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Australian Centre for International Agricultural Research

Final report

Small research and development activity

project	**Agriculture for Tourism – Research to advance a synergistic development pathway for local agribusiness value chains and tourism in Bali, with application to similar high intensity regional tourism hubs throughout Indonesia**
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1 Acknowledgments

The project team acknowledge the support provided by ACIAR, and the future thinking that has enabled this research activity to take a look at the potential for using the engagement of smallholder agribusiness with a high-demand tourism sector to drive change. We are also grateful to the University of Udayana for being a key partner in this project.

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2 Executive summary

This small research activity (SRA) was undertaken to gain an understanding of the potential to improve smallholder resilience and opportunity by strategically focussing participants on engagement with the local tourism sector.

Bali was selected for this research as this province has a strong agrarian culture embedding traditions, customs and spiritual activities into agriculture. It is also a major tourism location. Bali has an established role in the portrayal of Indonesia as both a domestic and international travel destination and tourism has rapidly become a prominent sector of the region's economy. There is a wide range of crops and types of food due to the numerous cultures and tastes of visitors.

Two research aspects were pursued culminating in a framework for research and development in the short to medium term. Firstly, this study looked at the value orientation of the institutional tourism consumers and key needs of this market. Secondly, the capacity and capability of the smallholders in terms of the supply of local agricultural product was examined with a review of stakeholders' key constraints or needs.

The tourism sector in Bali presents a distinct demand for local fresh product though an underlying need for quality and consistency of supply means that local product is not necessarily the priority. Additionally, potential discrepancies in product origin presents an obstacle in effective development of local value chains. There is no differentiation between local Balinese product and other domestic sources, and no traceability.

Key activities of this study were a collation and analysis of bulk purchasing data from the institutional tourism consumer sector. Participants were also surveyed and interviewed, individually and through group discussions, to understand the needs, preferences and expectations of the sector with respect to their purchasing decisions and outlook on local smallholder producers. Suppliers were interviewed, individually and through group discussions, to assess supply chain issues. Additional research and a focus on data capture particularly with respect to product traceability is needed to provide a more accurate assessment of the use and fitness for purpose of local Balinese product.

Three value chains – pineapple, carrot and chicken meat – were selected, based on our end-market analyses, as samples for the smallholder sector. Smallholders were surveyed and interviewed individually and through farmer groups, and farm and simplified chain-walk observations were made. Three reports were drafted to consolidate the learnings from this research.

This research finds that there is an opportunity and urgent need for transformational change of smallholder practices and their engagement with end markets in Indonesia. Local, high-density tourism offers a favourable combination of elements that can be turned, in collaboration with farmers, to creating greater value for all stakeholders. The application of Value Network Analysis (VNA) as a research tool, together with a focus on value creation are concluded as key drivers for capacity and capability building. To this end, analysis and understanding of the holistic value networks of stakeholders in the agribusiness-tourism space is an important area of study that would deliver practical interventions in local value chains. A deliberate emphasis on value and value creation for local producers is an important gap for further research.

The tourism sector has an uncompromising need for continuity of supply and the quality must be adequate and the price competitive. Local growers struggle to meet these requirements. This research identifies that the lack of consistent supply and poor quality are prevailing drivers of reduced demand for local product. The introduction of regulations to support local producers has merit though technical assistance and enforcement are needed. Regulations should not be relied upon in the longer term as they will distort market forces and will harm the local industry over time. Examination of the design of

policy to effectively serve the intention with respect to existing circumstances in the agriculture-tourism nexus should be a key focus.

Insufficient operating capital, rising costs and low or uncertain prices are key concerns for producers. Slow payment terms for produce delivered is a critical issue. There is an absence of effective pricing signals to distinguish important value parameters for produce. Very few smallholder farmers are engaged with or even, to some extent, aware of their end markets. However, smallholders want to improve their supply capacity to the tourism sector but lack the technical and market knowledge to achieve this.

Business partnerships will heighten the capacity building in both sectors, with collaborations based on shared value creation and facilitated to ensure mutual benefit. A key conclusion from this study is that pricing signals must be improved.

Recommendations from this study are:

1. Supply agreements need to be developed as a communication and capacity building tool, support product differentiation and as a framework for research and innovation in production and supply chain practices.
2. Research and development programs need to embrace foundation practice improvements, be cognisant of local terminology in data capture and promote technical upskilling of producers and suppliers. Implementation of record keeping is necessary to support baseline management of farm enterprises, quality assurance and traceability of local product.
3. Holistic examination of the networks and relationships between supply chain participants, as well as policy makers and other enablers, is needed and to be combined with capacity development to empower smallholders and commercial tourism consumers to determine collaborative opportunities that identify and create value.
4. Development of high-density tourism regions or hubs should include a needs assessment, policy review and improvement of local agricultural capacity to form a complementary relationship between local producers, the tourism sector, communities and regulators.
5. Analysis of policy formation in the agriculture-tourism space should be conducted to support policy makers and other value chain enablers in delivering improved impact of policy concepts and to identify how effective policy can be shared and utilised more broadly.
6. The design and delivery of research and innovation needs to be participatory. Research and extension partners should be supported and trained to prioritise and design trials and evaluate interventions in collaboration with end user networks to sustain institutional knowledge and enable stakeholders to develop skills and own the learning.

This SRA has helped inform the development of a strategic approach to research for development of the agriculture-tourism nexus in Indonesia. The framework provides high-level strategic direction and coordination of priorities for research and development for smallholder agribusiness in the short to medium term.

3 Abbreviations and acronyms

ACIAR	Australian Centre for International Agricultural Research
AIAT [BPTP]	Assessment Institute for Agricultural Technology (Balai Pengkajian Teknologi Pertanian)
BAPPENAS	National Development Planning Agency (Kementerian Perencanaan Pembangunan Nasional Republik Indonesia/Badan Perencanaan Pembangunan Nasional)
BARI	Research and Innovation Agency (Badan Riset dan Inovasi)
BRIN	National Research and Innovation Agency (Badan Riset dan Inovasi Nasional)
COVID-19	Covid-19 pandemic (caused by the SARS-CoV-2 virus)
HORECA	Hotels, Restaurants and Catering
ICASEPS	Indonesian Center for Agricultural Socio-Economic and Policy Studies
IHRA [PHRI]	Indonesian Hotel and Restaurant Association (Perhimpunan Hotel dan Restoran Indonesia)
ITDC	Indonesia Tourism Development Corporation
SRA	Small Research and Development Activity
UNUD	University of Udayana
VNA	Value network analysis

4 Introduction

This small research activity (AGB/2020/121), as a partnership with Udayana University, was undertaken as an initial step to examine how capitalising on the interdependence of agriculture and tourism could drive sustainable and resilient growth of the smallholder sector in Indonesia.

Indonesia is one of the world's most populous countries with the national census in 2020 (Statistics Indonesia) recording the population as over 270 million people. Food security and sovereignty are key objectives in social and economic development. The Nawacita program (2015) encompasses the aim of fulfilling food needs from domestic production whilst also protecting and improving the welfare of farmers as the key actors in the agricultural sector. Parallel to this, tourism is a major and critical economic driver for the country.

This research explored the tourism and the smallholder sectors in the province of Bali to investigate how engagement and investment in research and development can improve collaborative agribusiness-tourism value chains. Bali was selected as a model for this study as it has an established role in the portrayal of Indonesia as both a domestic and international travel destination and tourism has rapidly become a prominent sector of the region's economy. The economic achievement of tourism in Bali has been identified by the national government as an important opportunity to be replicated across Indonesia – '10 New Balis' growth strategy.

The expansion in tourism in Bali over the past couple of decades, however, and its hunger for large quantities of safe, quality food has strained the capacity and capability of local agricultural production. The underlying social and natural values are being overwhelmed. The current agribusiness system in the province is characterised by small scale enterprises, immature and underdeveloped value chains, diminishing returns and a degrading ecosystem. Concurrently, consumers are raising their expectations of quality standards including for produce specifications, certifications, availability, labelling and packaging, and lower price points. This unfolding problem is highlighted with the introduction in 2018 of the Governor's Regulation of Bali Province No 99 / 2018 (Articles 12, 13, 16) pertaining to quotas for tourism, food service and major retailers to source locally produced food and pay a minimum margin for the local producer.

With the underlying challenges exposed, the unprecedented impact of COVID-19 on agriculture, tourism and the local economy has underscored the intense need for a measured and collaborative process going forward to support smallholder agribusiness resilience and how the sector engages with markets. This SRA was borne out of a breadth of earlier discussions on the opportunities more broadly for smallholder agriculture to be better integrated with local tourism as a key market. The tourism sector is a high-demand, high-intensity market and stakeholders pursue multiple factors in consideration of product value. The production requirements and product specifications needed for the supply of local, safe agricultural products for food service and tourism are imperative, and while value adding could be an important strategy for local farmers, the underlying value elements are crucial for ensuring effective use of local smallholder resources and creating sustainable and viable value chains.

This research activity was an important starting point for understanding the demand and supply constraints and socioeconomic needs of agricultural production in Bali and matching the demand of high-intensity tourism, food service and modern retail to local agricultural production capacity. Crucially, it was an opportunity to determine key focal points in designing a development strategy that can enable the sustainable and resilient growth of the local agricultural sector, integrated with tourism as a key market.

The objectives of this activity were to:

1. Increase information on supply-demand elements and key product value arguments driven by tourism to improve understanding of how these market demands and dynamics of agricultural products can be best used to develop viability of smallholders.
2. Identify capacities and constraints for the supply of safe, quality locally produced agricultural products and how agribusiness value chains can be supported to satisfy specifications and market demands of high-density tourism (and by extension, modern retail).
3. Provide a research analysis for strategic development of local, collaborative agribusiness value chains.

5 Methodology

5.1 Research approach

The project sought to examine the local tourism sector as the end market consumer for agricultural product and the supplying smallholder sectors. A two stage approach was used for this study. This design provided an allowance for potential impacts of COVID-19 and generated a natural research activity pathway for the in-country team to step through the research and identify participants as needed.

Due to the diversity of farming systems and produce, and the multiple cultural, economic, policy and biophysical influences on them, we adopted a broad approach for bulk market data, which takes account of the range of stakeholders and their influence and experiences. Participants for the research were drawn from key groups:

a. Commercial tourism consumers – hotels, resorts, food service/restaurants (HORECA)
b. Modern retail
c. Smallholders
d. Enablers and government

The first stage was a focus on the end market – the commercial tourism consumers comprising hotels, resorts and food service/restaurants. The modern retail sector was also included as this market was expected to complement the demands of tourism and represent a changing face of the resident consumer. The second research stage targeted smallholders and aimed to investigate the provincial agricultural production capacity, capability and constraints to understand key socioeconomic and technical opportunities in local agribusiness value chains.

Three value chains – pineapple, carrot and chicken meat – were selected to provide a cross-section of agricultural activity for this study. These chains were chosen on the basis of the tourism market analysis to provide a manageable framework to guide a broader understanding of smallholder production.

With the objective of describing local agriproduct demand with respect to the desired specifications, needs of the sector, volume and value, qualitative and quantitative data were collected. Survey of end-market actors, a compilation of purchasing/sales data (2019) from key participants, supplier focus group discussions, modern retailer interviews and facilitated questionnaires were undertaken. The bulk data request focussed on monthly purchasing information for all available agricultural products based on product category, purchase volume, purchase price and also the origin or supplier for the 2019 calendar year. The data was collated under four categories – fruit, vegetable, herb/spice, meat and seafood.

Participants were asked about quality as well as preferences and differences with respect to local and imported product and key purchasing decisions. Data for the 2019 calendar year was used to provide a preCOVID-19 basis for demand as this research was not about the impacts of the pandemic but understanding where the opportunities for development of improved agribusiness value chains lie in connecting with high-intensity tourism hubs. A stocktake of the demand for agricultural products, current sources, key value criteria and issues was then generated.

A combination of survey, interviews and guided discussions with smallholders and other key informants, combined with chain observation, was used to identify capacity and capability elements of the upstream value chain participants, as well as constraints and needs. The research team, on visiting sites, also conducted field validation and third-party observation as part of a ‘chain walk’ process.

A quality assessment and satisfaction with standards as well as other value arguments were canvassed. The views of all informants on the Governor's Regulation No. 99/2018 were sought to identify what benefits and challenges are encountered.

Stakeholders were identified by in-country partners with assistance of the Bali Professional Purchasers Association, the Indonesian Hotel and Restaurant Association, the Young Farmers Forum of Bali and The Department of Agriculture (Bali). Suppliers and collectors who service the tourism sector were identified from the surveyed end-market stakeholders and invited to participate in guided discussions and the survey. Farmers from known farmer groups as well through the supplier networks were also invited to participate. Additionally, representatives of the modern retail chains in Bali, local Department of Agriculture and Food Security and Department of Trade and Industry participated in group and individual discussions. The guided discussions were facilitated by the Institute of Research and Innovation, Bali Province. The questionnaires and interviews were in language and customised marginally for each group but essentially sought the same information. Example of a questionnaire is provided in Appendix 1.

Selected end-market and supplier participants and representatives of enabling organisations were contacted by letter with a personal follow-up and provided with a background of the research and the survey. Farmers were contacted directly and/or through farmer groups and 42 farmers participated in the research.

Twelve tourism organisations provided bulk food purchasing data and took part in key informant interviews. Interviews and two group discussions were conducted with 20 agriproduct suppliers. Six suppliers are specifically active in the area of Bedugul, which is a well-established centre of production of highland vegetable and fruit in Bali. Four Bali supermarket/modern market groups joined in focus group discussions and group interviews were held with participants in the Department of Agriculture and Food Security and Department of Trade and Industry. Informal discussion about the supply chains and our research was conducted with representatives of the Research and Innovation Agency (Bali).

5.2 Feedback and discussion

At the final stage of this research and development activity, a series of meetings were held with stakeholders. The analysis of data and participant responses and summary of findings were discussed and related to the research and development framework. In particular, researchers sought responses on the background data, project analysis and conclusions, and the concepts promoted in the research and development plan.

6 Achievements against activities

Objective 1: To improve understanding of the market demands and dynamics of agricultural products and market requirements in the province of Bali

	Activity	Output/ Milestone	Completion date	COVID contingency & BCP COVID Response	Comments
1.1	Prepare qualitative and quantitative research methodology and data collection tools to engage local team with value chain actors • Convene inception meeting to confirm team and research methodology, identify stakeholders and prepare assessment tools, plans and schedules	Research plan	Nov 2020	Due to expected international travel restrictions this task will be prepared as an online meeting. In person attendance will be appropriate to local COVID safe requirements.	Completed as a Webex online meeting. A Governor Research Permit was received to support our engagement with value chain actors and data requests. A Request for Cooperation letter from the project was provided to all potential participants. A Letter of Support for the project and our data collection activities was received from BARI and provided to all potential participants.
1.2	Undertake a market assessment of key agricultural products in the high intensity tourism environment and describe key domestic markets for local agriproducts with respect to seasonal demand, volume, value, source • Analyse key domestic markets for local agriproducts with respect to seasonal demand, volume, value and desired specifications • Conduct qualitative and quantitative data collection and value chain analysis to obtain a stocktake of demand for agricultural products and sources	An analysis of key domestic market opportunities A stocktake assessment of end market demand for local agricultural products	July 2021	Data collection will be developed and guided via online meetings, initially. In the event travel remains restricted, additional tele meetings will be convened routinely during the data collection program to review data and on-ground activities.	Activities were planned in the context of travel restrictions. Despite this, there was a small impact on delivery resulting from the closure of numerous tourism enterprises and subsequent difficulty for staff to gain access to business records. Additionally, the bulk data obtained was in various formats due to different business practices and required more time to clean and collate. Participants were provided with questionnaires and followed-up with

	Activity	Output/ Milestone	Completion date	COVID contingency & BCP COVID Response	Comments
					personal communications to assist data collection. Tourism actors, suppliers, supermarkets and Govt enablers engaged in interview, survey, discussion groups and data collection.
1.3	Investigate consumer/user requirements for local produce through research and analysis of product value arguments and desired specifications with respect to local agribusiness product value chains in Bali and selected surrounding provinces • Research and analyse product value arguments with respect to local agribusiness product value chains in Bali and selected surrounding provinces	An assessment of local end market specifications and gaps in a high intensity tourism hub Report on drivers and consumer expectations of domestic end market and identification of key elements for market engagement			Extra time input was provided in lieu of travel to accommodate the less efficient collection and communication processes and maintain continuity. The lack of direct in-country meeting and activity had an overall minor suppression on project actions and motivation.
1.4	Examine qualitative and quantitative market assessment data and consumer/market end expectations and assess key agribusiness value chains that present socioeconomic opportunities for local producers • Examine qualitative and quantitative market assessment data and consumer/market end expectations to provide an assessment of key agribusiness value chains that present socioeconomic opportunities for local producers • Synthesis of the market demand and expectations of key agricultural products	A review of priority value chains for domestic production capacity development research Prioritised agricultural value chains	Oct 2021	In the event travel remains restricted, additional tele meetings will be convened as necessary during this phase of the program to guide field assessments, review data and additional local resources will be contracted in place of international travel to conduct activities, if necessary.	Report: Agriculture for Tourism: Local market development opportunities in Bali agriculture – market engagement assessment (Appendix 2)

Objective 2: To identify capacities and constraints for the supply of safe, quality and resilient locally produced key agricultural products

	Activity	Output/ Milestone	Completion date	COVID contingency & BCP COVID Response	Comments
2.1	Investigate the provincial agricultural production capacity, capability and constraints to understand key socioeconomic and technical opportunities in local agribusiness value chains • Determine capacity constraints and production/supply barriers, capability and infrastructure limits/needs • Conduct qualitative and quantitative investigation to gather rich data of agricultural production capacity, capability and constraints to understand key socioeconomic and technical opportunities in local agribusiness value chains	A report on the socioeconomic and technical opportunities for local value chain actors A situation analysis of high benefit local agricultural products and engagement points with tourism	Feb 2022	In the event travel remains restricted, additional tele meetings will be convened as necessary during this phase of the program to guide field assessments, review data and additional local resources will be contracted in place of international travel to conduct activities, if necessary.	These activities were planned to involve international travel and full team activities in-country. Continued restrictions on international travel throughout 2021 as well as local impacts on travel resulted in these activities being slower to undertake. Additional time input of local partners and data collection was supported with extra teleconferencing to enhance data collection guidance and maintain research quality. Local travel and direct data collection was possible for the in-country team with only occasional, short term impacts from COVID-19. Report: Agriculture for Tourism: Opportunities for local smallholders – engagement points (Appendix 3)
2.2	Evaluate key actions and solutions that can support sustainable engagement of local agricultural value chains with modern retail and tourism • Examine local agricultural value chains in context of high intensity tourism and development of modern retail • Conduct in-depth analysis with key informants, chain observation and gap scoping to determine processes and actions that can support capacity and capability development of local agribusiness			These activities were conducted remotely with the team through online validation workshops and interviews, as travel remained restricted. Research guidance and project management was undertaken as a dual location partnership.	

Objective 3: To provide a research analysis for strategic development of local, collaborative agribusiness value chains

	Activity	Output/ Milestone	Completion date	COVID contingency & BCP COVID Response	Comments
3.1	Formulate a research and development pathway for supporting integrated development of local, resilient cooperative agribusiness value chains • Examine market assessments and situation analysis to establish key methods and processes that will support collaborative agribusiness value chain development in Bali and some surrounding provinces, with application to other high intensity tourism hubs	An assessment of the domestic agriculture-tourism value chain dynamic in Bali as a tourism hub and associated agricultural research and sector capacity priorities • Key players, enablers and stakeholders for engagement in integrated development of agriculture for tourism Research and development framework for integrating local agribusiness value chains with high intensity tourism growth	Apr 2022	These activities will be conducted remotely with the team through online validation workshops and interviews, in the event that travel remains restricted. Research guidance and project management will be undertaken as a dual location partnership.	This final element of the project was not expected to be affected by travel restrictions, though advantageously, with the lifting of international travel restrictions in March 2022, the finalisation of this framework was able to be conducted in person through a series of in-country meetings with stakeholders. As a result of this opportunity the framework was delayed marginally. Report: Agriculture for Tourism: Enabling Sector Synergies – a research and development framework (Appendix 4)

7 Findings and Discussion

Further detail can be found in the associated project reports, reproduced in the Appendixes.

7.1.1 General

The tourism sector expects and requires high-quality standards and has unfulfilled demand for product with (i) better specifications, (ii) certification, (iii) reliability of supply, (iv) consistent availability, (v) lower price points and (vi) greater environmental responsibility. A distinct preference for local Balinese fresh produce is tempered by availability issues and continuity of supply, as well as potential discrepancies in product origin. Data collected in this study indicate inconsistencies around whether product is local or from other provinces. Substandard quality is a significant problem for the tourism sector, with quality assurance, food safety and product differentiation underpinning opportunities for smallholders.

Buyers are concerned that without significant productivity gains, costs of local produce will increase particularly as availability of agricultural land declines. Ironically, commercial tourism consumers expect the proposed construction of a new airport in northern Bali to be a key contributor to this. Both producers and buyers recognise equipment and machinery as important factors in increasing farm productivity. While local farm productivity is a key issue for price-sensitive buyers who nominate farmers' uptake of technology as crucial to improving productivity, farmers disclose that equipment and new practices are difficult to access primarily due to low farm returns and poor cashflows attributed to slow payment terms from buyers.

A broad range of limitations pervade the smallholder sector. Insufficient operating capital and rising costs are of key concern to producers, as are low or uncertain prices. Interestingly, this research found that rising land values, associated with the competition from tourism investment, is causing concern for smallholders in terms of diminishing returns for their farming. Coupled with increasing lifestyle costs, farmers reveal a sense of financial inefficiency.

7.1.2 Market and buyer factors

There is a strong underlying demand for local agricultural products and tourism has an uncompromising need for continuity of supply. The caveat on this is that the quality must be adequate and the price competitive. Local growers struggle on both accounts. This research also found that the lack of consistent supply and poor quality are the prevailing drivers of reduced demand for local product. For some buyers, these local limitations are a key incentive to simply source from other provinces. A significant share of produce purchased by the Balinese tourism sector is produced outside of Bali, though many buyers report they are purchasing local product. One factor is potentially a mixed understanding of terminology with respect to 'local' and 'domestic'. Additionally, suppliers readily obtain products from other provinces to fill orders and offset high local prices during periods of shorter supply. There is no differentiation between local Balinese product and other domestic sources, and no traceability. Notably, the tourism sector can also struggle to acquire sufficient product from other provinces during peak periods.

Most crops have a peak in demand over the new year (late December to January) with a secondary and broader peak mid-year, around July – September, corresponding with the long global vacations for schools and universities and subsequent tourism peaks. The new year accounts for a significant upswing in demand for meat, eggs and seafood corresponding to the main tourist season. There is also sizable pre-season purchase, particularly of imported beef, by many hotels and restaurants to ensure sufficient supplies for the new-year peak.

Approximately 70 types of fresh vegetables and herbs and 40 fruits are used by the Bali tourism sector. Most buyers purchase some 34 types of local vegetable and herb. For fruit, a typical buyer purchases 22 types. Similarly, for meat and seafood, there are 20 types purchased.

For a typical enterprise, 99% of the total annual spend on fruit would be for just 20 fruit product types. Of the top five fruits produced domestically (Melon (including honeydew and rockmelon), watermelon, banana, pineapple and mango), only banana is fully supplied by local farms though there is a small quantity of particular varieties brought in from East Java. In contrast, almost all pineapple comes from East Java as there is a negligible level of local production.

In terms of vegetables and herbs, the average share of annual spend on the top 15 product types is 70% and for a typical enterprise, 96% of the total annual spend on vegetable and herb products would be for just 30 product types. Tomato, lettuce and sweet pepper are the three main domestic vegetable products with the majority sourced from within the province. Carrot and potato complete the top five vegetable products, however these are primarily grown in Java and Sumatra. For livestock products, the bulk of the tourism sector annual spend (83%) is on five main products – chicken, pork, eggs (chicken), beef and duck. The majority are domestically produced, with beef being the exception. Overall, horticultural products are of predominately a domestic origin (though not necessarily local), whilst a higher share of key meat products are imported.

Smallholders in Bali have a desire to improve their supply capacity to the tourism sector, and primarily indicate a lack of technical and market knowledge to achieve this. Most farmers are still only engaged with local markets or selling at the farm gate to collectors.

This SRA was interested to determine whether farmers were knowledgeable of market specifications because poor quality was a key issue described by the tourism sector. Only a minority of smallholders were aware of objective specifications for the produce they grow. Feedback from buyers is absent. Our focus group discussions revealed that farmers were confident that they know what the buyers require, but due to the added costs in preparing product to the necessary standards and lack of corresponding reward, farmers prefer to sell to local collectors at a lower standard. Certain value adds such as certification and packaging are considered opportunities to improve demand.

Inconsistent grading is a dominant contributor to poor quality. Uneven size is a primary issue, and spoilage and pest damage are also quality concerns resulting in rejection and losses. Basic postharvest such as sorting and grading are not generally or consistently practiced. The market expectation of higher quality does not translate into better prices for producers. Farmers maintain that a tighter relationship is required between the quality delivered and the price received.

Post farmgate, the cost of transport is a significant expense acknowledged by almost half of smallholders participating in this research. Collectors and traders also impose a 10% ‘weight deduction’ price penalty on many horticultural products. This is a significant selling cost for farmers. It is also indicative of the ‘accepted’ postharvest loss. Improvements in postharvest management, including grading, packaging, cool chain and logistics could reduce losses and facilitate removal of this unfair practice.

Very few smallholder farmers are engaged with or even, to some extent, aware of their markets, market access issues and development opportunities. There is an absence of effective pricing signals to distinguish key value parameters for local smallholder producers.

For buyers, there are a variety of benefits attributed to contracts. Contracts are important in managing fluctuating market prices and especially price rises. Price certainty is considered as a key benefit for all buyers engaged in contracts, primarily by streamlining cashflows and budget planning within the tourism business. Ten percent of enterprises indicate that the reliability of supply and quality are valuable contract benefits.

All buyers, irrespective of whether contracts are used, impose intrinsic quality standards such as freshness and appearance when taking delivery. This is determined by the end user of the product, mostly the chef and/or bar manager, at point of receival. Sixty percent of purchasing decisions also involve assessment of extrinsic quality attributes such as product origin or production standards, though these are not clearly defined. The unreliability of stated product origin is a significant obstacle in the development of local value chains and there is a need to resolve this in further research. Where product is deemed to be below the expected quality standard, redress is the suppliers' obligation and is most commonly remedied by replacement of product and sometimes by a reduced price if there is no product available to substitute.

7.1.3 Production and producer factors

This research found that while a majority of local producers have an interest in directly supplying the high-demand tourism sector, they are ill-equipped to meet specifications and quality assurance requirements. In addition, there is significant financial risk for farmers to invest in practices and technologies, and in many cases, in enough crop inputs. Entrenched slow payment practices create precarious smallholder cashflows.

The smallholder sector is unable to maintain consistent quality of delivered fresh product. Supply is a critical issue. Farm productivity, losses both in the field and postharvest, and delays due to cashflow problems render the smallholder sector unable to supply the volumes required. This study found that a key driver of increased sales of local produce for smallholders, is being *able* to supply the market with required volumes.

Further analysis, however, identifies that farm output is conditional on price and the main reason behind changes in farm output is decision-making based on market [un]certainty. The most nominated reasons for selecting a crop to grow are price stability and predictable yield – seeking to mitigate production and financial risk. Similarly, the opportunity for quick and reliable cash returns is the primary motivation for farmers to produce meat chickens.

Costs of production are a significant issue and opportunity for research and improvement. Less than 40% of pineapple growers and only 19% of carrot growers report a profit. More than half of the carrot growers who participated in this research indicate that they only break even, that is, their returns are equivalent to the costs of production. Growers generally maintain that the price of inputs, particularly pest and disease management and crop nutrition, are the key costs and need to be lower for the smallholder to be profitable.

The average crop loss attributed to pests and diseases is 25% and the management of pests and diseases is nominated as a particular input cost of concern, followed by soil health and crop nutrition. Many smallholders single out the increasing cost of agrochemicals as a critical issue. An interesting finding in our research is that smallholders recognise that a higher labour input can reduce crop losses. This highlights that key tasks are being missed or not being completed properly.

The broad range of crops currently grown in Bali denotes that there is a platform of local skills and a structure on which to build learning, though technical knowledge across most production and postharvest practices is insufficient. This study indicates that local smallholders are likely to benefit significantly from technical support to improve productivity and quality, and these skills need to be backed with better market awareness. To effectively target research and extension activities, a more informed picture and needs analysis are required.

Technical information is mostly accessed from peers in the same village. While this presents an opportunity for extension, it harbours a high risk of perpetuating poor practices and cultural inertia. Collectors are the second most reported source of information. Again, this suggests potentially good extension pathways are available for dissemination of research and innovation. Social media is used by 1 in 20 farmers as a learning tool. Overall, this research found that growers are not accessing independent

professional advice. Interestingly, carrot farmers identify technical assistance as a necessary adjunct to the local product supply regulations to improve competitiveness and the regulations on their own are inadequate.

Soil health and crop nutrition are the main areas of technical information sought by pineapple growers, whilst carrot farmers place a higher emphasis on pests and diseases which account for the most problems identified by buyers and lead to product rejection. However, local lead farmers indicate that poor soil structure and crop nutrition are the primary reason for low quality carrots.

Overall, the most significant risk for farmers is attributed to pest and disease, followed by growing conditions. Low uniformity is a major issue for most smallholders. Soil health, crop nutrition and water management are key factors. There is limited sorting and grading postharvest to manage the consequences.

