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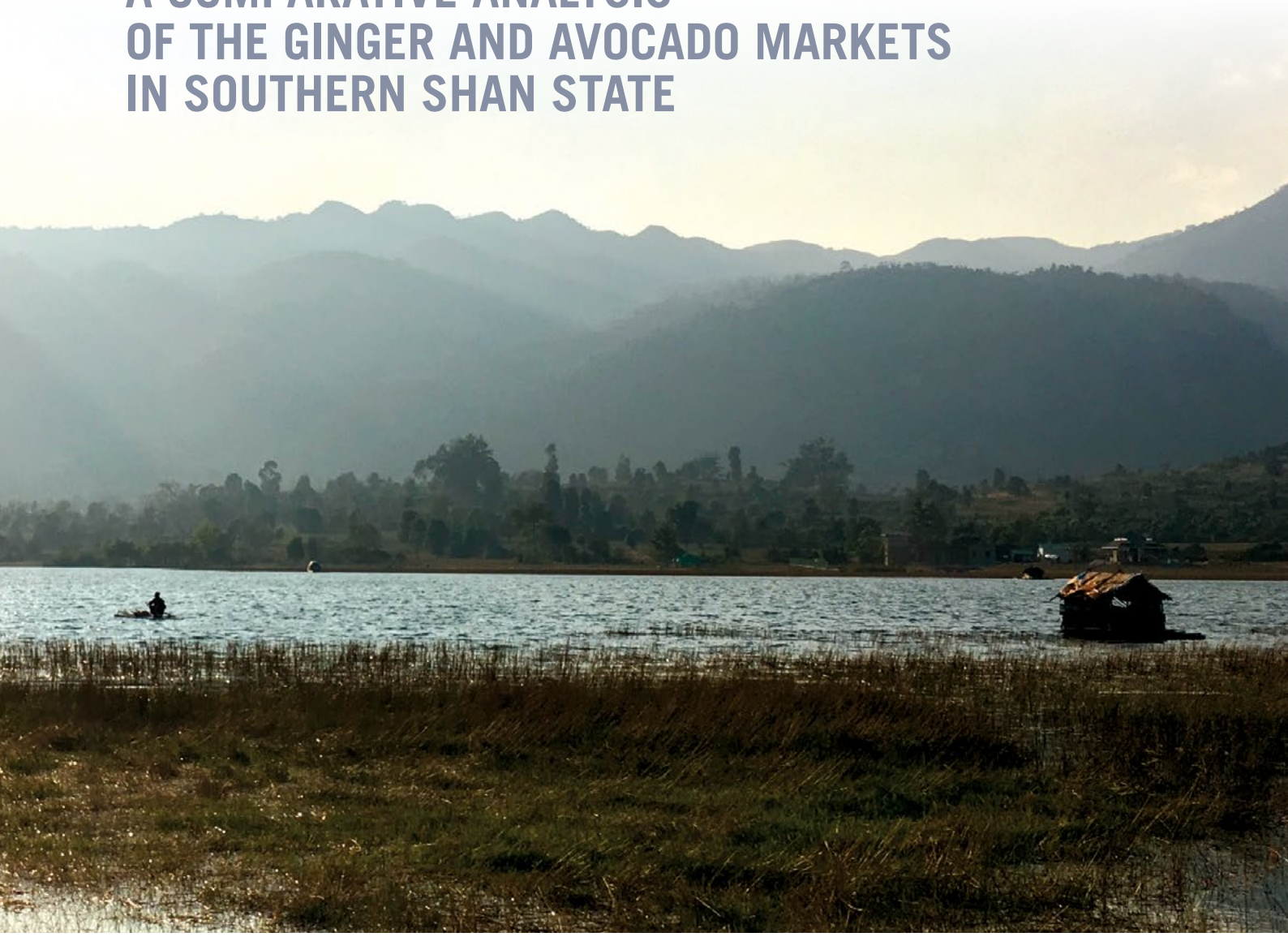
International Labour Organization

SOWING THE SEEDS FOR INCLUSIVE GROWTH IN MYANMAR'S HORTICULTURE SECTOR:

A COMPARATIVE ANALYSIS OF THE GINGER AND AVOCADO MARKETS IN SOUTHERN SHAN STATE



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A COMPARATIVE ANALYSIS OF THE GINGER AND AVOCADO MARKETS IN SOUTHERN SHAN STATE

This study was written by Aatif Somji and Steve Hartrich.
The research team would like to thank all those who participated in the interviews and focus groups.

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1 Introduction

1.1 Project introduction

The Myanmar SECO – UN Cluster on Trade and Productive Capacity project was signed between the Government of the Republic of the Union of Myanmar through the Ministry of Commerce; the Government of Switzerland through the Swiss State Secretariat for Economic Affairs (SECO); and the implementing UN agencies: UNCTAD, ITC, UNIDO, ILO and UNOPS. The first phase of the project is planned to run for four years (2018 to 2022) with a total budget of USD 4.8 million.

The project aims to enhance horticultural productive capacity and improve tourism development, management and promotion for the Inle Lake region of Shan State, Myanmar. The project intervention is expected to enhance the livelihoods of the local beneficiary communities through income generation and employment creation, thus contributing to poverty reduction.

The International Labour Organization has been engaged to assist the Myanmar SECO – UN Cluster project through its work on Market Systems Development for Decent Work (the Lab). In this regard, the Lab has been tasked with conducting market systems analyses of both subjected sectors. The market systems approach is an implementation methodology which aims to address the root causes of why markets may not be meeting the needs of poor people. The approach works within existing market structures, aligning incentives between different market actors – both private and public – to improve the likelihood that positive results are sustained and even scaled-up after intervention. The market systems analyses for both sectors will be used as a basis alongside the findings from the project's inter-agency mission (November 2018) and an initial rapid market assessment of the two sectors (January 2019) to support the redesign of the project's implementation phase, such that future interventions target key market constraints which have been identified through critical analysis.

