OECD, 2011).

- Risks may augment if states do not provide clear and transparent rules for consultations between enterprises and stakeholders, or safeguards to protect existing tenure rights from risks arising from large-scale transactions in tenure rights. In particular, enterprises may be at risk if national rules are not implemented or not sufficient to: (i) ensure appropriate engagement in good faith and in a culturally appropriate manner with the holders of tenure rights, and (ii) identify the modalities under which land and other natural resources will be transferred and used, including through the use of independent and participatory ex-ante and ex-post impact assessments, and/or the modalities to obtain redress (UN, 2009). A lack of inclusiveness in consultations over land acquisitions may cause tensions and possibly conflicts between enterprises and communities, which may feel excluded from the process and contest enterprises' rights (FAO, 2013).

- While governments hold the primary responsibility for providing prompt, adequate and effective compensation to former legitimate land tenure rights holders when expropriating land, enterprises have responsibilities to ensure that their operations do not lead to the resettlement of local communities without meaningful consultations or their forced evictions without proper compensation. As per the VGGT, states should expropriate only where land rights are required for a public purpose and should clearly define the concept of public purpose in law in order to allow for judicial review. However, in many developing countries, the unclear and/or broad definition of public purpose, the lack of land use plans, high corruption levels in land management and land speculation, lead to unlawful expropriation. Such expropriation may precipitate the loss of the livelihoods of local communities, or more limited access to land and other key natural resources, thus resulting in nutritional deprivation, social polarisation, entrenched poverty or political instability.[65] Thus, it may impede access to adequate food. Such expropriation may also infringe on the rights of indigenous peoples as set out in the UN Declaration on the Rights of Indigenous Peoples. Enterprises may be negatively impacted in their reputation and operations if they are connected to an expropriation for which the government has not undertaken appropriate consultations with local communities or obtained the free, prior, and informed consent of indigenous peoples and not provided due compensation. This is likely to cause tensions and conflicts between enterprises and communities that feel excluded or unfairly treated (FAO, 2013). In such cases, enterprises should consider options to withdraw from planned operations.

The level of land tenure risks depends on the type of investments. For greenfield investments, thorough due diligence should be undertaken to ensure that communities have not been expropriated for private purposes and without fair and prompt compensation. In the case of brownfield investments, joint ventures and mergers and acquisitions, previous operators may have been granted land tenure rights and land disputes may be inherited. Consequently, due diligence should ensure that the acquisition of these rights respected the standards set out in this Guidance, particularly as the VGGT were endorsed only in 2012. Investing in existing projects provides enterprises with an opportunity to ensure that land tenure rights were properly acquired, and if not to find ways to compensate affected stakeholders, and to re-engage with local communities to explore new partnership models.

Risk mitigation measures

- **Identify rights holders** - who consist not only of holders of officially recognised tenure rights, but also of public, private, communal, collective, indigenous and customary tenure rights that may not have been officially registered and titled, including women's tenure rights - and other relevant stakeholders, including through local and open consultations.[66]

- **Establish a committee** representative of the relevant stakeholders to advise on impact assessments, particularly on initial phases (screening and scoping) and on management, monitoring and contingency plans. Special consideration should be given to ensuring the adequate representation of indigenous peoples, local communities and marginalised groups.[67]

- Consider feasible alternative investments if proposed investments lead to the **physical and/or economic displacement** of local communities, recognising that states should expropriate only where rights to land, fisheries or forests are required for a public purpose and that they should clearly define the concept of public purpose in law.[68]

- When tenure right holders are negatively impacted by operations, work with the government to ensure that tenure rights holders receive a fair, prompt and appropriate **compensation** for those tenure rights negatively impacted by the operations by:

  - holding good-faith, effective and meaningful consultations on the compensation offered and ensuring consistent and transparent application of compensation standards
  - giving preference to land-based compensation, that is commensurate in quality, size and value, and otherwise providing compensation at full replacement cost for lost assets - including assets other than land (crops, water resources, irrigation infrastructure and land improvements) - and other assistance to help them improve or restore their standard of living or livelihoods
  - monitoring the implementation of the compensation arrangement.[69]

- Where government capacity is limited, play an active role in the resettlement planning, implementation and monitoring.[70]

7. Animal welfare

Risks

Significant animal welfare risks may arise in agricultural supply chains. They can be associated with limitations on space in individual stalls restricting the movement of animals, high stocking densities in groups increasing the potential for disease transmission and injurious contact with others, barren/unchanging environments leading to behavioural problems, feeding diets that do not satisfy hunger, injurious husbandry procedures that cause pain, and breeding for production traits that heighten anatomical or metabolic disorders. Inadequate inputs from knowledgeable and skilled stockpersons may increase these risks (IFC, 2014).

Improving animal welfare can make business sense. Disease is a good example of a joint threat to animal welfare and business sustainability. The OIE estimates that

morbidity and mortality due to animal diseases cause the loss of at least 20% of livestock production globally – which represents at least 60 million tonnes of meat and 150 million tonnes of milk with a value of approximately USD 300 billion per year. In addition, affluence in many parts of the world has increased consumer choices and heightened expectations about food production standards. Surveys in Europe and North America found that the majority of consumers care about animal welfare and report a willingness to pay significantly more for animal products they perceive to have come from farm animals raised humanely (IFC, 2014).

References to animal welfare in international standards and principles are scarce. The most comprehensive guiding principles are developed by the World Organisation for Animal Health (OIE). In 2008, the members of the OIE adopted a definition of animal welfare in order to clarify on an international scale what it actually involves.[71] Animal welfare can be compromised in any size of farms when conditions and/or management are inadequate (RSPCA, 2014).

The nine OIE standards address specific welfare challenges, including the transport and slaughter of animals, production systems for cattle and poultry, the control of stray dog populations and the use of animals in research. These standards are based on scientific evidence and the fundamental principles for animal welfare are known as the 'five freedoms': freedom from hunger, thirst and malnutrition, from physical and thermal discomfort, from pain, injury and disease, from fear and distress, and to express normal patterns of behaviour.[72] The United Kingdom Department for Environment Food and Rural Affairs (DEFRA) offers an example of good practice by establishing these five freedoms. As underlined in the preface to DEFRA's code of recommendations for the welfare of livestock, enterprises engaged in animal production should demonstrate: caring and responsible planning and management; skilled, knowledgeable and conscientious stockmanship; appropriate environmental design; considerate handling, transport, and humane slaughter of animals (DEFRA, 2003).

In addition to OIE standards, the European Union (EU) has adopted a detailed set of animal welfare legislation, and Article 13 of the Treaty on the Functioning of the European Union recognises animals as 'sentient beings'.[73] While most EU rules on animal welfare apply only to EU producers, third countries wishing to export meat into the EU are required to establish standards equivalent with EU standards on welfare at the time of slaughter. Furthermore, the EU is working to bring convergence in global standards on animal welfare through international trade agreements. Additional standards and certification schemes on animal welfare have been developed by private enterprises, governments and civil society organisations.[74]

Risk mitigation measures

- Assess actual and potential impacts on animal welfare, using the framework of the **'Five Freedoms'**.
- Ensure that the **physical environment** allows comfortable resting, safe and comfortable movement, including normal postural changes, and the opportunity to perform types of natural behaviour that animals are motivated to perform.
- Ensure that animals have **access to sufficient feed and water**, suited to their age and needs, to maintain normal health and productivity and to prevent prolonged hunger, thirst, malnutrition or dehydration.