Chicken farmers draw a direct link between their practices and their capacity to deliver better and more consistent quality. However, two key issues impact. The quality and health of day old chicks bears adversely on their subsequent outturn. The cost and reliable and timely delivery of feedstock is the second problem. While these farmers benefit from a controlled and predictable production and market cycle, they are also constrained by the contract arrangement and in-house supply of key inputs. Developing management practices is crucial to reducing mortality, improving the condition of birds and subsequent farm returns. Upstream practices also need to be addressed. Farmers view their costs of production as fixed and that they cannot influence the input supply elements. Furthermore, the technical information available to farmers is also provided by the contracting company.

Most producers are aware that improving husbandry is necessary to increase their farm productivity. However, for producers who do not have direct relationships with the market, price received is the sole focus and these smallholders particularly, do not associate other business components and practices with this outcome. Costs of production are not acknowledged as a key element that can be managed to offset price weakness.

The paucity of knowledge on production costs not only interacts with pricing and/or profitably, but it also undermines the purpose of the local supply regulations with respect to profit margins of smallholders. A key opportunity for further research is to gain a greater understanding of the design of policy that effectively serves the intention within the context of existing circumstances in the agriculture-tourism nexus. Economy of scale is identified by many producers as an advantage. Despite the argument for greater economies of scale, very few smallholders specialise in particular crops. This is due to market insecurity and the uncertainty farmers have, which makes diversification a key risk mitigation strategy. Land ownership was not found to impact on smallholder opportunity or viability. However, the area of land a farmer has (access to) and uses for a particular crop is seen as important.

Equipment and machinery are regarded as important for productivity. More than half of smallholders indicate that a lack of appropriate machinery or equipment affects their production capacity, while almost 20% of carrot growers cite the lack of cool storage as an issue.

Access to capital is identified as a constraint, and further investigation found that it is not necessarily investment capital that is needed, but simply operating capital. A quarter of producers describe lack of cashflow as a critical problem and a majority indicate that it is a serious constraint. Market confidence and price stability are leading grower concerns reflecting low margins and high economic risks for farmers. This was found to be exacerbated by cashflow issues, directly caused by the pervasive problem of slow or late payments from buyers. Payment terms are the biggest issue with respect to poor cashflows and the smallholder sector consider it a greater concern than a sudden fall in prices.

Our research identified that smallholders who are involved in cooperative activity do not have the same level of concerns with seasonal price variability or supply problems. This is on account of demand being more consistent as buyers forecast and communicate their requirements. Contracts are more common with groups. Approximately a third of pineapple growers cooperate with others to secure sufficient volumes and continuity of supply for their buyers. These cooperating farmers are differentiated from others by their awareness of their specific markets (buyers) and are more likely to have contracts. Many growers consider that improving collaboration is a key element necessary to improve the reliability of delivery quantity and quality.

For some crops, market actors are unwilling to offer contracts because farmers are unable to satisfy quality, supply or price requirements – confirming the issues of high costs of production, low productivity and poor output standards. Quality standards are the primary component of supply agreements. Product presentation and certification are pinpointed as key requirements for improved sales. From the producers' perspective, there is a lack of willingness on the part of traders, institutional consumers (hotel and food service) and modern retail to support local smallholders to grow and supply quality produce.

Smallholders recognise that reducing the costs of production and enabling profitability at lower price points represents opportunities for them, as does improving value characteristics. However, farmers were not able to readily describe what 'value' could be added or enhanced. The tourism sector could identify a range of values including quality standards, specifications, certifications, availability, labelling and packaging and other elements of product differentiation, but there is an expectation that this is 'done and delivered' by someone else. Our examination of these supply chains did not reveal consistent or concerted effort to communicate desired values to the producer sector. Participating farmers report an overall view of 'being outside the system'. However, following our interactions and discussions with the end-market buyers, a greater focus on collaborative partnerships was nominated as a way to improve access to local product.

7.1.4 Governor of Bali Regulation No. 99 / 2018

Our qualitative research activity included examination of the perceptions and challenges of the Governor of Bali Regulation No. 99 / 2018 which was enacted in 2018 as a means to support the local smallholder sector. The Bali provincial administration issued this regulation to mandate a minimum use of local agricultural products in hotels and food service. It also requires supermarkets to stock more local product. The stated intent of the regulation was to encourage businesses operating in Bali to 'develop the province of Bali, not just their respective business in Bali'.

As noted above, analysis of the creation of policy in the agriculture-tourism space could support policy makers and other value chain enablers to deliver improved impact of policy concepts and identify how effective policy can be shared and utilised more broadly.

The regulations require hotels and food service to ensure that at least 30% of product used is locally produced. For supermarkets, 60% of the agricultural product (30% for fishery products) offered instore needs to be sourced from local farmers and fishermen. Additionally, the price paid to farmers for local agricultural products must be at least 20% higher than the cost of production. Farms are also required to be registered and there is an expectation in the regulation for the end-market actors to work in partnership with farmers and small to medium local enterprises.

The tourism sector buyers reported full compliance with the requirement. Base products required by tourism and retail in order to meet the regulatory requirements are readily grown in Bali and are easily accessed so there are few technical or marketing barriers to satisfying the minimum requirements. All project participants revealed much higher proportions of local content in their purchasing. Notwithstanding these claims, additional research and focus on data capture and product traceability would provide a more complete assessment of the use of local Balinese product.

Three of the four supermarket groups engaged by the research team and almost a third of the supplier sector were found to be unaware or did not fully understand the local product supply regulations. While this prompted a forum for discussion and an opportunity for the research team to extend awareness of the regulations and increase sector knowledge, it highlighted the absence of official information and extension about the regulations and obligations. Farmers involved in organised groups or cooperatives were found to be generally aware of the rules, whilst independent farmers were not. Smallholders outside of Bali were least likely to know of the requirements. The lack of awareness in the supplier sector is a key issue as hotels and food service are commonly relying on these enterprises with regards to the origin of produce.

Although produce may generally be locally grown, farms are not necessarily registered and periodically, when local supplies are inadequate, produce is readily brought in from other provinces with no distinction. For example, for key products such as tomato, sweet pepper and lettuce, suppliers source a mix of local and other domestic product to ensure continuity of supply and to manage changes in price. In the case of tomato, produce sourced from Java is typically bought to cover local production gaps as well as to offset high local prices. Prices fluctuate sharply during the year making business decisions for suppliers challenging.

Our research revealed that in buying fruit, vegetables, fresh herbs, meat and eggs, the majority (70%) of tourism sector buyers do not differentiate between local Balinese and other domestic supply, as the quality is considered to be equivalent. A deliberate focus on value and value creation for local producers is an important gap for further research.

In general, project participants are supportive of the regulations though some elements of the policy and overall implementation need to be clarified and improved, particularly in terms of awareness, implementation and enforcement. A greater understanding of the socioeconomic and technical constraints and value relationships is needed to properly implement the requirements. This research also shows that traceability, and lack there-of, is a critical shortcoming in the regulatory system.

Value chain actors are uncertain that the benefits to local producers are adequate compensation for any additional requirements. Despite this, research participants believe that these regulations beneficially support local production to the extent that buyers are obligated to source local, but the overall efficacy is questioned as smallholders are seen to not have sufficient capacity to meet, or even increase supply. Our research found that all sectors see the regulation as providing an advantage to local growers who would otherwise struggle to build purchaser connections. There is a risk that lower efficiencies and higher costs of production are being hidden, which would normally be mitigated through competitive market forces.

Only around half of the participating farmers claim to be knowledgeable of their cost of production. The challenges and obligations of paying 20% above the cost of production are further muddied by the buyers paying differently for separate produce standards and specifications.

7.1.5 Research learnings

The strategy to obtain bulk purchasing data as a means to providing an overview for the research worked well. The different format of data resulting from various business processes and software created a need for additional cleaning and proofing once received but this flexibility meant that the participants were not required to commit their resources to fit their data to a mould. While there were some access challenges resulting from COVID-19 impacts, once databases were obtained, the research team were able to form a useful impression of the sector.

While it did not present a problem in this study, there is some indication that some buyers may consider a product produced in another province and brought into Bali to be ‘imported’. Whilst for others, understanding of the terms ‘local’ and ‘domestic’ are also

mixed. With the absence of traceability, product origin cannot be relied upon which potentially undermines provincial agricultural development and policy. The origin, traceability and differentiation of imported, domestic and local provincial products is an element that needs further research in the context of developing local value chains.

7.1.6 Stakeholders

This project contacted and interacted with a range of stakeholders. The Research and Innovation Agency (BARI) provided a letter of support and coupled with a Governor Research Permit, all participants were formally contacted by letter and invited to participate. This was then followed with a personal approach. Stakeholders were keen to participate, and the process worked well and enabled the project team to work individually with participants to manage COVID-19 implications with respect to impacts on specific organisations and individuals.

There is significant restructuring of research capacity in Indonesia at this time with respect to the National Research and Innovation Agency (BRIN), however it is clear that this organisation will be an important partner going forward and the Assessment Institute for Agricultural Technology (BPTP) are a strong connection to smallholders and a good technical resource. The University of Udayana was a key partner and provided broad technical and research expertise, and enabled the research team to connect with all sectors through wide ranging personal and professional relationships with community organisations, farmer groups and government. Government departments and agencies were supportive of our research activities and there is a clear interest in further research and development programs for the province. Farmer groups and leading farmers are open and keen to develop their sectors. The Indonesian Hotel and Restaurant Association (IHRA) is a willing and professional group with good relations with members and the tourism industry as a whole, as is the Indonesia Tourism Development Corporation. The National Development Planning Agency (BAPPENAS) is an important stakeholder in developing synergistic agriculture and tourism sectors.

This SRA found that there is strong local and broad-based support for research and development ensuring a sound base for future projects.

7.1.7 Project Impacts

No specific scientific impacts have resulted from this small research activity and were not the intent, however this project has identified an innovative approach to agribusiness development. Value network analysis (VNA) (Allee 2003, 2008), applied by Peppard and Rylander (2006) as a method to analyse business ecosystems is not generally practiced in agricultural research and development. A literature search only determined one published application of this technique in agriculture to date (Dentoni et al 2020), as well as its use in a recent ACIAR project (Bonney et al 2019). Future application of VNA as a research tool, together with a focus on value creation as the driver for capacity and capability building, are anticipated to expand as an effective research-for-development methodology and subsequently, drive scientific impacts into the future. The use of VNA has been included in the research and development framework drafted in this project.

Our research activities have also contributed to an increased awareness of the business and regulatory environment, specifically the Governor of Bali Regulation No. 99 / 2018. While a significant number of participants who interacted with this SRA were not aware or particularly familiar with the new regulations at the time, following the discussion groups and interviews conducted by our research team, supplier and supermarket actors have expressed an undertaking to follow up on the regulatory requirements.

On a more individual level, key informant interview training and guidance was conducted online for the team prior to the research activities. An in-country team preparation meeting was held to prepare for the qualitative data collection activities. Ms Massrianing was assigned a key role and this project has contributed to expanding her knowledge and

skills in market awareness and intelligence, as well as the application of this research in determining value chain opportunities.

A further impact of this research activity has been the inclusion of Prof Made Utama as a member of the expert advisory group for the Governor of Bali which is involved in efforts to streamline work with Departments of Agriculture and Industry, BARI (Bali Province) and other organisations. This is providing a high level forum to consider our research findings and gain prominence in development discussions.

7.1.8 COVID-19

The research activity was conducted in two stages to provide a streamlined process with stepped timelines. This phased approach was used to better manage anticipated and dynamic restrictions related to COVID-19 and to allow for unknown short term impacts while minimising potential cumulative consequences. Our strategy worked well. The impacts of COVID-19 manifested primarily in marginally extended time frames for engaging with some participants and collating data.

While planning was undertaken to mitigate travel challenges for the team and utilise remote collection for some participant feedback, a secondary impact resulted from the complete closure of significant numbers of tourism enterprises due to the lower visitor numbers. Although communication and connection with business operators proceeded well, temporary closure of premises meant that staff were not onsite, and records were not readily available. This created some delays in data collection and overall, a smaller data pool was accessible during the research timeframe than originally anticipated. However, the data acquired from the participating organisations was comprehensive and relatively homogenous, providing a good confidence within the scope of this research.

An in-country team member contracted COVID-19 and was isolated initially in hospital and then at home for two weeks. This forced a short delay in activities at the time. An emergency enforced stay-at-home lockdown issued for both Java and Bali in mid-2021, resulted in a further month-long postponement of activities. A second in-country team member contracted COVID-19 and was isolating at home during the provincial lockdown period, creating no additional issues. Both team members recovered fully.

Overall, while restrictions prevented international travel until the last quarter of the project, our domestic travel needs were not significantly hindered.

8 Conclusions and recommendations

8.1 Conclusions

This SRA provided a rapid scoping of the Balinese smallholder-tourism sector dynamic. Our research findings affirm that there is disconnect between the commercial tourism consumers and the farm goods producers. This manifests in poor communication, weak information flows and inefficiencies in the supply chains. Despite this, there is strong demand from the tourism buyers for local produce, and smallholders want to supply the sector.

A key conclusion from this study is that pricing signals must be improved. Market uncertainty is a primary restraint on farm outturn. At the moment there is insufficient incentive and information for smallholders to invest in supplying higher quality output. The three elements – produce quality, availability and continuity – are central to local smallholders' opportunity to grow access to the commercial tourism market. The mismatch between capacity and capability of local producers and the requirements of the tourism and modern retail sectors is a substantial development opportunity for local agribusiness value chains but is currently a considerable choke point. Clear product specifications and agreements between producers and buyers are necessary. Instituting product specifications and the adoption of practices and technologies aimed at increased farm enterprise productivity and better postharvest handling can support a reduction in costs of goods sold, more consistently fulfil product specifications and address waste.

A further conclusion of this research activity is that weak farm cashflows are a serious impediment to smallholder viability and capacity growth. Payment terms and low margins are the primary underlying problems. A system of payment on supply or terms of no more than fourteen days is needed. A better handle on costs of production/goods sold and farm productivity are crucial.

Rising production and lifestyle costs will increasingly encourage a departure from agriculture if the costs of production and low farm margins are not addressed, even though there are clear market opportunities for local agricultural produce. High labour inputs and limited supply is adversely impacting on farm productivity. Improved practices, technologies and greater financial security are needed to offset this labour decline.

There is substantial scope to improve the development and adoption of best management practices for local smallholders. Business skills, production and postharvest practices and market awareness are all critical areas of need. Record keeping needs to be improved, made more consistent and established as standard practice. Research and extension programs will need to ensure best management practices are central to smallholder learning.

We also conclude that extended production seasons, pest and disease management and business development training are matters of high importance. Growers are seeking technical assistance and training in production and marketing – but have limited access. Technical and business skills are necessary to address physical and financial challenges of reliably producing quality produce.

Another conclusion of this research is that both smallholders and tourism enterprises in Bali are not realising their skills and capacity for creating new value. The capacity of these supply chains to create value is unfulfilled. Smallholders, producer groups, commercial tourism consumers, communities and supply chain enablers need to focus on the conversion of resources to value.

We ascertain that product differentiation needs to be a key priority for the local industry. Presently, local product is not readily distinguished from product coming from elsewhere in Indonesia and is vulnerable to competition. Further research with regards to the origin, traceability and opportunities for differentiation of imported, domestic and local provincial products in the context of developing local value chains is needed.

Local smallholder ownership of postharvest handling infrastructure is expected to be a high gain strategy for creating value, improving product quality, enhancing communication and increasing smallholder revenues. Additionally, we determine that business partnerships will heighten the capacity building in both sectors. Collaborations should be based on shared value creation and facilitated to ensure mutual benefit. To this end, analysis and understanding of the holistic value networks of stakeholders in the agribusiness-tourism space is an important area of study that would deliver practical interventions in local value chains and support quality policy creation and implementation.

Finally, we conclude from this research that the policy to support local smallholders through regulations has short to medium term merit in promoting the development of local agricultural production, however technical assistance and enforcement are vital factors which are not present. The regulations should not be relied upon in the longer term as they will distort market forces and will harm the local industry over time.

8.2 Recommendations

1. Supply agreements need to be developed as a communication and capacity building tool, support product differentiation and as a framework for research and innovation in production and supply chain practices.

2. Research and development programs need to embrace foundation practice improvements, be cognisant of local terminology in data capture and promote technical upskilling of producers and suppliers. Implementation of record keeping is necessary to support baseline management of farm enterprises, quality assurance and traceability of local product.

3. Holistic examination of the networks and relationships between supply chain participants, as well as policy makers and other enablers, is needed and to be combined with capacity development to empower smallholders and commercial tourism consumers to determine collaborative opportunities that identify and create value.

4. Development of high-density tourism regions or hubs should include a needs assessment, policy review and improvement of local agricultural capacity to form a complementary relationship between local producers, the tourism sector, communities and regulators.

5. Analysis of policy formation in the agriculture-tourism space should be conducted to support policy makers and other value chain enablers in delivering improved impact of policy concepts and to identify how effective policy can be shared and utilised more broadly.

6. The design and delivery of research and innovation needs to be participatory. Research and extension partners should be supported and trained to prioritise and design trials and evaluate interventions in collaboration with end user networks to sustain institutional knowledge and enable stakeholders to develop skills and own the learning.

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10 Appendixes

10.1 Appendix 1: Example Questionnaire

QUESTIONNAIRE FOR PRODUCERS

SMALL RESEARCH AND DEVELOPMENT ACTIVITY

AGRICULTURE FOR TOURISM

Respondent's Name :

Farmers Group (if any) :

Address :

Regency :

Telephone :

Enumerator's name : .....

Date of interview : .....

RESEARCH COLLABORATION BETWEEN

PRIMARY PRINCIPLES PTY LTD, ACIAR, UDAYANA UNIVERSITY, PHRI BALI, BPPA

2021

Part A. GENERAL INFORMATION AND CROPS/PRODUCTS

1) Do you produce any (a) pineapple (b) carrot (c) chicken meat

Why / why not?

2) What products do you grow/produce? (List all)

3) How many other farmers produce the same crops as you? Estimate: In your local area? _____ In other areas in Indonesia?

4) What size supplier are you compared to other farmers? (a) small (b) medium (c) large

5) What is the size / land area of this farm? _____ m2

6) Does the size/land area of your farm impact on your business? How?

7) How many people work/earn income from this farm? _____Men _____Women

8) Does anyone in this household work/earn income off the farm? Who? _____

a) Optional - What is approximate annual income? from the farm_____ from off-farm_____

9) Do you know the yield of your products? (a) Yes, for all products (b) some products (c) no

10) Do your yields change much from year to year? Yes / no Why?

11) Are you increasing your yields? Yes / no

a) If yes,
how?

12) Do you know the amount of loss in yield of your products? (a) Yes, for all products (b) some products (c) no

13) How much? What is the cause?

14) Are you decreasing your amount of loss in yield? Yes / no

a) If yes,
how

15) Do you know the actual cost of production of your products (per unit)? (a) Yes, for all products (b) some products (c) no

16) Are you decreasing your actual cost of production of your products (per unit)? Yes / no

a) If yes, how?

17) For the main products, what is your average **yield**? What is your **cost of production**? What **volume** do you sell each month? What **price**? Put in table below

Product			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
name	Yield (per m2)	kg												
	Cost of production (per unit)	Rp												
	Amount of product sold	kg												
	Price (per unit)	Rp												
name	Yield (per m2)	kg												

	Cost of production (per unit)	Rp												
	Amount of product sold	kg												
	Price (per unit)	Rp												
name	Yield (per m2)	kg												
	Cost of production (per unit)	Rp												
	Amount of product sold	kg												
	Price (per unit)	Rp												
name	Yield (per m2)	kg												
	Cost of production (per unit)	Rp												
	Amount of product sold	kg												
	Price (per unit)	Rp												
name	Yield (per m2)	kg												
	Cost of production (per unit)	Rp												
	Amount of product sold	kg												
	Price (per unit)	Rp												
name	Yield (per m2)	kg												

	Cost of production (per unit)	Rp												
	Amount of product sold	kg												
	Price (per unit)	Rp												
name	Yield (per m2)	kg												
	Cost of production (per unit)	Rp												
	Amount of product sold	kg												
	Price (per unit)	Rp												

Part B. MARKETING AND PRODUCT QUALITY

1) How many buyers do you sell to ?

Buyer type	**How many?**	**What % of your product?**	**What average price?**	**Does price change during the year? Yes/no**	**Highest month?**	**Lowest month?**	**Where is the end consumer? Location?**
Direct to consumers – from home/field/farm							
Direct to consumers – at local market/store							
HOREKA supplier							
Collectors							
Co-operative/market groups							
Other farmers							
Street vendors							
Retailers							
Specialty stores							
Supermarkets							
Restaurants							
Hotels							

Processors							
Exporters							

2) Do you know all the desired specifications of product (for example size, colour, blemish, variety, packaging etc…) your buyers want? Yes / no

3) Do you have written specifications provided by the buyer for each product you sell? Yes / no Photograph/attach a copy

4) Do you get information about the good and bad things about your product, from the collector/supplier/buyer? What have you been told?

5) What quality issues do you have with your product?

6) What percentage of your product is damaged and cannot be sold?

7) What quality issues have buyers told you about your product?

8) What percentage of products that you have sold are rejected by buyers?

(a) direct consumers (households) _____% What reason? _____ (b) market traders _____% What reason?

(c) HOREKA suppliers _____% What reason? _____ (d) supermarkets _____% What reason?

(e) other _____% What reason?

9) What types of quality aspects do buyers expect or ask for?

(a) Freshness (b) Size (c) Colour (d) Consistency (e) Continuity of supply

(f) Packaging (g) Label/origin (h) Certification (i) Amount of blemish/damage (j) other

10) Do you have certification (for example, HACCP, organic, GAP etc) for any of your products? What?

11) Have any of your buyers asked you to have certifications? Yes / no

12) If yes, what?

13) Do you process or treat any products before you sell them? What do you do for what product? Describe in table

Action	**Which crops / products? What do you do? Describe**
Wash / clean	
Grade / sort	
Pack	
Label / brand	
Certification	(a) HACCP (b) Organic (c) GAP (d) if other, what?
None	
Other	
For animals:	

Slaughter	
Clean	
Pack	
Label / brand	
Certification	(a)HALAL (b) HACCP (c) Organic (d) GAP (e) if other, what?
None (sell live)	
Other	

14) Have buyers asked you to process or treat any products before you sell them? What?

Part C. CONTRACTS AND BUSINESS TERMS

1) How do you decide what to produce?

2) Do you grow products because a buyer has asked /contracted you ? Yes / no

3) If yes, what type of buyer (eg hotel) and what did they want?

4) Do you collaborate with other farmers? How many? Why? (eg, to increase supply or extend period of availability)?

5) What do you think would increase demand for your product? For example brand, packaging, certification, price…

6) Do you have supply contracts for any products? Yes / no

7) If yes, which products? (a) all (b)

8) What are the main obligations and expectations of these agreements ?

9) How long (time) is your contract for ? (a) per month (b) per season (c) other

10) Are you satisfied with these arrangements? Yes / no

11) How could it be better?

12) How do you get paid? What payments terms do you have?

(a) Directly from buyer at time of purchase

(b) Down payment (%) _____ then the remainder ? (a) 1 week (b) 2 weeks (c) 1 month (d) other

(c) Credit – how long until you receive payment? (a) 1 week (b) 2 weeks (c) 1 month (d) other

13) Are you satisfied with these agreements? Yes / no

14) How could your payment terms be better?

15) Are you happy with price you get? (a) Yes, all the time (b) Yes, most of the time (c) Some of the time (d) no

16) Do you make a profit? For example, is the price you get for a unit of product, more than the cost of producing the product? By how much?

(a) Same: price =cost (b) up to 5% profit (c) between 5 -10% profit (d) between 10 - 20% profit (e) more than 20% profit (f) make a loss

17) What is your most profitable crop?

18) What are the main **risks** to your business/income/farm?

a) On your farm?

b) Postharvest?

c) In the marketplace?

19) What are the main **problems/challenges** for you?

a) On your farm?

b) Postharvest?

c) In the marketplace?

20) How do you think Bali farmers can do better business with tourism industry?

Part D. CAPACITIES AND CONSTRAINTS

1) Do you have any problems in supplying enough product? What? When? Why?

2) Do you sell directly to a buyer or does a third party sell your product for you? _____ If using an agent, what commission or fee is there?

3) In normal times (before covid) Is the market predictable? Yes / no

4) In your farm/business, what **constraints** do you experience? (What makes it hard or business slow for you?)

5) In your farm/business, what **barriers** do you experience? (What stops you?)

6) In your farm/business, what **solutions** do you think of? (What would help you?) List as many as you can:

7) Do you keep farm records of all inputs (what, when, amount and price), pests and diseases (what, when and action), and yield? Yes/ no Photograph/attach a copy

8) Do you use chemicals for weed, pest or disease control? What, for what and when? Write in the table

What do you use?	For what? (pest, disease, weed)	When (month)

For focus value chains: A) Pineapple B) Carrot C) Chicken meat

Activities in the supply chain: Mark the month in table if you do these activities

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Land preparation												
Seeding/Planting												
Fertiliser/manure												
Chemicals												
Irrigation												
Pruning/training thinning												
Weed management												
Pest and Disease management												
Harvest/slaughter												
Intercrop/fallow												
Postharvest Grading/packing												
Postharvest Pest and disease mgt												
Storage												

Transportation												
Certification												
Regulation												
Selling												
Processing												

Part E. INFRASTRUCTURE AND FACILITIES

1) Do you have any problems with access or reliability of infrastructure or facilities? Eg roads, transport, power/energy, water, internet, [cool] storage?

What?

2) Do you have any problems with access or reliability of services or labour? Eg workers, contractors, input supplies, technical advice, regulators?

What?

3) Do you have any problems with reliable yields? Yes / no What and why?

4) Do you have any problems with reliable product quality? Yes / no What?

5) What would make things better or fix a problem for your business/farm?

6) Where/who do you get technical information from?

6a) How do you get it? 6b) How could it be better?

7) Where/who do you get market information from?

7a) How do you get it? 7b) How could it be better?

8) Are there services or assistance you would like to help your farm/business? Yes / no

(a) Faster payment or shorter payment terms
(b) Group /cooperative or contract grading and packing

(c) Group /cooperative or contract marketing
(d) Advice and training (a) Technical (production) (b) Business (c) Marketing and product development
(e) New products / varieties / breeds What ?
(f) Infrastructure – (a) power/energy (b) water (c) transport (d) communications (e) cold storage (f) other

(g) Other

8) What would make the supply chain better?

9) What would make your farm better?

10) What issues are impacting on your product or farm business (or your function/activity in supply chain) and how significant are these factors?

Issue	Rank importance	Comment
Input (eg fertiliser, chemicals, seeds) availability	M	
Input (eg fertiliser, chemicals, seeds) costs or quality	H	
Labour availability	M	
Labour cost	M	
Energy/fuel		Is supply reliable?
Production equipment, mechanisation	M	

Postharvest and processing equipment, mechanisation		
Cool storage		
Transport		
Processing services		
Weather information and forecasting		Where do you get information from?
Changing Climate	M-H	
Environment (eg water, soil…)		
Certification training/audit		
Pests or diseases advice, information & training	H	Where do you get information from?
Pests or diseases control	H	
Production and advice, information & training	H	
Business advice, information & training	H	
Market / price information		Where do you get information from?
Prices received	H	
Payment terms	H	
Market facilities / structures		
Access to Credit / Finance / Insurance	M-H	

Regulations	M-H	
other		

Part F. GOVENOR OF BALI REGULATION NO. 99/2018

1) Starting in 2018, the Bali Provincial Government regulates that HOREKA (hotels, restaurants, catering) purchase local Balinese agricultural products (fruits, vegetables, herbs, meat, eggs) at least 30%. Modern markets are also required to sell local agricultural products at least 30%. Are you aware of this Rule? Yes / no

2) If yes, what is your opinion about this regulation?

3) What impact does the regulation have on the prices of local Balinese agricultural products?

4) What is the impact of the regulation on the prices of domestic agricultural products (from outside Bali)?

5) Can local Balinese agricultural products compete with imported agricultural products if the Bali Provincial Government without these regulations? Why / why not?

6) Considering similar products <u>from within Indonesia</u> (outside Bali):

(a) in terms of **quality** (for the same commodity), can local Balinese agricultural products compete? Why / why not?

(b) in terms of **price** (for the same commodity), can local Balinese agricultural products compete? Why / why not?

(c) what do you think would help Balinese products compete better with other provinces?

7. Considering similar products that are imported (outside Indonesia):

(a) in terms of **quality** (for the same commodity), can local Balinese agricultural products compete? Why / why not?

(b) in terms of **price** (for the same commodity), can local Balinese agricultural products compete? Why / why not?

(c) what do you think would help Balinese products compete better with imported product?

10.2 Appendix 2: Report: Agriculture for Tourism: Local market development opportunities in Bali agriculture – market engagement assessment

2021

Agriculture for Tourism: Local market development opportunities in Bali agriculture

Market engagement assessment

Primary Principles and Udayana University

Primary Principles Pty Ltd

Image: 3695068348_5a7c483d93.jpg (staticflickr.com)

Assessment of market development opportunities for agribusiness in Bali tourism

This report is prepared as a component of the Australian Centre for International Agricultural Research project AGB/2020/121: Agriculture for Tourism – Research to advance a synergistic development pathway for local agribusiness value chains and tourism in Bali, with application to similar high intensity regional tourism hubs throughout Indonesia.

https://www.aciar.gov.au/project/agb-2020-121

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Contents

Summary

Examination of market drivers and the expectations held by the tourism sector buyers have defined key elements that could be exploited to better engage local smallholders with the Balinese tourism sector.

This agribusiness market opportunities analysis has revealed a definite demand within the Bali tourism sector for local fresh product, with a cautionary note on quality and the reliability of supply. There are also some key insights in terms of drivers that can and could encourage agribusiness development and importantly, promote better market engagement.

Looking for key agricultural products, this market assessment provides a stocktake of the relative demand, particularly products that are locally produced, on a preCOVID-19 basis. Ultimately, this can provide insights into areas where research can develop improved opportunities as the sectors enter a recovery period and how high-intensity tourism hubs can be better connected with local and regional agricultural producers.