For the horticulture sector, the Lab conducted a market systems analysis of the tea value chain. This sector was selected by the implementing agencies from analysis conducted in the horticulture rapid market assessment (RMA) which indicated that tea had significant potential to generate further income and employment for the target group. At that stage, the implementation team requested further data and information be provided on other potential horticulture sub-sectors that could also contribute to the project objectives. Thus, this study has been conducted to fill the information void on two sectors that were also identified as having high potential during the RMA: **ginger and avocado.**

The remainder of this study presents details on the two sectors in a brief comparative analysis.

1.2 Structure

The structure of this report is as follows:

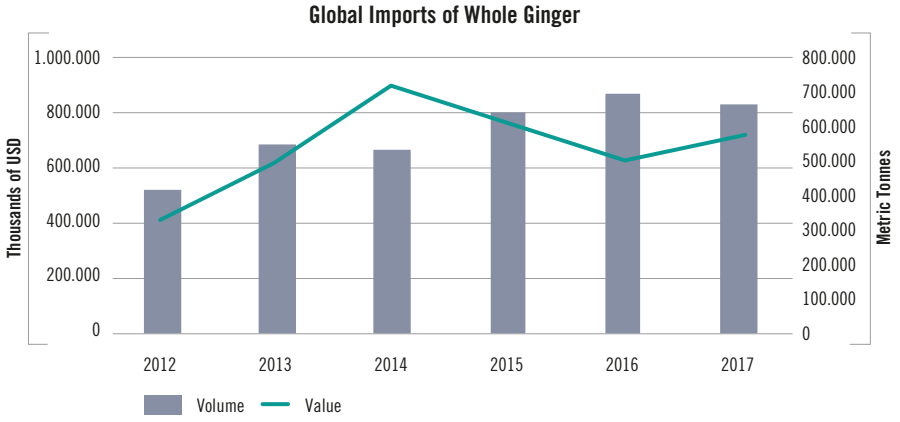
- **Section 2** provides a general overview of the ginger and avocado value chains in Myanmar, with a particular focus on Southern Shan State.
- **Section 3** consists of a SWOT analysis of both products, outlining the respective strengths, weaknesses, opportunities and threats of the project working in each sub-sector.
- **Section 4** concludes by summarising and providing a recommendation of which of the two sub-sectors to prioritise.

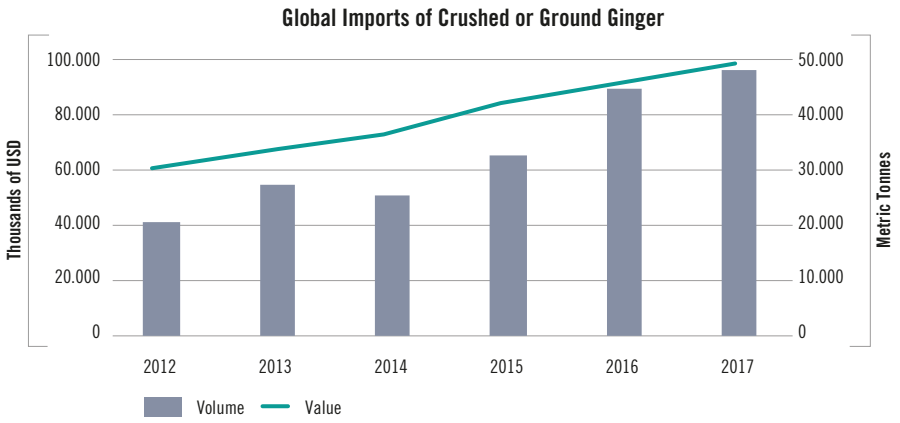
2

Sector Overview

2.1 Ginger

Worldwide consumption of ginger is increasing. In the five years leading up to 2017, global imports of whole ginger increased by 58% and totalled 658,000 MTs in 2017. This corresponds to a global value of almost $750 million. While the total volume of whole ginger imported has generally been increasing over time, the value of these imports has somewhat fluctuated. Meanwhile consumption of crushed or ground ginger also increased, with global imports more than doubling over five years from 19,000 MTs in 2012 to 45,000 MTs in 2017. This has corresponded with a steady increase in value, from $61 million to $95 million[1].





1 International Trade Centre. ITC Trade Map. Products 091011 and 091012. Available at: *https://www.trademap.org/Index.aspx*

According to data from 2017, Myanmar is the 10th largest exporter of whole ginger and 4th largest exporter of crushed/ground ginger by *volume*. However, when ranked according to *value*, its position drops to 22nd for both categories, suggesting that the country is exporting ginger of relatively lower quality and therefore lower value[2]. China is by far the largest importer of Myanmar whole ginger at almost 2,500 MTs in 2017 – with a corresponding value of over $1.1 million which represents 66% of Myanmar's exports by value. Bangladesh is second-largest at 1,600 MTs and $466,000 (27%). For crushed or ground ginger, Bangladesh imports almost 88% of Myanmar's exports by volume, which is valued at $242,000. Pakistan and the United Arab Emirates each import roughly 5% - though they purchase ginger at a much higher value (and presumably quality) than Bangladesh. A caveat here is that trade figures are unlikely to capture the informal 'border trade' which takes place primarily across the borders with China, Thailand and Bangladesh. Key informants indicated that informally traded commodities comprise the majority of cross-border trade and that they are usually of lower quality and lower value than those that are formally traded.

Over 60,000 metric tonnes of ginger were produced in Myanmar in 2017, with 60% being exported and the rest consumed domestically. 51,000 MTs of ginger (85% of national production) occurs in Southern Shan State, cultivated on 8,000 acres of land and suggesting a yield of 6.4MTs per acre[3]. It is estimated that ginger production is carried out by over 15,000 smallholders in the region, with an average plot size of roughly half an acre. The main sites of ginger production in Southern Shan State are Kalaw, Pindaya and Pinlaung; other areas include Ywangan and Lawksawk[4].