- When **painful procedures** cannot be avoided, manage the resulting pain to the extent that available methods allow.
- Ensure that the **handling of animals** fosters a positive relationship between humans and animals and does not cause injury, panic, lasting fear or avoidable stress.
- Use **livestock breeds** appropriate to the environment and circumstances so that they can be reared without production diseases and other intrinsic problems.[75]

8. Environmental protection and sustainable use of natural resources

Risks

Agricultural activities can deploy environmentally-friendly practices that can enhance ecosystem services, in particular by employing land management techniques conserving soil and moisture, protecting watersheds, restoring vegetation and habitat, and maintaining biodiversity. However, agricultural investments intended to increase agricultural production in the short term may also lead to ecosystem degradation in the long term, including land degradation, water resource depletion, and losses of pristine forests and biodiversity. An estimated 55-80% of global forest loss is due to land conversion for agricultural use (UNEP, 2015). The most commonly arising issues among the 39 investments analysed by the World Bank and UNCTAD in 2014 were related to agrochemical use, such as water contamination, chemical drift, and aerial spraying. In addition, agricultural activities can generate external impacts, including greenhouse gas emissions, impacts on watersheds, or deforestation occurring far from the location of the operations but directly linked to them (FAO, 2010).

Adverse environmental impacts may be due to the lack of proper environmental impact assessment prior to the investment and the absence of an effective environmental management system during its implementation (FAO, 2011). The quality, comprehensiveness and public availability of these assessments have often been the object of criticism of large-scale investments (FAO, 2010). Risks are higher when scientific evidence is not sufficient to fully assess adverse impacts. Risks for enterprises are also rapidly evolving as international standards on efficient resource utilisation and recycling, emission reduction, substitution or reduction of use of toxic substances, and biodiversity conservation advance (OECD, 2011; IFC, 2012).

Risk mitigation measures

- Establish and maintain a **system of environmental management** appropriate to the characteristics of the enterprise, including by: collecting and evaluating adequate and timely information regarding the environmental, health, and safety impacts of its activities; establishing measurable objectives and, where appropriate, targets for improved environmental performance and resource utilisation, including by developing an integrated pest and/or fertiliser management plan;[76] and regularly monitoring and verifying progress toward environmental, health, and safety objectives or targets.[77]
- Establish procedures to **monitor** and measure the effectiveness of the environmental management system. Where the government or third party has the responsibility for managing specific environmental risks and impacts and associated mitigation measures, collaborate in establishing and monitoring such mitigation measures. Where appropriate, consider involving representatives from affected communities to participate in monitoring activities.[78]

- **Address** the foreseeable environmental, health, and safety-related impacts associated with the processes, goods and services of the enterprise over their full life cycle with a view to avoiding or, when unavoidable, mitigating them. Where the proposed activities may have significant environmental, health, or safety impacts, and where they are subject to a decision of a competent authority, prepare an appropriate environmental impact assessment.[79]
- Where there is a risk of harm to the environment, avoid reference to the **lack of full scientific evidence** as a reason for postponing cost-effective measures to prevent or minimise such damage, consistent with the scientific and technical understanding of the risks, taking into account risks to human health and safety.[80]
- Maintain **contingency plans** for preventing, mitigating, and controlling serious environmental and health damage from the operations, including accidents and emergencies, and, where applicable, assist and collaborate with potentially affected communities and local government agencies to respond effectively to emergency situations, including by setting up mechanisms for immediate reporting to competent authorities.[81]
- Taking into account concerns about cost, business confidentiality, and the protection of intellectual property rights, provide the public and workers with adequate, measureable and timely **information** on the potential environmental, health and safety impacts of the activities of the enterprise, and engage in adequate and timely communication and consultation with the communities directly affected by the environmental, health and safety policies of the enterprise and by their implementation. [82]
- Seek to avoid negative impacts on, and support the conservation of **biodiversity, genetic resources and ecosystem services**, and when avoidance of such impacts is not possible, implement measures to minimise impacts and restore biodiversity and ecosystem services through an adaptive management approach.[83]
- Select the most appropriate production system, in collaboration with the government if appropriate, to enhance **resource use efficiency** while preserving the future availability of current resources.[84] This implies in particular striving to:
  - Improve **water conservation,** waste-water treatment and water use efficiency, and invest in and use technologies to achieve this objective.[85]
  - Improve the management of **agricultural inputs and outputs** to enhance the efficiency of production and minimise threats to the environment and to plant, animal and human health.[86]
  - Reduce **waste and losses** in production and post-harvest operations and enhance the productive use of waste and/or by-products.[87]
  - Implement technically and financially feasible and cost effective measures for improving efficiency in **energy consumption**.[88]
  - Take measures, as appropriate, to reduce and/or remove **greenhouse gas emissions**.[89]

9. Governance

9.1 Corruption

Risks

If the government does not have clear and well-enforced laws on transparency and anti-corruption, governance-related risks for enterprises are high (OECD, 2006). Government bodies overseeing the land sector are among the public entities most affected by service-level bribery, with only the police and the judiciary having higher levels of bribery (TI, 2011). Enterprises may have to offer undue advantages to obtain access to large land areas to the detriment of local communities holding customary land rights. Corruption may also affect the allocation of government-subsidised credit, with unnecessary fees being garnered by government officials when granting credits. Corruption can also increase the price of agricultural inputs, as agricultural input companies can sell their products to government agencies at an elevated price to provide public officials with a share of the profit.

Allegations of corruption either reduce the benefits of agricultural investment or prevent them from being realised by augmenting the cost of accessing resources, minimising synergies with current and future infrastructure development, and increasing the potential for conflict (FAO, 2010). They can undermine the confidence and trust of local communities in the enterprise, which are essential for developing positive relationships in the long term.

Risk mitigation measures

- Refrain from seeking or accepting exemptions not contemplated in the statutory or regulatory framework related to human rights, environment, health, safety, labour, taxation, or other issues.
- Avoid directly or indirectly (via a third party) offering, promising, giving, or demanding a bribe or other undue advantage to public officials, the workers of business partners or to their relatives or business associates, to obtain or retain business or any other improper advantage.
- Develop and adopt adequate internal controls, ethics and compliance programmes or measures for preventing and detecting bribery.
- Prohibit or discourage, in internal company controls, ethics and compliance programmes or measures, the use of small facilitation payments, which are generally illegal in the countries where they are made, and, if and when such payments are made, accurately record these in books and financial records.
- Ensure properly documented due diligence pertaining to the hiring of agents, ensure their appropriate and regular oversight, and ensure that their remuneration is appropriate and for legitimate services only.
- Abstain from any improper involvement in local political activities.[90]
- Use objectively assessed values, transparent and decentralised processes and services, and a right to appeal, to prevent corruption with regard to tenure rights, in particular the customary tenure rights of indigenous peoples and local communities.[91]

- Collaborate in the efforts by governments to implement the **OECD Convention** on Combating Bribery of Foreign Public Officials in International Business Transactions (OECD Anti-Bribery Convention).[92]

9.2 Taxation

Risks

Enterprises can contribute to the economic development of host countries by making timely payment of their tax liabilities. Tax governance and compliance in their risk management systems can ensure that financial, regulatory and reputational risks associated with taxation are fully identified and evaluated (OECD, 2011). As demonstrated by recent campaigns targeting large enterprises, tax avoidance can increase reputational risk.