End-market demand from the Bali tourism sector for local agricultural products is strong. A preference for Balinese produce permeates the sector and this has significant scope for improvement. The underlying support for the purchase of local product requires product differentiation as a crucial intervention to build commitment. Buyers report they are purchasing local product, though there is potentially a mixed understanding of terminology with respect to 'local' and 'domestic'. There is no differentiation between local Balinese product and other domestic sources, and no traceability. Brand identity, packaging and traceability are important considerations. Consistent product specifications are judged a priority at all value chain segments, though are currently lacking. From the market end perspective, consistency in quality and reliability of supply are the prevalent issues.

Three value chains (carrot, pineapple and chicken meat) have been selected through this study as proxies for further evaluation of local agribusiness prospects by examining the local production-side challenges.

There are some important market drivers and links with consumer expectation in the local Bali tourism market that have been isolated as influences on local Balinese smallholders, as well as other domestic agricultural producers. Effective research and development of these key elements can offer levers for improved market engagement.

The application and enhancement of supplier agreements as a value chain engagement and communication tool is seen as a priority. Locally identifiable product through brand development and certification are particular consumer-based mechanisms that would be important market drivers for local Balinese produce. To support these market development opportunities, a rigorous implementation of farm input and business management records is critical. Integration with the intent and implementation of local content regulations will strengthen these actions. A supplier agreement approach can combine production and postharvest technical solutions with investment incentives, research and buyer expectations and support the growth of inclusive agribusiness relationships.

Local smallholders are likely to benefit from technical assistance to improve productivity and quality, but a more informed picture is required. A dedicated focus on value creation is recommended to realise the full potential for both smallholders and the high-demand tourism sector.

It is recommended that future inquiry consider a value network approach to uncover prospects for more meaningful collaborations and partnerships between businesses that could benefit the whole value chain. Analysis of the holistic value networks of all stakeholders in the agribusiness-tourism space is an important area of study that would deliver practical interventions in local value chains and support quality policy creation and implementation.

Local smallholder ownership of postharvest handling infrastructure is expected to be a high gain strategy for creating value, improving product quality, enhancing communication and increasing smallholder revenues. Additionally, we determine that business partnerships will heighten the capacity building in both sectors. Collaborations should be based on shared value creation and facilitated to ensure mutual benefit.

Introduction

This assessment is part of an appraisal of the opportunities for research to develop the capacity and capability of local agriculture to meet market expectations of the high-intensity tourism sector in Indonesia, using the province of Bali as the research model.

The objective of this study is to improve understanding of how the dynamic market demands of agricultural products in the province of Bali and selected surrounding provinces can be best used. In particular, we want to increase the available information on supply-demand patterns and the changing product value arguments that are being driven by tourism. A medium-term outlook based on preCOVID-19 market assessments, focussed on the 2019 calendar year, is being used.

This research will also form the basis to build capacity, methods and systems necessary for the sustainable development of interdependent agribusiness value chains, tourism, modern retail and crucial infrastructure in Indonesia. Initially this is with respect to Bali and ultimately will look to other major tourism destinations such as the '10 new Balis' including Borobudur, Mandalika and Lake Toba (Figure 1).

Figure 1: '10 New Balis'
(Original image source: https://invest-islands.com/ten-new-bali-project)

The analysis is based on survey responses, purchasing data and guided discussions and provides a stocktake assessment of the relative demand for agricultural products by the local tourism sector. It also defines key elements that can support better market engagement for smallholders by examining the prominent market drivers and expectation of buyers in this high-intensity tourism sector.

Background

Indonesia is one of the world's most populous countries with over 270 million people[1]. Consistent with many countries across the Asian region, Indonesia's food security and sovereignty are key objectives in social and economic development.

Tourism is a major and critical economic driver for the country and demands a large share of local agricultural output. Prior to COVID-19, Bali hosted approximately 16 million visitors annually[2,3] – four times the resident population. Australians composed just under 20% of this international tourism market[4,5]. The sector expects high-quality standards and

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[1] Central Bureau of Statistics Census 2020. Statistics Indonesia (bps.go.id)
[2] In 2019, the number of tourist arrivals to Bali rose by 1.88 percent to 16.11 million, slightly up from 15.81 million in 2018. https://tradingeconomics.com/indonesia/tourist-arrivals
[3] An estimated 9.75 million domestic visitors and almost 6 million international visitors accounting for some 15.7 million visitors in 2018. https://www.balidiscovery.com/news/strong-start-to-2019-for-foreign-tourist-arrivals-to-bali
[4] https://www.balihotelsassociation.com/media-centre/stats/
[5] Reported by Wibawa, T (2020) Bali's tourism-dependent economy is 'collapsing' due to coronavirus travel bans. https://mobile.abc.net.au/news/2020-04-05/bali-tourism-dependent-economy-collapsing-coronavirus/12112348?pfmredir=sm. This is up from 1.2m in 2018

has unrealised demand for better product specifications, certifications, reliability of supply, consistent availability, lower price points and greater environmental responsibility.

The province of Bali was selected for this research as Bali has a strong agrarian culture and is also a major tourism location. There is a wide range of crops and types of food due to the numerous cultures and tastes of visitors. Bali has an established role in the portrayal of Indonesia as both a domestic and international travel destination and tourism has rapidly become a prominent sector of the region's economy.

Tourism has contributed a significant expansion of the economy and associated growing pains. It accounts for approximately half of the local economy and one third of employment[6] while agriculture makes up approximately one fifth of the employment on the island; potentially up to a third. In the wake of COVID-19, the agriculture sector also absorbed many of the workers displaced from tourism and other industries[7].

The relationship between these two sectors is often described as agriculture versus tourism and COVID-19 has reignited this concept of opposing forces, though there is a counter view that agriculture and tourism are mutually supportive[8]. These important parts of the economy are interdependent and need to be grown in harmony. A one percent growth in tourism in Bali has been calculated to contribute a 0.59% growth in agriculture[9]. However, tourism in Bali is often reported to have negative impacts, for example an unsustainable demand for freshwater resources, conversion of significant areas of agricultural land to other uses, increasing urbanisation and tourism infrastructure, increased traffic congestion and extreme volumes of waste and landfill[10, 11]. While creating opportunities for the local community, tourism has increased competition for land and infrastructure, labour and natural resources.

The growth of tourism has been found to improve labour productivity in agriculture[9], essentially because tourism draws workers from farms, whilst the agricultural output increases to meet expanding demand. There is an obvious limit to this improvement. Although beneficial in the short term, this experience highlights the importance of the agriculture sector in attracting and retaining younger participants in order to maintain a working age population, upskilling and investing in efficiency.

In examining the elements of destination competitiveness, Chin et al (2015) identify that competition within the tourism industry also enhances product quality and promotes innovation[11], both of which support capacity building and market opportunities in agriculture. For this to occur, agriculture needs to develop better value creation.

Bali Governor Regulation No. 99 / 2018

The Bali provincial administration issued a regulation in 2018 that mandates the use of local agricultural products in hotels and food service. It also requires supermarkets to stock more local product. The stated intent of the regulation was to encourage businesses operating in Bali to develop the province of Bali, not just their respective business in Bali.

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[6] *Bank of Indonesia, Bali's economy 2017:Q3 overview, Online: https://www.retalkasia.com/news/2017/12/06/balis-economy-2017-q3-overview/1512555803*

[7] *M Setyawan Santosa, Deputy Director of Representative Office of Bank of Indonesia, Bali Province, in 'Back (not switching) to agriculture', BaliPost (2021)*

[8] Professor I Gede Pitana, former Deputy of the Ministry of Tourism and Creative Economy in webinar 'Operational strategies to develop the agriculture and tourism sectors in the era of 'new normal', June 2020.

[9] Artini, N. W. P., Antara, M., Susrusa, I. K. B., Ambarawati, I. G. A. A. (2020) Impact of Tourism on development in Bali province, Intl Journal of Life Sciences, Vol 4(2): https://doi.org/10.29332/ijls.v4n2.429

[10] *Philip, B (2015) 'How mass tourism is destroying Bali and its culture', Le Monde, SBS News.*

[11] Chin, W.L, Haddock-Fraser, J. and Hampton, M.P (2015) Destination competitiveness: evidence from Bali, *Current Issues in Tourism*. https://doi.org/10.1080/13683500.2015.1111315

For hotels and food service, at least 30% of product used must be locally produced. For supermarkets, 60% of the agricultural product (30% for fishery products) offered instore needs to be sourced from local farmers and fishermen.

Additionally, the price paid to farmers for local agricultural products must be at least 20% higher than the cost of production. Transactions should be in cash or through the Provincially-owned company, Perusda Bali, though this article is yet to be applied.

There is also a requirement in the regulation for these end-market actors to work in partnership with farmers and small to medium local enterprises. The Governor identified that there is a need 'to balance the structures of tourism and agriculture'.

Objective and scope of this assessment

The overall aim of this research is to understand the disrupters and dynamics of agricultural production and its capacity in Indonesia within the context of tourism and modern retail sectors being the dominant and highly influential markets for local smallholders.

The specific objective of this activity is to review agricultural products in Bali, identify potential for market engagement that can be strongly linked to the local tourism sector and provide a development prospect that can be further examined to enhance smallholder opportunity.

The tourism sector is a high-demand, high-intensity market and stakeholders pursue multiple factors in consideration of product value. The production requirements and product specifications needed for the supply of local, safe agricultural products for food service and tourism are imperative, and while value adding is an important strategy for local farmers, the underlying value elements are crucial for ensuring effective use of local smallholder resources and creating sustainable and viable value chains.

The primary geographic scope of this assessment is the province of Bali, in Indonesia. Nominated agricultural value chains involving neighbouring provinces will also be assessed in the second phase to provide further context in understanding supply resilience and regional opportunities.

The critical challenges and strategic leverage points that can address sector capacity and local agricultural supply will be determined from this research and inform the development of a strategic approach to research for development of the agriculture-tourism nexus in Indonesia.

Methodology

The methodology used draws on rapid market assessment and value chain analysis, focussing on the high-intensity tourism end-market in Bali for this first phase.

Qualitative and quantitative data was collected, with local agriproduct demand described with respect to season, volume, value and desired specifications. The research activity involved survey of end-market actors, a compilation of purchasing/sales data for 2019 from key informants, supplier focus group discussions, modern retailer interviews and facilitated questionnaire and data collation and analysis. A stocktake of demand for agricultural products, current sources, key value criteria and issues was then generated.

Stakeholders were identified by in-country partners with assistance through the Bali Professional Purchasers Association and the Hotel and Restaurant Association of Indonesia. A mix of key informant interviews and surveys, coupled with guided discussions was used to collect data. Participating enterprises also provided bulk purchasing data for agricultural products. Data for the 2019 calendar year was used to provide a preCOVID-19 basis for demand as this research is not about the impacts of the pandemic but understanding where the opportunities for development of improved agribusiness value chains lie in connecting with high-intensity tourism hubs. This can also provide insight into recovery expectations of this sector in the medium term.

Selected end-market participants were contacted by letter with a personal follow-up and provided with a background of the research and the survey. The survey was modified for each value chain actor cohort.

Survey of stakeholders and purchasing data

The raw data request focussed on 2019 monthly purchasing information for all available agricultural products based on product category, purchase volume, purchase price and also the origin or supplier. Participants were asked about quality as well as preferences and differences with respect to local and imported product. Informants' views on the Governor's Regulation No. 99/2018 were sought to identify what challenges are encountered.

Supplier information and transaction elements were also included as well as whether, and what type of contracts were used. A quality assessment and satisfaction with standards as well as other value arguments were canvassed.

Focus group discussions and interviews

Suppliers and collectors who service the end-market were identified from the surveyed end-market stakeholders and invited to participate in guided discussions and the survey. Additionally, representatives of the modern retail chains in Bali, local Department of Agriculture and Food Security and Department of Trade and Industry participated in group and individual discussions. The guided discussions were facilitated by the Institute of Research and Innovation, Bali Province.

COVID-19 implications

The repercussions of COVID-19 impacted data collection. While planning was undertaken to mitigate travel challenges for the team and utilise remote collection for some participant feedback, a secondary effect has resulted from the complete closure of significant numbers of tourism enterprises due to the lower visitor numbers. Although communication and connection with business operators proceeded well, temporary closure of premises has meant that staff are not onsite and records cannot be readily accessed. The overall impact has been that smaller data pool was accessible during the research timeframe, than originally anticipated.

Although COVID-19 constrained access to bulk purchasing data during the study period, the data acquired from the participating organisations was relatively homogenous, providing a good confidence within the scope of this research.

Findings

Purchasing data insights

Local smallholders supply a broad range of products. Approximately 70 fresh vegetables and herbs and 40 fruits are used by the tourism sector in the province of Bali. Most buyers purchase some 34 types of local vegetable and herb. For fruit, a typical buyer purchases 22 types. Similarly, for meat and seafood, there are 20 types purchased.

The top purchased agricultural products by value are consistent across the sector, although as would be expected, the individual relative value of purchases vary between enterprises.

There is some inconsistency between terminology of 'imported', 'domestic' and 'local' and there is likelihood that buyers are not always, or fully, aware of product origins. Further research with regards to the origin, traceability and opportunities for differentiation of imported, domestic and local provincial products in the context of developing local value chains is needed.

Fruit

The average share of annual spend on the top 10 fruits is 68% highlighting the importance of this relatively small group of products (Figure 2). For a typical enterprise, the main 20 fruit product types purchased over the year, on average, would account for 99% of total annual spend on fruit by an enterprise.

The main fruit crops used by Bali tourism are illustrated in Figure 3. Melon (including honeydew and rockmelon) dominates, with watermelon, banana, pineapple and mango rounding out the top five domestic products. When imported fruit is included, orange and apple are more significant.

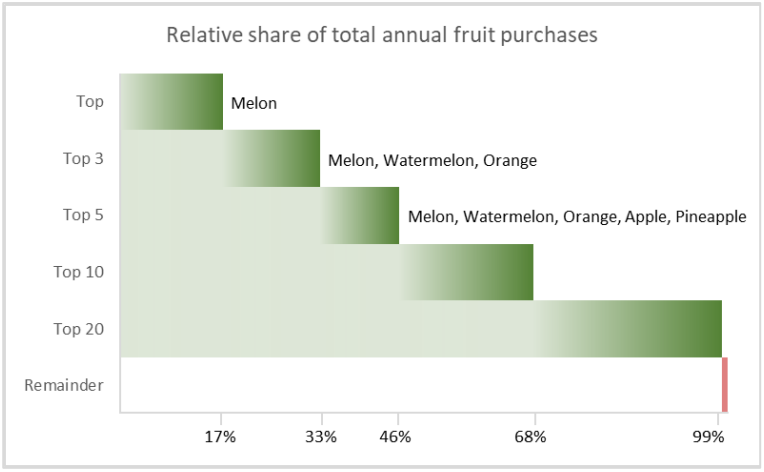

Figure 2: Relative share of main fruit purchases (domestic and imported)

Of the top five fruits, only banana is fully supplied by local farms (Table 1) though there is a small quantity of particular varieties brought in from East Java. Almost all pineapple comes from East Java as there

Table 1: Origin of main fruit and local production

	Origin			Province of Bali		National production, 2019 (tonnes)
	Bali	Other domestic	Import	Production, 2019 (tonnes)	Proportion of national crop	
Watermelon	30%	70% East Java	-	19,719	3.77%	523,333
Melon	30%	70% East Java	-	552	0.35%	156,183
Banana	100%	-	-	231,794	3.18%	7,280,658
Pineapple	-	100% East Java	-	1,104	0.05%	2,196,458
Mango	60%	40% East Java	-	65,693	2.34%	2,808,939
	Supplier survey, 2021			Statistics Indonesia (bps.go.id)		

is a negligible level of local production. An approximate 35% premium is paid for local banana compared with the produce sourced from East Java. Local melon and watermelon also fetch a higher price; +16.4% and +7% respectively. This may reflect an impact of the Governor's regulations and/or the proportionally higher levels of product bought from outside of Bali. While most fruit are grown to a small extent in the province, the bulk is brought in from Java and up to 10 fruit types are also imported. Apple, pineapple and banana are purchased by all respondents, and more than two-thirds of buyers routinely purchase jackfruit, lime, orange, papaya, passionfruit, pomelo, strawberry, watermelon, coconut, dragonfruit and grape. Interestingly, suppliers indicate that banana is mostly used by hotels for guest fruit baskets and therefore is a less significant product than the purchasing data suggests. Whereas papaya is a more noteworthy purchase representing the fifth largest product sourced by quantity, though it does not make the top 10 fruits by value bought by a typical tourism enterprise.

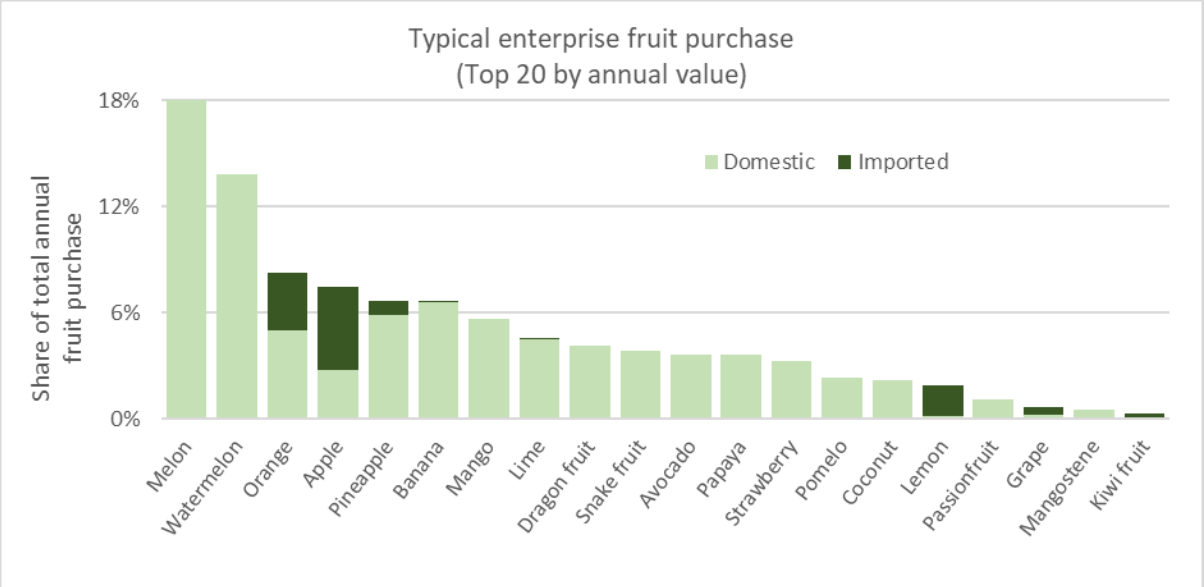

Figure 3: Top 20 fruit by annual value typically purchased, shown by share of annual spend

The most significant fruits, by annual value, purchased from outside of Bali are apple, orange, lemon, pineapple and grape (Figure 3). Orange is a high demand crop for the tourism sector, ranking sixth in terms of annual purchasing data. Balinese annual production of orange (almost 350,000 tonnes) in 2019, is equivalent to 14.27% of the national crop, though significant quantities are imported to the province during the Balinese off-season. These product flows are reversed during the Balinese cropping season with oranges exported to other regions, such as East Java. This dynamic maintains a reasonable price stability for orange in Bali across the year. Neither apple nor lemon are produced to any significance in Bali. Apple grown in East Java is available in Bali.

Although grape is a significant locally produced crop with some 13,000 tonnes produced in 2019, the hotel sector does not favour the local product and sources grapes from Java. With this existing cultivation knowledge, developing local production of higher value varieties of some crops such as grape and citrus, could provide a product development opportunity for Balinese smallholders.

Strawberry is also identified as a reasonably high demand product with local farmers producing a little under 600 tonnes of this fruit per year. This represents 7.92% of the national crop. Java accounts for the vast majority (75%) of the strawberry production in the country. Increased production capacity, product differentiation and continuity of supply could offer a local market opportunity. Other fruit crops that have recognisable levels of

local production include star apple / sapodilla (2.15%), snakefruit (2.68%), jackfruit (2.34%), mangosteen (4.4%), durian (1.87%) and rambutan (2.80%).[12]

Existing production signifies that there are local skills in growing many of these crops which suggests that collaboration with buyers could support local expansion. However, suppliers contend that farmers lack skills and knowledge in growing any type of melon. Pineapple is considered by suppliers to be an opportunity for local Balinese farmers due to the suitability of several potential production areas in the province, for example Karangasem, Buleleng and Jemberana.

Vegetables and herbs

In terms of vegetables and herbs, the average share of annual spend on the top 10 product types bought is 61%. The main 30 vegetable and herb products purchased throughout the year for a typical business represents 94% of purchases by value, reflecting the importance of these key crops (Figure 4).

The major vegetable and herb crops typically purchased by the tourism sector in Bali are shown in Figure 5. In a similar pattern to fruit, one crop – tomato – dominates, with lettuce, sweet pepper, carrot and potato completing the big five domestic products.

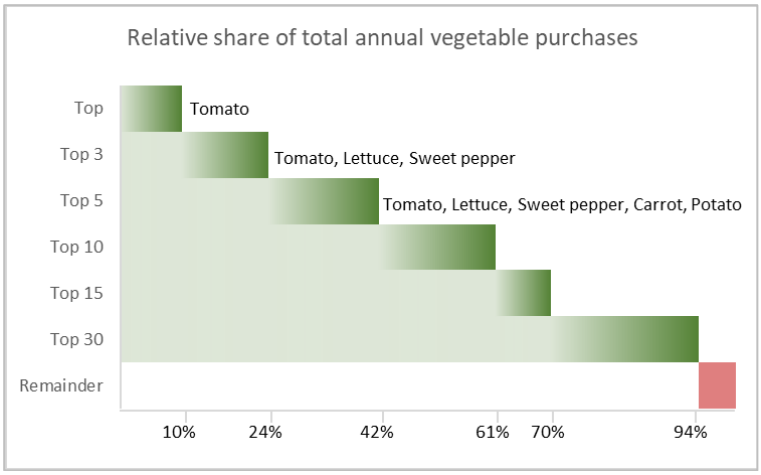

Figure 4: Relative share of main vegetable purchases (domestic and imported)

The majority of vegetables and herbs purchased by the local tourism sector are reported as sourced from within the province. However, major vegetable crops like potato and carrot are grown in Java and Sumatra. There are also some imports, for example onion is almost exclusively imported and sourced from India and Pakistan, garlic and carrot are imported predominantly from

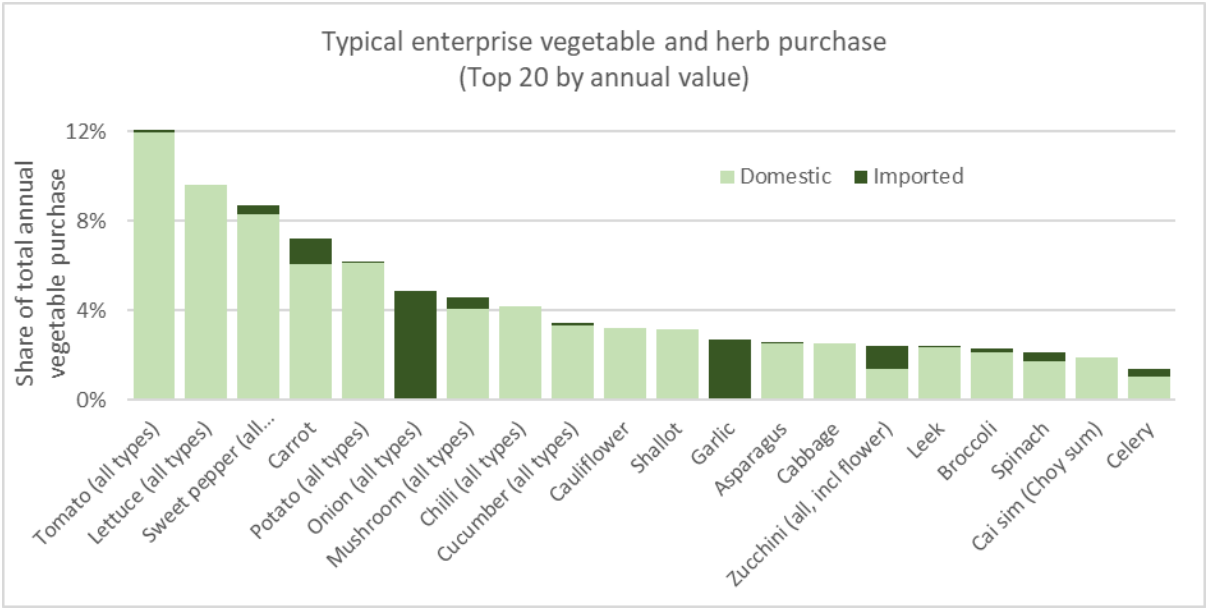

Figure 5: Top 20 vegetables by annual value typically purchased, shown by share of annual spend

[12] *Data collated from Statistics Indonesia (bps.go.id)*

China. Other key imported vegetables are lettuce (from USA, Thailand and New Zealand) and zucchini (Australia).

Of the top five domestically produced vegetables, only lettuce appears to be fully supplied by local farms (Table 2) and the vast majority of tomato is indicated to be local to Bali. Almost all potato comes from Java, though there is a small amount of local production with some hotels demanding local baby tubers. Local potato receives around a 33% price premium compared with the produce sourced from West Java, whilst Balinese carrot fetches a 13.4% premium over North Sumatran product. Local sweet pepper enjoys a 6.2% premium compared with East Javan product. This may reflect an impact of the Governor's regulations and/or a freshness quotient. However, imported carrot from China costs up to 50% more than the locally grown carrot.

Table 2: Origin of main vegetables and local production

	Origin			Province of Bali		
	Bali	Other domestic	Import	Production, 2019 (tonnes)	Proportion of national crop	National production, 2019 (tonnes)
Tomato	90%	10% East Java	-	15,171	1.49%	1,020,333
Sweet pepper	70%	30% East Java	-	10,277	0.83%	1,233,777
Lettuce	100%	-	-	2,250*		
Potato	5%	20% East Java, 75% West Java	-	208	0.02%	1,314,657
Carrot†	30%	50% West Java and Nth Sumatra	20% China	1,898	0.28%	674,634
	Supplier survey, 2021					Statistics Indonesia (bps.go.id)

* Lettuce is widely grown across Indonesia, particularly in highland areas of Java and Sumatra, but is not classified as a priority vegetable so statistics are unavailable. Local Balinese production is an estimate from Bedugul farmers.

† Almost all carrot consumed by the top end tourism enterprises comes from outside of Bali. Prior to 2019, up to 30% of carrot was imported from China, though an increasing share is being delivered from within Indonesia. Approximately 30% of carrot is supplied by local smallholders, predominantly to restaurants.

Overall, for tomato, sweet pepper and lettuce, suppliers source a mix of local and other domestic product to ensure continuity of supply and to manage changes in price. There are a range of problems identified by suppliers. For tomato, prices fluctuate sharply during the year making business decisions for suppliers difficult. The tomato sourced from Java is typically bought to cover local production gaps as well as to offset high local prices. Whereas for sweet pepper, production is more limited and requires protected cropping infrastructure. Buyers are not necessarily aware that some 'local' product may be from other provinces, as opposed to imported.

Access to clean seed is a noted barrier for potato and carrot and farmer skills with these crops are judged as lacking. Quality of local root vegetables is also considered inferior to potato and carrot produced in West Java. In addition, suppliers suggest that the small plot size of local Balinese farms adversely affects economies of production compared with farms in North Sumatra and West Java.

Other 'high-demand' vegetable crops that have recognisable levels of local production as a proportion of the national crop include chilli (2.09%), cucumber (1.51%), mushroom (1.33%), shallot (1.25%) and cabbage (1.24%). Chayote/choko is a relatively low demand product for the tourism sector, though there is a significant share (15.43%) of national production grown in Bali. This likely reflects local consumer demand. Chinese cabbage (4.34%), green bean (2.58%), kangkong (2.26%), garlic (1.76%) and radish (1.38%) also

have relatively significant levels of local production, but lower importance in the Bali tourism sector.[13]

Animal products

The average share of a typical annual spend on the main five meats, eggs and seafood is 83% highlighting the dominance of this small group of products (Figure 6). A range of cuts are included in meat categories, while some processed products are also included, for example in pork. For a typical enterprise purchasing 20 animal products over the year, just half of these (10 product types) would account for 98% of the total spend in this category by an enterprise, by total value in a year.

The main animal products used by Bali tourism are illustrated in Figure 7. Beef dominates, with the majority being imported. Chicken is the next most significant animal product and is all locally sourced. Pork, chicken egg and lamb round out the top five products. Similarly to beef, the vast share of lamb bought by the Bali tourism sector is imported. When imports are excluded, chicken, pork, eggs (chicken), beef and duck are the top products by value.