Ginger appears to be grown relatively easily in Southern Shan State as a product of the regular rainfall during the growing season. Ginger is cultivated using rhizomes from the previous season as planting material on prepared soil. Ideal growing conditions require 30% shading. Once planted, the ginger grows for roughly 10-12 months before being harvested by hand. The harvest season is typically December to February. After harvest, ginger can either be sold fresh or undergo a short process of being sorted, washed, dried and packed for higher value markets. The quality of the fresh ginger rhizome is a function of size, shape, disease and damage. Larger 'hands' have higher market value as do those with regular shape, while rhizomes should be free from both damage and disease.

After holding the best rhizomes back as seed for the next year, the common route to market for smallholders is that they take the fresh ginger to Aung Ban commodity trading centre in Kalaw Township. Here, they assess the prices being offered by different traders and select the highest one to deposit their ginger. According to traders at the market the majority of this fresh ginger goes to Bangladesh and Pakistan, with agents of buyers from these countries often purchasing directly at the market. Finally, the fresh ginger is transported by road to these markets where they are sold on to retailers and end customers. Farmers can keep their produce underground to prolong shelf-life to around 90 days, giving them a small window of opportunity to sell when prices are higher.

Ginger farmers supplying higher value markets often send their fresh produce directly to processing factories, such as Green Eastern Agri and Heho Potato, where the ginger is sorted, washed, dried and packed before being transported to Yangon via cold storage trucks for export. Cold storage can extend the shelf-life of ginger for 8-12 months.

2 *Ibid*
3 International Labour Organization. 2018. *A case study of drivers and constraints for occupational safety and health improvement in the ginger global value chain from Myanmar.*
4 *Ibid*

As of January 2019, the market price for ginger at Aung Ban was around 1,000 MMK per viss[5], 400% higher than that at the close of 2017 (200 MMK). Exporters pay a premium of between 100 and 200 MMK per viss above the prevailing market price.

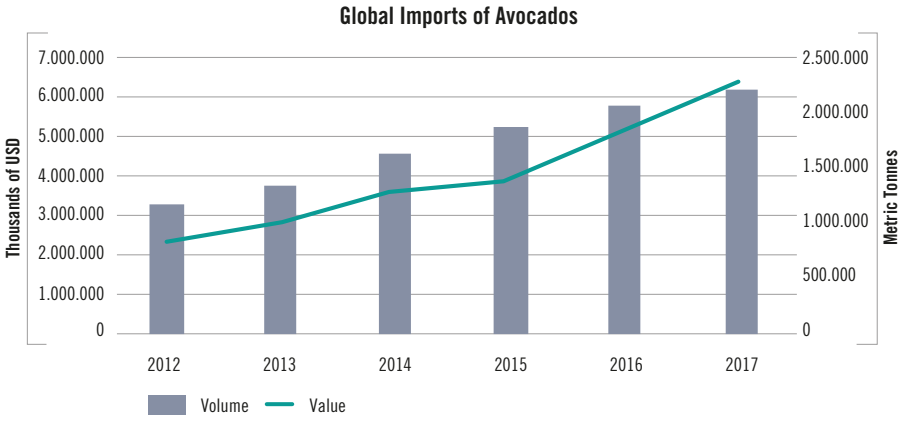
As a general rule of thumb, the ratio of ginger rhizomes planted to rhizomes harvested is around 1:4. However, based on the experiences of the USAID Winrock *Value Chains for Rural Development* project in Southern Shan State, a number of agricultural practices can help increase yield by 75% and to a ratio of 1:7:

- Good quality seeds/rhizomes used from previous harvest.
- Sufficient spacing of seeds at around 3ft x 1.5ft (smaller spacing leads to small rhizomes).
- Proper land cultivation before planting.
- pH between 5.5 and 6.5, with agricultural lime used to increase acidic soil.
- Use of higher quality natural fertiliser such as bokashi.
- Shading of ideally 30%, intercropped with e.g. corn & pigeon pea.
- Mulching using rice straw or corn husk.

Fresh ginger can be processed into dried whole ginger, dried sliced ginger and ground ginger amongst other products. Processing tends to add value to the product and significantly extend its shelf-life.

2.2 Avocado

The global market for avocados is both significant and growing exponentially. In 2017, over 2 million metric tonnes (MTs) of avocados were imported globally, corresponding to a value of $6.1 billion – up from $2.2 billion in 2012.



Myanmar, however, does not feature prominently among avocado exporting countries. According to 2017 data, it only exported $192,000 worth of avocados while in the same year it imported $176,000 – consisting of high value avocados from Australia and New Zealand and lower value ones from Thailand. Thailand was also the principal importer of Myanmar avocados at 87% by value (and almost 95% by volume)[6]. Large producers reported that nearly all avocados are exported informally and thus, are unlikely included in the registered statistics.

5 1 viss = 1.63293 kg
6 International Trade Centre. ITC Trade Map. Product 080440. Available at: *https://www.trademap.org/Index.aspx*

Myanmar exports few avocados for several key reasons. According to consultations with the Myanmar Avocado Producer & Exporter Association (MAVO), the total area of land under cultivation is around 12,000 acres, with an estimated yield of up to 10 metric tonnes per acre. This generously puts total production at 120,000 MTs per year. In Southern Shan State, commercial avocado production is generally limited to Hopong, Taunggyi and to the east side of Inle Lake. Some small-scale production can be found in Nyangshwe, Ywangan and Pindaya.

Historically, avocados have been grown as a wild fruit that were sometimes planted to provide shade for more valuable crops such as coffee and tea. Up until three years ago, they had limited value as they were consumed mostly at the farm level with little to no demand in domestic markets. As a consequence, the sector is constrained by limited technical expertise on production or harvesting practices, poor standardisation of products, lack of quality inputs, very few processing or storage facilities and limited value-added services. All of these challenges severely constrain the yields, quality, access to markets and ultimately, the value which can be generated from the sector.

The commercialisation of avocados reportedly started in 2014 through a technical production training sponsored by Winrock. Up until this time, domestic producers had limited knowledge on quality commercial production practices which could produce higher value avocados. Adoption of this training was somewhat slow, though by 2015/2016, some producers reportedly were able to commence export[7]. As technical expertise is growing and being transferred from farmer-to-farmer, exports are growing and so is interest in further developing production in the sector. Some stakeholders indicated that investors, both domestic and from the ASEAN region, are buying up land and setting-up plantations within Southern Shan State.