Risk mitigation measures

- Provide authorities with **timely information** that is relevant or required by law for the purposes of the correct determination of taxes to be assessed in connection with operations.
- Conform **transfer pricing** practices to the arm's length principle.
- Adopt **risk management strategies** to ensure that the financial, regulatory and reputational risks associated with taxation are fully identified and evaluated.[93]

9.3 Competition

Risks

Anti-competitive practices may not only negatively affect consumers but also weaken the bargaining power of smallholders if excessive buyer power goes unchecked, thereby affecting food security and nutrition (UN, 2009). Similarly, dumping by large enterprises selling a product at loss in a competitive market can force competitors, including small and medium enterprises, out of the market. In countries where competition laws and regulations are not sufficiently developed or enforced, enterprises run the risk of infringing competition standards if they do not exercise heightened managerial care in refraining from practices that constitute an undue exercise of buyer power, such as retrospective reduction in prices without reasonable notification or unjustified payments imposed on supplier for consumer complaints (OECD, 2006).

Risk mitigation measures

- Refrain from entering into or carrying out **anti-competitive agreements** among competitors.
- **Co-operate with investigating competition authorities,** including by, subject to applicable law and appropriate safeguards, providing responses as promptly and completely as practicable to requests for information, and considering the use of available instruments, such as waivers of confidentiality where appropriate, to promote effective and efficient co-operation among investigating authorities.[94]

10. Technology and innovation

Risks

Promoting and sharing technologies may contribute to create an environment that supports the enjoyment of human rights and enhance environmental protection. However, empirical studies suggest that actual technology transfer in the agricultural sector is seldom up to the level announced by enterprises (UNCTAD, 2009).

As regards genetic material and the traditional knowledge of indigenous peoples, local communities and farmers, States Parties to the CBD, the International Treaty on Plant Genetic Resources for Food and Agriculture and the Nagoya Protocol on Access and Benefit-sharing to the CBD, have specific international obligations related to access to genetic resources and associated traditional knowledge. Enterprises may collaborate with governments to support them in complying with these international obligations, or at the very least not undermine them, taking into account relevant intellectual property laws.

Risk mitigation measures

- Endeavour to ensure that activities are compatible with the science and technology policies and plans of **host countries** and, as appropriate, contribute to the development of local and national innovative capacity.

- Adopt, where practicable in the course of the operations, practices that permit the **transfer and rapid diffusion** of locally-adapted and innovative technologies, know-how and practices, with due regard to the protection of intellectual property rights.[95]

- Subject to national law and in accordance with applicable international treaties, respect the **right of farmers** to save, use, exchange and sell genetic resources, including seeds, and recognise the interests of breeders.[96]

- When appropriate, perform science and technology development work in developing countries that aim to address **local market** needs, employ local personnel and encourage their training, taking into account commercial needs.

- When granting licenses for the use of **intellectual property rights** or when otherwise transferring technology, do so on reasonable terms and conditions and in a manner that contributes to the long term sustainable development of the host country.

- Where relevant to commercial objectives, develop ties with **local universities**, public research institutions, and participate in co-operative research projects with local industry or industry associations.[97]

Annex A Notes

1. OECD Guidelines, III.1-3, VIII.2; CFS-RAI Principle 9.ii; VGGT, 12.3; Akwé: Kon Guidelines, 10-11; IFC Performance Standard 1, 29; UN Principles for Responsible Contracts appended to the UN Guiding Principles and endorsed by the UN Human Rights Council, Principle 10. This may also support the implementation of the Aarhus Convention, Article 5.6. Information on the *'characteristics of products'* should include information that is sufficient to enable consumers to make informed decisions, including information on the prices and, where appropriate, content, safe use, environmental attributes, maintenance, storage and disposal of products (MNE Guidelines, VIII.2).
2. Akwé: Kon Guidelines, 10-11.
3. Aarhus Convention, Article 5.1.c.
4. OECD Guidelines, III.1.
5. IFC Performance Standard 1, para. 27.
6. IFC Performance Standard 7, paras. 13-17; Akwé: Kon Guidelines, 29, 52-53, 60; VGGT, 3B.6, 9.9; CFS-RAI Principle 9.iii; UN Declaration on the Rights of Indigenous Peoples, Article 10. As per IFC Performance Standard 1, para 33, where stakeholder engagement is primarily the responsibility of the government, enterprises should collaborate with the responsible government agency, to the extent permitted by the agency. Where government capacity is limited, they should play an active role during the stakeholder engagement planning, implementation, and monitoring. If the process conducted by the government does not meet the relevant requirements for meaningful engagement, they should conduct a complementary process and, where appropriate, identify supplemental actions.
7. VGGT, 3B.6; IFC Performance Standard 1, 30.
8. VGGT, 9.9 and 4.10; Akwé: Kon Guidelines, 14-17; PRAI Principles 1 and 4; IFC Performance Standard 1, 26-27 and 30.
9. Akwé: Kon Guidelines, 17; IFC Performance Standard 1, 30-31.
10. Akwé: Kon Guidelines, 7-8; IFC Performance Standard 1, 27.
11. OECD Guidelines, VI.3 and VI.67.
12. Tools such as High Conservation Value and Carbon Stock Assessments can be used. You can refer to sub-section 8 on 'environmental protection and sustainable use of natural resources' for further details on potential adverse environmental impacts.
13. CFS-RAI Principle 10; Akwé: Kon Guidelines, 6, 37 and 48.
14. CFS-RAI Principle 10.i; Akwé: Kon Guidelines, 14.
15. IFC Performance Standard 1, paras 8 and 10.
16. CBD Articles 8(j) and 10; ITPGR Article 9.2; Nagoya Protocol Article 5; ILO Convention 169, Article 15.
17. An indicative list can be found in the Annex to the Nagoya Protocol.
18. Akwé: Kon Guidelines, 46.

19. CFS-RAI Principles 1.iii and 2, iv-vii; PRAI Principle 6; ILO MNE Declaration, para. 20; Akwé: Kon Guidelines, 46; IFC Performance Standard 7, paras 18-20.

20. ILO MNE Declaration, para. 10, PRAI Principle 5.

21. PRAI Principle 6; Akwé Kon Guidelines, 46; IFC Performance Standard 7, paras 18-20.

22. IFC Performance Standard 1, para 35.

23. UN Guiding Principle 31, commentary.

24. OECD Guidelines, IV.46.

25. OECD Guidelines, IV.1-3.

26. OECD Guidelines, IV.37.

27. Akwé: Kon Guidelines 13; IFC Performance Standard 7, para.8.

28. See the section above on impact assessments for more details.

29. OECD Guidelines, II.2 and IV.5 and 45.

30. CFS-RAI Principles 3 and 4.

31. CFS-RAI Principle 3; Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW).

32. CFS-RAI Principle 3.iii.

33. Freedom of Association and Protection of the Right to Organise Convention, 1948 (No. 87); Right to Organise and Collective Bargaining Convention, 1949 (No. 98); Forced Labour Convention, 1930 (No. 29); Abolition of Forced Labour Convention, 1957 (No. 105); Minimum Age Convention, 1973 (No. 138); Worst Forms of Child Labour Convention, 1999 (No. 182); Equal Remuneration Convention, 1951 (No. 100); Discrimination (Employment and Occupation) Convention, 1958 (No. 111).