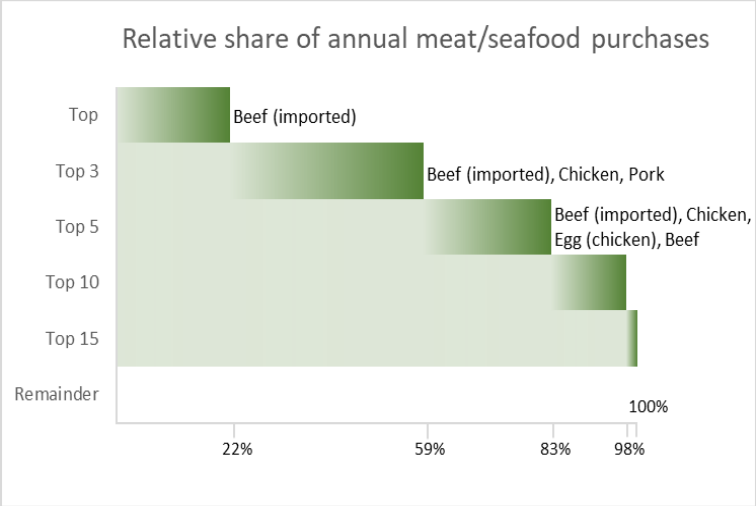

Figure 6: Relative share of main meat and seafood purchases

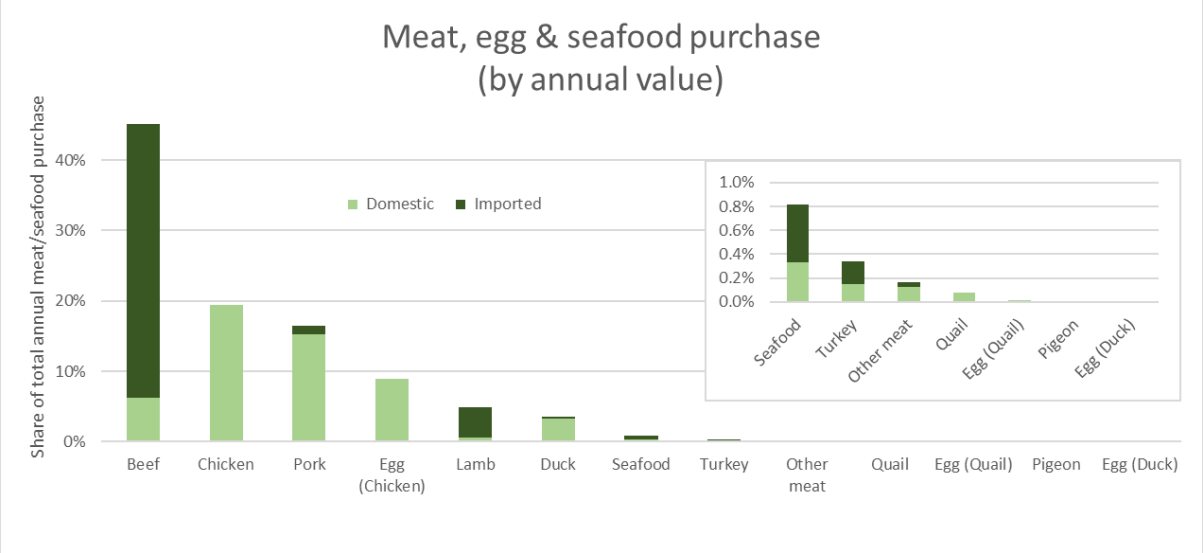

Figure 7: Top animal products by annual value typically purchased, shown by share of annual spend

Annual pattern

Most crops have a noticeable peak in demand in the new year (late December to January) with a secondary and broader peak mid-year, around July – September, corresponding with the long global vacations for schools and universities and subsequent tourism peaks

[13] *Data collated from Statistics Indonesia (bps.go.id)*

(Figure 8). Avocado has a significant peak in January, whilst strawberry tops out over August – September and pomelo has its main season in October. For vegetables, there is a general peak for all types in January, starting in late December. Over the course of the year, similarly to fruit and vegetable purchases, the new year accounts for a significant upswing in demand for meat, eggs and seafood corresponding to the main tourist season. While all animal products exhibit a general rise in demand for January, imported beef experiences a major peak as well as a significant second season in September – October. There is also sizable pre-season purchase of imported beef by many hotels and restaurants to ensure sufficient supplies for the peak tourism new-year season.

Importantly, demand across the year outside of the seasonal upswing is consistent and moderately stable for most products. Opportunities can be loosely split into a few, high-demand staple vegetables, for example cabbage, leek, cai sim and shallot accounting for just over 10% of annual purchases as well as the key seasonal products of tomato, lettuce and sweet pepper that represent more than 30% of annual spend and demonstrate a high year-round demand with distinctive seasonal flows. Overall, horticultural products are of predominately a domestic origin (not necessarily local), whilst a higher share of key meat products are imported.

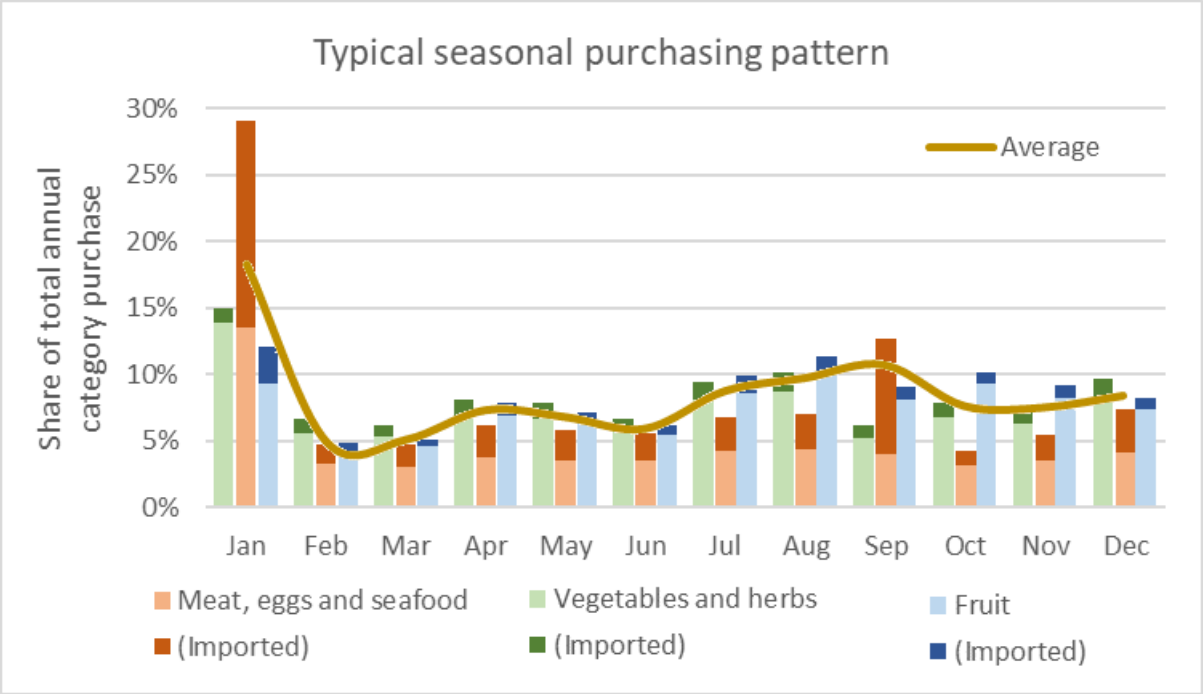

Figure 8: Typical share of total annual spend by month

Business relations

The tourism sector overwhelmingly relies on active suppliers who approach them with products, with just 1 in 10 enterprises also seeking out suppliers for key products. Seventy percent of buyers have some form of purchase contract with suppliers for at least some products. These agreements almost always set an agreed price for the month, with prices typically set every month. Some alternatives allow for a 7 day notice, if a price changes. One fifth of agreements encompass set prices for a defined contract period. A proportion of tourism sector enterprises buy directly from markets, both traditional and modern, particularly where smaller volumes are required and lower prices can be obtained. Smaller businesses are more likely to buy at retail, compared with larger operations who need to source bigger quantities of products.

All participating enterprises indicate that they secure agriproducts on credit with payment terms of at least 1 month and up to 2 months. Rarely, an enterprise will make cash purchases or make part payments in advance for specific orders.

There are a variety of benefits attributed to contracts. Price certainty is recognised as a key benefit for all buyers engaged in contracts, and this is most commonly seen as assisting cashflows and budget planning within the tourism business. Contracts are important in managing fluctuating market prices and especially price rises. Ten percent of enterprises indicate that the reliability of supply and quality are additional contract benefits while access to ancillary benefits such as use of refrigeration/freezing facilities is also nominated.

Unsurprisingly, all purchasers who engage in price contracts consider these arrangements as more profitable, whilst those not using contracts assert their non-contractual arrangement to be more profitable. Businesses who elect not to use contracts all report that they are better able to capitalise on market prices and obtain lower purchasing costs, overall.

The tourism sector buyers also have requirements for suppliers to sponsor or support annual events. Sponsorship varies but commonly includes provision of additional storage equipment for perishable items, supply of product for promotion and occasionally financial contributions. This aspect of the value chain reveals opportunity for more extensive collaborative in value chain activities could be developed to drive local product value and demand.

The majority (90%) of buyers consider long-term relationships with local producers will benefit their business with the main benefit seen as higher and more reliable quality of produce. There is also an expectation held by a minority of enterprises, that ongoing relationships enable them to customise product specifications. This suggests that there are genuine prospects for value adding for local smallholders. More favourable prices and payment terms are also disclosed as opportunities with long-term partnerships. One buyer revealed an expectation that long-term relationships will foster feedback investment encouraging increased production and consumption, and ultimately this will improve local productivity and lead to better sustainability.

All buyers, irrespective of whether contracts are used, impose intrinsic quality standards such as freshness and appearance when taking delivery. This is determined by the end user of the product, mostly the chef and/or bar manager, at point of receival. Sixty percent of purchasing decisions also involve assessment of extrinsic quality attributes such as product origin or production standards, though these are not clearly defined. Products that are considered high risk, such as poultry are required, by a minority of purchasers, to have hygiene certification. Half of purchasers expect Halal certification of meat products as well as hygiene certificates. Fresh fruit and vegetables are considered low risk and no certification is requested. Under the Governor Regulations 99/2018, product supplied to hotels, restaurants and modern retail is required to be certified and sourced from a registered orchard/garden, however, this article has not yet been applied. None of the respondents indicate a concern for chemical residues.

Where product is deemed to be below the expected quality standard, redress is the suppliers' obligation and is most commonly remedied by replacement of product and sometimes by a reduced price if there is no product available to substitute.

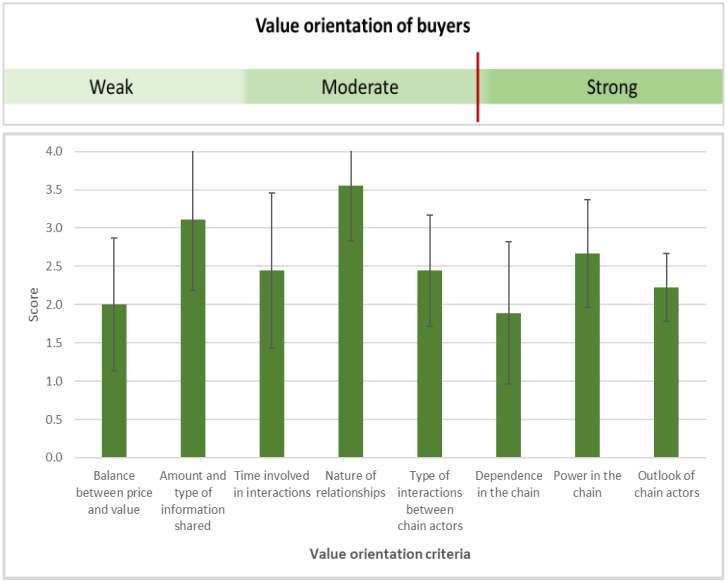

Figure 9: Value orientation of the Bali tourism fresh produce supply chain

Value orientation of the supply chain

Overall, the surveyed buyers in the tourism sector demonstrate a moderate to strong orientation towards value (Figure 9). This aligns with previous work on the value chain of vegetables from the Bedugul area of Bali[14] and indicates that there are likely to be opportunities for smallholders in creating improved value with their products. All buyers view their interactions with their suppliers as being collaborative or mostly collaborative, though only 40% of buyers describe their dealings with suppliers as based on an ongoing relationship, as opposed to being transaction based. Sixty percent of respondents indicate that the nominal cost is a key consideration in individual purchasing decisions and 40% report value, encompassing quality, intrinsic and extrinsic characteristics and associated services, as the primary factor. These aspects suggest that evolving the value elements of key products for value chain actors will enhance better business outcomes for smallholders.

Whilst the longevity of buyer/supplier interactions is split between medium to long term relations and connections that involve just short-term interactions which occur periodically, there is a strong correlation between transactional interactions and interdependence of the parties. Buyers who have interactions based on relationships are more likely to consider themselves independent of the supplier. All buyers believe that information is freely shared with suppliers with half of buyers revealing that this transparency in the value chain is extensive, whilst 20% report that only price information is shared.

In terms of value chain influence, buyers are evenly split on whether suppliers are dominant or negotiating power is comparable between the parties. Despite this, 90% of buyers report that they are oriented towards mutual benefit in conducting transactions, rather than self-interest. This suggests that there is good scope to enhance reciprocity. Understanding the value network across the smallholder and tourism sectors is crucial.

Origin of supply

All buyers reported a preference for local Balinese fresh produce (fruit, vegetables and herbs) as illustrated in Figure 10, however issues with local supplies are reported by 40% of buyers with half relating to availability challenges, often in peak season when orders are late or cannot be filled due to lack of supply. Modern retailers assert that they experience challenges in sourcing sufficient local Balinese product, and overall, this segment find that

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[14] *Utama, I M. (2019) Developing agriculture value chain inclusion for small scale vegetable farmers in the highland of Bedugul, Bali. Udayana University paper presented in the 1st ICANaRD Conference, 27-28 July 2021*

continuity of supply is a persistent problem. As previously noted, there are discrepancies between how some value chain participants understand where a product comes from. For example, this research found that product from outside of Bali may sometimes be considered to be imported, even if it is domestically produced, and any domestic product could be described as local by some buyers. These potential discrepancies in product origin present an obstacle in effective development of local value chains.

Lower cost is identified as a principal reason for buying local vegetables, though some locally grown vegetables are more expensive than product traded from other provinces such as Java. Having product readily available is the next most important motivation followed by quality, particularly freshness. Substandard quality is the second most common problem nominated as a local supply issue. Supporting local producers is considered the central reason for buying local by 10% of respondents. Some herbs that are not available in Bali are sourced from other provinces. A minority of buyers report importing herbs because the quality is better.

For meat, quality is the most important attribute with half of respondents preferring to buy imported meat due to superior quality, whilst 20% source domestic meat on the basis of quality. It is worth noting that some domestic meat is from live-import calves, fattened in Indonesia. A fifth of tourism sector buyers reveal a preference for local meat products due to lower cost.

All buyers generally have access to locally produced fruit, vegetables, fresh herbs, meat, poultry and eggs and a significant majority also have access to imported products in all categories, except eggs. Sixty percent of buyers indicate that the domestic sources of products (from Bali or other provinces) that they seek are not available every month of the year.

When a local product is unavailable, 40% will import the product, 40% will substitute with an alternative, 10% will opt not to purchase unless an alternative is at a similar price point and 10% of buyers will source the products from private non-commercial contacts or from their own garden.

However, when imported products are not available, 90% of buyers will turn to local supplies.

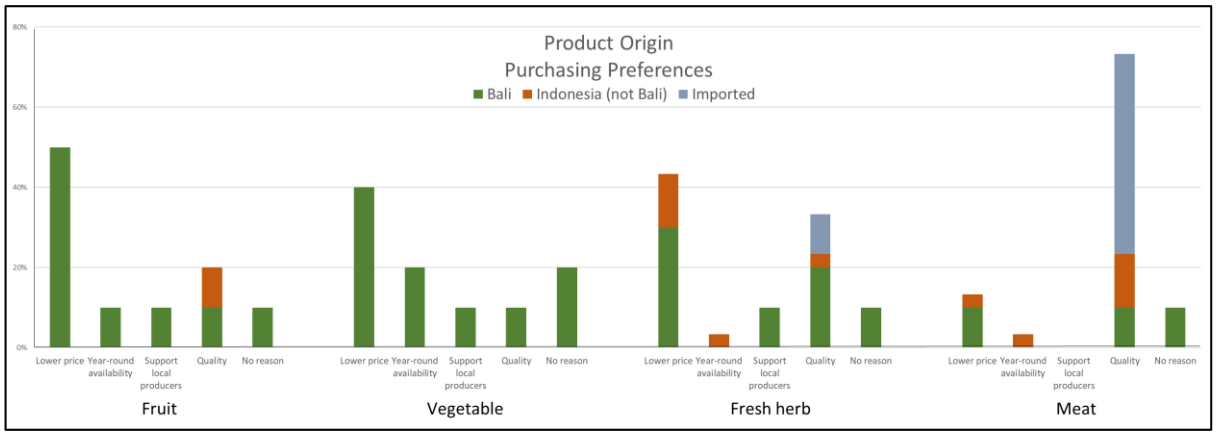

Figure 10: Product origin purchasing preferences for key product categories

In buying fruit, vegetables, fresh herbs, meat and eggs, the majority (70%) of tourism sector buyers do not differentiate between local Balinese and other domestic supply as the quality is considered equivalent (Figure 11) and purchasing decisions place more emphasis on price, quality and continuity of supply. There is no point of sale differentiation between local Balinese product and other domestic sources, and no traceability. End consumers are not expected to be able to distinguish a difference either, however the Governor's Regulation No. 99/2018 encourage a minority of buyers to ensure local Balinese product is sourced, and a small contingent of end-market actors actively choose

to support local producers. Where Balinese product is preferred, the primary reason is quality – freshness of fruit and vegetables, texture of meat. Some traders/suppliers favour the sale of Balinese products to the tourism sector, even though the origin is of lesser importance for the end-market buyers. Additional research and a focus on data capture particularly with respect to product traceability is needed to provide a more accurate assessment of the use and fitness for purpose of local Balinese product.

Figure 11: Tourism sector buyers' assessment of quality of available product

Provincial competitiveness

The capacity and capability of local producers to compete with product coming from elsewhere in Indonesia or imported to the country is centred around the issue of suitable supply. Tourism sector buyers are willing, and in some cases prefer, to use local Balinese products. There is a distinct emphasis on price, quality and continuity of supply as critical barriers for locally produced items. Quality is the primary constraint nominated by most tourism sector buyers (Figure 12), although the general quality of local Balinese product meets the basic needs of buyers. Inconsistency is a problem, with the overriding challenge being the reliable delivery of sufficient quantities of suitable product throughout the year, especially during peak periods. This impacts on purchasing confidence. Additionally, gaps in local supply resulting from availability or quality issues necessitates buyers to maintain supply linkages for product from outside of the local province. This requirement establishes an inertia to swap between suppliers and further inhibits local producers to capture and maintain a market.

Interestingly, buyers identify access to technology to improve local farm productivity, including improved varieties and skills of producers as key solutions. Local farm productivity is a key issue for price-sensitive buyers with available agricultural land expected to be further reduced by the proposed construction of a new airport and associated infrastructure in northern Bali[15, 16].

Figure 12: Relative importance of key issues affecting competitiveness of local Balinese product

Certification

Seventy percent of agricultural products purchased by the Bali tourism sector have some type of certification. Half of purchasers expect Halal certification for meat products. HACCP food safety quality assurance certification and/or organic certification are required by 10% of current buyers. Thirty percent of buyers indicated no certification was required

[15] *https://www.airport-technology.com/news/indonesia-ariport-bali*
[16] *https://m.rri.co.id/daerah/1129388/rencana-pembangunan-bandara-bali-utara-segera-terwujud*

on their purchases. Interestingly, all buyers report that purchases must meet their requirements for quality and safety and traceability. This indicates that quality assurance, food safety and product differentiation is an underlying opportunity for smallholders.

Bali Governor Regulation No. 99 / 2018

Tourism sector buyers report compliance with the Governor's Regulation No. 99/2018 requiring a minimum of 30% of agricultural produce purchased to be locally produced. All respondents revealed much higher proportions of local content, with locally produced products representing approximately two thirds of purchases on average (Figure 13). The lowest representation of Balinese product is 45% and many buyers are only sourcing local produce.

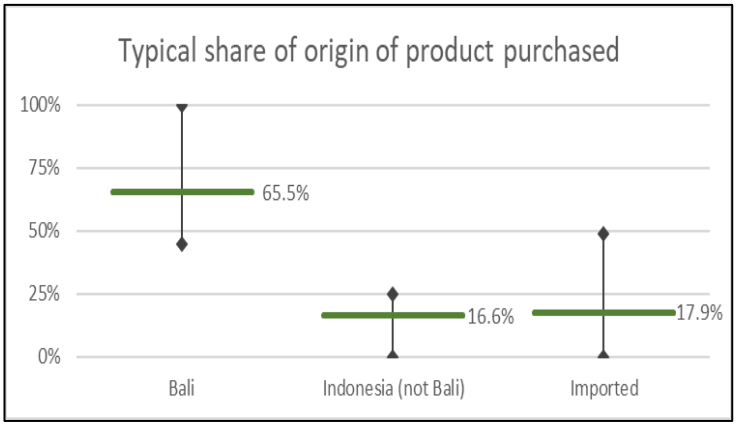

Figure 13: Share of local origin product purchases

Key informant interviews with suppliers revealed that a third of this chain segment were unaware of the regulations or important requirements, for example, that the product must be certified and/or sourced from a registered enterprise. Additionally, of suppliers who indicated knowledge of the regulations, discussions revealed that the details of the regulations are not well understood. For modern retail, only 25% were aware of the regulations, though they are confident that they currently meet the minimum quotas for 60% local product. However, as noted above, traceability is identified as a key shortcoming and a difficulty with the regulatory system. There is a common view that better facilitation, implementation and enforcement are needed. As the value chains are not transparent and often informal, many stakeholders are not fully informed or committed to the rules. Without a cultural change in the supply chain, the regulations are considered to simply add an additional cost with increased administration and labour inputs, without creating value.

The lack of compliance and enforcement of the regulations is considered a key limitation. In general, the value chain is supportive of the rules, but some elements of the policy and overall implementation need to be clarified and improved. Suppliers perceive that the regulation is just a gimmick. There is no oversight of buyers to ensure compliance with sourcing appropriately certified product. On the production side, there is no implementation plan nor guidance as to how farmers can quantify market demand and align their production outputs. Critically, no one, including producers themselves, can validate the actual costs of production and therefore the minimum prices upon which price premiums are based.

Despite an overall expectation that the regulations benefit farmers through higher income, increased productivity and quality, and improved access to buyers, there is an acknowledgement that there is no benchmark for the success of these regulations and no precedent, so stakeholders are uncertain of the full impact and whether there is a net benefit. A major concern is the lack of confidence that value chain actors share in how the existing system can be transformed and the new requirements be integrated.

Overall, value chain actors are not certain that the benefits to local product are adequate compensation. However, the regulations are believed to beneficially support local production to the extent that buyers are obligated to source local, but smallholders themselves do not have sufficient capacity to meet, or even increase supply.

On the positive side, informants identify a distinct benefit in the purchase of seasonal local fruits by accommodation businesses. Hotels and resorts traditionally supply a small fruit bowl for guests. The requirement for purchasing of local product is underpinning seasonal supply from local growers, even though some value attributes, such as quality standards and packaging are considered suboptimal.

It is also noted that the base products required by tourism and retail in order to meet the regulatory requirements are readily grown in Bali and easily accessed and so there are few technical or marketing barriers to satisfying the requirements. However, this contradicts the stated problem of insufficient local production capacity and may indicate that buyers are not fully aware of the origin of all purchases. A greater focus on collaborative partnerships is identified by some end-market buyers as a way to improve access to local product. Interprovincial trade for agricultural products is suggested as a means to improve local competitiveness and seasonal resilience. This would require better engagement of farmers and suppliers. The growth of online marketing businesses[17] enabling efficient, direct purchasing from smallholders is considered a critical step in this direction.

Generally, the requirements for locally grown is seen to provide an advantage to local growers who would otherwise struggle to build purchaser connections, but the risk that lower efficiencies and higher costs of production are being hidden, cannot be ignored. These would normally be mitigated through competitive market forces.

Finally, from an administrative perspective, the implementation of the regulations is seen as being simple but requires greater facilitation from government. Enforcement of the regulations is also needed. The latter reflects the perception that underlying compliance issues will undermine the longer term benefit of the regulations. Research to support policy makers and improve understanding of the design of policy in the agriculture-tourism nexus and how, with respect to existing circumstances, it can be effectively implemented is a key opportunity.

Value chain dynamics

The supplier (wholesaler) segment is a highly fragmented and crowded market. There are a relatively large number of actors selling the same product lines. The quantities of specific products traded by individual suppliers are relatively small as a consequence. There are many small and informal wholesaling enterprises that compete with each other trading a variety of products to a diverse customer base including both high-end tourism players and local consumers. Some suppliers have extensive customer databases, trading with more than 200 buyers in certain cases.

Better value chain linkage between producers/suppliers and suppliers/buyers is identified as critical but the disjointed and congested supplier sector results in significant competition between suppliers. Furthermore, a relatively small collector/trader sector holds a key market control position between producers and suppliers (wholesalers). Suppliers can be readily substituted by both collectors and buyers. Their easy replacement renders this cohort a weak ally in ensuring smallholders' expectations are met or practices improved. Not only is their influence in encouraging higher-order supply criteria with producers weak, but this situation creates an incentive for suppliers not to add costs or inconvenience to buyers. This segment competition also constrains the willingness of suppliers to invest or engage with more business risk. Presently, most suppliers obtain product from collectors and other wholesalers, rather than directly from

[17] *For example I-Grow, TaniHub, Sayurbox, Chilibeli*

producers. Formal partnerships between suppliers and the farming sector could potentially enhance the sectors' connectivity with end-market buyers.

Insights and Recommendations

This assessment of local market opportunities has identified key areas of research and sector improvement that can offer strategic leverage in Bali agriculture. These actions speak to development needs that underpin resilience and reflect an opportunity for harnessing consumer-based mechanisms in implementing change.

Overall, there is potential for interventions to be multipurpose in their impacts or interrelate in terms of their application to address local product quality, consistency and reliability and value creation for smallholders.

Traceability and food safety are important underlying considerations. These depend on good farm and supply chain management practices, including record keeping and traceability of products which also extends to the efficacy of the Governor's regulations 99/2018. Multifunctionality is viewed as a highly positive opportunity.

Several important elements have been uncovered through this study. There is an evident disconnect between the buyers and the producers which interferes with the proficiency of the value chain. Local smallholders need greater production capacity, and this capacity has to target continuity of supply and ideally, local supply gaps. Further understanding of this issue will be gained in the next research phase with the involvement of producers. Quality dominates as a priority, though competitive pricing is essential and increased farm enterprise productivity can support a reduction in costs of goods sold, consistently fulfil product specifications and address waste.

The lack of connectivity between producers and suppliers/buyers results in collector/traders being empowered price-makers in the chain. The crowded supplier segment is enabling the flow of product through to market but does not necessarily create value for smallholders. The abundant rivalry between suppliers ensures competitive pricing and service for the tourism sector, however producers primarily deal with a relatively small number of collector/traders. This sector of the chain enjoys an oligopolistic position and embeds a power imbalance at both the farm gate as well as in dealing with the supplier sector, and fractures information flows. There is an absence of effective pricing signals that distinguish key value parameters for local smallholder producers. This is aggravated by the disparate understanding between value chain participants of where product originates and what constitutes local, domestic and imported products.

This first stage assessment suggests excellent potential for development of collaborative value chain partnerships that deliver high-quality, high-value local product to meet the demands of the tourism sector and capitalise on the growth of modern retail. Ensuring a cohesive value chain will also be critical in underpinning recovery postCOVID-19.

Application of production and postharvest technologies and practices, coupled with training and market engagement, to build both capacity and capability are needed to meet the expectations of this market. Downstream chain sectors acknowledge that price security and farm profitability are necessary ingredients to the implementation of best management practices on-farm, as well as good handling practices throughout the supply chain.

This analysis, from the viewpoint of the market end actors, identifies five issues – (1) quality, (2) production capacity, (3) supply continuity, (4) pricing signals and (5) product differentiation.

The tourism and modern retail sectors in Bali demonstrate a moderate to strong orientation to value. This represents a clear approach – improved value creation will support market opportunities. At the most basic level, although the sector is delivering adequate quality, farmers are not presenting sufficient product for sale that embeds value for the buyers, or are not doing so consistently. A significant market driver is product specifications – incorporating both intrinsic and extrinsic values. Product specifications and quality standards are not well defined in this market, despite being a key concern.

Nestled with the challenges of maintaining consistent quality of delivered fresh product, is the need for continuity of supply. For the tourism sector, reliability is important. In addition to meeting predefined quality standards, both the capacity of the producer sector to satisfy demand and to fill orders over an extended, or at least definable period of the year are seen as an important element of value. During peak periods, the tourism sector can struggle to source sufficient product and when importing items, customs and administrative issues can exacerbate the problems. Local producers may realise a comparative advantage.

Suppliers identify that most buyers are poor payers and only settle when it suits their cashflow situation. This is despite the regulatory requirements. Additionally, suppliers are squeezed by the marketing power of the collector/trader sector. Slow and late payment for delivered product is a pervasive problem with impacts on small business viability. Fixed contracts and payment terms are not normalised in these value chains and the intense competition between suppliers enables buyers to simply shift allegiance if suppliers push for payments.

The extensive use of credit with long payment terms is expected to also be hindering smallholder capacity and distorting information flows pertaining to product quality and demand. Suppliers report that the inconsistent supply volumes and quality from producers make it hard for them to meet end-market expectations, yet they interact more with collectors than the smallholders themselves.

Furthermore, a high level of postharvest loss is acknowledged. Pricing penalties are placed on sellers by way of an automatic 10% weight deduction applied to compensate buyers for the ‘known’ losses in handling and storage. This practice effectively penalises farmers for poor post-farm management and does not provide accurate price signals across the value chain.

Overall, there is a clear disconnect between the expectations on smallholders and their reward.

The fifth issue is that the local industry has no facets of differentiation or product identity in use. There is no differentiation between local Balinese product and other domestic sources, and no traceability. It is widely conceded that, although the local tourism sector prefers Balinese product, there is no selectivity between local Balinese and other domestic produce. Additionally, there is little commercial basis between local and imported produce. As a result, local product is vulnerable to competition even though buyers have a local preference and regulations promote local content.

Local Balinese and other domestic smallholders are not capturing potential market value. Effective identification of product could achieve significant value creation and act as a conduit to multiple value chain improvements. There is considerable potential for brand to drive both demand and customer loyalty.