Avocado is seeded in the dry season from February to May, grows through the rainy season and is harvested when the dry season returns in December and January[8]. Trees require some time before bearing fruit, with seedlings taking up to 8 years and grafting requiring 3-5 years before producing sufficient quantities for export. Due to both a lack of availability and knowledge of their use, chemical inputs are rarely used and nearly all production is therefore organic.

Once ripe, avocados are sold through two distinct ways. The more common sales method, particularly for small-scale farmers, is to sell all the produce on the tree to local collectors. In this arrangement, the collector pays a certain price - 700,000 to 800,000 MMK per tree – and assumes all costs and risks associated with harvesting, packaging and transport. The collectors then use labourers to harvest the avocados before they are transported to markets either in Aung Ban or at trading hubs at the border with Thailand or China. One farmer indicated that this method was preferred as it shifted the risk associated with post-harvest losses to the collector and provided a guaranteed income.

Larger commercial farms typically sell produce to domestic buyers in higher-end markets in Yangon or Mandalay or to informal traders at the Thai border. Commercial producers indicated that prices at Yangon retailers exceeded those in the Thai market. However, the domestic market demand is still small relative to the scale of commercial production, and thus, large producers still sell most of their produce to the lower value Thai market. Secondarily, domestic prices do fluctuate throughout the year – the high-value, domestic market price nearly doubles if the product is sold just a couple of months after harvest season and is about 2.5 times the price in June/July – indicating a potential case for improved cold storage.

7 This is based on the account of commercial producers who largely export.
8 DaNa Facility. 2018. *Improving Avocado Production in Chin State and Southern Shan State.*

Table 1 – Avocado Market Prices

Price information	Price (MMK/kg)
Reject quality at Thai border	650
Decent quality at Thai border	1,300[9]
Yangon retailer price (Dec-Feb)	1,600 -1,800
Direct purchase form plantation (Dec-Feb)	2,000
Yangon retailer price (Mar/Apr)	3,000
Yangon retailer price (Jun/Jul)	5,000
Retail price at supermarket for imports	10,000

Value addition in avocados is quite limited but growing. One plantation owner indicated that his business started selling avocado-based skin-care products and conditioner. Three other commercial producers have their own processing factories – largely to produce avocado paste/spread and oil from seeds of rejected avocados. Another factory in Hopong was recently set-up with funding from DaNa Facility and is available for use by the 24 largest producers in MAVO to process avocado seed oil and avocado paste.

It is unclear how many people are employed within the avocado value chain, though most commercial producers of avocado have between 2 and 5 acres of land[10]. The role of women in avocado production seems to be prevalent as they support the growing, picking, polishing and packaging processes where men often work in more labour intensive exercises such as ploughing.

9 Note the quality of avocados sold at the border varies significantly and therefore so does the price.
10 *Ibid.*

3

SWOT Analysis

3.1 Ginger

Strengths

Ginger is a relatively **well-established crop** in Southern Shan State and already provides employment for over 15,000 smallholders in the region. The yield of up to 8 MTs per acre is higher than many ginger-producing and exporting countries (with the exception of China which can generate yields of up to 15 MTs per acre). This means it has strong potential to be price competitive in international markets.

Private investment has already begun in ginger **processing infrastructure**, such as washing stations, with Green Eastern Agri and Heho Potato among a number of large-scale processors seeking to grow higher quality ginger for high-value markets. Green Eastern Agri is already servicing the American market, shipping fresh ginger to Miami. The company has also engaged with a buyer from the Netherlands who requested 1,000 MTs per year of Global GAP certified ginger: a request that is currently not serviceable due to supply constraints and lack of Global GAP certification.

Meanwhile, FAME Pharmaceuticals, a Myanmar company, is directly purchasing ginger from smallholder groups in Southern Shan State to sell to France and other European countries for the production of ginger juice. In 2018, FAME bought 10 MTs of fresh ginger and plans to scale this up in 2019. However, organic ginger is a new requirement from buyers which means that additional certification is required before this demand can be met – yet another opportunity in the market.

Producers already have the **right incentives** to switch to higher quality ginger, demand for such ginger among local processors and international markets is growing swiftly and the constraints to meet this market seem limited. With the exception of certification, the costs associated with improving the value of ginger are low. A number of low-cost changes to agricultural practices can result in a significant increase in yield, as outlined in Section 2.1.

There is good potential to **leverage pre-existing activities** from two donor-funded programmes on ginger in the region. The first is the USAID Winrock *Value Chains for Rural Development* (VCRD) which seeks to shift production to high-quality, residue-free ginger, link producers to buyers in high-value markets,

and support private sector development of processing capacity. Winrock has helped to establish better agricultural practices for smallholder groups, enabling them to improve their yield and receive better prices for their fresh ginger. They also helped facilitate the relationship between Green Eastern Agri and its Miami buyer and played a role in connecting smallholder groups to FAME. The second programme is the ILO *Vision Zero Fund* which seeks to improve occupational safety and health practices in the ginger supply chain. Its activities include awareness raising among farmers on the use of agrochemicals, supporting the creation of farmer groups to promote information sharing on good agricultural practices, capacity building of input retailers and Department of Agriculture on information sharing of safe use of chemicals, and promoting certification processes. Winrock activities in ginger were scaled up in 2017 and are due to close in July 2019; it is unclear if a new programme will be established. ILO activities are set to continue until at least May 2020. Both organisations appear willing to collaborate if there is scope for mutually beneficial outcomes.

Weaknesses

A key weakness of working in the ginger value chain is **price fluctuation**. In 2017, the market price for ginger was as low as 200 MMK per viss. Since then it has increased to 600 and by December 2018 the market price at Aung Ban was between 900 and 1,000 MMK per viss. Production costs for farmers are estimated at 400 MMK per viss, so these changes in selling price can determine if ginger production is profitable or not for these smallholders.