34. In addition, the right to join and form trades unions is protected by the European Convention on Human Rights (Article 11). The right to join trade unions is protected by the right to freedom of association contained in the American Convention on Human Rights (Article 16) and the African Charter on Human and Peoples' Rights (Article 10).

35. CFS-RAI Principle 2 covers labour rights.

36. ILO MNE Declaration 21; OECD Guidelines, V.1.e. Commentary 54 of the OECD Guidelines specifies that the term “other status” for the purposes of the Guidelines refers to trade union activity and personal characteristics such as age, disability, pregnancy, marital status, sexual orientation, or HIV status. It is worth noting that the Convention on the Rights of Persons with Disabilities (CRPD) prohibits discrimination in employment on the basis of disability.

37. ILO MNE Declaration 36; OECD Guidelines, V.1.c; Children’s Rights and Business Principle 2. The Children’s Rights and Business Principles do not create new international legal obligations. They are founded on the rights outlined in the Convention on the Rights of the Child and its Optional Protocols. The Convention is the most widely ratified human rights treaty: 193 governments have signed and ratified the Convention. These Principles are also based on the ILO Conventions No. 182 on the Worst Forms of Child Labour and No. 138 on the Minimum Age. They

also elaborate on existing standards for business, including the UN Global Compact's 'Ten Principles' and the UN Guiding Principles.

38. OECD Guidelines, V.1.d; IFC Performance Standard 2, paras. 13, 15, 21, 22 and 27.

39. ILO MNE Declaration, 34; OECD Guidelines, V.4.a & b.

40. ILO MNE Declaration, 25.

41. ILO MNE Declaration, 26; OECD Guidelines, V.6.

42. ILO Communications within the Undertaking Recommendation, 1967 (No. 129), para. 2.

43. Industrial relations systems, including collective bargaining at company and sector levels, can play an important role in preventing and addressing grievances.

44. IFC Performance Standard 2, 14; ILO MNE Declaration, 17, 52-53.

45. OECD Guidelines, II.9, V.1-3, V.6-8; ILO MNE Declaration, 41, 44, 47, 51-56.

46. OECD Guidelines, V.4-5; ILO MNE Declaration, para. 18.

47. ILO MNE Declaration, 16-18, 30-34.

48. CFS-RAI Principles 3.iii and 4.ii.

49. ILO MNE Declaration, 31.

50. The following countries and organisations have endorsed this approach: European Commission, US Department of State, US Department of Agriculture, US Centre for Disease Control and Prevention (CDC), World Bank, World Health Organization (WHO), FAO, OIE, and United Nations System Influenza Coordination (UNSIC). For further information, consult *www.onehealthglobal.net*.

51. The General Comments of the Committee on Economic, Social and Cultural Rights are non-binding but authoritative interpretations of the ICESCR.

52. Committee on Economic, Social and Cultural Rights, General Comment No. 14 of 2000. Though the ICESCR is a widely-ratified international instrument in which States Parties recognise the right to the enjoyment of the highest attainable standard of physical and mental health, health-related rights are also found in other instruments, including the Convention on the Rights of the Child (CRC), the Convention on the Elimination of all Forms of Discrimination against Women (CEDAW), the Convention on the Elimination of All Forms of Racial Discrimination (CERD), and the Convention on the Rights of Persons with Disabilities (CRPD).

53. For specific recommendations on consumer interests, see the OECD Guidelines, VIII.

54. The IFC Performance Standard 3 defines 'good international practice' as 'the exercise of professional skill, diligence, prudence, and foresight that would reasonably be expected from skilled and experienced professionals engaged in the same type of undertaking under the same or similar circumstances globally or regionally. The outcome of such exercise should be that the project employs the most appropriate technologies in the project-specific circumstances'.

55. IFC Performance Standard 4.

56. PRAI Principle 5. The Codex Alimentarius Commission, established by FAO and the World Health Organization (WHO) in 1963, proposes international food standards, guidelines and codes of practice to protect the health of the consumers and ensure fair

practices in food trade. The Commission also promotes the co-ordination among various food standards developed by international governmental and non-governmental organisations. HACCP principles are part of the Codex. They are a systematic preventive approach to food safety and biological, chemical, and physical hazards in production processes that can cause the finished product to be unsafe. They design measurements to reduce these risks to a safe level. The seven principles are as follows: (1) conduct a hazard analysis; (2) identify the critical control points; (3) establish critical limits; (4) monitor the critical control points; (5) establish corrective action; (6) verify; and (7) keep records. The HACCP system can be used at all stages of a food chain, from food production and preparation processes, including packaging and distribution.

57. For instance, schemes recognised by the Global Food Safety Initiative include the SSC 22000 Food Safety Management System and BRC Global Standards and International Featured Standards. The European Food Safety Authority also provides food safety standards.

58. As per the Codex Alimentarius Commission of 2006, traceability is defined as the ability to follow the movement of food through specified stages of production, processing and distribution. The traceability tool should be able to identify at any specified stage of the food supply chain from where the food came (one step back) and to where the food went (one step forward), as appropriate to the objectives of the food inspection and certification system.

59. Food-related rights are also protected in other international and regional instruments, including the Convention on the Rights of the Child (CRC), the Convention on the Elimination of all Forms of Discrimination against Women (CEDAW), and the Convention on the Rights of Persons with Disabilities (CRPD).

60. UN Committee on Economic, Social and Cultural Rights, General Comment 12 (1999), paras. 6, 15 and 27.

61. For further information, refer to the Access to Nutrition Index at *www.accesstonutrition.org*.

62. CFS-RAI Principles 1.i and iii, 2.iii and iv, and 8.i; 3.i and iii; VGGT, 12.4; PRAI Principle 2.

63. The CAO is the independent recourse mechanism for the IFC and the Multilateral Investment Guarantee Agency (MIGA). It responds to complaints from project-affected communities with the goal of enhancing social and environmental outcomes on the ground.

64. Although tenure rights over land and other natural resources are not human rights, they may have important implications for the enjoyment of various human rights and are reflected in RBC standards. One important exception is the right of indigenous peoples to ownership and possession over lands they traditionally occupy, which is codified in ILO Convention 169 and promoted in the non-binding but widely cited UN Declaration on the Rights of Indigenous Peoples (see Annex B).

65. Involuntary resettlement refers both to physical displacement (relocation from or loss of land) and economic displacement (loss of natural resources or diminished access to natural resources that leads to loss of livelihood) as a result of land acquisition and/or restrictions on natural resource use. Resettlement is considered involuntary when

affected persons do not have the right to refuse land acquisition and/or restrictions on natural resource use (IFC Performance Standard 5).

66. VGGT, 2.4; PRAI Principle 1; Akwé: Kon Guidelines 13; IFC Performance Standard 7, para 8.

67. Akwé: Kon Guidelines 13.

68. VGGT, 12.4 and 16.1; IFC Performance Standard 5, para 8; ILO Convention on Indigenous and Tribal Peoples, 1989 (No. 169), Article 16. Note that these standards are also referred to in the recent commitments of major agri-food companies on land grabbing.