Based on this market opportunities assessment, there are three capacity building recommendations and a broader recommendation on future research.

1. Supplier agreements

Supplier agreements offer a tangible partnership mechanism to build capacity and capability for smallholders and, with various contracts in common use, research in this space would be a relatively small step with meaningful gains.

The overriding challenge is to create a mutually beneficial environment for all value chain actors. Supplier agreements that facilitate mutually agreed terms between producers (farmers) and the buyers and which improve communication between the actors in a safe and non-pressured way is needed. Importantly, the relationship power of different actors, especially the collector/trader cohort, needs to be balanced. These value chains are currently impeded by a lack of recognition of shared interest and effective information

flows. This creates a disconnect between production and markets, introducing mistrust and market uncertainty for all parties. Contracts are an existing tool in these value chains, but their current form does not support business development, grow trust or create shared value.

Supplier agreements can be designed and used to act as a simple mechanism to formalise market expectations and improve communication between value chain actors. Agreements to address specific impediments or quality and food safety elements can be implemented initially in a limited scope and embedded as a normal business practice, then developed over time into more robust contracts.

Advancement of a culture of supply agreements that identify prices and fair payment terms, quantities (including availability and continuity of supply) and quality (including key product specifications) can be used to overcome market failure and build engagement.

2. Product identity

Brand development and certification are particular consumer-based mechanisms that would be important market drivers for local Balinese produce. Locally identifiable (branded) product, specifications and quality and food safety assurance show up as important consumer drivers. Although certification is not noted as an issue for horticultural products, Halal certification is already established for meat and 'delivered quality' is recognised across the Balinese tourism sector as a critical value element. Overall, traceability is deemed to be of increasing importance.

Based on this assessment, developing brand (and associated appropriate grades and packaging) is expected to empower producers to better engage with these high-demand markets. Market awareness training and support for marketing initiatives are key elements of this action that need to be incorporated. Value adding and customised specifications are important aspects identified by the end-market buyers and indicate that product development and diversification (including processing) are valuable options that can be built under an identified local label.

Better differentiation of local product in the marketplace can be achieved with a number of factors including quality and grading, pricing, labelling, packaging and availability and tied together with identity. Brand and product characteristics that provide differentiation in the Bali tourism sector are invaluable consumer-based mechanisms that will drive buyer preference and acceptance. Importantly, a research and development program to establish a point of differentiation for local product in these value chains will facilitate direct communication between the tourism and agricultural sectors. This will push further improvement.

Assurance of product quality is a critical shortcoming, and a significant lack of market engagement pervades this value chain. Further enhancement of product identity is attainable in parallel by implementing a level of quality assurance and certification – food safety as well as other attributes. Although food safety has not been raised as a critical issue, it can be readily included over time to create value and preserve market access.

Supporting smallholders to deliver farm output at a better standard will be a key improver in this sector. Over time, quality specifications, certification and labelling will contribute to market awareness and are instruments in a product differentiation intervention to improve local product marketing and priority placement with Bali tourism. Important influences such as product reputation reflecting key specifications are identified by this analysis. Implementing change in this value chain will extend from addressing product specifications and quality assurance.

Importantly, product identity can also offer a crafted link to additional tourism values including connectivity to local culture, visitor experiences and community development. The strong collaborative and mutually supportive elements teased out in this research

show a clear market opportunity to build individual farm enterprise identity and associate this with tourism enterprises, driving higher standards and underpinning demand.

3. Record keeping

Any improvement in quality assurance, product certification and differentiation for local Bali producers will require implementation of farm input and business management records. A focus on farm enterprise baseline management is necessary and the third capacity building recommendation is record keeping. This will be examined in the next phase of this assessment, however the challenges tourism sector buyers contend with in terms of quality, supply consistency and meeting pricing obligations under the Governor's regulations 99/2018 highlight an absence of clear business fundamentals in the producer sector.

Smallholder productivity and efficiency are dependent on effective information management and record keeping will be essential for local producers to meet market expectations in supply, quality and price competitiveness.

4. Value network analysis

There are clear agribusiness market opportunities for local smallholders in improving their engagement with the Bali tourism sector. Similarly, there are prospects for more meaningful collaborations and partnerships between businesses that could benefit the whole value chain. This is a complex business ecosystem and the standard approach of analysing the value chain has revealed shortcomings in capturing the multidirectional opportunities these interdependent industries share.

From this assessment, it is recommended that future research consider a network approach and focus on a broader scope for value conversion for local smallholders connecting with high-intensity tourism hubs. Analysis of the network needs to be highly inclusive and draw input from smallholders, collectors, buyers, policy makers, research and development as well as communities.

10.3 Appendix 3: Report: Agriculture for Tourism: Opportunities for local smallholders – engagement points

Agriculture for Tourism: Opportunities for local smallholders

Engagement points

Primary Principles and Udayana University

Photo credit: William Cho | Bali – Lake Batur Agriculture | Agriculture near the shore o… | Flickr

Opportunities for local agribusiness value chains to engage with high intensity tourism

This report is prepared as a component of the Australian Centre for International Agricultural Research project AGB/2020/121: Agriculture for Tourism – Research to advance a synergistic development pathway for local agribusiness value chains and tourism in Bali, with application to similar high intensity regional tourism hubs throughout Indonesia.

https://www.aciar.gov.au/project/agb-2020-121

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Contents

Summary

This research is seeking to identify strategic development pathways for local, collaborative value chains. There is a notable complementarity of the views smallholders have about the value chains with that revealed by the tourism operators. This illustrates a degree of underlying awareness of issues, even though stakeholders have been unable to address them. Tourism is a major and critical economic driver for the country and demands a large share of local agricultural output, yet there is a significant disconnect between the sectors. Of growing concern, smallholders are increasingly aware that rising production and lifestyle costs and increasing land values are diminishing their effective return on capital and in turn, this encourages a departure from agriculture; shifting the use of land to non-agricultural purposes.

The promising engagement point for smallholders with the high-demand tourism sector (and modern retail) is in supply agreements. As a communication tool to cement mutually beneficial partnerships, this approach can address the smallholders' key needs and develop confidence in supply and quality for tourism sector buyers. It can also encompass social, human and ecological responsibilities and support global Sustainable Development Goals. Agreements can facilitate communication, mutual understanding and delivery of knowledge and practice improvement across all stakeholders.

Instituting product specifications and developing mechanisms of effective delivery are a priority for facilitating better market awareness for smallholders. Additionally, it is evident that the underlying support for the purchase of local product requires clear product differentiation. Better differentiation of local product in the marketplace is anticipated and would feed into both the needs of the end-market as well as the growers. Multiple points for improvement are identified including quality and grading, pricing, labelling, packaging and availability, as well as social and ecological values. These could all be tied together with product identity and traceability. Supporting smallholders to deliver farm output at a better standard will be a key improver in this sector.

Efforts that focus on the shortcomings in technical, marketing and business skills in these sectors are necessary to address physical and financial challenges of reliably producing quality fresh produce. Research and extension programs will need to ensure best management practices are central to smallholder development. Pest and disease management and business development training are evidently matters of high importance. Growers seek technical assistance and training in production and marketing – but have limited access.

In attaining higher required standards however, smallholder productivity and efficiency are also dependent on effective information management. The adoption of Good Agricultural Practices (GAP), the use of Standard Operating Procedures (SOP) and the application of Internal Control Systems (ICS) are key improvement pathways. Record keeping presents as a critical missing element and will be essential for local producers to improve capability and meet market expectations.

Whilst not examined in this study, almost all enterprises rely on both men and women offering good scope to better understand the merits of and barriers to gender and social inclusion in creating value throughout the agribusiness-tourism ecosystem. Furthermore, the intrinsic values afforded by local Balinese culture that imbue ecological, social, humanitarian and spiritual values to maintain the balance and harmony of the ecosystem could realise value creation opportunities for Bali agriculture.

Overall, this study finds that there is excellent potential for development of collaborative value chain partnerships that support high-quality, high-value local product to meet the demands of the tourism sector and capitalise on the growth of modern retail. Fostering a cohesive value chain will also be invaluable in underpinning recovery postCOVID-19.

Introduction

This assessment is part of an appraisal of the opportunities for research to develop the capacity and capability of local agriculture to meet the market expectations of the high-intensity tourism sector in Indonesia, using the province of Bali as the research model. This research is seeking to identify strategic development pathways for local, collaborative value chains. Potentially, this will present a framework for resilient development of smallholder agriculture at the doorstep of tourism 'hotspot' destinations.

This study is the second element of the Agriculture for Tourism small research project. It looks at the capacity and constraints in the supply of safe, quality locally produced agricultural products with the view to improve the understanding of how the market demands and value chain dynamics of agricultural products can be harnessed to nurture resilient smallholder communities. In turn, these networks can provide quality, safe, fresh food to high-intensity tourism hubs, in addition to their local community.

The initial study focussed on the high-demand tourism end-market and found a distinct demand within the sector for local, fresh product, with a cautionary note that the delivery of stable quality and the reliability of supply are prevalent issues. Instituting product specifications and mechanisms of effective delivery are judged a priority and need to involve all stakeholders. Additionally, the underlying support for the purchase of local product requires clear product differentiation. Brand identity, packaging and traceability are important considerations.

To understand the relevant socioeconomic and technical opportunities in local agricultural production, this activity examined the capacity and capability constraints in local value chains. Three value chains were selected as proxies – pineapple, carrot and chicken meat.

The aim is to understand how a locally defined economy that connects local and neighbouring agricultural production capacities to an accessible, dense tourism end-market could be best achieved.

Background

Indonesia is one of the world's most populous countries with over 270 million people[18]. Consistent with many countries across the Asian region, Indonesia's food security and sovereignty are key objectives in social and economic development.

Tourism is a major and critical economic driver for the country and demands a large share of local agricultural output. Additionally, the demand for local agricultural output has changed in focus as a response to the food preferences of tourists. In parallel, local consumers have shifted their attention from traditional supply to seeking more intrinsic quality attributes in their food purchases. This is playing out in the growth of modern retail markets. Overall, these market impacts have created opportunities for local producers, that have not been capitalised upon.

The local agricultural sector is dominated by small-scale farmers. Smallholders operate in fragmented, poorly functionality value chains (VCs), with high costs, low productivity and weak business terms, and critically, express a lack of skills and knowledge about the value requirements of consumers. These two crucial sectors of the economy are intertwined, and this co-dependence of agriculture and tourism is clearly visible in Bali and

[18] *Central Bureau of Statistics Census 2020. Statistics Indonesia (Central Bureau of Statistics (bps.go.id))*

is further highlighted by the impacts of the pandemic which has brought both these industries to a standstill, yet the relationships between actors are weak.

Bali Governor Regulation No. 99 / 2018

The Bali provincial administration issued a regulation in 2018 that mandates the use of local agricultural products in hotels and food service. It also requires supermarkets to stock more local product. The stated intent of the regulation is to encourage businesses operating in Bali to develop the province of Bali, not just their respective business in Bali.

For hotels and food service, at least 30% of product used must be locally produced. For supermarkets, 60% of the agricultural product (30% for fishery products) offered instore needs to be sourced from local farmers and fishermen[19]. Producers are required to be registered and have quality and safety certification[20].

Additionally, the price paid to farmers for local agricultural products must be at least 20% higher than the cost of production[21]. Transactions should be in cash or through the provincially-owned company, *Perusda Bali*, though this article is yet to be applied[22].

There is also a requirement in the regulation for these end-market actors to work in partnership with farmers and small to medium local enterprises. The Governor identified that there is a need 'to balance the structures of tourism and agriculture'[23].

Objective and scope of this assessment

The overall aim of this research is to understand the disrupters and dynamics of agricultural production and its capacity in Indonesia within the context of tourism and modern retail sectors being the dominant and highly influential markets for local smallholders.

The specific objective of this activity is to explore local agricultural production in Bali and example value chains to identify the challenges and thereby, the opportunities for local producers with respect to their relationship with markets.

The geographic scope of this assessment is the province of Bali with nominated agricultural value chains involving neighbouring provinces to provide context in understanding supply resilience and regional opportunities.

The primary constraints and corresponding key actions and solutions that can support sustainable engagement with high-demand markets will be determined from this research and inform the development of a strategic approach to research for development of the agriculture-tourism nexus in Indonesia.

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[19] *Regulation No. 99/2018 Article 12*
[20] *Regulation No. 99/2018 Article 8*
[21] *Regulation No. 99/2018 Article 16*
[22] *Regulation No. 99/2018 Article 18*
[23] *Prof I M U Supatha, pers comm (2021) A number of crises contributed to the background of these regulations to support agriculture including the terrorist bombings in Bali, food poisoning in tourist groups, SARS and the Bird Flu outbreak. The eruption of Mt Agung and COVID-19 subsequently support the objective for agricultural resilience as a key part of the local economy.*

Methodology

A methodology drawing on rapid market assessment and value chain analysis, focussing on producer capacity in the context of a high demand end-market in Bali was used. Three value chains – pineapple, carrot and chicken meat – were selected to provide a cross-section of agricultural activity in this study. These chains were selected as a framework to guide a broader understanding of smallholder production.

Survey, interviews and guided discussions with smallholders and other key informants, combined with chain observation were used to identify capacity and capability elements of the upstream value chain participants. A gap scoping exercise was blended with this primary data collection. A composite assessment of supply capacity and capability for agricultural products with respect to high-demand markets, together with key value criteria and issues was then generated.

Stakeholders were identified by in-country partners with assistance through the Bali Professional Purchasers' Association, the Hotel and Restaurant Association of Indonesia, the Young Farmers Forum of Bali, The Department of Agriculture (Bali) and end-market purchasers who were engaged in the preceding research activity. Participating enterprises also provided their perspective on the challenges and opportunities in connecting with high-intensity tourism hubs. Participants were contacted by letter and through farmer group leaders with a personal follow-up and provided with a background of the research and the survey. The survey was modified for each value chain actor cohort.

COVID-19 implications

The impacts of COVID-19 manifested primarily in extended time frames for engaging with participants and collating meaningful data. Planning was undertaken to mitigate travel challenges for the team and engage with participants when suitable. The data, focussed on preCOVID-19 conditions, acquired from the participants was relatively homogenous, providing a good confidence within the scope of this research.

Value chain overview

Pineapple

Pineapple (*Ananas comosus*) is a herbaceous perennial tropical plant in the Bromeliaceae family, native to South America. It is primarily grown for its large edible fruit. Fibre can also be made from its tough waxy leaves. Pineapple can be consumed fresh, juiced, cooked and preserved.

Pineapple is a product of significant demand. Purchasing data show that it is the fifth most significant fruit purchase in the tourism end-market in Bali[24]. In 2019, an estimated 17,116 hectares of pineapple were grown in Indonesia. The area of production has increased by some 40% in the last decade[25]. Essentially, all pineapple consumed in Indonesia is domestically grown, predominately in Sumatra and Java (Figure 1)[26]. These two islands account for almost 60% and 30%, respectively, of national production. Lampung is the most significant province for pineapple production.

Java is the main origin of pineapple consumed in Bali. There are primarily two production regions supplying Bali. The large, honey pineapple comes from the Kediri and Blitar regencies in East Java. A smaller pineapple is mostly from Subang Regency in West Java.

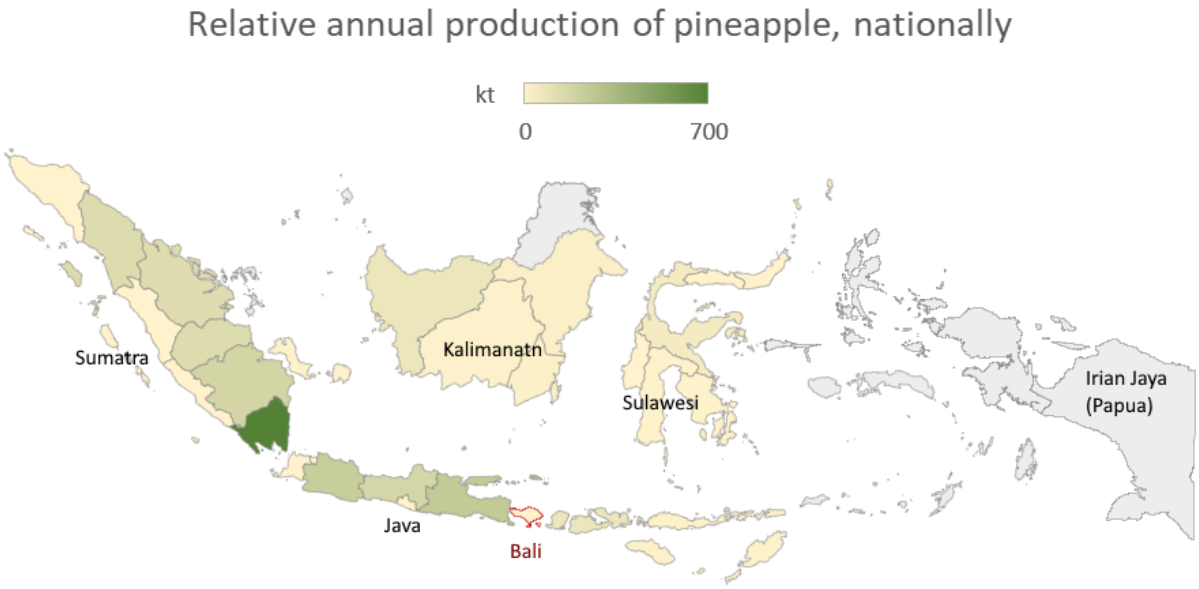

Figure 14: Provincial production of pineapple in 2019

Farmers in East Java lease land[27] and obtain a permit to farm and are liable for the respective rent or land tax for the area being used. Generally, new crops are grown in a distinct contract monocropping land-use system, with pineapple replanted after harvest. Most fruit is harvested in the dry season. After the fruit has been cut, the mother plants and shoots are removed, the land cleared and cultivated before the shoots are replanted.

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[24] *Agriculture for Tourism: Local market development opportunities in Bali agriculture – market engagement assessment, Primary Principles, 2021.*
[25] *FAOSTAT*
[26] *Central Bureau of Statistics (bps.go.id)*
[27] *Land is owned by the State-owned Estate Crop Company (PTPN XXIII) or Perhutani, the stated-owned forestry company. The farmer pays rent for the use of PTPN land or land tax when using Perhutani owned land.*

This approach results in a uniform level of maturity and predictable harvest. The cropping cycle is approximately 16 months from planting to harvest.

Farmers are only involved in the cultivation period. The pineapple crop is generally forward sold, up to 12 weeks before harvest. The actual harvest and all postharvest activities are conducted by the traders. There is no processing capacity in these regencies. Pineapple is sold-on fresh by the traders to markets in East and Central Java, with a small volume traded to Bali, however, this inter-provincial trade ceased with the impact of COVID-19.

In West Java (Subang Regency), there is a mixture of land ownership and rental. Farmers grow pineapple on their own land as an under crop in a mixed cropping system, commonly with sengon (*Albizia chinensis*), mangosteen (*Garcinia mangostana*) and banana (*Musa* spp). In this area, the pineapple crop is not replanted after harvest and instead, is cultivated as a permanent bed. After the fruit has been cut, side shoots are left to grow into the new mother plants. Some farmers, remove the 'pups' and plant them around the expended mother plant. The practice of not replanting is due to the cost involved. This practice, unlike that pursued in East Java, results in less uniformity in the maturity of pineapple fruits. This lends itself to a smaller but more continuous yield over the year, though the peak harvest is in the dry season (May – September). The contingent of farmers who lease land in this area, cultivate the land in the same manner as the land-owning farmers – renting the same plot continuously and mix-cropping the land.

While a small number of farmers have the traders cut the fruit, most farmers in this area harvest and sell their fruit to the traders. Pineapple tends to be sold at the farmgate with most local pineapple subsequently traded fresh in the adjacent tourism area of Ciater, and in the larger urban centres in West Java. A small volume of West Javan pineapple is normally sold in Bali. This trade has ceased with the impact of COVID-19.

Two processing enterprises operate in Subang Regency, however there is limited demand for pineapple, with just a small volume of unsold fresh fruit processed into jam and sweets.

For the limited production of pineapple in Bali, most fruit (70-80%) is picked in November – February and the remainder picked in June - September.

Table 3: Overview of smallholder pineapple production activities

Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Land preparation	■	■		■	■	■	■					
Seeding / planting	■	■		■	■	■	■					
Interplanting						■	■					
Manure	■	■				■		■	■			
Pruning/ thinning				■	■	■		■				
Pest & disease management	■	■	■	■	■		■	■	■	■	■	
Weeding	■		■	■	■		■		■		■	
Irrigation	■	■	■			■						

Harvest (Bali)												
Harvest (E. Java)												
Harvest (W. Java)												
Grading & packing												
Transport												
Selling												

Indonesia is one of the world's leading producers of pineapple. Based on Food and Agriculture Organisation (FAO) agricultural statistics, Indonesia is the 6th largest producer of pineapple globally and harvested around 2.2 million tonnes of pineapple in 2019 (Figure 2)[28]. This represents some 3.6% of global annual output of this crop. Indonesia is the most productive country, with significantly higher yields than other countries with an average of 117.5 tonnes of pineapple per hectare per year (Figure 2).

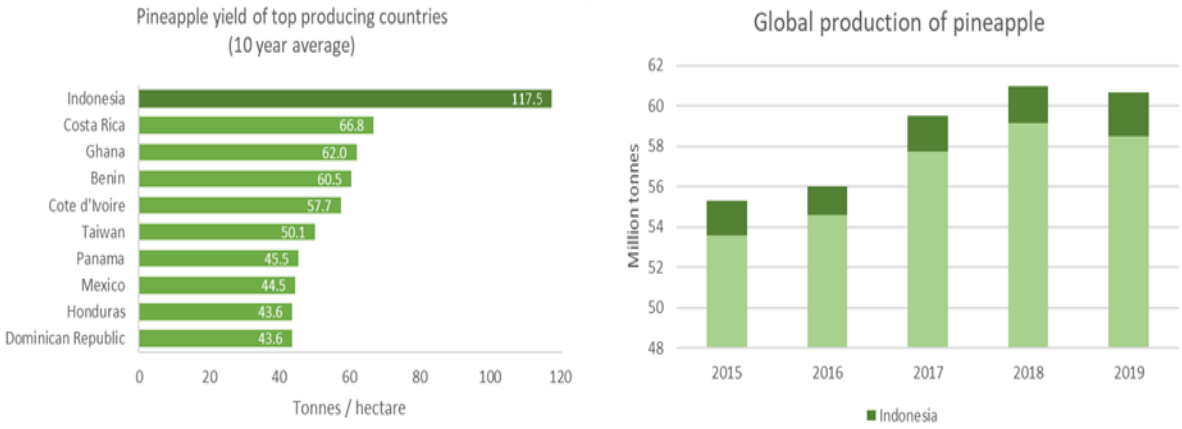

Figure 15: Productivity of top pineapple producing countries (left) and estimated global output (right)

Indonesia exported 18.5kt of fresh pineapple in 2019 and this has increased significantly in recent years from just 874 tonnes in 2015. The UAE accounts for 54% of fresh pineapple exports. Almost 162kt of canned pineapple was also exported to some 60 countries, though this trade is in decline, having fallen some 6% in the last 5 years. The USA, Spain and The Netherlands represent half of this market. The relative value per unit of this export has dropped by 7.5% and 10.1% for fresh and canned product respectively, over the same period.

A small volume of canned pineapple[29] is imported to Indonesia, from China, and attains a 35% price premium per unit compared with exported Indonesian product. Overall, there is very little price differentiation between export markets for Indonesian product.

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[28] *FAOSTAT*

[29] FAOSTAT: Canned pineapple imported from China in 2019 was 229 tonnes, equivalent to 0.14% of the volume exported

Export of juice is increasing. The Netherlands and Spain are the principal markets for both fresh juice and concentrate. While concentrate is exported to some 30 countries, The Netherlands, USA and Spain account for around 60% of the concentrate market. Fresh juice exports have risen by 60% and concentrate by almost 40% since 2015. A small volume of fresh pineapple juice is imported, equivalent to around 20% of the volume exported. Exported juice is more than twice the unit value of juice imports.

Sector summary

Although only a relatively small number of participating farmers cultivate pineapple, it is not a specialist crop with all participating famers reporting that it is just one of several crops grown. The majority of farmers also produced a variety of vegetables, with some smallholders growing fruit crops, such as citrus. Typically, a smallholder crops around 500m^2 of pineapple. Fewer than 20% of producers cultivate significantly larger areas of pineapple, up to one hectare. The larger producers cite economy of scale as a key reason for larger cropping areas, as well as opportunities to supply the greater demand from markets such as Bali. Most smallholders note that the small scale of their enterprises is a constraint. Smallholdings are mixed-cropped and the overall size of the pineapple plot is an allocation based on the number of other crops produced.

Both men and women are involved in pineapple smallholder production with all enterprises relying on family members for labour.

Reported farm revenues vary significantly between smallholders. There is no consistency with crop area which suggests the smallholder responses may be a mixture of whole farm and specific crop revenues, and further examination is necessary to adequately understand the overall economic situation for pineapple cultivation. On average, off-farm household income is equivalent to just under 30% of farm revenues, with almost all households having an off-farm source of income.

A quarter of smallholders report weather as a key reason for changes in farm output from year to year, though interestingly, half of participants indicate that farm output is conditional on price and the main reason behind changes in farm output is decision-making based on market uncertainty. This is mirrored further with close to 10% of farmers indicating that if prices were better, they would produce more. Overall, most producers indicate that improving crop husbandry, including better varieties and crop choices are necessary to increase their farm productivity.

Most smallholders are aware of their crop losses with a range of issues identified. An average loss of 25% is attributed to pests and diseases by more than half of farmers and around 10% of respondents nominated adverse weather as a reason for a loss of some 30% of production. One farmer indicated that a 30% loss in yield results from poor soil ‘health’ caused by previous chemical use. Anecdotally, collectors and traders reported that chemical residues are a factor behind poor crop production.

Overall, smallholders maintain that improving soil health and pest and disease management are the main requirements to reduce their crop losses. A higher labour input is also noted as a way to reduce crop loss, suggesting that smallholders are aware that key tasks are being missed.

Marketing and market feedback

The majority of farmers sell their whole crop to a local collector for an average price of IDR5000/kg, with just a third of producers having a second outlet through which 20 – 30% of their pineapple crop is sold. Most commonly, the second outlet is the local traditional markets. The average price at the traditional markets is the same as that paid by local collectors. Notably, the average return is equivalent to the average reported costs of production. A small number of farmers sell direct to consumers or to local shops for a premium – +40% and +60% respectively. The highest prices are June – August with prices falling around 40% to a peak season low in December – January.

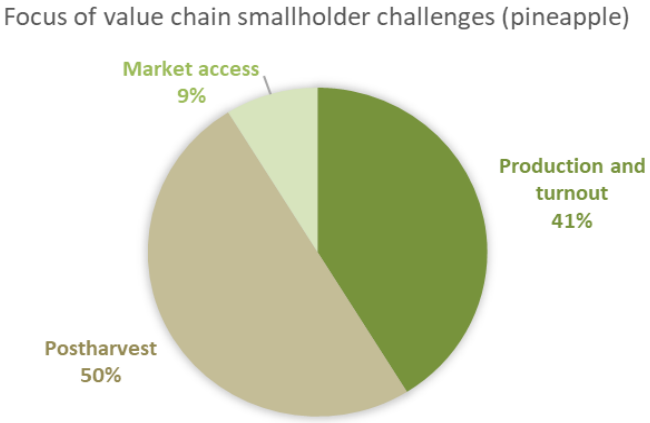

Figure 16: Proportion of challenges per value chain link

Interaction and communication along the supply chain are weak. Fewer than half of smallholders are aware[30] of market specifications for pineapple and less than a third of producers claim to have or know of any written descriptions of product specifications. Despite this, all participating smallholders are confident in describing what attributes buyers of pineapple are seeking – freshness, fruit size, minimal defects and for some producers, packaging and continuity of supply are recognised as important factors. This knowledge has been acquired through experience with 75% of producers reporting reasons for lack of demand or reduced prices. The most common reason is fruit size. Appearance, primarily of the leaves, is a proxy for freshness and quality and is the second most common reason buyers provide. Insect damage of leaves and/or yellowing are undesirable. Other problems include rot and unsatisfactory flavour. Packaging is also important though is limited to a small number of buyers and so relevant only to producers supplying these purchasers. Collation of these value chain challenges from the perspective of the smallholders illustrates that production and postharvest are both significant areas in which improvement could be made (Figure 3). Improvements are also necessary in accessing markets. Key challenges, such as certification and packaging, are expected to yield dividends, though an appropriate share of additional value needs to be returned to the producers to justify the extra input.

Pineapple growers identify most of the problems reported by the buyers relate to product quality. Growers who have had pineapple fruit rejected describe low fruit quality and appearance (of leaves) and low sweetness as key factors. Lack of market demand is also a reason for growers to have fruit rejected.

Fruit size is a recurring issue with uniformity being the main challenge though under-sized fruit is also noted as a concern. Growers struggle with the demand for high quality but at a lower price point.

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[30] The research set out to determine whether farmers were knowledgeable of market specifications, with a minority stating they are aware of the specifications. Focus group discussions revealed that a greater proportion of farmers know what the buyers require but due to the added costs in preparing product to the required standards and lack of reward, farmers prefer to sell to local collectors at a lower standard.

Production and market access

With respect to production decisions, contracts and terms of trade, few of the participating smallholders have contracts or specific agreements for pineapple production. Stability and market confidence are important decision factors for growing pineapple, with a stable price (25%) and predictable production (38%) the most nominated reasons. Pineapple can be readily intercropped with vegetables and farmed as a perennial cash crop as it poses less competition for farm resources, particularly labour.