Another weakness concerns **quality**. According to consultations with processors, only 30% of harvested ginger is of export quality. To maintain competitiveness in export markets, this figure should be at least 60-70%. Reasons for poor quality include a lack of consistency in quality of rhizomes being used for planting and a number of **traditional agricultural practices** such as limited spacing between plants which leads to small rhizomes. Another issue affecting quality is **disease**, with bacterial blight and fungus disease especially common for ginger, particularly during storage if the rhizome has been damaged. A final issue is the shortage of **irrigation**, which is very important for ginger cultivation. This can also adversely affect the quality of ginger produced.

Very few farmers are producing at a sufficient quality to gain Global GAP or Organic **certification**, which limits the value of ginger produced. Global GAP requirements include over 300 control points, which is unlikely to be feasible for smallholders and may be better suited to commercial farming. According to one processor, organic ginger production is not yet commercially viable. The company is therefore focusing on developing commercial production of regular ginger for now.

Many different **varieties** of ginger exist. Some varieties are better for fresh consumption while others are more useful for oil extraction or processing into ground ginger. Most smallholders are unaware of the varieties and characteristics of the ginger they are growing, which makes it difficult to sell to international buyers. Better knowledge and identification of these varieties this could help farmers better target markets accordingly.

Opportunities

During the research, a number of opportunities presented themselves regarding the ginger value chain. The first is the sharing of **good agricultural practices** with farmers, which can easily and quickly be implemented to improve yields, thereby contributing to greater income generation for smallholders.

Market prices for ginger are lowest during peak harvest which points to an opportunity in **storage facilities** such as cold-storage which are key to extending the shelf-life of ginger, can mitigate the risks associated with price fluctuations and provide more regular supply for export markets. Other ways to minimise the risks of price fluctuation could include **direct trade** between producers and buyers, potentially through some form of contract farming to provide an agreed price range for farmers in return for guarantees over supply.

Another opportunity within the ginger value chain is to establish **processing facilities**, in order to create higher value dried or ground ginger which is less easily perishable and is seeing increasing demand from Europe (Germany, Netherlands, UK) and the USA. This would require significant capital expenditure in the form of a factory premises, machinery and compliance with international standards of manufacturing and food safety.

Regarding global **export markets,** China currently produces 60-70% of globally exported ginger. However, the quality of Chinese export ginger has apparently been falling of late, with US rejection rate of fresh ginger estimated at 50%. This presents a significant opportunity for Myanmar to fill the void left by the rejected Chinese ginger. Moreover, the production cycle of ginger in Myanmar complements that of Peru, the second largest exporter of ginger to the USA – because the peak harvesting season in Myanmar is during a relatively low season in Peru. This could therefore present an opportunity for Myanmar to tap into the US market for organic fresh ginger. Bangladesh was a large importer of Myanmar ginger in 2017, and is expected to increase its volume of imports. Therefore, this could be another opportunity for Myanmar to tap into, though recent reports suggest ginger production is scaling up in Rakhine State to cater to this demand given its proximity to the country. Finally, the example from Green Eastern Agri of a buyer from the Netherlands requesting 1,000 MTs per year suggests there are opportunities to supply a significant demand.

Based on discussions with farmer groups, the overwhelming majority of manual farming labour appears to be done by **women**. Estimates from key stakeholders suggest they account for around 70% of farmers' groups. Promoting sector development in ginger has potential to contribute to **greater income generation and economic empowerment for women**, though there is equally the possibility of a threat to empowerment which will be discussed in the next section.

Threats

Ginger cultivation requires crop rotation, with the same land being re-used for ginger only every three years. Scaling-up ginger production therefore presents a significant threat regarding **deforestation**. The ecological system in and around the Inle Lake already appears to be under strain for a number of complex reasons. Deforestation can exacerbate this through greater soil erosion and the loss of land for cultivating crops, which would damage both the environment and people's livelihoods.

The aforementioned **price fluctuations** could have severe consequences for project activities on ginger if this is not accounted for in the interventions and could easily.

Regarding gender, while women may benefit from activities in ginger as they are the majority of ginger farmers, there are risks of adverse consequences including **entrenching gender inequality**. Consultations widely demonstrated that women labourers are paid less than men. Moreover, women are almost wholly responsible for unpaid care and domestic work. Therefore, developing the ginger value chain could put additional strain on these women and widen the gap in pay between the sexes.

Finally, there appears to be **weak linkages between ginger and tourism** which are perhaps less evident than with avocado. However, there is room to explore and test different products including ginger tea, ginger powder, crystallised ginger, body scrubs and more.

3.2 Avocado

Strengths

There has been an **increasing production** of avocados in Myanmar in recent years. While most avocados are still consumed domestically at the household level, it is estimated that 8-10,000 MTs of Myanmar avocadoes were exported last year. This is reportedly increasing year-on-year as is the quality of production. One producer indicated that one or two farms would achieve Myanmar GAP this year and Global Gap in two years, and that others would quickly follow. Most farms are organic, by default, and could bring eventual higher value to products once the varieties are more standardised.

The Myanmar Avocado Association (MAVO) is an **active producer association** that has helped to develop the avocado value chain in Myanmar through promoting better agricultural practices for avocado cultivation, holding business events such as trade fairs to connect producers with domestic and international traders, and connecting farmers with banks in order to facilitate credit arrangements. MAVO has imported grafted Hass avocado plants from California to develop production of this highly-demanded variety, while it has recently completed the construction of a processing and packing plant close to the Chinese border with a view to receiving quality and safety inspections by the Chinese General Administration of Quality Supervision, Inspection and Quarantine (AQSIQ) – a move that would solidify formal trade with China.

Avocado also appears to have strong **support at the regional level**. The Shan State Government Committee is investing in a 2,500 acre international level avocado cultivation zone in collaboration with MAVO.