69. PRAI, 6.2.1; IFC Performance Standard 5, paras. 9-10, 19, 27-28, and IFC Performance Standard 7, paras 9 and 14.

70. IFC Performance Standard 5, para. 30. In addition, paragraph 31 of this standard requires enterprises to prepare a supplemental resettlement and livelihood restoration plan.

71. According to the OIE's definition recognised by more than 170 countries, animal welfare means how an animal is coping with the conditions in which it lives. An animal is in a good state of welfare if (as indicated by scientific evidence) it is healthy, comfortable, well nourished, safe, able to express innate behaviour, and if it is not suffering from unpleasant states such as pain, fear and distress. For further information, see *www.defra.gov.uk/fawc*.

72. The five freedoms are acknowledged in the introduction of OIE's recommendations on Animal Welfare, i.e. in Article 7.1.2. of the Terrestrial Animal Health Code. For further information, see the Farm Animal Welfare Council's Five Freedoms at *www.fawc.org.uk/freedoms.htm*.

73. See *http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:12012E/TXT*.

74. These standards include: IFC Good Practice Note on Animal Welfare in Livestock Operations; Freedom Food of the Royal Society for the Prevention of Cruelty to Animals (RSPCA); Label Rouge; GAP 5-step; and the Soil Association's organic standards.

75. OIE, Terrestrial Animal Health Code 2015, Article 7.1.4. These risk mitigation measures appear in line with the substantive criteria of the Business Benchmark on Farm Animal Welfare (*www.bbfaw.com*).

76. A pest management plan should aim to reduce pest development by combining various techniques, such as biological control by using beneficial insects or microbes, pest-resistant crop varieties and alternative agricultural practices such as spraying or pruning.

77. OECD Guidelines, VI.1.

78. IFC Performance Standard 1, paras 5 and 21-22.

79. OECD Guidelines, VI.2-3.

80. OECD Guidelines, VI.1, 4-5; IFC Performance Standard 1, 5 and 21-22; UN Global Compact, Principles 7-8; United Nations Framework Convention on Climate Change, Article 3.

81. OECD Guidelines, VI.1, 4, and 5; IFC Performance Standard 1, paras. 5 and 21-22.

82. OECD Guidelines, VI.2-3.

83. IFC Performance Standard 6, para. 7; CBD Articles 8 and 9; CFS-RAI Principle 6.ii. IFC Performance Standard 6, para 26, also states that 'Where feasible, the client will locate land-based agribusiness and forestry projects on unforested land or land already converted'. The Forest Policy Proposals of the International Commission on Land Use Change and Ecosystems (October 2009), the EU Renewable Energy Directive No. 2009/28/EG (April 2009), the EU Timber Regulation No. 995/2010 (October 2010), and the New York Declaration on Forests adopted at the Climate Summit 2014, refer to land use changes.

84. PRAI Principle 7. For example, soil fertility can be preserved through appropriate crop rotations, manure application, pasture management and rational mechanical or conservation tillage practices.

85. The CEO Water Mandate - a public-private initiative launched by the UN Secretary-General in 2007 designed to assist companies in developing, implementing and disclosing water sustainability policies and practices - requires setting targets related to water conservation, waste-water treatment and the reduction of water consumption. However, Rio +20 outcome document 'The Future We Want' rather focuses on increasing water use efficiency and reducing water losses.

86. CFS-RAI Principle 8.iii.

87. CFS-RAI Principle 6.iii. Food waste should also be assessed, including by measuring it. Whenever feasible, waste should be minimised, for instance by transferring technology to third parties or raising awareness on food waste and its consequences. When waste cannot be avoided, food sent to landfills should be minimised by, for instance, using it for animal feed or transforming it into energy when appropriate.

88. IFC Performance Standard 3.6.

89. CFS-RAI Principle 6.v.

90. OECD Guidelines, II.A.5 & 15, and VII.

91. VGGT, 6.9, 8.9, 9.12, 16.6, 17.5.

92. For further details on how states can take effective measures to deter, prevent and combat the bribery of foreign public officials in connection with international business transactions, see the OECD Recommendation of the Council for Further Combating Bribery of Foreign Public Officials in International Business Transactions, *www.oecd.org/daf/anti-bribery/44176910.pdf*.

93. OECD Guidelines, XI.1-2.

94. OECD Guidelines, X.2-3.

95. OECD Guidelines, IX.1-2 ; CFS-RAI Principle 7.iv.

96. CFS-RAI Principle 7.ii; International Treaty on Plant Genetic Resources for Food and Agriculture, Article 9.3.

97. OECD Guidelines, IX.

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Annex B

Engagement with indigenous peoples

As stated in the model enterprise policy, good-faith, effective and meaningful consultations with communities should be undertaken before initiating any operations that may affect them as well as during and at the end of operations. In addition, some international instruments and standards express a state commitment to engage in consultation in order to obtain the free prior and informed consent (FPIC) of indigenous peoples prior to the approval of any project affecting their lands or territories and other resources.[1] According to some human rights bodies and indigenous peoples, the concept of FPIC is derived from indigenous peoples' self-governance, territorial and cultural rights and is necessary for the realisation of those rights. Some countries have national laws consistent with a commitment to consult and co-operate to obtain FPIC.[2]

The CFS-RAI Principles and the VGGT call for meaningful consultations in order to obtain the FPIC of indigenous peoples. In addition, some major agri-food companies and commodity roundtables require obtaining FPIC in certain conditions. For instance, the Round Table on Sustainable Palm Oil (RSPO) requires the FPIC of affected groups for using land for palm oil plantations.[3] The OECD Guidelines make reference to UN instruments on the rights of indigenous peoples in the context of adverse human rights impacts but do not include any language on FPIC.[4]

Definition of indigenous peoples

There is no single definition of indigenous peoples, and indigenous groups are not homogenous entities. However, the International Labour Organization (ILO), drawing from its Convention No. 169, has characterised indigenous peoples as a distinct social and cultural group possessing the following characteristics in varying degrees:

- self-identification as members of a distinct cultural group
- traditional life styles
- culture and way of life different from the other segments of the national population, e.g. in their ways of making a living, language, customs, etc.
- own social organisation that may include traditional customs and/or laws.[5]

Self-identification as indigenous should be regarded as a fundamental criterion for determining indigenous peoples.[6]

Indigenous peoples may experience adverse impacts differently or more severely than other stakeholder groups, based on their relationship to the land that often plays a major

role in social, cultural and religious practices, their culture and their socio-economic status. They are often among the most marginalised and vulnerable segments of the population. They may face discrimination and experience high poverty levels, thereby being more vulnerable and less resilient to adverse impacts. Regardless of the legal framework in which an operation takes place, they often have customary or traditional rights based on their relationship to the land, their culture and socio-economic status:

- **Land:** Indigenous peoples often have a special connection and/or customary rights to ancestral lands. This relationship to land is a distinguishing feature of indigenous peoples and therefore impacts related to land such as reduced or loss of access to land, or environmental degradation, may affect indigenous peoples, their livelihoods and culture, more severely than other, non-indigenous stakeholder groups. Furthermore, the customary land rights of indigenous people may not be recognised by national laws. Consultation should explore intangible value associated with sacred sites or areas of cultural significance.