Approximately a third of pineapple growers cooperate with others to secure sufficient volumes and continuity of supply for their buyers. These cooperating farmers are differentiated from others by their awareness of their specific markets (buyers) and are more likely to have contracts. Contracts are seasonal. Producers with contracts indicate they are satisfied with the agreements and payment terms, however better prices and shorter payment terms are desired. In general, farmers are paid directly for their product. Around 10% of producers indicate they are paid 10% at the time of supply or in advance, with the balance paid up to a week later. The predominate area for improvement cited by smallholders is in building trust with buyers – having good relationships and clear agreements.

In terms of improving sales, cooperating farmers identify product quality, presentation and certification as key requirements. Quality standards are the primary component of supply agreements. In contrast, producers operating alone cite price as the key driver of sales and do not have supply agreements. Most pineapple producers are generally satisfied with the prices received, however, only just over half of smallholders growing pineapple are knowledgeable of their net returns and only 37% report a (small) profit (Figure 4).

The primary brake on farm output is market uncertainty with respect to demand and especially price. Price is reported as a key factor to improving pineapple growing particularly as many smallholders suggest that returns do not cover the costs of production. Access to capital is repeatedly identified as a challenge with 25% of growers indicating that access to capital and cashflows is crucial.

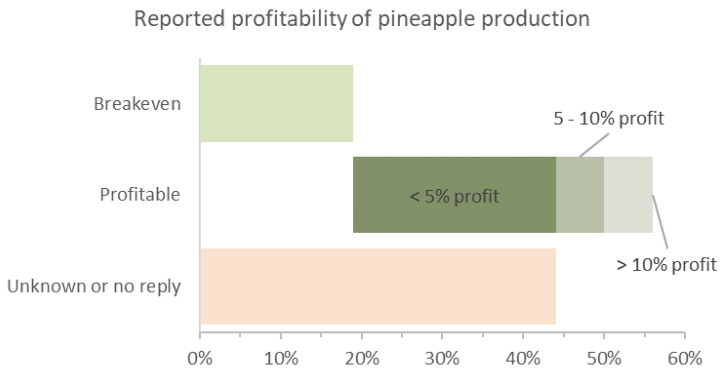

Figure 17: Profitability of pineapple cultivation

In terms of costs, only around half of farmers are knowledgeable of their cost of production, though costs are consistently reported as IDR5000/kg. This presents a particular challenge with the Governor's Regulation No. 99/2018 specifying the price paid to farmers for local agricultural products must be at least 20% higher than the cost of production. Fertilisers and agrochemicals are specifically noted input cost categories with the majority of smallholders indicating that a reduction in use of fertilisers and pesticides and/or a transition to organic fertilisers is the main method of reducing costs. There is a potential that this perception is contributing to lower productivity and increasing the costs per unit of output, given the reasons nominated for crop losses. Fewer than 10% of the participating farmers identify improved productivity through better crop management and product quality as a strategy for reducing costs of production.

The supply and demand ratio is recognised as a key element with this crop and peak harvest periods impact significantly on prices as farmers compete to sell their produce and, conversely, farmers are conscious of the higher prices during the dry season when supply declines. Smallholders involved in cooperative activity do not report concerns with seasonal price or supply problems and product is sold directly as opposed to other

growers who sell via third parties such as collectors. Farmers indicate that the collectors capitalise on the supply gluts to suppress prices. Peak supply periods affect the growers through low prices and lack of sales, with smallholders carrying the full risk of excess production.

Governor's Regulations No. 99 / 2018 and competitiveness

Only pineapple growers involved in group or cooperative arrangements report knowledge of these regulations in Bali, with most smallholders unaware. When discussed, growers generally feel that the regulations will have a positive outcome for them and improve the value of local products. Interestingly, some smallholders (in Java) suggest that this will result in domestic product from outside of Bali being lower cost and therefore, more competitive and to their advantage.

Overall, local Balinese growers believe that improved and more consistent quality of produce would supplant the need for the regulations, however currently the consistency of local quality is not satisfactory. Improving collaboration is considered by many farmers to be a key element in delivering better and more reliable quality and intrinsic value, and therefore, competitiveness. Technical assistance is also identified by local smallholders as an adjunct to the regulations to improve competitiveness. Local farmers are more confident with respect to domestic competition, than with imported produce. Greater smallholder collaboration and lower costs of production are seen as necessary to effectively compete with imports.

Risks

The most significant risk identified by pineapple growers and correspondingly, the main problems encountered relate to pests and disease in the field which directly impact quality, shelf life and marketability of harvested fruit. Other issues include poor crop management resulting in small fruit and unexpected price drops or a lack of demand diminishing sales.

Pest and disease management and business development training are revealed as matters of high importance. There are several key business obstacles (Figure 5) acknowledged by smallholders with pests and diseases noted as the primary challenge (41%), though only around 5% of producers consider pests and disease to be significant enough to stop pineapple growing. All smallholders report the use of agrochemicals for pest, disease and weed management.

Almost a fifth of pineapple growers identify growing conditions relating to weather and/or climate or a lack of water due to drought as a significant impediment. Price, including low prices and/or high costs of production as well as price uncertainty, is reported by almost 20% of producers to be a key hurdle and the same number of smallholders indicate that finance or lack of capital is a significant problem.

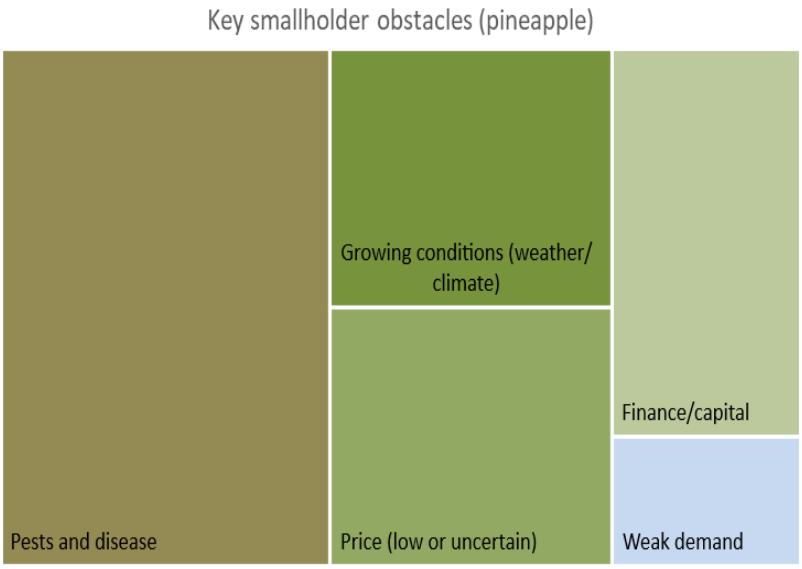

Figure 18: Main obstacles facing pineapple growing enterprises

However, some 40% of pineapple producers consider the lack of (working) capital to be the major business risk and competitors with access to capital are considered to be a potential end for their pineapple enterprise. Working capital affects smallholders' capacity to purchase key inputs such as fertiliser, which in turn affects output. In terms of selling costs (postharvest), pineapple growers note transport as a significant cost. For growers who use packaging for access to a market, this is also a substantial expense.

Farmers have limited opinion on potential solutions other than government credit for business expenses, subsidies or price regulation. Overall, improved cashflow appears to be a critical issue, with better payment terms, higher profitability and/or access to operating funds likely to be worthwhile. All growers report price and working capital as serious constraints.

Feeding into this cashflow and business risk scenario is the finding that none of the pineapple growers maintain farm records or track inputs and costs.

Support

Farmers report that group or cooperative marketing, contracts and technical training are important areas of assistance they desire. Almost 40% of pineapple growers seek technical assistance and training in production and marketing and a slightly higher number identify assistance with getting faster payment terms as very important. More than half (56%) of smallholders nominate marketing awareness, market access and pricing and as the key items to improve farm enterprises. Three quarters of growers obtain their market information from collectors and traders, with around 5% only getting market and price information directly from their buyer.

A third key improvement identified by pineapple growers (12%) is the importance of soil health and crop nutrition. There is a suggestion that this issue is intwined with the challenge of reducing production costs and smallholders are not attaining an effective balance. The main impacts on pineapple enterprises revolve around the cost and quality of inputs and access to technical learning. These are considered as very important elements in reducing costs of production and improving produce quality and are recognised by smallholders as vital to achieving higher returns.

Technical information is mostly accessed through peers in the village with 25% of smallholders reporting this as the source of learning. Collectors are nominated by just under 20% of growers as sources of technical help, while social media is used for technical learning by just 5% of pineapple growers.

With respect to general constraints and infrastructure issues, water availability (and drought) is the only issue of concern with 25% of producers indicating a problem. Impacts of moderate importance include access to equipment and mechanisation (related to labour and costs of production challenges), availability of inputs and weather.

In terms of building better business opportunities with high-demand markets such as tourism, pineapple farmers reveal three avenues – greater promotion and focus on local product, collaborative supply agreements and more connected relationships with buyers.

Carrot

Carrot (*Daucus carota* subsp *sativus*) is an annual vegetable in the Apiaceae family, native to Europe and Southwest Asia. Today, it is primarily grown for its edible root; leaves and seed are also consumed. Carrot can be consumed fresh, juiced, cooked and canned. Local production is generally across two cycles with most sowing in January – March, as well as a midyear planting.

Table 4: Overview of smallholder carrot production activities

Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Land preparation												
Seeding / planting												
Fertiliser												
Manure												
Pruning/ thinning												
Pest & disease management												
Weeding												
Irrigation												
Harvest												
Grading & packing												
Certification												
Transport												
Selling												

Carrot is a product of significant demand. Purchasing data show that it is the fourth most significant vegetable purchase in the tourism end-market in Bali[31]. Although the majority of carrot consumed is domestically grown, Indonesia is a relatively small producer. In 2019, Indonesia cropped an estimated 42,895 hectares of carrot[32]. The area of production has increased by almost 60% in the last decade, though productivity has remained static. Domestic production is centred on the islands of Java and Sumatra, with West and Central Java dominating the national output with around 60% of total production, and Sumatra accounts for almost 30% of the annual carrot crop (Figure 6)[33]. Balinese product is generally considered expensive and inferior by the local tourism sector[8].

Approximately 20% of carrot consumed in Bali is reportedly imported from China. Although there are no imported quantities of carrot identified by Indonesia in FAO statistics, the average annual exports of carrot from other countries to Indonesia is 30,000 tonnes per year over the past decade. The bulk was supplied from China, followed by Malaysia, Singapore and Australia. Total imports fell dramatically in 2017 and just 1027 tonnes of carrots were imported in 2019.

Indonesia is a moderate producer of carrot, globally (Figure 7). Based on FAO agricultural statistics, Indonesia is the 12th largest producer and harvested around 0.7 million tonnes of carrot in 2019[32]. This represents just over 1% of global annual output of this crop. Crop yield is low compared with other countries with an average of just 16.3 tonnes of carrot per hectare per year.

Indonesia is not a significant exporter of carrot, trading just 16 tonnes of this crop in 2019, mostly to Malaysia (81%) and Singapore (19%).

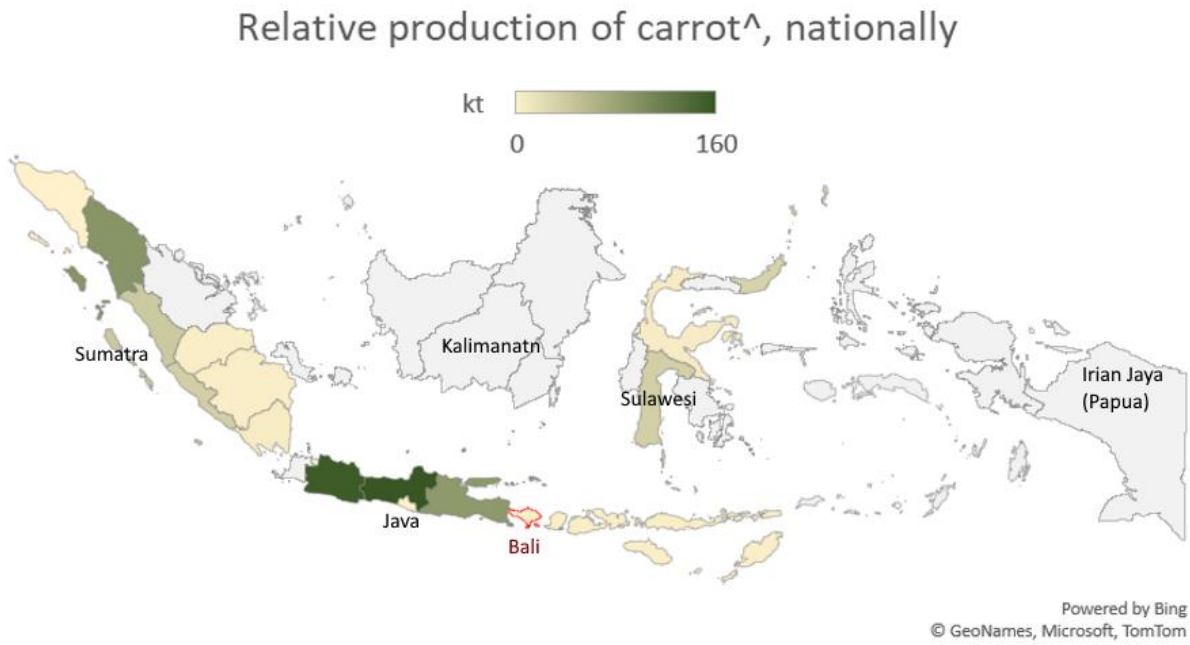

Figure 19: Provincial production of carrot in 2019
[^ statistics combine carrot and turnip]

[31] Agriculture for Tourism: Local market development opportunities in Bali agriculture – market engagement assessment, Primary Principles, 2021.
[32] FAOSTAT: Statistics combine carrot and turnip
[33] Central Bureau of Statistics (bps.go.id)

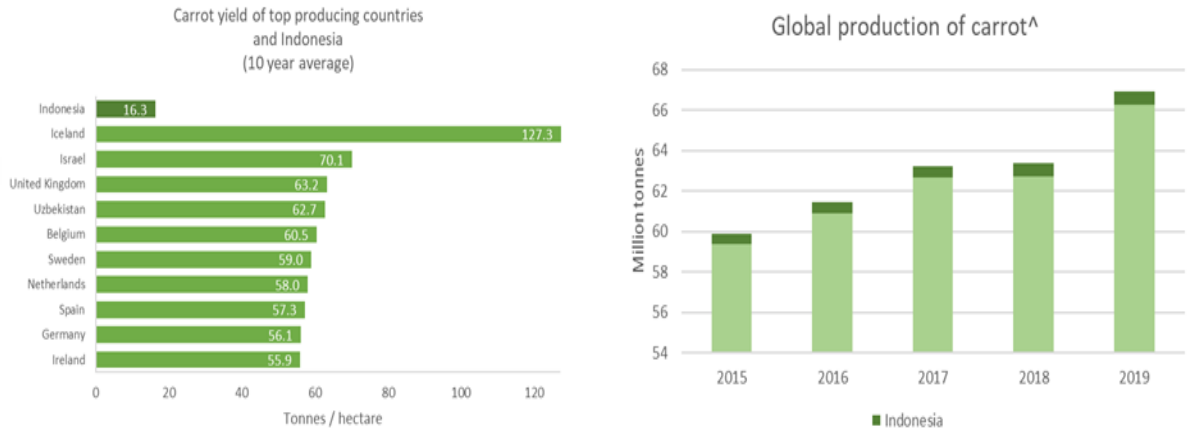

Figure 20: Productivity of top carrot producing countries (left) and estimated global output (right)
[^ FAO statistics combine carrot and turnip]

Sector summary

The primary reason that smallholders reveal for producing carrot is the relatively low cost of production and ease of cultivation. Just under 40% of smallholders growing carrot specialise, growing only this crop. The majority of farmers cultivate carrot as one of several vegetable crops. Carrot is grown domestically in various provinces including Sumatra and Java, as well as in Bali.

Farm size is considered a key factor and impacts a producer's capacity to fulfil market opportunities, suggesting smallholders are confident of demand. Most smallholders note that the small scale of their enterprises is a constraint. Typically, a smallholder crops around 2200m^2 of carrot. Farmers who only grow carrot, tend to have smaller areas of production than farmers who grow several crop types.

Both men and women are involved in carrot smallholder production with all enterprises relying on family members for labour.

Similarly to pineapple growers, reported farm revenues vary significantly between smallholders. There is no consistency with crop area which suggests the smallholder responses may be mixture of whole farm and specific crop revenues, and further examination is necessary to adequately understand the overall economic situation for carrot cultivation.

Approximately 45% of carrot producers report off-farm income. On average this is equivalent to between 20 – 30% of farm revenues.

Forty four percent of smallholders state weather as a key reason for changes in farm output from year to year, and the same number of participants indicate that farm output is affected by the condition or fertility of the land. Just over 10% of carrot growers report that price is a factor and the main reason behind changes in farm output is decision-making based on market uncertainty.

The majority of smallholders (62%) consider that cooperation and knowledge sharing is necessary to improve productivity, with innovation and intensification also suggested as opportunities.

Most smallholders are aware of their crop losses with a range of issues identified. An average loss of 15% is attributed to production factors including harvesting, weather and pest and disease. Losses in the field range from between 5 to 50%. Poor harvesting practices is the predominate cause of losses. Just under 20% of growers indicate that taking better care of the crop will reduce loss and approximately 30% of carrot growers state that improving uniformity and quality of seedlings is crucial to reducing crop losses.

Postharvest loss is estimated at an average of 7%. The main reason suggested for postharvest loss is in grading and quality rejection. A reduction in (fresh) weight of product sold is a factor too. A lack of market demand or oversupply reduces the amount of product that can be sold, also resulting in losses. Better peer to peer cooperation and crop scheduling are identified by smallholders as solutions to reduce postharvest loss resulting from supply and demand issues.

Marketing and market access

In Bali, a third of the carrot farmers sell their crop to a local collector, with the majority of smallholders selling directly to consumers at the traditional markets. In Bandung and Garut regencies, West Java, most carrot growers harvest and sell their produce to collecting traders who on sell to central markets within the province as well as into other provinces. Prices fluctuate throughout the year, but growers report a preCOVID-19 average price of IDR4000 – 5000/kg (both in Bali and Java). Production costs for carrot are reported around IDR2000 – 3000/kg with yields in the order of 1 – 1.5kg/m^2. Notably, the impact of COVID-19 has been a 40 – 50% decline in prices for carrot. Prices still fluctuate offering some occasions for higher returns though growers currently receive an average price of IDR2500 – 3000/kg, providing a minimal profit, at best. This is resulting in growers selling below the cost of production.

Reported high and low price periods vary between producers. Further examination is necessary to determine the reasons for the discrepancies and/or clarify market opportunities. Approximately 40% of carrot producers state they are sometimes satisfied with the price received reflecting occasions when their harvest coincides with higher price periods.

However, only 19% report a (small) profit, overall. The majority (56%) of carrot growers state that their returns for this crop are equivalent to the costs of production (Figure 8).

Similarly to pineapple, this presents a particular challenge with the Governor's Regulations No. 99/2018 stipulating that the price paid to farmers for local agricultural products must be at least 20% higher than the cost of production.

The management of pests and diseases is identified as a particular input cost of concern, with the increasing cost of agrochemicals singled out by some farmers.

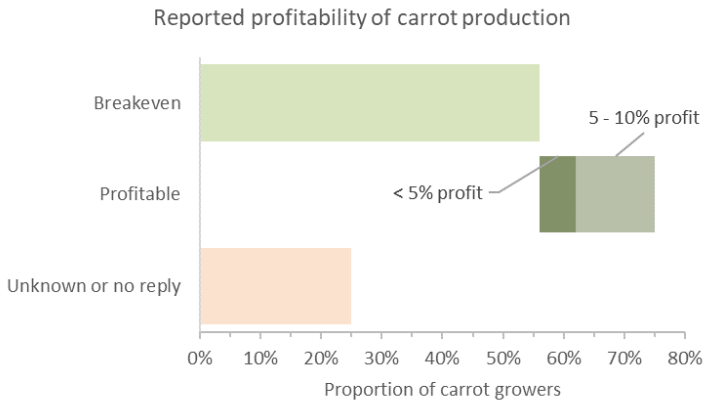

Figure 21: Profitability of carrot cultivation

Interaction and communication along the supply chain appears functional though not collaborative. All smallholders are aware of market specifications for carrot, with half of the carrot growers indicating there are written product specifications. Most growers state that they have received feedback from buyers at some point about the quality of their carrots. Although feedback generally covers problems with quality (including physical damage or not meeting the specifications), some growers report that buyers inform them of the market specifications. Inconsistent grading, in particular size, is the main problem reported by almost 60% of producers. Spoilage and pests are the next two most common issues. On average, growers report that the unmarketable portion of their crop is 15%. Grading issues typically result in 10% loss whereas growers with pest or spoilage problems face a 20% loss of product sold.

All producers state that cleaning and grading are required postharvest. Key attributes desired by buyers are freshness, size, consistency, colour and continuity of supply. This is reported consistently by all carrot producers. Some traders also specify the acceptable proportion of defects. One participating farmer indicated that they received constructive feedback with the buyer informing them of poor product maturity and that they needed to extend the growing period.

Approximately 40% of producers indicate that their buyers expect certification (PRIMA 3) while a similar number of farmers report that they neither have certification nor have they been asked to have it. Almost 60% of carrot growers have PRIMA 3 certification through their farmers' group. There are approximately 20% of smallholders producing carrot who have certification but do not require it for their buyer/s. Only one participating smallholder has organic certification and this was requested by their buyer.

Production and market feedback

Most of the surveyed smallholders decide to grow carrot based on their own expectation of market demand, with 25% of farmers reporting that they grow carrot on the basis of a buyer or farmer group leader asking for this crop. Half of the smallholders indicate that they collaborate with or share information with at least one other farmer with the main reasons being to maintain supply volumes and to improve practices.

Consistent and reliable supply are the predominate demands made by buyers of carrot in Bali. Other expectations include high quality at a low price point, certification, low pesticide residues (especially for high-end hotels and restaurants) and environmentally friendly production.

In considering strategies to increase sales of local Balinese carrot, smallholders identify a handful of key needs. The relative value of these actions is illustrated in Figure 9. Improving quality is the most important element to improving sales, while reducing the price point is needed. Certification, as well as increasing the availability and reliable supply of local product, are deemed equally valuable. While these strategies focus on overall improvement of farm enterprises, collaboration between producers and other value chain actors is also put forward as a means of improving sales. Discussion reveals that this principally relates to cooperative planning and scheduling of production, but there is also an element of building value chain transparency and creating mutually beneficial partnerships.

None of the participating smallholders have contracts or specific agreements for carrot production[34]. However, one participant revealed that the lack of a contract was due to the current situation and, postCOVID-19 they would anticipate having some type of supply agreement. While most farmers have no expectation or consideration of contracts, a small proportion cite market certainty as a reason for agreements and indicate that continuity of production is an important criterion. A small minority of farmers have (or have had) contracts for crops other than carrot. These are very simple agreements essentially just an agreement of price for the month.

[34] Discussions with market actors and farmers suggest that the inconsistent or unsatisfactory quality of local Balinese carrot is a significant barrier to offering contracts; farmers are unable to meet the expectations

In general, farmers are paid directly for their product, reflecting the majority who sell direct at traditional markets. Around 5% of producers indicate they receive a part payment (selling to a trader) at the time of supply, with the balance paid up to a week later. The main area for improvement in payment terms cited by smallholders is to have payment on supply or terms of no more than one week. The principal reason given is the need for smallholders to have better cashflow in order to undertake ongoing farming activities.

Figure 22: Relative importance of key actions effecting increased sales of local Balinese carrot

Support and risks

In terms of improving opportunities with high-demand markets such as tourism, local farmers identify collaborations and partnerships with buyers as the best route and supported with marketing and promotion of local production. Similarly to pineapple growers, carrot farmers note price stability and market confidence are important factors.

Carrot growers identify a number of key risks to their enterprise (Figure 10). Market or price uncertainty is the predominate concern. Growing conditions, the impact of pests and diseases and the subsequent rejection of product at point of sale are significant issues. Reflecting these risks, the majority of smallholders indicate that price uncertainty is their primary challenge, and this exacerbates the problems of production costs, lack of capital (cashflows), postharvest handling and loss, access to cultivation equipment and impacts of weather, pests and disease.

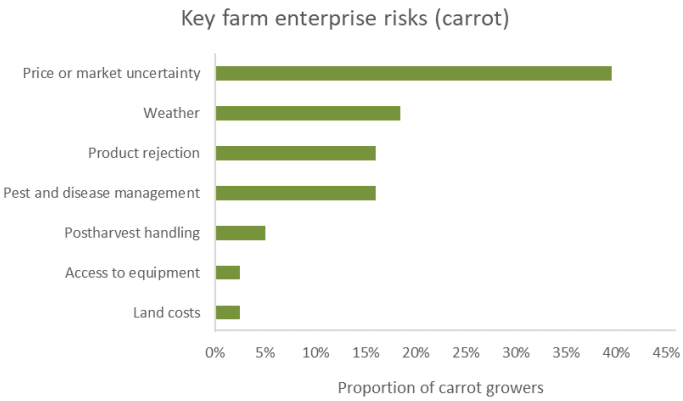

Figure 23: Smallholder carrot growers' identified risks

Notably, the single biggest failure risk for carrot farmers is a failure to harvest a saleable crop. Highlighted within this risk is the lack of financial resilience farmers possess.

The supply and demand ratio is recognised as an influencing element with this crop. Growers are confident, outside of the impact of COVID-19, that carrot demand is good, provided a suitable product can be delivered. The majority of carrot growers feel that the seasonal price trends are stable and fairly predictable. Interestingly, low productivity is considered a reason for a fair market outlook. This echoes the growers' own recognised limitations with their output capacity resulting from problems or constraints in cultivation, which in turn, keeps a lid on supply. Some smallholders also include substandard quality as a key impact on supply and demand. Price surprises are generally limited to an unexpected oversupply of produce.

Postproduction, the cost of delivery/transport is nominated as a problem by almost half of the carrot farmers. A 10% 'weight deduction' imposed by traders is identified by one in five smallholders as a significant selling cost.

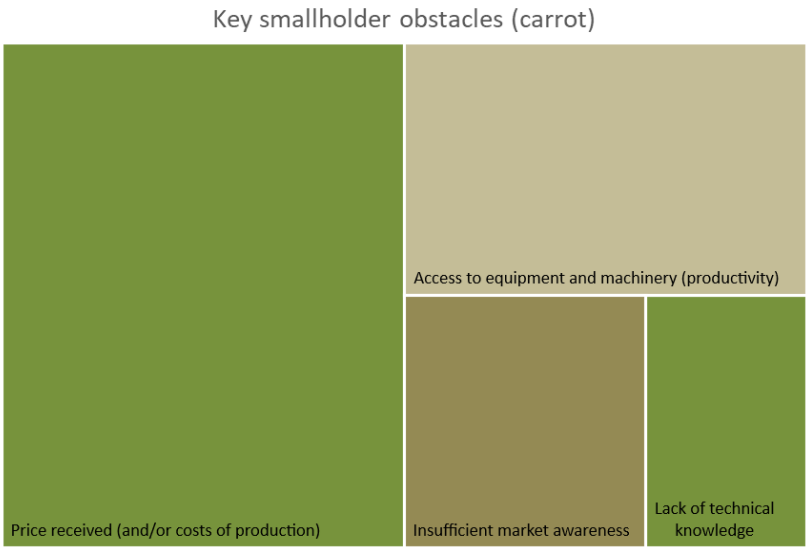

Figure 24: Main obstacles facing carrot growing enterprises

A number of obstacles are considered to be key impacts on the prospects of carrot farmers (Figure 11). Price features significantly with 50% of smallholders stating either prices do not adequately cover costs, or specific input costs (such as fertiliser) are increasing whilst overall prices are declining. Access to equipment and a need for modernisation of cultivation practices is considered a key obstacle by 25% of the smallholders. (Half of participating growers identify adoption of machinery and equipment, including automation, as a being a key to higher farm productivity and lower costs of production.) An insufficient understanding of markets is recognised to be an obstacle by some 15% of the smallholders. Learning and implementing better farming practices (10%) and reducing agrochemical inputs are considered necessary actions for the sector. More than half of the smallholders do not have or keep farm records. The remainder, associated with farmer groups, have (and presumably follow) standard operating procedures. This cohort of farmers also state they do not use agrochemicals for pest or disease management. Just under 40% of local carrot producers use agrochemicals as part of their normal farming activity.

There are a handful of infrastructure constraints identified by carrot growers which impact their enterprise. Whilst 12% indicate they have no constraints, 56% state that a lack of appropriate machinery or equipment affects their production capacity. Almost 20% of carrot growers note the lack of cool storage as an issue. Transport, water and reliable internet are also constraints each nominated by around 12% of growers. In terms of non-physical constraints, lack of price transparency and/or market access are a concern for almost a quarter of smallholders, whilst around 10% of carrot farmers suggest that regulation around the certification and trading of organic compost is a problem.

Price of inputs, particularly pest and disease management and crop nutrition need to be lower to reduce the costs of production, according to around 10% of carrot growers, half of whom suggest subsidy or other support is needed. (Many growers reduce their inputs to lower costs which then results in smaller, lower quality product.) Around one fifth of farmers suggest that collaboration, technical assistance and modernised cultivation practices are the solution.

A number of farmers advise that a tighter relationship between the implementation of good practices and quality assurance with the price received is required. A small minority of carrot producers (~5%) would like to see market or price guarantees. Farmer groups and technical extension services are widely nominated as necessary and valuable sources of technical information and improvement. Market information is generally obtained through social media and other social interactions between farmers.

The majority of carrot growers admit that low quality, primarily resulting from pest and disease incursions, is a problem identified by their buyers. However, local lead farmers

indicate that poor soil structure and crop nutrition are considered a prime reason for low quality carrots. Smallholders are also acutely aware that the expectation of higher quality does not translate into better prices.