Weaknesses

A weakness of current avocado production is the number of **different varieties**. There are over 70 local varieties of avocado, with more being imported from abroad. Farmers tend to use seedlings, which often have mixed characteristics from mother and father seeds meaning they are unable to identify the varieties planted and cannot market them accordingly. Some plantations have begun grafting with strong, good quality local varieties but this practice is still not common. According to MAVO, out of the 600,000 avocado plants grafted only 20-30% survived. Moreover, grafted plants can be quite expensive compared to seedlings. The Hass variety of avocado is not common in Myanmar while mainstream avocado markets demand this variety. Therefore, the country may need to switch production to this variety to significantly increase export potential. In this regard some domestic grafting has started for higher-quality, standardised avocados, and cheaper grafts of Hass have begun to enter the country from Thailand.

Beyond this, **poor production practices** limit production quality and yield. Myanmar currently has **no technical experts** for high-value commercial avocado production – this clearly limits the rate at which even the most commercial of producers can attain export quality produce. This poor level of expertise also filters down to less commercial farms - one producer reported that trees are often

planted in improper locations, sometimes located in areas with too much sun exposure. Given that many avocado trees serve a dual purpose as shading for other crops, the trees become very tall which makes proper cultivation difficult.

Lack of access to infrastructure, particularly **irrigation systems**, is also a considerable constraint to producing standardised avocados as well as mitigating against weather-related risk during production. Basic irrigation costs were reported at USD 300 per acre with higher-quality irrigation that drips in measured amounts of fertiliser and considerably enhances product quality for high-value export markets costing around USD900-USD 1,000 per acre.

Another key weakness is the **poor harvesting techniques**. Many producers lack sufficient technical skills to know how to properly harvest their avocados, including the use of maturity indices and proper harvesting tools which protect the fruit from damage. Harvesting techniques, particularly at smaller scale farms, involve striking avocados with a pole to loosen them from the tree (See Annex B, Figure 4). Such methods damage the fruit via impact with the pole and ground and because it rips the stem from the top of the avocado and exposes the flesh to fungus and stem-end rot.

Poor harvesting techniques cause **diseases** and lead to significant **post-harvest losses** – with up to 80% of harvest damaged and either unsold or sold at a severely reduced price[11]. Linked to this is the fact that avocados are fragile and therefore easily perishable, particularly as they are commonly packaged in bags as opposed to more protective boxes. Poor harvesting methods also drive down the price, as avocados that fall to the ground have the same appearance on the exterior as quality avocados, yet because so many are damaged, the overall price for similar looking domestic avocados – regardless of quality – is reduced. This may disincentives collectors to improve harvesting techniques as they will receive the same price regardless of the method used.

There is very **little production that meets international standards**. According to MAVO, only 100-200 acres of avocado plantation currently meets this, which would need to be significantly scaled up in order to boost export prospects. Global GAP certification is required in order to export to most European markets, as well as to Singapore, Hong Kong and Taiwan and no producers will have this for at least the first two years of the project.

Within the value chain, **cold storage** is almost non-existent, meaning that producers must sell all produce in one three-month period, when the market price is at its weakest. **Transport and packaging** is also limited as most smaller orders of avocados destined for the Thai border are put in a bag and heaped into the back of a truck alongside other products that are damaged along the route. One commercial producer estimated that most of the 30%-50% post-harvest losses were lost in transit, severely reducing the revenue generated by his production by an estimated magnitude of between 15%-25%.

A final weakness of working in the avocado value chain is that it is a **limited driver of broader growth** in the region, given that the fruit is simply exported as a raw material.

Opportunities

There appears to be a strong likelihood of a **growing domestic market for avocado.** The fruit is primarily used to produce a sweet smoothie drink at present.

11 A more experienced commercial farmer reported 5%-10% post-harvest losses while a less experienced one indicated 30%-50% post-harvest losses, mostly during transport.

However, a fast-growing middle class could enhance the domestic market for fresh avocado – especially in cities such as Yangon and Mandalay – through its current trend in Western markets and reputation as a 'superfood'. This was evidenced during the research where, for instance, one high-end coffee shop in Yangon was selling organic avocados from Shan State and a number of restaurants included avocado in their dishes, when just a few years earlier, avocados were almost exclusively consumed at the farm level.

Meanwhile, the **global market for avocados is exponentially increasing**. If Myanmar can upgrade its avocado value chain and grow specific varieties at high-quality, it has the potential to tap into this large and expanding market. In particular, it could provide competition to New Zealand in supplying markets in Japan, Singapore and Taiwan.

There is **strong support from development partners** to develop the avocado value chain. The International Trade Centre is supporting the Myanmar Avocado Association to prepare a National Avocado Export Strategy. Meanwhile the DaNa Facility, a DFID-funded private sector development programme, is providing support to the Myanmar Fruit and Vegetable Producer and Exporter Association (MFVP) to upgrade the avocado value chain in the Pa-O Self-Administered Zone of Southern Shan State. Its activities include training on good agricultural practices, the formation of farmers' collectives, and showcasing products to stimulate interest from new markets. The programme is also exploring the potential to facilitate 'Good Agricultural Practices' certificates to avocado farmers to enable them to access higher-value markets. UNODC is also promoting avocado production (along with tea and primarily coffee) in Ywangan, Hopong and Loilen as an alternative cash-crop to opium. These programmes all seem relatively 'light-touch' in their support which could provide an opportunity for the project to build on this start and have a significant impact after some initial period.

The **nascence** of the sector and the **wider investment into production** could also be perceived as considerable opportunities. Given the nascence, the sector has many challenges in need of addressing – as highlighted in the "weaknesses" section – and thus, a project could add substantial value to supporting the sector. The wider sector investment indicates that sector growth will continue and thus project investment now could be opportune to support the initial development stages of a rapidly growing sector.

Avocado has a **clear link to tourism**. It would be able to cater to the demand of international tourists by supplying the fruit to hotels and restaurants in Southern Shan State and beyond to be used in cuisine. At the same time, it can maintain and even promote its traditional, local use as a smoothie. According to MAVO, the organisation is already linking up with tourism actors including the Myanmar Tourism Federation (MTF) and the Myanmar Chef Association, to conjure up ideas on how to better link the two sectors.