- **Culture**: Indigenous peoples may hold unique cultural values and characteristics which should be considered and respected when engaging with them. For example, issues of privacy can be of particular importance to indigenous peoples, e.g. due to a legacy of social or cultural discrimination and marginalisation, or sensitivity due to a lack of contact with mainstream cultures. In such instances, appropriate engagement practice could include seeking consent when recording information about rituals, ceremonies and rites of passage to ensure against disruption of cultural life. This is particularly important when the operations result in resettlement and/or displacement. Given that indigenous peoples' traditional way of life is usually intimately linked with a specific territory, resettlement may lead to a loss of social networks, cultural erosion, and loss of language and distinct identity. Employment in large-scale business activities may likewise be seen as a detriment to traditional activities by some indigenous peoples. The introduction of a cash economy may be incompatible with previously-existing relationships of exchange. Engagement with indigenous peoples can identify ways to mitigate these impacts and reflect their aspirations and priorities.

- **Socio-economic status:** In many parts of the world, indigenous peoples are among the most marginalised and vulnerable segments of the population. They often face discrimination and experience high levels of poverty and social disadvantage. Often, they are less informed about and less able to defend their rights and cultural heritage. This means that they may be less resilient to shocks and adverse impacts and more vulnerable to serious economic and social consequences. They may speak unique dialects or rely on oral tradition for communicating information which can lead to difficulties in effectively communicating information, and may require innovative methods of consultation and engagement. Additionally it is important to consider that historical grievances may exist and could complicate activities.

Indigenous groups comprise individuals who experience adverse impacts differently and include more vulnerable groups, such as women and children, with whom special attention during the engagement process would be expected.

Implementing FPIC

Enterprises should always obey domestic laws and regulations as well as respect relevant internationally recognised human rights.[7] Irrespective of regulatory or operational requirements and throughout their project planning, they should anticipate that indigenous peoples may expect consultation seeking FPIC and that risks may be generated if such expectations are not met. In countries where FPIC is not mandated, enterprises should consider local expectations, the risks posed to indigenous peoples[8] and to the operations as a result of local opposition. They should pursue an engagement strategy that meets the legitimate expectations of indigenous peoples to the extent that they do not violate domestic law.

In this regard, the following key steps may be useful to engage with indigenous peoples when seeking to implement FPIC:

- Agree with affected indigenous peoples on a consultation process for working towards seeking FPIC. This should identify the specific current and future activities where consent should be sought.[9] In some cases it might be appropriate to commit to this process through a formal or legal agreement.[10] The process should always be based on good faith negotiation free of coercion, intimidation or manipulation.

- Consult and agree on what constitutes appropriate consent for affected indigenous peoples in accordance with their governance institutions, customary laws and practices, e.g. whether this is a majority vote from the community or approval of the council of elders. Indigenous peoples should be able to participate through their own freely chosen representatives and customary or other institutions.

- Engage in the process of seeking consent as soon as possible during project planning, before activities for which consent should be sought for commence or are authorised.

- Recognise the process of seeking FPIC as iterative rather than a one-off discussion. Continuous dialogue with the local community will lead to a trust relationship and a balanced agreement that will benefit the investment across all phases of the project.

- Provide all information relating to the activity to indigenous communities in a manner that is timely, objective, accurate and understandable to them.

- Document commitments/agreements that have been reached, including, as relevant, specification of what activities consent has been granted for or withheld, any conditions of consent, and areas of ongoing negotiation and share them with the indigenous community in a form and language they can understand and in a timely manner.

- Determine what action(s) will be taken in the event that: a) indigenous peoples refuse to enter into negotiations; and b) indigenous peoples do not give their consent for activities in their territory.

Responding to a lack of consent or refusal to engage

When consent is withheld by an indigenous community, an enterprise should consult with the community to understand the reasons behind the lack of consent and whether ongoing concerns can be addressed or accommodated. Consent previously granted under free, prior and informed conditions should not be withdrawn arbitrarily.

In cases where consent is not forthcoming or where indigenous peoples refuse to engage, material risks to the enterprise and adverse impacts to indigenous peoples may be generated. In situations where proceeding with projects will cause adverse impacts to indigenous peoples, an enterprise should take the necessary steps to cease or prevent such impacts.[11]

If, through its due diligence,[12] an enterprise concludes that consent is required to proceed with an activity, and the agreed process has not arrived at consent, activities should not proceed unless FPIC is subsequently forthcoming. For example, a project financed by IFC should not proceed, regardless of any authorisation by the state, if relocation of indigenous populations is required and if FPIC has not been obtained from them.

Excerpts from existing instruments and standards

Standard	FPIC-related text
UN Declaration on the Rights of Indigenous Peoples (UNDRIP)*	*No relocation shall take place without the FPIC of the indigenous peoples concerned (Article 10).* *States shall provide redress through effective mechanisms, which may include restitution, developed in conjunction with indigenous peoples, with respect to their cultural, intellectual, religious and spiritual property taken without their FPIC or in violation of their laws, traditions and customs (Article 11).* *States shall consult and cooperate in good faith with the indigenous peoples concerned through their own representative institutions in order to obtain their FPIC prior to the approval of any project affecting their lands or territories and other resources, particularly in connection with the development, utilization or exploitation of mineral, water and other resources (Article 32).* Additional references to FPIC are included in Articles 19, 29 and 30.
ILO Convention No. 169 on Indigenous and Tribal Peoples**	*Where the relocation of these peoples is considered necessary as an exceptional measure, such relocation shall take place only with their free and informed consent. Where their consent cannot be obtained, such relocation shall take place only following appropriate procedures established by national laws and regulations, including public inquiries where appropriate, which provide the opportunity for effective representation of the peoples concerned (Article 16).*
CFS-RAI Principles	*Responsible investment in agriculture and food systems should…incorporate inclusive and transparent governance structures, processes, decision-making…through… effective and meaningful*

Standard	FPIC-related text
	consultation with indigenous peoples, through their representative institutions in order to obtain their FPIC under the United Nations Declaration of Rights of Indigenous Peoples and with due regard for particular positions and understanding of individual States (Principle 9).
VGGT	*States and other parties should hold good faith consultation with indigenous peoples before initiating any project or before adopting and implementing legislative or administrative measures affecting the resources for which the communities hold rights. Such projects should be based on an effective and meaningful consultation with indigenous peoples, through their own representative institutions in order to obtain their FPIC under the United Nations Declaration of Rights of Indigenous Peoples and with due regard for particular positions and understandings of individual States (Para 9.9).* *In the case of indigenous peoples and their communities, States should ensure that all actions are consistent with their existing obligations under national and international law, and with due regard to voluntary commitments under applicable regional and international instruments, including as appropriate from the ILO Convention No. 169 concerning Indigenous and Tribal Peoples in Independent Countries and the UN Declaration on the Rights of Indigenous Peoples (Para 12.7).*
Akwe: Kon Guidelines	*In the conduct of cultural impact assessments, due consideration should be given to the holders of traditional knowledge, innovations and practices and the knowledge itself… In the event of the disclosure of secret and or sacred knowledge, prior informed consent and proper protection measures should be ensured (Para 29).* *The following general considerations should also be taken into account when carrying out an impact assessment for a development proposed to take place on, or which is likely to impact on, sacred sites and on lands and waters traditionally occupied or used by indigenous and local communities:* • *Prior informed consent of the affected indigenous and local communities: Where the national legal regime requires prior informed consent of indigenous and local communities, the assessment process should consider whether such prior informed consent has been obtained. Prior informed consent corresponding to various phases of the impact assessment process should consider the rights, knowledge, innovations and practices of indigenous and local communities; the use of appropriate language and process; the allocation of sufficient time and the provision of accurate, factual and legally correct information. Modifications to the initial development proposal will require the additional prior informed consent of the affected indigenous and local communities (Para 53).* • *Ownership, protection and control of traditional knowledge, innovations and practices and technologies used in cultural,*