Bali Governor Regulation No. 99 / 2018 and competitiveness

In contrast to pineapple growers who are predominately located outside of Bali, a little over half of carrot growers are aware of the regulations in Bali. Most of these smallholders view the regulations as a positive, however no benefits or impacts of any sort have been realised yet as the changes have not been actioned. This reflects the concerns revealed by the end-market actors around the lack of implementation and enforcement of the regulations.

Of note, carrot farmers accept that the regulations could support competitiveness of local produce but improvements in continuity of supply, postharvest handling and overall quality are necessary. Modernisation and mechanisation of farming practices are suggested as necessary to compete effectively with imports, as well successful implementation of certification to guarantee quality. Market development and promotion of local product is considered essential, irrespective of the regulations.

Reducing the costs of production and enabling profitability at lower price points represents opportunities for local producers. Smallholders also reveal that improving value characteristics of their product, such as implementation of sustainable ('nature') production systems and certification (for example GAP) would enhance competitiveness. A minor proportion of farmers (12%) consider regulation and subsidy as a means to compete with other provinces, though the majority advocate improving quality and supply consistency. Of note, most carrot farmers are confident in being able to compete with imports, however, the quality and volume of supply need to be addressed.

In terms of price, over 60% of producers consider local carrot production can be competitive, though some 10% of growers indicate that local producers are disadvantaged by government prioritising imported produce[35]. This perception relates to Indonesia's membership of the World Trade Organisation. In order to open up export markets for Indonesians, for example Singapore and Malaysia, local farmers need to compete with imports. In general, imported vegetables are suppressing off-season prices. Stakeholder discussions suggest that it is anticipated that the higher standards of imported product will be a driver for local producers to strive for better quality.

Overall, local carrot growers hold a similar view to that of pineapple growers. Improved and more consistent quality of produce would supplant the need for the regulations, however currently the consistency of local quality is not satisfactory. Improving farming practices as well as collaboration are considered by many farmers to be key elements in delivering better and more reliable quality, and therefore, competitiveness. Technical assistance is also identified by local smallholders as an adjunct to the regulations to improve competitiveness. Greater smallholder collaboration and lower costs of production are seen as necessary to effectively compete with imports.

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[35] Indonesia has signed and implemented a number of free trade agreements with countries and regions around the world. Indonesia is also currently in negotiations on several more trade agreements. The country is also a member state of the Association of South East Asian Nations (ASEAN) which has multiple free trade agreements.

Chicken meat

Chicken meat is a product of significant demand and is the second most important animal product purchased by the Bali tourism end-market[36]. In 2019, an estimated 3.5 – 3.9 million tonnes[37] of chicken meat were produced in Indonesia (Figure 12). This represents around 4% of world production of this animal product.

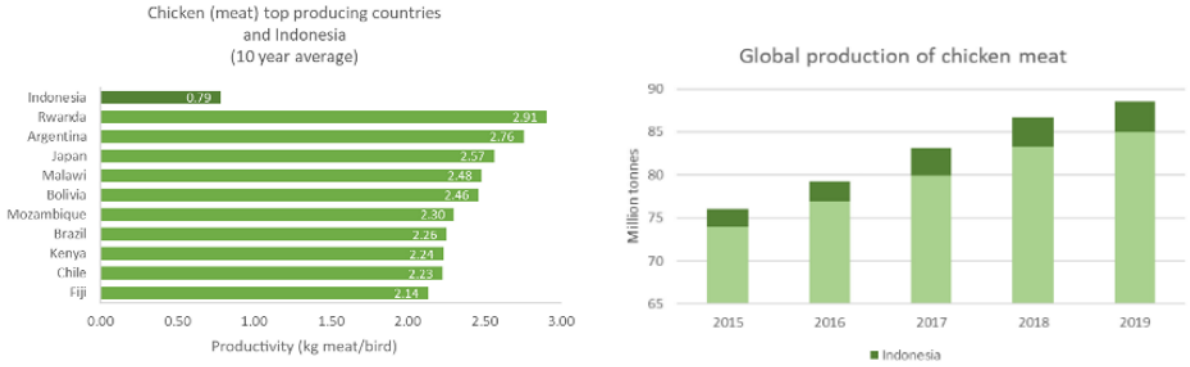

Figure 25: Productivity of top chicken meat producing countries (left) and estimated global output (right)

Despite being a relatively significant producer, Indonesia is characterised by fairly low comparative yields on a global basis (Figure 12)[38]. Output has increased an average of 13% pa over the last 5 years, though productivity has fallen close to 10% over the same period.

The island of Java is the dominant area of production, accounting for 65% of the national output (Figure 13)[39]. The province of Bali produced some 91kt of chicken meat in 2019. The Bali tourism end-market source all chicken locally. Whilst broilers make up the bulk of

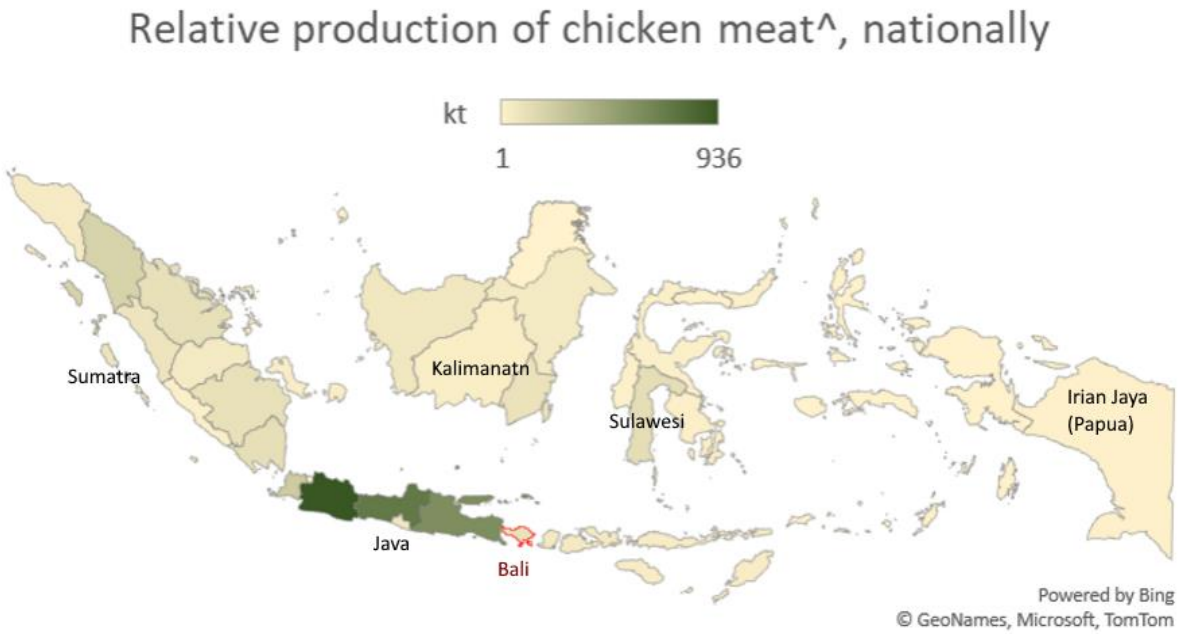

Figure 26: Provincial production of chicken meat in 2019
[^ statistics include layer hens and native chicken sold for meat]

product, native chicken represent 3.25% and older layer birds comprise just over 2.5%.

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[36] *Agriculture for Tourism: Local market development opportunities in Bali agriculture – market engagement assessment, Primary Principles, 2021.*
[37] *Chicken for meat production (broilers) was 3.5m tonnes in 2019 (FAOSTAT). Older layer birds and native chicken constituted an additional 400,000 tonnes of chicken meat (Central Bureau of Statistics (bps.go.id)).*
[38] *FAOSTAT*
[39] *Central Bureau of Statistics (bps.go.id)*

Broilers are harvested around 6 weeks. Layers are generally sold for meat after 2 years and native chicken (buras or bukan ras) are slaughtered at 2 – 3 months if intensively reared, or otherwise at up to 4 months from hatching.

FAO statistics[38] show Indonesia is an insignificant exporter of chicken meat, recording the trade of just 331 tonnes in 2019 to two countries and does not record any imports, however 6,500 tonnes of chicken meat were reportedly exported to Indonesia in 2019, predominately from Singapore, up from 5000 tonnes in the previous year. Just over 400 tonnes of canned chicken meat were also exported to Indonesia in 2019, the bulk coming from the USA. This is significantly less than in previous years, with imports of canned chicken meat from the USA averaging over 27,500 tonnes per year over 2016 – 2018.

Sector summary

The primary motivation for farming meat chickens is the opportunity for quick cash returns. The production cycle is short and the sales dependable. Most chicken farmers are only involved in raising poultry, with just 10% also producing eggs. Chickens are raised widely – farmed in most regions of the country.

Farmers operate in partnership with the buyer company[40]. Stock feed and day old chicks (DOCs) are purchased by farmers from the company. All farmers have a contract for purchase of all their output and prices are controlled within these agreements, with smallholders stating they have no avenue to negotiate prices.

An average smallholder has a 1.3 hectare farm and a typical production (cage) area of 560m^2 with approximately 12 birds per square metre and annual revenues of around IDR115 million. Farmers report a direct correlation between production size and profitability, indicating a strong demand[41] for chicken meat. The condition of the birds impacts the farm output and all smallholders indicate that improving the management practices is necessary to ensuring consistently good product, though none of the participating farmers are able to quantify a level of productivity loss. There is some indication that disease and/or inadequate feed are considered the main loss causing problems. Overall, the focus of chicken growers is to increase bird weight and some farmers report the need to minimise stress at 'harvest'. All chicken farmers state they are know their production cost and indicate that improving their bird management is crucial to reducing costs.

Most smallholdings have two people involved in the activity, with larger enterprises requiring a third worker. No meat chicken farmers report having off-farm income. Both men and women are involved in chicken smallholder production.

Production and market feedback

All smallholders sell all birds as live chickens to a single supplier and receive IDR14000/kg. Farmers are paid two weeks after supply. All the chicken growers are satisfied with the price received, however, net profit is uncertain as their costs vary between seasons. None of the participating farmers are aware of any required product specifications and they do not receive any feedback on performance of their product from end buyers. The body weight of the chickens is the only product attribute farmers are aware buyers are concerned with. Bird mortality is the principal problem faced by farmers though saleability is also impacted by low bird weight or inconsistent weights in a batch.

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[40] Producers work in contract partnership with *Charoen Pokphand*. This collaboration has developed a fairly tightly held supply chain.

[41] *Chicken meat is an agricultural product that is consumed by all sectors and all types of consumers on a regular basis*

The key risk faced by these smallholders is disease. Disease reduces growth rates, produces low weight birds and causes deaths. Farmers report an average of 3% unsaleable product, but otherwise there are no issues with respect to selling their product as all suitable birds are taken by the contracting company. None of the chicken farmers have any type of certification, nor is it required by the trader. There are no agrochemicals used and farmers indicate there are no products available for controlling pests and diseases.

The expectation on smallholders is to optimise farm management to turnout consistent and high-weight birds. No farmers report the use of record keeping. Contracts are seasonal and all smallholders state satisfaction with the arrangements and payment terms, though discussions reveal that farmers feel they are not getting the fairest deal. Half of the participating chicken growers indicate that contracts could be improved by reducing pressure on farmers and a more equitable sharing of value. Discussion with farmers suggests that this pressure and sharing of value may relate to the farmers carrying all the risk of bird health and mortality, as well as the costs.

The primary obstacles reported by all smallholders is that the quality of the DOCs is poor which adversely impacts subsequent growth and performance of the birds (Figure 14). This also presents the highest risk farmers perceive to their business, in that unhealthy DOCs leads to low turnout and higher mortality. Disease, generally, is the second most critical issue. Other issues identified by chicken growers are the late supply of feed (supplied by the contracting company) and some producers indicate adverse weather is a risk.

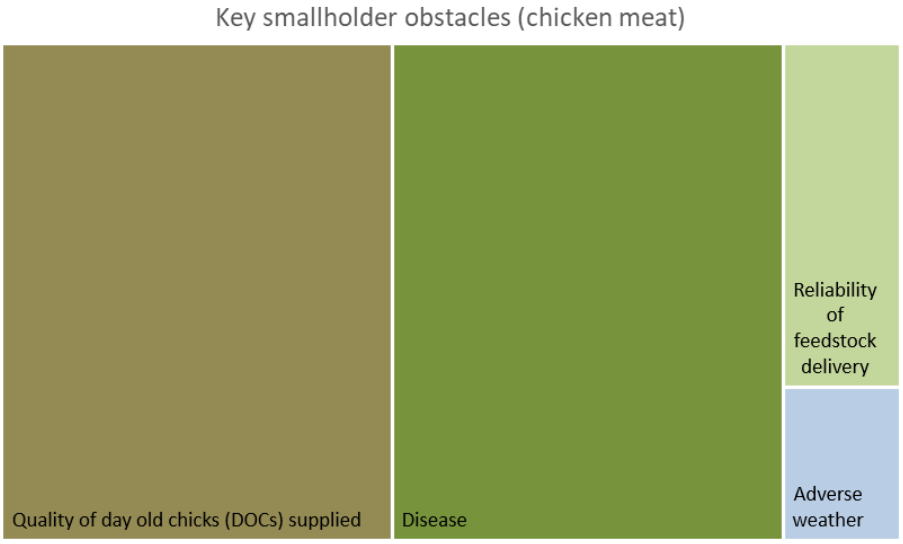

Figure 27: Main obstacles facing meat chicken (broiler) growing enterprises

Support

In terms of business outlook and how chicken farming could be improved, growers share a similar view to pineapple and carrot producers – that the end-market needs to give preference to local product. Opinion is divided between the tourism sector being required to source local product (60%) and a collaborative approach along the value chain to build mutual benefit (40%).

Smallholder chicken farmers report no issues with respect to infrastructure or available services, though this is in contrast to almost 10% of growers citing a problem with the delivery of feed and all farmers indicating that the quality of the supplied day old chicks is poor. The primary drag on farm productivity is inconsistent bird growth and weight at cull, with 100% of chicken growers reporting this as a problem. However, buyers do not indicate to the producers that this as an overall problem and this is likely a reflection that the farmers are bearing the full cost and risk of a poor out turn. All chicken growers report that their technical support is provided by the contracting company. Similarly, all market information is sourced from the partner company.

All producers consider improved technical assistance and business training as being key needs to developing their enterprise. The main area for improvement in payment terms

cited by smallholders is to have faster payment, though no farmers suggested that their current arrangements were unsatisfactory.

Overall, local chicken growers consider improving farming practices to be a key element in delivering better and more consistent quality, and therefore, competitiveness. However, the single most critical issue and opportunity for improvement repeatedly identified by smallholder chicken farmers is the need for better and more consistent quality of day old chicks.

Bali Governor Regulation No. 99 / 2018 and competitiveness

Only 10% of chicken growers are aware of the regulations in Bali and they do not reveal a view on whether the rules are a positive change, though 80% of the farmers, when learning about the regulations, feel that they might benefit from a higher price. In terms of competitiveness with imported product, local chicken growers consider improving quality is necessary, but otherwise, given their contractual system of production, they don't see competitiveness with imports to be a concern for them.

This study, looking at pineapple, carrot and chicken meat as value chain examples, has generated a good picture of the smallholder sector with respect to the constraints and, by extension, the opportunities. Although specific capacity and capability limitations vary contextually between value chains, there is a distinct commonality in local agribusiness supplying high-intensity tourism and modern retail markets. This can be confidently extended as a generality for smallholders in Bali.

From the producers' perspective, there is a lack of willingness on the part of traders, institutional consumers (hotel and food service) and modern retail to support local smallholders to grow and supply produce. This is exacerbated by the absence of coordination or facilitation of research and development to address production and supply chain constraints. For products that can be readily brought in from other provinces, these challenges are magnified. In contrast, a product such as chicken meat has an existing local contract farmer arrangement managed by a single company. This provides a fairly stable and secure arrangement for farmers, though there remain underlying problems.

Overall, the weak collaborative nature and value orientation of the supply chains renders small-scale farmers ill equipped to better engage with the high-value markets.

A broad range of limitations pervade the smallholder sector including having insufficient operating capital for inputs, rising costs and interestingly, with rising land values, smallholders are concerned about diminishing returns for their farming and increased lifestyle costs. Discussions reveal a sense of financial inefficiency. This could be a precursor to increased departure from farming to make better returns from the land.

Farmer groups are being encouraged by government as a response to production constraints, though to date, this approach has not overcome the power imbalances in the value chains or effectively addressed the cost and production issues. For example, farmer groups[42] producing carrot and potato, which are two crops of significant and consistent demand in the tourism sector, are still unable to gain sufficient market access with the sector continuing to source imported produce. This is in spite of the local regulations which seek to endorse the use of local product. A better understanding of policy creation and efficacy could provide support for policy makers and other supply chain enablers and is an opportunity for future research.

Delivering quality farm output and doing this reliably is a significant challenge throughout the sector. This mirrors the expectations and concerns that the tourism stakeholders revealed[43]. Additionally, smallholders are not cognisant of the key quality attributes or their market significance for their products. Market access is challenging, and a paucity of end-market feedback curtails growers in their capacity to respond. Farmers disclose an overall issue of 'being outside the system'. Along with the challenges of maintaining consistent quality of delivered fresh product, the high-demand market of tourism has an uncompromising need for continuity of supply. Throughout 'the system', (1) quality, (2) confidence in quality and (3) reliability of the supply of quality are central issues.

There are push and pull drivers in delivering quality. The most significant drivers revolve around 'local'. Separating out the impacts of COVID-19, there is a strong underlying demand for local agricultural products – provided the quality is satisfactory. Lack of supply and poor quality are the prevailing drivers of reduced demand for what the local smallholders out turn. Equally, the key driver of increased sales revealed by the smallholders, is being *able* to supply the market. A prevalent desire and expectation for

[42] *In Tamblingan Village (Buleleng Regency) and Mayungan Village (Tabanan Regency), respectively*
[43] *Agriculture for Tourism: Local market development opportunities in Bali agriculture – market engagement assessment, Primary Principles, 2021.*

improved and more consistent quality for local, fresh product exists throughout these value chains.

Broadening the scope, for the smallholder sector, market security and critically cashflows, are very important. Slow and late payment for delivered product is a pervasive problem with impacts on these small businesses. Fixed contracts and payment terms are not normalised in these value chains and smallholders carry the bulk of risk and are generally last to be paid. The extensive use of credit with long payment terms is hindering smallholder operational capacity and constraining farm planning and investment. There is a clear disconnect between the expectations on smallholders and their reward.

Price received by smallholders is an important concern, however, costs of production and by extension, productivity are the critical matters. Nestled into the challenge on quality, costs of production are not clearly understood with record keeping uncommon. Of concern, is that smallholders do not readily relate production inputs with production results and reducing key inputs is a common strategy to manage costs. This practice has impacts on productivity and quality.

Traceability and food safety are further underlying considerations identified from the end-market assessment. These depend on good farm and supply chain management practices, including record keeping which also plays to the efficacy of the Governor's Regulation No. 99/2018.

Although quality dominates as the priority throughout the value chain, competitive pricing is essential. Smallholders recognise an imbalance between expected quality and the price paid. Farmers identify that increased farm enterprise productivity can support a reduction in costs of goods sold and enable them to consistently fulfil product specifications and supply, but they express a gap in technical skills and market knowledge.

For smallholder enterprises, technical assistance and learning, coupled with business improvement have a critical role in enabling farmers to understand, capture and deliver real change. There is a crucial need to foster record keeping in order to improve productivity and efficiency. Importantly, records and specifications are also fundamental to better preparing farmers to manage, improve and guarantee the quality of their delivered product.

Underscoring these hurdles, very few smallholder farmers are engaged with or even, to some extent, aware of their markets, market access issues and development opportunities. Assurance of quality, product differentiation and product specifications are generally lacking. This analysis of smallholder context provides a preliminary understanding of the socioeconomic opportunities and development of agribusiness value chains to supply the needs of tourism and modern retail. The depressed demand resulting from the widespread closure of tourism enterprises, due to COVID-19, shows that growers are able to pivot to alternative crops and/or change their practices, for example, adjusting inputs and switching to crops with better price points. This finding establishes that latent capacity and/or capability sits within the smallholder sector, which represents a receptive platform for interventions.

Importantly, there is not a specific need to identify and focus on particular farm products on account of the broad underlying demand. This offers a comprehensive canvas for farm and market development research and activity. In general, external infrastructure is not inhibiting. The main resource and supply challenges and thus potential barriers to development of local agribusiness value chains revolve around technical, marketing and business support.

As identified in the end-market actor assessment, harnessing consumer-based mechanisms will be an important aspect to implementing change. Presently, most suppliers obtain product from collectors and other wholesalers, rather than directly from producers. Formal partnerships between suppliers and the farming sector would enhance the sectors' connectivity with end-market buyers.

The disconnect between the buyers and the producers that was highlighted by the end-market assessment is again evident from the perspective of the growers. Smallholders are entrenched as 'hopeful' price takers, with minimal relationship with their buyers, despite the shared emphasis on local, quality produce. Better value chain linkage between producers/suppliers and suppliers/buyers is identified as critical from the end-market perspective, and the weak collaborative outlook of the value chain as a whole, offers an opening to building local capability and capacity. Local smallholders need better productivity, and improved capacity has to target the continuity of supply.

The high-demand end-market stakeholders highlight that production and postharvest technologies and practices, coupled with training and market engagement are needed to build both capacity and capability. This assessment conducted with smallholders, confirm these are needed to meet the expectations of this market. For example, pricing penalties are placed on smallholders by way of an automatic 10% weight deduction applied to compensate buyers for the 'known' losses in handling and storage. This practice effectively penalises farmers for poor post-farm management and does not provide accurate price signals across the value chain.

Engagement points

Potential interventions for the local farming sector interrelate in terms of their application to address local product quality and consistency, effective market access, and critically, value creation for smallholders. From this research, the smallholders have corroborated tourism enterprise perspectives and there are clear development pathways that would enable local opportunities for resilient, collaborative agribusiness value chains to meet the needs of high-intensity tourism and modern retail.

Research and actions that can realistically deliver positive change in terms of driving agricultural resilience and growth for local actors in these value chains are ones that capitalise on a market-based approach. The end-market assessment distilled four key opportunities – supplier agreements, product identity, record keeping and value network analysis. This smallholder analysis endorses these approaches and adds an essential additional step – production capability / smallholder productivity.

1. Production capability

Smallholders demonstrate good resilience and adaptability, though profitability is marginal. Many growers are not fully aware or in control of their costs of production. Inputs costs coupled with poor payment terms squeezes growers' cashflows and impacts farming activities and production planning. Productivity and farm efficiency appear to be under performing as a result. Improvement in production and postharvest management is needed. Record keeping is uncommon. It is recommended that record keeping be integrated into all activities to normalise it as farm enterprise practice. Records are critical for improving many areas including productivity, managing costs, providing traceability and underpinning any form of certification or brand.

Efforts that focus on the shortcomings in technical and business skills in these sectors are necessary to address physical and financial challenges of reliably producing quality fresh produce. Research and extension programs need to ensure best management practices are central to smallholder development.

It is recommended that smallholders and other actors throughout the supply chain be supported with greater knowledge about the production and postharvest of crops, including soil and crop health and nutrition, integrated pest and disease management, biosecurity, water management, grading and cool chain. A more general understanding, coupled with capability development of the smallholders will create more confidence.

Additionally, awareness of mechanisation and other technologies, including IoT[44], is presently limited to a minority and this assessment indicated that the advantages could be more broadly attained.

2. Supplier agreements

The clear engagement point for smallholders with the high-demand tourism sector (and modern retail) is in supply agreements. As a communication tool to cement mutually beneficial partnerships, this approach can address the smallholders' key need to have payment and price security and clear market access information including product specifications and supply planning. Importantly, supply agreements will facilitate knowledge transfer and practice improvement by providing a platform for learning and improvement across stakeholders in the value chain.

There is opportunity to facilitate the use of supply agreements to promote multiple outcomes in both production and market sectors and develop the linkage of farmers with both local markets and also pursue international standards. Contracts and supply agreements between farmers, co-operatives and farmer groups with buyers is identified as a research outcome that can support good management practices and be used to deliver on farm productivity, product quality and food safety through a process of market engagement. Smallholders are openly looking for better engagement with markets and developing supplier agreements that facilitate mutually agreed terms between producers (farmers) and the buyers. The majority of smallholders seek faster and fairer payment terms to address cashflow challenges and provide financial security. Agreements will underpin communication between the actors.

Development of template agreements and complementary training and guidance to facilitate adoption is recommended to provide an environment for smallholders to appreciate what they can achieve and have confidence in engaging with high-demand markets. Agreements could provide smallholders with better market certainty – a persistent limiting factor – and well designed, they could be used as a tool to support adoption of multiple improvements including quality specifications, and lead to certification.

3. Product identity

Local product is not readily distinguished from product coming from elsewhere in Indonesia. Price, followed by quality are key elements for growers. While local Balinese products tends to compete well on price, reliable availability is a significant constraint. Brand development and certification are particular consumer-based mechanisms that were identified as important market drivers for local Balinese produce. Improving locally identifiable (branded) product, specifications and quality as well as food safety assurance are opportunities that smallholders recognise as change agents.

Both this assessment and the end-market study suggest that developing 'local' can empower producers to better engage with the high-demand markets. Market awareness training and support for marketing initiatives are key elements that need to be incorporated in collaboration with the tourism sector.

Better differentiation of local product in the marketplace feeds into both the needs of the end-market as well as the growers. Quality and grading, pricing, labelling, packaging and

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[44] *Internet of Things - interconnectivity of equipment, machines, sensors, cloud data, data collection, reporting, analysis and remote control*

availability can be tied together with identity. Supporting smallholders to deliver farm output at a better standard will be a key improver in this sector.

4. Record keeping

Local (Bali) producers need to implement farm input and business management records to support baseline management of farm enterprises. This was highlighted in the end-market actor assessment and this farmer perspective study reinforces record keeping as a critical action. Not only are basic records necessary for buyers to meet pricing obligations under the Governor's Regulation No. 99/2018, but this research exposes an absence of clear business fundamentals in the producer sector. Input efficiency, productivity and costs of production are all directly connected with capacity to measure and monitor practices. Improving records and data capture is also essential to support traceability and certification.

Smallholder productivity and efficiency are dependent on effective information management and record keeping will be essential for local producers to meet market expectations in supply volumes, consistency, quality and price competitiveness.

5. Value network analysis

This assessment indicates that there are prospects for more meaningful collaborations and partnerships within and between businesses that could benefit the whole value chain. Furthermore, whilst not examined in this study, with both men and women involved in most enterprises, there is scope to better understand merits of and barriers to social inclusion through a value network approach. The intrinsic values afforded by local culture that imbue ecological, social, humanitarian and spiritual values to maintain the balance and harmony of the ecosystem could also realise value creation opportunities for Bali agriculture.

Local smallholders can grasp agribusiness market opportunities by improving their engagement with the Bali tourism sector. It is recommended that all supply chain actors gain a greater understanding of their value networks. Farmers are not adequately benefiting from the broader openings of high-demand, high-intensity local tourism. A network approach with a focus on a wider scope for value conversion for smallholders in connecting with high-intensity tourism hubs is recommended. Research in value networks can encompass all stakeholders and provide a foundation for value creation and policy support.

For example, revealed across the value chains studied, product identity for local farm products can also offer links to additional tourism values including connectivity to local culture, visitor experiences and community development. The strong collaborative and mutually supportive elements teased out in the end-market actor study and this smallholder research assessment illustrate that associating farm enterprise identity with tourism enterprises has the capacity to drive higher standards and underpin demand.

10.4 Appendix 3: Report: Agriculture for Tourism: Enabling Sector Synergies – a research and development framework

Agriculture for Tourism: Enabling Sector Synergies

Research and Development Framework

Primary Principles and Udayana University

Primary Principles Pty Ltd

Image: Wayan Seria, Bali Buyan Berry

Research and development framework for integrating local agribusiness value chains with high intensity tourism

AGB/2020/121: Agriculture for Tourism – Research to advance a synergistic development pathway for local agribusiness value chains and tourism in Bali, with application to similar high intensity regional tourism hubs throughout Indonesia.

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Summary

The province of Bali is well placed to capitalise on agribusiness value and build resilience of its smallholder sector. Agriculture is a significant part of Balinese culture, embedding traditions, customs and spiritual activities. There is a strong demand from institutional tourism consumers for local produce. Local government policy seeks to support local producers. The capacity of smallholder agribusiness and the capability of producers, producer groups, institutional tourism consumers, communities and enablers to create value is unfulfilled. It is important to ensure that not only does research and development address key issues, but that it facilitates and supports good policy.

There is an evident disconnect between the buyers and the producers which interferes with the proficiency of the value chain. Tourism is a major and critical economic driver for the province and demands a large share of local agricultural output, while the local agricultural sector is dominated by small-scale farmers with limited-to-no market awareness. Smallholders operate in fragmented, poorly functioning value chains with high costs, low productivity and weak business terms. Critically, smallholders lack the skills and knowledge for improving value conversion and meeting the dynamic value requirements of consumers. The demand for local agricultural output has changed in focus as a response to the food preferences of tourists. In parallel, local consumers have shifted their attention from traditional supply to seeking more intrinsic quality attributes in their food purchases. Smallholders need to develop capacity and capability to meet shifting market demand and higher expectations. The end-market needs to support this maturing of the sector.

The detachment between value chain actors entrenches weak communication and results in inadequate sharing of information and, significantly, a poor understanding of potential value creation. While quality dominates as a priority for the tourism sector[45], followed closely by continuity of supply, local smallholders need greater production capacity[46] and critically, improved capacity has to address continuity of supply and ideally, local supply gaps. Product specifications and quality standards are not well defined in this market, leaving smallholders without a clear objective. Competitive pricing is essential and yet, bias and supply chain noise renders pricing signals for smallholders ineffectual. Distorted pricing signals are borne out of poor payment terms, a lack of price to specification clarity and built-in pricing penalties for postharvest loss which create a negative pull on the sector. Five overriding issues are identified – (1) quality, (2) production capacity, (3) supply continuity, (4) pricing signals and (5) product differentiation. Traceability and food safety are important underlying considerations within these elements.