Finally, regarding the environment, avocado plantations could help **counter deforestation** linked primarily to cheroot leaf cultivation.

Threats

The key threat to implementation in the avocado value chain is the **significant time required for results**. For farmers and plantation owners, this means at least three and up to five years of investment with little to no return. It may therefore prove very difficult to incentivise these actors to invest in the production of high-quality avocado. One possible way is to encourage planting vegetables as supporting crops to make short-term income, which would then need to be substituted for root crops once the trees mature.

Avocados are **fragile and easily perishable**. This may limit the feasibility of export without a significant corresponding investment in cold storage, packing facilities and other processing infrastructure.

Avocado cultivation is also **highly water-intensive**, and requires a drip irrigation system for quality production. The effect of encouraging avocado production on local water resources should be thoroughly examined in this regard before project activities are proposed.

A final threat is the fact that there is **limited potential for improving outcomes for the target group**. The project seeks to improve income and employment of women and men farmers, workers and SMEs in order to contribute to poverty reduction. Given that the commercial production of avocado is being carried out by relatively wealthy, male plantation owners, interventions in this value chain may be comparatively less effective in creating positive outcomes for the target group. Furthermore, the labour required for planting, crop maintenance and harvesting is fairly limited compared to other crops, so improvements to commercial scale farms are unlikely to trickle down to labourers at the plantation level.

4 Conclusion

Based on the information in this short comparative study, the research can be summarised as follows:

Ginger is a growing market, with Myanmar a well-established producer and exporter of both fresh and dried/crushed ginger. Processing facilities for ginger already exist in Southern Shan State, set up by private companies. Processing is key to value addition in the ginger value chain, can extend the shelf-life of the product and at the same time create a multiplier effect on employment and income generation due to new work opportunities being created in the different stages of production and processing. Relatively simple (and cheap) changes to agricultural practices can be made to improve yields, which could generate quick wins for the project and get farmers on board for further investment in upgrading the ginger value chain.

The main risk of working in ginger is likely to be the severe price fluctuations that can occur from year to year. This could be circumvented through contract farming or forms of direct trade with buyers. Significant increases in ginger cultivation may lead to greater deforestation and therefore environmental damage to the land through soil erosion. Finally, it is unclear how easily a link can be made between ginger and tourism, the other principal sector in this project.

Avocado is comparatively a much larger market at the global level. Myanmar's production and export of avocados is extremely limited, though it is increasing. In Southern Shan State, avocado production could easily link to the tourism sector by catering to the needs of visitors and supplying local hotels and restaurants. The nascence of the sector provides an opportunity for the project to support the initial development of the avocado value chain and therefore achieve considerable impact.

However, creating a positive impact in avocado is likely to be a long-term investment of at least three to five years. The limited returns in the meanwhile could disincentivise producers from investing in upgrading their plantations. Moreover, the lack of processing steps means that avocado is likely to be a limited driver of broader growth in value-added processing. Finally, commercial production is almost exclusively owned by relatively wealthy male plantation owners with limited required labour force, which calls into question the ability of the avocado sector to drive positive changes for the target group of female and male farmers, workers and SMEs.

It should be noted that the selection of these two sectors is not exclusive – the project may decide to support one or both, and even add more based on how the project develops. This document simply serves to assist in the prioritisation

of project activities. Although this analysis is considered as comprehensive as possible given the time and resource constraints, it remains non-exhaustive. The project should strive to revisit, update and build upon this information as the project team gathers more insights in the two sectors, their constraints and key market actors. This will help the project more aptly adapt and deliver to create scalable and sustainable change for the target group.

Annex A

Assessment of ginger and avocado according to selection criteria established by the Lab during the rapid market assessment of the horticulture sector in Southern Shan State.

GINGER	
Relevance	**Presence of target group** - Ginger supply chain provides seasonal employment for approximately 18-19,000 individuals in Southern Shan State. - Production is undertaken mostly by smallholders, with average plot size of 0.5 acres. Almost all producers have less than 2 acres. - Ginger is one of the main sources of income for about 10,000 households in six townships in Southern Shan. **Representation of women** Tasks with the highest value, such as husbandry and land preparation, are traditionally performed by men. Weeding, harvesting, cleaning and sorting performed by women.
Opportunity	**Scale** - Southern Shan State: · 51,000 MTs (85% of national production) · 8,000 acres · 6.4 MTs per acre - Grown mostly in: · Kalaw · Pindaya · Ywangan · Pinlaung · Hopong · Nyangshwe - Higher yields than most major ginger-producing and exporting countries. Strong potential to be price competitive in international markets. - 40% of production consumed domestically, 60% exported – mostly via border trade to China, India, Bangladesh, Pakistan. - Border trade exports transported by road and ship. International exports done via cargo freight. - Opportunities for processing, mostly for dried or ground ginger. - Growing demand for high-quality ginger in Europe (Netherlands, Germany) and USA based on food safety, environmental and organic standards, primarily for higher value dried ginger and organic fresh ginger. - Organic fresh ginger production cycle complements that of Peru, which could serve the US market. **Decent work** - Price premium for chemical-free ginger = 150% - Organic price premium = 200% - Increased production of higher-quality fresh and/or processed ginger has the potential to improve the incomes of farmers. If the market continues to grow, there is also potential for more farmers to crowd-in. - Chemical-free/organic production methods would reduce hazards related to agro-chemical exposure, improving working conditions. - For regular quality ginger, the cost to set up a plantation is K1-1.5m for one acre, which can yield revenues of K4-5m based on the current market price (K1,000/viss). Profit per acre of roughly K2.5-4m. - Strong incentive for more jobs to be created in the ginger value chain, both for regular quality and higher-quality.

GINGER

Feasibility

Capacity of market actors

- Farmers already producing ginger, but most goes to Aungban or other wholesale markets where price is key purchasing determinant.
- Most likely lacking technical capacity for better agricultural practices to stimulate change in the market system.
- Market for higher-quality produce may also not be evident to smallholders.
- Private investment in processing infrastructure (e.g. washing stations) for ginger already taking place in Southern Shan State (SPSH, Heho Potato, Green-Eastern Agri, Myanmar Agri-Business Group) and elsewhere in Myanmar (Organic Agroland, Naypyidaw).