Standard	FPIC-related text
	environmental and social impact assessment processes… Such knowledge should only be used with the prior informed consent of the owners of that traditional knowledge (Para 60).
IFC Performance Standards	*There is no universally accepted definition of FPIC (…). FPIC builds on and expands the process of Informed Consultation and Participation described in Performance Standard 1 and will be established through good faith negotiation between the client and the Affected Communities of Indigenous Peoples. The client will document: (i) the mutually accepted process between the client and Affected Communities of Indigenous Peoples, and (ii) evidence of agreement between the parties as the outcome of the negotiations. FPIC does not necessarily require unanimity and may be achieved even when individuals or groups within the community explicitly disagree.* *Affected communities of indigenous peoples may be particularly vulnerable to the loss of, alienation from or exploitation of their land and access to natural and cultural resources. In recognition of this vulnerability, the client will obtain the FPIC of the affected communities of indigenous peoples in the following circumstances:* • *Impacts on lands and natural resources subject to traditional ownership or under customary use.* • *Relocation of indigenous peoples from lands and natural resources subject to traditional ownership or under customary use: The client will consider feasible alternative project designs to avoid the relocation of indigenous peoples from communally held lands and natural resources subject to traditional ownership or under customary use. If such relocation is unavoidable the client will not proceed with the project unless FPIC has been obtained.* • *Critical cultural heritage: Where significant project impacts on critical cultural heritage are unavoidable, the client will obtain the FPIC of the affected communities of indigenous peoples. Where a project proposes to use the cultural heritage including knowledge, innovations, or practices of indigenous peoples for commercial purposes, the client will…obtain the FPIC of the affected communities of indigenous peoples.*

* The 2007 Declaration is a non-legally binding document that has been adopted by the UN General Assembly with 143 countries in favour, 4 against and 11 abstaining. It represents their political intention.

** This Convention of 1989 is binding on the 22 countries that have ratified it. Its adoption within ILO represents a consensus among ILO tripartite constituents about the rights of indigenous and tribal peoples and the responsibilities of governments to protect these rights. The foundations of the Convention are: respect for the cultures and way of life of indigenous peoples, recognition of their right to land and natural resources, and their right to define their own priorities for development. Its key principles are consultation and participation.

For further guidance on FPIC

Expert Mechanism on the Rights of Indigenous Peoples (2011), Expert Mechanism advice No. 2: indigenous peoples and the right to participate in decision-making. Geneva.

Foley-Hoag (2010), Implementing a corporate free, prior, and informed consent policy: benefits and challenges, by Lehr, A. and Smith, G. *www.foleyhoag.com/publications/ebooks-and-white-papers/2010/may/implementing-a-corporate-free-prior-and-informed-consent-policy*.

FAO (2014), Respecting free, prior and informed consent - Practical guidance for governments, companies, NGOs, indigenous peoples and local communities in relation to land acquisition, Governance of tenure technical guide 3.

ILO (2013), Understanding the Indigenous and Tribal Peoples Convention, 1989 (No.169), Handbook for ILO Tripartite Constituents, International Labour Standards Department, International Labour Organisation, Geneva.

OECD (2016), *OECD Due Diligence Guidance for Meaningful Stakeholder Engagement in the Extractive Sector*, forthcoming, OECD Publishing, Paris.

Oxfam Australia (2005), Guide to free, prior and informed consent, by Hill, C., Lillywhite, S. and Simon, S., Carlton, Victoria, Australia.

RSB (2011), RSB guidelines for land rights: respecting rights, identifying risks, avoiding and resolving disputes and acquiring lands through free, prior and informed consent, Roundtable on Sustainable Biofuels, Geneva.

UN Permanent Forum on Indigenous Issues (2005), Report of the International Workshop on Methodologies Regarding Free, Prior and Informed Consent and Indigenous Peoples. Document E/C.19/2005/3, submitted to the Fourth Session of the UNPFII, 16-17 May.

World Bank (2005), Operational Policy 4.10: Indigenous Peoples. Washington, DC.

Annex B Notes

1. The international instruments relating to indigenous peoples are UNDRIP and ILO Convention No. 169. UNDRIP recommends that states consult and co-operate with indigenous peoples concerned in order to obtain their FPIC in a number of situations, including for projects affecting their land and territories or other resources (Articles 19 and 32). ILO Convention No. 169, which is legally binding for countries that have ratified it, requires state parties to consult with indigenous peoples with the objective of reaching agreement or consent on proposed measures (Article 6). For guidance on the Convention's provision on consent, see ILO Handbook for ILO Tripartite Constituents – Understanding the Indigenous and Tribal Peoples Convention, 1989 (No. 169) (2013). Other UN bodies argue that international standards with regard to FPIC apply equally to non-state actors. These bodies include the UN Permanent Forum on Indigenous Issues, the UN Working Group on the issue of human rights and transnational corporations and other business enterprises, the UN Special Rapporteur on the rights of indigenous peoples, the UN Experts Mechanism on the Rights of Indigenous Peoples, and several UN Human Rights Treaty Bodies.

2. FAO, "Respecting free, prior and informed consent – practical guidance for governments, companies, NGOs, indigenous peoples and local communities in relation to land acquisition" (2014), p. 7, *www.fao.org/3/a-i3496e.pdf*.

3. The 'Principles and criteria for the production of sustainable palm oil' endorsed by the RSPO Executive Board and accepted at the Extraordinary General Assembly by RSPO members on 25 April 2013 state that the use of the land for oil palm does not diminish the legal, customary or user rights of other users without their free, prior and informed consent (Principle 2.3.). As an indicator, copies of negotiated agreements detailing the process of FPIC should be available and include: a) Evidence that a plan has been developed through consultation and discussion with all affected groups in the communities, and that information has been provided to all affected groups, including information on the steps that shall be taken to involve them in decision making; b) Evidence that the company has respected communities' decisions to give or withhold their consent to the operation at the time that this decision was taken; c) Evidence that the legal, economic, environmental and social implications for permitting operations on their land have been understood and accepted by affected communities, including the implications for the legal status of their land at the expiry of the company's title, concession or lease on the land.

4. See OECD Guidelines, IV.40: '[…]'enterprises should respect the human rights of individuals belonging to specific groups or populations that require particular attention, where they may have adverse human rights impacts on them. In this connection, UN instruments have elaborated further on the rights of indigenous peoples […].''

5. ILO Convention No. 169 sets forth the following definitions of indigenous and tribal peoples. *Tribal peoples:* their social, cultural and economic conditions distinguish them from other sections of the national community, and their status is regulated wholly or partially by their own customs or traditions or by special laws or regulations; *Indigenous peoples:* they are regarded as indigenous on account of their descent from the populations which inhabited the country or a geographical region to which the country belongs, at the time of conquest or colonisation or the

establishment of present state boundaries and who, irrespective of their legal status, retain some or all of their own social, economic, cultural and political institutions.