This research and development framework distinguishes three core elements. Firstly, socio-economic foundations for development need to be established. Secondly, business partnerships hold a key to driving mutually beneficial change. Finally, the agribusiness-tourism ecosystem needs to recognise the relevance of the broader community and culture and that the connection between businesses and individuals is critical to value growth.

[45] *Agriculture for Tourism: Local market development opportunities in Bali agriculture – market engagement assessment, ACIAR SRA AGB2020/121, Primary Principles and Udayana University, 2021*
[46] *Agriculture for Tourism: Opportunities for local smallholders – engagement points, ACIAR SRA AGB2020/121, Primary Principles and Udayana University, 2021*

Introduction

Purpose

The purpose of this research and development framework is to provide a strategic focus for integrating local agribusiness value chains with high-density tourism as a structural model for local agribusiness.

This framework is intended to provide high-level strategic direction and coordination of priorities for research and development for smallholder agribusiness in the short to medium term. As Bali, and global tourism generally, builds recovery from the impacts of COVID-19, action is required now.

Scope

This plan is prepared as a component of the Australian Centre for International Agricultural Research project AGB/2020/121: Agriculture for Tourism – Research to advance a synergistic development pathway for local agribusiness value chains and tourism in Bali, with application to similar high intensity regional tourism hubs throughout Indonesia.

The province of Bali was selected for this study as Bali has a strong agrarian culture and is also a major tourism location. There is a wide range of crops and types of food due to the numerous cultures and tastes of visitors. Bali has an established role in the portrayal of Indonesia as both a domestic and international travel destination and tourism has rapidly become a prominent sector of the region's economy.

Strategic Intentions

Within the conversation and through the process of developing an understanding of the agribusiness smallholder and tourism sectors, four overarching strategic intentions were crystallised. These have been captured here to suggest a background for the research and development framework.

- Ensure technical capacity is available to support capability and ambition of the sectors
- Enable local participants to direct and drive their own continuous improvement cycle
- Distinguish extrinsic values of local output to provide differentiation and shared value creation
- Advance economically and sustainably feasible actions, independent of need for subsidy or ongoing regulatory support

Background

This framework is underpinned by data gathered from both tourism and smallholder individuals, enterprises and communities as well as technical observation of production and supply activities. During the development of this framework, two integrated studies were conducted. The first, *Assessment of market development opportunities for agribusiness in Bali tourism*, involved examination of market drivers and the expectations held by the institutional tourism consumers operating in the province of Bali.

The tourism sector is a high-demand, high-intensity market and stakeholders pursue multiple factors in consideration of product value. The production requirements and product specifications needed for the supply of local, safe agricultural products for food service and tourism are imperative. The local demand portrayed by institutional tourism consumers operating in the province of Bali was assessed and analysed through qualitative and quantitative data, and described with respect to season, volume, value and desired specifications.

The second study, *Opportunities for local agribusiness value chains to engage with high intensity tourism*, examines the capacity and constraints in the supply of safe, quality, locally produced agricultural products with the view to improve the understanding of how the market demands and value chain dynamics of agricultural products can be harnessed to nurture resilient smallholder communities in the province of Bali. Three proxy value chains –

pineapple, carrot and chicken meat – were used to explore the research and development issues.

A synthesis of supply capacity and smallholder capability for agricultural production and the relative match to the expectations of institutional tourism consumers was generated through primary data collection via survey, interviews and guided discussions with smallholders and other key value chain informants. This was combined with an observational assessment of the supply chains.

Historically, agriculture is a significant part of Balinese culture, embedding traditions, customs and spiritual activities. These cultural elements have represented an important component of the value experiences attracting tourists to Bali and have underpinned the dramatic growth of tourism compared with other locations. Prior to COVID-19, Bali hosted approximately 16 million visitors annually[47,48] – four times the resident population.

Rapid, and in many ways unplanned growth in tourism related infrastructure has placed substantial demands on land, water, labour and food. Agriculture moved to conventional, higher output systems to meet consumer demand but the paucity of best practice knowledge and management skills has adversely impacted on the finely balanced sustainability of the traditional systems. *Subak*, the long-established agricultural irrigation system of Bali has all but collapsed[49]. The use of agrochemicals has come without sufficient training and research support in integrated crop management practices. While the tourism economy has flourished in recent decades, economic and social benefit for the smallholder agricultural sector is difficult to identify.

This framework provides an integration point to focus research and development over the short to medium term and proposes a vision of collaborative partnerships between the smallholder sector and institutional tourism consumers, centred on mutual value creation.

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[47] In 2019, the number of tourist arrivals to Bali rose by 1.88 percent to 16.11 million, slightly up from 15.81 million in 2018. https://tradingeconomics.com/indonesia/tourist-arrivals

[48] An estimated 9.75 million domestic visitors and almost 6 million international visitors accounting for some 15.7 million visitors in 2018. https://www.balidiscovery.com/news/strong-start-to-2019-for-foreign-tourist-arrivals-to-bali

[49] Norken, I. (2019). Efforts to preserve the sustainability of subak irrigation system in Denpasar city, Bali Province, Indonesia. MATEC Web of Conferences. 276. 04002. 10.1051/matecconf/201927604002.

A secondary assessment action of this research was to ascertain key actors and engagement stakeholders important for integrated development of agriculture for tourism. There is significant restructuring of research capacity in Indonesia at this time, however it is clear that the BPPT (Agency for Assessment and Application of Technology) are a strong connection to smallholders and technical resource. The universities also present not only broad technical and research expertise, but wide ranging personal and professional relationships with community organisations, farmer groups and government. Government departments and agencies are supportive. Farmer groups and leading farmers are open and keen to develop their sectors. The Hotel and Restaurant Association of Indonesia (HRAI) is an eager and professional group with good relations with members and the tourism industry as a whole, as is the Indonesia Tourism Development Corporation (ITDC).

Strategic issues

There is a need in all development plans to recognise and accommodate broader issues. Delivery of research and development within this framework should also consider the following:

- Maintain the trust and support of stakeholders
- Encompass social, cultural and ecological responsibilities
- Bridge the gap between opportunity and resources
- Maintain efficacy in a globalised environment
- Anticipate and respond to new demands
- Keep up with technology and innovation
- Sustain institutional knowledge

1. Establish socio-economic foundations for development

Strategic challenge

Absence of a platform from which to build upon and add practice improvements for end-users

Leverage points

Wide access and use of internet enabled devices

Strong market-end demand for (suitable) local produce

Enthusiasm in smallholder producer communities for growth and increasing involvement of younger people

Workforce migration from tourism/hospitality to agriculture (due to COVID-19) is transferring firsthand knowledge of required product values

Primary barriers are information centric – market transparency and technical knowledge in production and postharvest

Buyers demonstrate a moderate to strong orientation to value representing a clear approach through improved value creation to support market opportunities

Focus

Readily adoptable elements that need minimal (additional) user resources which provide structures that facilitate ongoing improvement

Strengthen farm enterprise information collection, analysis and planning		
Priority	**Research and development task**	**Notes**
Farm records and budgets Business tools	• Devise, adapt or adopt suitable records and budget tools for smallholders, data collection and simple analysis • Technical training and extension resources and capacity building • Foster practice champions • Enable traceability	Record keeping is essential for local producers to improve capability and meet market expectations. Better information collection provides capacity in facilitated and self-driven improvement in costs of production, waste reduction, cashflows, product certification/quality assurance and differentiation. Good agricultural practice (GAP) resources are available for a range of crops and livestock, though poorly adopted, with little incentive for smallholders.

		Bali producers will require supported implementation of farm input and business management tools. Research and development actions in this space need to examine producer practices and inputs, and create templates, guides and training and learning resources.
Supply agreement templates	• Devise, adapt or adopt suitable templates or contracts for smallholders and buyers • Normalise the use of supplier agreements in everyday business • Develop technical training and extension resources and capacity building • Integrate specifications and terms • Engage market-end supporters • Promote fair payment terms	Supply agreement templates can provide a tangible partnership mechanism to build capacity and capability for smallholders and build trust, transparency and surety with the end-market. Creating a culture of simple business agreements will contribute to market and price security. This can enable direct and indirect financial incentive through both price and supply signals. Agreements as a research and development tool can provide advantage for all chain relationships, between any combination of actors. There is scope to nestle (or reference) agreements along value chains to build transparency and efficiency. Agreements provide an instrument to supportively introduce multiple points for improvement including specifications, quality and grading, pricing, labelling, packaging and availability, as well as social and ecological values. Product differentiation and identity can be supported, and agreements open opportunities for customisation and value-adding with buyers. Agreements establish a way of helping smallholders to deliver farm output at a better standard and facilitating better practices. As a research and development tool these enable a structure for communication, record keeping, residue testing and compliance and can create a direct process for change along the value chain. Importantly, using agreements as a platform creates a circuit breaker for quality assurance by enabling commercial incentives to

		be more easily linked to practice change. Payment terms need to be clearly defined and fair. The potential need for targeted regulation around payments could be scoped and promoted. Research and development actions in this space need to examine market expectations and producer capabilities, address legal requirements and create templates, guides and training and learning resources.
Build market awareness capability amongst smallholders		
Market – producer communications	• Generate simple, quarterly or seasonal outlooks for market demand • Social media portal	Smallholders need opportunity to gain greater information about the market and the demands of the market, and to better understand oligopolistic characteristics of particular chain segments and their relative market position in order to create more business resilience. Publication and communication of market demand projections and forecasts can be used to build a shared understanding, including of seasonal dynamics and customer feedback, and this information can enable smallholders to explore new ideas and develop their own plans. Improved communications can generate better supply security for buyers.
Product and services specifications	• Develop and publish agreed quality and grade standards for products (and services)	Specifications of products provide both a communication tool that ensures transparency and understanding between parties, as well as guiding production practices and farm outturn to improve productivity and reduce losses. Associated services can be part of specific buyer requirements. Specifications can build on existing local and international information and encompass local product, services and market elements. Connection between pricing signals and specifications

		or grade standards is an important area. Research and development actions in this space need to examine market expectations and producer capabilities, generate appropriate quality standards/grades and practical assessment procedures. Guides, tools and training and learning resources are necessary.
Digital communications – traceability	• Devise, adapt or adopt suitable tools • Technical training and extension	Traceability provides a market communication tool for producers, builds market security and trust, and creates in-house incentive for improvement. It also builds a relationship with consumers. Further development towards quality assurance, certification and product differentiation depends on traceability with increasing integrity. Research and development actions in this space need to examine practical, readily adopted, low-cost mechanisms that accommodate or facilitate increasing sophistication. Digital technologies are an important progression as a likely low-cost option to support small-scale farming. Guides, tools and training and learning resources are necessary.
Product differentiation	• Nurture local product identity • Foster collaborative exchange with market buyers for shared acceptance • Distinguish extrinsic values of local product • Develop brand/label/packaging resources and training • Support producers to have an active role and ownership of brand opportunities	To underpin the recognised support for the purchase of local product, produce needs to be clearly identifiable. In addition, good product identity and differentiation assists in connecting with markets as supply continuity is built. Brand development and certification are key differentiation tools and also provide linkage with traceability and establish a clear pathway to securing food safety. A range of extrinsic product values can be linked to brand. Climate change risk, sustainability, socially responsible practices and climate resilience can benefit through

		association of products with key practices or outcomes. Additionally, Balinese agriculture encompasses social, cultural and ecological interests and these can be fostered. Research and development actions in this space need to examine market expectations, accommodate specifications and investigate extrinsic value characteristics for products. Differentiating local products is an opportunity that fosters producer confidence and acts as a prelude to fully engaged certification and ultimately linking smallholder production to global standards. Current occurrences of branding tend to be at the collector/trader stage of the supply chains with producers not being involved. Guides, tools and training and learning resources are necessary, as well as packaging and/or labelling.
Enhance production and supply capability of smallholders		
Best management practices (BMP)	• Devise, adapt or adopt suitable generic BMP guidelines for smallholders • Build upon existing SOP guides for key products • Integrate specifications and costs of production • Technical training and extension resources and capacity building • Participatory demonstrations/trials • Foster practice champions	There continues to be a strong need for the development of technical skills of smallholders and opportunity to boost and update skills of those working with the sector. Pests and diseases are identified as the primary production risk for smallholders with general elements of growing conditions leaning into soil, water and nutrient management also bring critical. Suboptimal production practices directly impact outturn and quality throughout the sector. Smallholders demonstrate a risk averse outlook and ensuring demonstrated practices and recommendations are clear, proven and consistent is crucial. Connection of practices to pricing signals is important. Research and development actions in this space need to

		address foundational elements and basic, generic practices to establish and normalise standard, minimum skills. Traditional integration of practices and resources, for example *Subak*, could be utilised as a context for collaborative and value driven innovation. Wide publication and open sharing of basic practices through communities creates subculture for self-driven change and low-pressure benchmarks.
Postharvest	• Devise, adapt or adopt suitable generic BMP guidelines for postharvest, sorting and grading, handling and transport • Participatory demonstrations/trials • Technical training and extension resources and capacity building • Evaluate packaging and low handling options to preserve quality with focus on loss reduction, cost control and sustainability • Examine cool (and short) chain options, inbound and outbound logistics	Preserving quality after harvest is a critical element of reducing costs (losses) and increasing market supply. Developing and implementing better postharvest practices provides a direct means of improving quality, reducing losses and enabling more effective pricing signals. Existing weight penalties (farmgate) adversely and unfairly target smallholders and distort chain communications. This disrupts improvement. Collection, collation, grading and transport have direct impacts on maintaining quality and need to be addressed within the background of production practices. Accessibility of appropriate postharvest infrastructure and/or services to smallholders is a key step in better postharvest management.
Certification	• Devise, adapt or adopt suitable generic certification procedures and guidelines for production and postharvest activities • Characterise extrinsic values of local product • Encourage professionalisation and registration of enterprises • Technical training and extension resources and capacity building	Certification of produce is an inevitable requirement for all producers and effective implementation strategies need to be devised. Certification has critical implications in linkage with markets and to food safety, and other key policy areas such as culture, environment and work practices. Certification in connection with branding and differentiation also contributes to enterprise resilience.

	• Training and conduct 'experience' audits	Significant opportunity exists for using minimum practices/generic certification as an approach through a simplified focus on a single base standard, to reflect and codify good management practices, particularly record keeping and to normalise audit processes. A tendency to shortcut certification capacity building to focus on group certification and 'shield' individuals from more challenging compliance requirements needs to ensure a development plan exists for individual capacity to avoid disadvantaging producers from pursing new opportunities over time. Avoiding multiple 'competing' certification options as smallholders learn and improve practices leads to faster adoption, lower costs and provides a basis for subsequent assessment of which types of certification are a best fit for specific sectors and individual enterprises. Critically, minimum practices/generic certification generates a pathway for future adoption of any scheme required by markets or policy makers. Research and development actions in this area need to act to simplify the overall certification process – to provide agribusinesses with a safe and simplified space in which capability can be built. Activity can focus on fundamental practices that underscore all certification schemes and streamlining training requirements, resource development and promotion, compliance requirements, residue testing capacity and affordable access.
Transaction and exchange efficiencies	• Promote sector-owned collection infrastructure and services • Examine opportunity for online exchange system	Local collection and produce consolidation infrastructure can generate a base to improve capacity and capability in production, postharvest management and market supply.

	for orders and transactions	Business skills and investment and planning capacity development for smallholders provides a pathway for local agribusiness to establish more value adding and resilience. More effective trading practices can reduce costs and losses and potentially benefit the whole chain. Within the institutional tourism consumer sector in Bali, the scope for an integrated order and supplier system for businesses is being examined. This presents an opportunity to investigate the feasibility for smallholders to operate directly within an order and supply exchange network with buyers. Virtual supply and demand platforms need to be accessible to individuals and producer groups, traders as well as consumers.
Accelerate financial resilience by driving policy that supports financial services	• Lead local and international groups to improve access to funds for SME; focus on working capital • Invest and accelerate cross sectoral opportunities in resource management and reuse, food waste and closed loop systems • Identify and promote opportunities for co-investment • Facilitate fair payment terms including potential for targeted regulation	Facilitating access to investors for smallholders would generate a means to embed financial literacy and business growth with practice improvements. Underlying the limited capacity of the smallholder sector, available capital and/or credit, rather than investment opportunities, is a primary constraint.
Digital payments clearing house	• Investigate opportunity for a clearing house to facilitate short term credit for operating capital secured against accounts receivable for product sold/contracted	A current prevalence of long payment terms is a significant burden on smallholder capacity and viability. It is important to note that the difficulty or unwillingness of institutional tourism consumers to offer shorter (fairer) payments terms indicates that cashflows and basic business practices are also suboptimal in this sector. The tourism sector is effectively using the smallholders as a cheap credit service. Business capability

		improvement in the tourism sector needs to be aligned with development of smallholder capacity. A transaction clearing house integrating multi-party transactions could support short term credit against accounts receivable to assist smallholder operating cashflows. There are some credit sources currently available to smallholders, with varying conditions, including some subsidised services. Reliance on subsidised credit needs to be carefully monitored to avoid distortion of value over time.
Encourage fit-for-purpose and state-of-the-art technologies to address (production and postharvest) constraints		
Production system technologies	• Conduct technology assessments • Participatory demonstrations/trials • Devise, adapt or adopt suitable technologies, apps and equipment in production, postharvest, grading, handling and transport • Technical training and extension resources and capacity building	Reducing costs of goods sold and boosting resilient production systems are key elements behind growing the local smallholder sector. Facilitating awareness and suitability of technologies and practices, coupled with supporting access and training, can enable producers and other chain actors to rapidly integrate simple technology and decision support systems, for example in irrigation, soil moisture monitoring, nutrition and P&D monitoring – as well as postharvest elements such as sorting and grading, cool chain monitoring and product traceability.

Digital technologies	• Review and development of smart and social media systems to connect value chain actors
	• Analyse needs and evaluate options:
	  • Management information systems
	  • Record keeping
	  • Certification
	  • Forecasting and advice tools
	  • Market pricing information (for producers) and product
		Access to reliable and timely information in a range of areas including management information systems for production, forecasting tools and transaction or business services enable better decision making with implications for sector resilience, food safety and farm productivity (including precision farming tools and robotics).
		
		Potentially, efficiencies and better chain communications could be attained with arrangements and sales transacted online. Record

	availability information (for buyers/consumers) • Online sales platform for farmers to offer product, accept bids/order and potentially integrated with transporters • Precision farming tools and robotics	keeping is a common challenge and impacts directly on successful implementation of better management practices and quality assurance. Research and development in this space could enable value chain actors to better manage (farm) records and exchange documents as part of certification programs and traceability. Opportunities in integrating with other key research and development tasks include digital supplier agreements that ensure all parties know obligations and payment dates, and could include feedback on key metrics, such as quality. Additional areas for action include developing access to current or real-time market and pricing tender requests and potentially a transaction clearing house that supports short term credit against accounts receivable to support smallholder operating cashflows. Capture of pricing data for public access can support better pricing signals underpinning investment decisions, for example in accessing equipment or planning extended or off-season production.
Capacity and capability – identify and exploit innovations		
Participation	• Enable people focussed trials and evaluations of actionable solutions • Promote awareness along the value chain and throughout value network • Develop training material and remote delivery methods to support capability growth with reduced costs and increased accessibility • Need to simultaneously focus on smallholders, institutional consumers and enablers	Responding to the challenges of global competitiveness, productivity, adaptability and sustainable development depends largely on investments being made now in people. Inclusion of end users in discovery and implementation needs to be a priority in designing and driving research and development. Research and extension programs need to ensure best management practices are understood and available, not just relying on technology and equipment but knowing the fundamental practices. Investment in

		institutional capacity and capability of enablers is an important foundation for ongoing improvement.

2. Drive business partnerships

Strategic challenge

Relationships between actors are weak

Leverage points

Improved value conversion/creation and mutual profitability

Tourism is a value-based sector

Strong market-end demand for (suitable) local produce

Institutional tourism consumers need better supply continuity

Enthusiasm in smallholder producer communities for growth and increasing involvement of younger people

Workforce migration from tourism/hospitality to agriculture (due to COVID-19) is creating inter-sector relationships

Primary barriers are information centric – market transparency and technical knowledge in production and postharvest

Buyers demonstrate a moderate to strong orientation to value representing a clear approach through improved value creation to support market opportunities

Focus

Fostering business relationships to wrap around technical and financial practice improvements for shared benefit

Establish value creation as a driver for change		
Priority	**Research and development task**	**Notes**
Value creation	• Value driven assessment of agribusiness and tourism sectors to develop a collaborative approach to production, resource use, creation of new opportunities or the emergence of entirely new 'products' • Develop/engage research tools to achieve value knowledge • Develop a tool or learning resource to support stakeholders to introduce and foster value creation into business strategy • Understand the needs of all stakeholders – end-markets and smallholders	Value conversion and value creation create financially based drivers for change. Improving conversion of resources to value helps enterprise efficiency, productivity and profitability. Research and development leading to new product development and innovation is borne out of understanding value and supporting effective communication throughout the agribusiness network. A focus on a broader scope for value creation facilitates mutually beneficial business opportunities, potentially new products and

	• Empower participants to broaden their understanding of value creation (including gender equality, social inclusion and culture) within their enterprise, family and community to discover new opportunities	connects local smallholders with high-density tourism hubs. Tourism is also a gateway to international links and provides a way to connect a global industry with local value, and local output to global standards. The values and cultures of tourism consumers (tourists) also have a place in determining value and ultimately demand.
Tourism value	• Examine experiential tourism as it links to smallholder communities and rural aesthetics • Investigate connection between food tourism and food producers to determine value adding strategies • Foster landscape and smallholder community values as part of tourism promotion and policy • Link environmental, cultural and spiritual values to local produce	Tourism is inherently a value driven industry with experiences and expectations providing a primary market driver. This can be directed to reflect value in food, farming and landscapes and create connection to, and awareness of, smallholders as value creating entities. Quality, fresh, locally identified produce, as well as rural aesthetics and landscapes, provide scope for experiential value adding in the tourism sector and link directly with smallholders and their communities. Values afforded by local culture that imbue ecological, social, humanitarian and spiritual values to maintain the balance and harmony of the ecosystem could also realise value creation opportunities for local agriculture. Research and development recognising these extrinsic values and, with these, linking tourism to agribusiness products, is a key space for capacity and capability growth.
Bolster individual ownership of knowledge and skills as a means to drive shared effort		
Participation	• Embed research activities and implementation with direct participation of end users • Facilitate multi-actor involvement in evaluation and adoption trials • Conduct trials, field days & demonstrations, workshops, training and	Research and development is an important means for maintaining growth and ensuring a relevant product in the market. In conjunction with the delivery of research and development activities, there is a need to foster within the agribusiness sector, an

	other participatory activities to generate and share knowledge • Enable institutional consumers in tourism to chain walk and identify value opportunities for their customers	understanding of the value of learning and innovation. It is important that activities avoid relying on continuous external efforts to build growth. Participants need to develop skills and own innovation. Highlighting the links between local practices and culture with intrinsic and extrinsic values of products could be used to build market understanding and business motivation.
Align farm outturn with institutional tourism consumer markets	• Examine value chain gaps • Assess smallholder production capacities • Devise, adapt or adopt suitable technologies and practices to address gaps	Disconnection between producers and the institutional tourism consumers enables a gap to exist between what is available from smallholders and what is required by the end consumer. Costs and losses are increased, and satisfaction reduced under these circumstances. Research and development has an important role in identifying mismatches and 'aligning' the value chain. It is important to recognise that importation is not necessarily a problem and can be a viable and important part of a value network and capacity building.
Harness agribusiness networks and connections to determine opportunities for creating new value or achieving better conversion of resources to value	• Study the value networks and relational connections of smallholders • Study the value networks and relational connections of institutional tourism consumers • Gain an understanding of constraints within agribusinesses and value chains • Recognise the connections between actors and devise better relationships • Model and optimise the internal and external value networks of social and technical resources within/between organisations	Many constraints in agribusiness value chains are associated with internal and external production challenges, chain logistics and transparency. Supporting and training stakeholders and research and extension partners to prioritise and design trials and evaluate interventions within the stakeholder agribusiness networks can allow specific, locally applicable solutions to be found. It is important that the knowledge gains about constraints, gaps and opportunities are held by the stakeholders. Research and development in this space should seek to enable participants to identify or conceptualise existing and opportunity value between network nodes and members (multi-directionally) and to devise

		'products' that could be exchanged with other stakeholders. More meaningful collaborations and partnerships within and between businesses will benefit the whole value chain. Enabling organisations, including educational institutions and community organisations, are also an important partnership opportunity to grow value.
Set up a financial basis of actions and opportunities to connect all potential participants to outcomes		
Economic feasibility	• Establish costs of goods sold (production and supply chain) • Drive record keeping, information sharing, specifications and efficiency gains through cost metrics • Enable technical capability in production and efficiency by linking to profitability metrics • Determine assessments of cost and market differentials between grades and product specifications • Facilitate seasonal and/or periodic dissemination of pricing expectations • Examine the costs of waste and losses, and gains in technical practices, non-seasonal output and supply agreements • Encourage institutional consumers in tourism to telegraph their expected needs to agriculture	Economic feasibility requires effective information collection and analysis. As such, record keeping presents as a key tool in driving productivity, containing costs, providing traceability and underpinning certification or brand opportunities. It is important to ensure all stakeholders share ready access to financial information to foster new ideas and value creation. Primary business management skills are fundamental to capacity development and resilience. These should be embedded in research and development activities and capability building outputs.
Brand	• Foster collaborative exchange with market buyers for shared acceptance of product identity • Characterise extrinsic values of local product	Brand can be used to consolidate economic values and embed a shared appreciation of value. Brand also creates a means to help bridge seasonal or other supply gaps by reconnecting consumers when supply resumes. Supply gaps or new seasonality can also be exploited as a value add through

	• Develop brand/label/packaging resources and training	brand and this common opportunity can provide both producers and institutional tourism consumers with a shared supply commitment.

3. Connection of communities

Strategic challenge

Stakeholders are operating businesses in relative isolation

Leverage points

Wide access and use of internet enabled devices

Strong market-end demand for (suitable) local produce

Enthusiasm in smallholder producer communities for growth and increasing involvement of younger people

Workforce migration from tourism/hospitality to agriculture (due to COVID-19) is moving people back to rural communities

Focus

Readily adoptable elements that need minimal (additional) user resources which provide shared incentive for ongoing improvement

Bring networks and connections forward as a business development strategy for smallholders		
Priority	**Research and development task**	**Notes**
Networks and value relationships	• Recognise the connections between actors and devise better relationships • Encourage business social events and activities • Foster community champions	Connection of local and neighbouring agricultural production capacities to an accessible, dense tourism end-market requires an understanding that goes beyond a single transactional relationship. Business owners across all sectors will benefit by seeing themselves as a part of a whole value creating system. Value Network Analysis needs to be holistic and engage smallholders, collectors, buyers, policy makers, research and development and communities.
Extrinsic values	• Characterise extrinsic values of local produce • Develop community awareness and pride (ownership) of brand and local smallholders	Embedding the extrinsic values of agribusiness products and services with an element of community achievement can provide momentum and ongoing innovation and improvement through perceived and, ultimately, real vested interests. Examples of the application of extrinsic values to products in other markets/areas can provide ideas and lessons for local producers and can be

		used to improve capacity building activities and resources. Research and development activities can build awareness and support in associated, though non-target users, by communicating broader values within the community and connecting achievement with shared benefit.
Experience trails	• Examine 'green way' options with planning and community stakeholders • Normalise the holistic element of community as a basis for business opportunities • Develop community awareness of planning resources and local capacity • Engage regional and local planning	Providing a tourism experience that links the sector through rural and production areas can be used as a larger, regional value creator. Experience trails is one of the simplest ways of envisioning a regional value network, for example trails that essentially create a slow movement access way for consumers to move between and connect with both tourism and smallholders. This can be driven by communities and provides value creation opportunities for a wide range of businesses. It is linked through the need for quality rural stewardship that can be delivered with viable agribusinesses and benefits tourism. Value can be created through additional tourism pull factors and social health outcomes. Embedding the concept into regional planning and local governance enables a continual development cycle. An important change driver is to generate a community identity linked to agriculture, landscape and tourism experiences and this can include product differentiation and branding outcomes. Notions of eco and agri-tourism can also be built in to support regional smallholder value development.
Increase resilience and preparedness for critical interruptions and recovery	• Conduct a sector risk analysis • Develop smallholder awareness and planning resources for risks and cashflow interruptions • Examine the opportunity and value of insurance • Investigate diversification and	Market insecurity is a prevailing constraint. Insufficient operating capital for inputs, rising costs and interestingly, with rising land values, smallholders are concerned about increased lifestyle costs and diminishing returns for their farming. This can lead to a sense of financial inefficiency and drive smallholders away from new opportunities. Insurance and external investment can provide greater resilience, and while

	value adding as strategies • Drive participation in research and development activities to establish local ownership of knowledge and planning • Ensure baseline skills and knowledge are established as new practices, technologies and ideas are developed and implemented	subsidy can be useful in a short term scenario, it increases risk overtime. Where there is a lack of willingness on the part of traders and institutional tourism consumers to support local smallholders to grow and supply produce, the supply chain security and the interwoven risks and opportunities need to be promoted. Resilience should be considered an underlying structural attribute for all agribusinesses. Research and development activities need to be cognisant of external risks and potential impacts in the areas of work being undertaken. It is important to guard against failure of an 'improved' situation exposing smallholders to a situation worse than the starting point. Research and development across all areas has a responsibility to ensure that end users have the underlying knowledge, skills and understanding of the practices and innovations being implemented.