Willingness to change

- Right incentives seem to exist for switching to higher-quality ginger production. Need for technical assistance, ideally market-driven.
- Market agents able to facilitate large-scale change include processors and exporters. Direct trade between farmers and these actors would remove intermediaries and allow greater value to be maintained by producers.

Existing programmes

- Winrock VC-RD: Shifting production to high-quality, residue-free/organic ginger, linking producers to buyers in high-value markets, supporting private sector development of processing capacity.
- ILO Vision Zero Fund: Awareness raising among farmers on use of agrochemicals, capacity building of input retailers and DoA on information sharing on safe use of chemicals, support creation of farmer groups to promote information sharing on good practices, promote certification processes (e.g. GAP, Organic).
- Good potential to leverage pre-existing activities. Winrock activities in ginger only scaled up in 2017 and programme expected to close in 2019. Open to collaboration. ILO activities strongly complement the aims of this programme.

Implementing agency expertise

- UNCTAD: International trade, market access conditions (tariffs and non-tariff measures).
- UNIDO: Good agricultural practices, certification, quality infrastructure, food safety.

Complementarities

- Development of the high-quality fresh and processed ginger market will likely enhance synergies between production and trade through greater export markets and improve environmental sustainability through better agricultural practices including reduced use of pesticide and chemical fertiliser. No apparent attraction for tourism.

AVOCADO

Relevance

Presence of target group

- Unclear how many people are employed within the avocado value chain.
- Orchard owners each have between 2 and 5 acres of land.
- Avocados commonly sold on the tree to local collectors/distributors, which provides another level of employment.

Representation of women

- Men and women have different roles in cultivation which are used to justify why men are paid more for their labour than women (e.g. K5,000 vs K3,500 in Shan State)
- Men: Climb trees, fertilise trees, pick and carry fruit.
- Women: Planting seedlings, post-harvest handling, packaging.

Opportunity

Scale

- Southern Shan State, grown mostly in:
  - Hopong
  - Taunggyi
  - Nyangshwe
  - Ywangan (lower quality)
  - Pindaya (lower quality)
- Growing cycle:
  - Feb-May: Seeding
  - June-July: Growing
  - Dec-Jan: Harvest
- Naturally grown, with over 70 local varieties of mixed quality.
- Hass varieties introduced from California and New Zealand.
- MFVP has identified 10 local varieties as suitable for both domestic consumption and international export, which include Amara Hass, Little Hopong, Aung Moe and Upland Queen.
- Good domestic market, primarily used to produce sweet smoothie drink. Developing market for fresh avocado in Yangon for expats/middle-class.
- Border trade:
  - Thailand- Distributors transport to Myawaddy and Thachileik either through agents or directly to border.
  - China- Often tagged as 'Made in Yunnan' and certified by AQSIQ (Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China)
- Other export markets: Singapore, Taiwan, Hong Kong.
- No evidence of export to non-Asian markets, unclear if such demand exists.
- Very little production that meets international standard levels (100-200 acres). Addressing this could boost export prospects.
- Trees yield little fruit in first year and take 3-6 years to mature. Requires a longer-term commitment to realise its potential. Grafting for local varieties has begun and these should be ready for significant export within 3 years.
- Can be intercropped with other cash crops, such as coffee.
- Limited driver of broader growth as avocado exported as raw material.
- Fragile and easily perishable which may limit feasibility for large-scale exports without corresponding investment in cold storage and other infrastructure.

Decent work

- Avocado farming appears to have grown significantly over the last 10-20 years.
- 1 acre can yield around 10 MTs, with a market price of K10m and profit of around K4-5m.
- Limited potential for improving income of target group is most producers are medium-to-large scale, rich orchard owners.
- Conversely, job opportunities for collectors and distributors may improve.

AVOCADO

Feasibility

Capacity of market actors

- MFVP and Myanmar Avocado Association have both been very active in developing the avocado market, through promoting better agricultural practices for avocado cultivation (e.g. grafting), business events such as trade fairs to connect producers with domestic and international traders, and connecting farmers with banks to facilitate loans.
- MFVP/MAVO completed construction of processing and packing plant, for inspection for AQSIQ certification by China, which would solidify formal trade.
- Shan State Government Committee investing in a 2,500-acre international level avocado cultivation zone.

Willingness to change

- Current challenges faced by producers are large post-harvest losses and limited export markets.
- Investment in better agricultural practices and certification to globally-accepted standards would be first steps towards greater export for avocados, which would overcome these challenges.
- Thus, there appears to be strong incentives for producers to change their behaviour.

Existing programmes

- DaNa Facility: Exploring facilitating the issuing of legal certificates such as Good Agricultural Practices to increase prices and access to markets.
- UNODC: Encourages growing of avocado (along with tea and primarily coffee) as an alternative livelihood source to opium.
- Both programmes are relatively 'light-touch' with regard to the avocado value chain, which means that there could be good potential for programme interventions to have a significant impact (after some initial period).

Implementing agency expertise

- UNIDO: Adherence to certification and quality and food safety standards appears critical. Expertise on infra-structure for export, such as cold storage, also required.
- UNCTAD: Technical assistance in marketing and exporting to non-Asian markets.

Complementarities

- Avocado plantations could counter problems of deforestation linked to cheroot leaf cultivation.
- Cash crop alternative to opium.
- Strong potential to cater to tourism demands at hotels/restaurants in Southern Shan.

Annex B

Selection of photos from the research:

Figure 1: Organic fresh ginger cultivated in Ywangan Township

Figure 2: Ginger from Aung Ban delivered to solar dryer facility in Mandalay

Figure 3: Ginger washing station at Green Eastern Agri, Heho

Figure 4: Example of poor cultivation technique for avocado, Ywangan

Figure 5: Premium avocados from Southern Shan State being sold in a high-end café in Yangon

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