6. See ILO Convention No. 169, Article 1.2.

7. OECD Guidelines, I.2 and IV. 1.

8. The following resources provide details on communities' expectations in relation to FPIC: *Guide to Free Prior and Informed Consent,* http://resources.oxfam.org.au/pages/view.php?ref=588&search=mining&order_by=relevance&sort=DESC&offset=48&archive=0&k=&curpos=54, Oxfam Australia (2014); *Making Free Prior and Informed Consent a Reality: Indigenous Peoples and the Extractive Industries,* Doyle C. and Carino J., Middlesex University, PIPLinks & ECCR (2013), www.ecojesuit.com/wp-content/uploads/2014/09/Making-FPIC-a-Reality-Report.pdf.

9. The international instruments referred to in the table below specify the circumstances in which FPIC is relevant, for example in cases when resettlement is needed.

10. It has been suggested that FPIC can be understood as a heightened and more formalised form of community engagement. As a result, in certain cases companies may be motivated to enter into a more formal consultation process when developing a project on or near indigenous territory that may have significant adverse impacts. See Lehr & Smith, *Implementing a Corporate Free Prior Informed Consent Policy,* www.foleyhoag.com/publications/ebooks-and-white-papers/2010/may/implementing-a-corporate-free-prior-and-informed-consent-policy, Foley Hoag (2010), p. 8. The World Resources Institute advises companies trying to overcome the challenges of operationalising FPIC procedures through legal recognition of the process – ex. formal agreement, in combination with other good stakeholder engagement practices. See *Development without Conflict: The Business Case for Community Consent, Development without Conflict: The Business Case for Community Consent*, World Resources Institute (2007), http://webcache.googleusercontent.com/search?q=cache:KBxXOS9628IJ:pdf.wri.org/development_without_conflict_fpic.pdf+&cd=1&hl=en&ct=clnk&gl=fr.

11. OECD Guidelines, II.B.18-19 and IV.40 & 42.

12. Legal expertise should be sought to clarify legal obligations with regard to engagement with indigenous peoples.

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OECD and FAO have developed this Guidance to help enterprises observe standards of responsible business conduct and undertake due diligence along agricultural supply chains in order to ensure that their operations contribute to sustainable development. The Guidance comprises:

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- A description of the major risks faced by enterprises and the measures to mitigate these risks.
- Guidance for engaging with indigenous peoples.

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Sustainability risk assessment matrix for spices

- This matrix must be filled in for specific spices, preferably related to specific production areas (product-country combinations).
- The topics are to a large extent based on the OECD-FAO Guidance for Responsible Agricultural Supply Chains. Some spices-specific attention points are added.
- Initially, with regard to 'risks', it is important that *risks to society* (farmers, workers, local communities, environment) will be considered, not business risks,
- To avoid tunnel vision it is recommended to base the assessment not only on information and insights from downstream spices companies. Consider obtaining input from e.g. civil society organisations and experts and conducting additional desk-research.

	Sustainability issue	No / minor risk	Medium risk	Major risk	Don't know
1	**Socio-economic**				
1.1	Inadequate **decent (living) income** for **farmers** (e.g. as a result of low productivity, inferior product quality and low and/or volatile prices).				
1.2	Inadequate **decent (living) wages** for (seasonal) **workers.** (*farm and processing level*)				
1.3	**Health & Safety risks farmers** (e.g. as a result of exposure to hazardous chemicals, extreme weather conditions and other dangerous situations).				
1.4	**Health & Safety risks** (seasonal) **workers** (e.g. as a result of exposure to hazardous chemicals, extreme weather conditions and other dangerous situations). *(farm and processing level*)				
1.5	Inadequate **other labour conditions farmers.**				
1.6	Inadequat**e other labour conditions** (seasonal) **workers** (e.g., secondary labour conditions, working times, payment for overwork, leave arrangements, access to sanitary facilities, training, maternity leave). *(farm and processing level)*				
1.7	**Child labour** (both farmers and workers).				
1.8	**Forced labour** (both farmers and workers)				
1.9	**Debt traps**, resulting in **bonded labour** (both farmers and workers).				
1.10	**Discrimination of workers** (e.g. based on race, ethnic background, religion, sex). *(farm and processing level)*				
1.11	Inadequate **freedom of association and the right to collective bargaining** for workers *(farm and processing level)*				
1.12	General abuse of **migrant workers** (both working and living conditions).				

	(farm and processing level)				
1.13	Inadequate attention to **gender** (e.g. women have no meaningful participation in decision-making and leadership role, no equal access and control over natural resources, inputs, productive tools, advisory and financial services, training, markets and information).				
1.14	Inadequate attention to **indigenous peoples** (e.g. indigenous people have no meaningful participation in decision-making and leadership role, no equal access and control over natural resources, inputs, productive tools, advisory and financial services, training, markets and information).				
1.15	Conflicts related to **land ownership** and **access to natural resources** (e.g. land, fisheries, forests and water). This includes inadequate **compensation mechanisms**.				
1.16	Inadequate measures to **mitigate climate change** / **increase resilience of spice production systems.**				
1.17	**Excessive crop loss** (e.g. as a result of inadequate post-harvest practices and/or risks of harvest failures).				
1.18	Inadequate **access of farmers to finance** (credit and insurance).				
1.19	General **adverse impacts on local communities** (e.g. as a result of adverse impacts on tangible and intangible cultural heritage, influx of migrants, access to healthcare and education).				
2	**Environmental**				
2.1	**Conversion of natural ecosystems** into production systems, including deforestation.				
2.2	**Soil degradation** (erosion, depletion).				
2.3	**Water and soil pollution** (e.g. as a result of agro-chemicals use and post-harvest cleaning practices).				
2.4	**Air pollution** (e.g. as a result of burning practices, fumigation).				
2.5	Contribution to **climate change** (e.g. as a result of use of fossile fuels, deforestation and/or dewatering of peat lands).				
2.6	Excessive **water use** (*at farm and processing level*).				
2.7	Inadequate **waste management** (*at farm and processing level*).				
2.8	Introduction of **invasive species** (including GMO).				
2.9	**Overexploitation** of spices collected in the wild.				
2.10	Contribution to **depletion of (other) natural resources.**				
2.11	**General adverse impacts** on protected areas, high conservation areas and/or endangered species.				
3	**Other**				
3.1	Inadequate **consumer safety** (e.g. as a result of product contamination).				

3.2	Occurence of **corruption and/or fraudulent practices**.				
3.3	Occurence of **tax evasion and/or avoidance**.				
3.4	Occurence of **anti-competitive agreements**.				
3.5	Inadequate **diffusion of appropriate technologies and innovations**, particularly environmentally friendly technologies.				
3.6	Inadequate **disclosure** about sustainability risks in supply chains and efforts to prevent or mitigate these.				
3.7	Inadequate supply chain **traceability**.				
3.8	Inadequate **consultations with spices communities**, especially indigenous peoples, among other reasons in order to obtain their free, prior and informed consent.				
3.9	Inadequate **grievance mechanisms** in place.				
3.10	Other, namely….				