

Vanuatu Domestic Market Study:

*The potential impact of increased tourist numbers on the
domestic market for selected fresh vegetable produce*

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September 2011



All  Agricultural Commodities Programme



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The findings, interpretations and conclusions expressed in this report are those of the author and do not necessarily represent the views of FAO.

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Table of Contents

Acknowledgements.....	3
List of Abbreviations	5
Executive Summary.....	6
1. Introduction	7
2. Methodology.....	9
3. Survey Results	12
3.1. Demand for fresh produce by hotels, restaurants, institutional canteens and kava bars	12
3.2. Demand from restaurants.....	14
3.3. Demand from institutional canteens	14
3.4. Demand from kava bars (nakamals)	16
3.5. Relative fresh produce demand from the different consumer segments	18
4. Supply of fresh produce from PVMM, Efate Ring Road markets and imports	19
4.1. Port Vila Municipal Market Survey	19
4.2. Efate Ring Road market survey	20
4.3. Other Markets.....	22
4.4. Fresh Produce Imports.....	22
5. Demand from the hospitality sector as a proportion of total supply	23
6. Implications for Policy and Recommendations	24
References	27
Annex 1: Conversion table for CTU to kg weights	28

List of Abbreviations

CTU	Common Trade Unit
DARD	Depart of Agriculture and Rural Development
DQLS	Department of Quarantine and Livestock Services
EC	European Commission
FAO	Food and Agriculture Organization
PVMM	Port Vila Municipal Market
MAQFF	Ministry of Agriculture, Quarantine, Forestry and Fisheries
MOH	Ministry of Health
MOT	Ministry of Tourism
MOTCI	Ministry of Trade, Commerce and Industry
VNSO	Vanuatu National Statistics Office

Executive Summary

This study was undertaken with the express aim to demonstrate the value of using domestic market data to better inform policy formation. At the time that the study commenced there was a near complete absence of data on the fresh produce domestic market in Vanuatu. The government authorities currently do not implement any regular market surveys and there are few studies which are easily accessible for use by decision makers. This poses a serious limitation for evidence-based policy making. It also constrains the analysis and interpretation that can be achieved from a case study approach such as this one because there is no context and baseline data to assess and validate assumptions being made.

Acknowledging the data limitations, the study has gone some way to map the supply and demand channels for the food service sector in Port Vila and determine the potential impact of increased tourist arrivals. The most plausible estimation is that the hospitality sector (hotels and restaurants) currently constitute only a small proportion (estimated 2.5%) of total market demand for fresh produce and therefore even a doubling of tourist numbers would not overall have a significant impact on supply channels. However, the food service sector as a whole consuming around 750 tonnes of fresh produce annually is an important market for local produce. Interestingly, kava bars are the market segment estimated to have the largest share of demand (35%) with institutional canteens and restaurants both having a 23% share and hotels only 19% share.

Whilst the study has provided a preliminary snap-shot of the fresh produce market supply and demand, particularly for the food service sector, there are a number of data collection areas that need to be more rigorously addressed and recommendations on where further survey and data collection should be undertaken and strengthened are made.

With growing demands on Port Vila fresh produce markets due principally to rapid urban population growth, but also to some extent from likely increased demands from the tourist sector on the one hand, and potential negative impacts of climate change, rising fuel costs and high global food prices negatively impacting food supply on the other hand; the need for good data for effective decision making has never been greater.

1. Introduction

Too often policies are made based on perceptions rather than evidence. In Vanuatu the lack of well researched information to assist policy making is a significant issue in the agriculture sector and other productive sectors such as tourism. There is a growing need to obtain reliable data on food production, marketing and home consumption to assist sound policy making and improved coordination and linkages with the tourism sector.

A system for a quarterly market survey which is designed to collect quantity of produce (crops, fruits, vegetables, firewood, and livestock) brought to market, quantity sold and prices has been prepared. However, this has not to date been implemented because of insufficient resources. The Vanuatu National Statistics Office (VNSO) recognize that formal market information is generally lacking and consider that this is one area that has been neglected given its importance to farmers and for policy makers.

The urban and suburban fresh produce markets in Port Vila are thought to be under increasing demand-side pressure as a result of growing numbers of the resident population becoming more reliant on these markets for food and also from potential demand from growing numbers of tourism visitors. But the current lack of information and understanding of the structure and functionality of the domestic fresh produce markets inhibits capacity to develop appropriate policy interventions, be they directly related to the development of these markets or indirectly, through for example, promotion to increase tourist numbers and how this might impact on different market stakeholders.

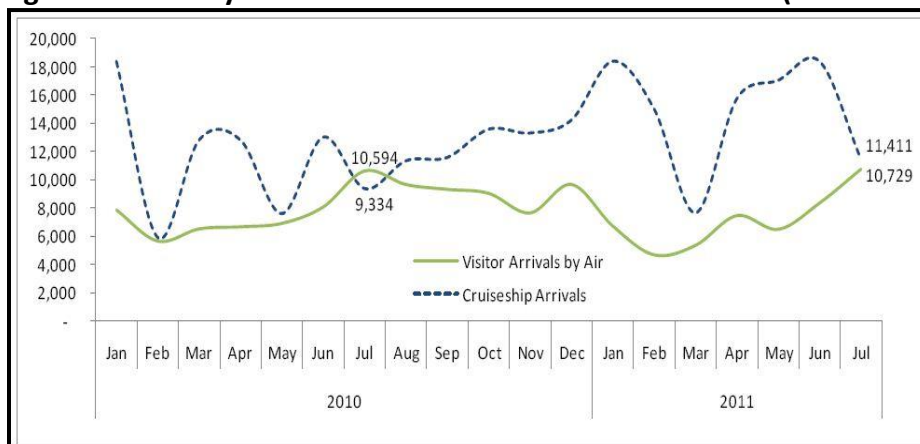
This study is one of a series commissioned by FAO in the region to demonstrate the policy value of domestic market data to improve evidence-based decision making. The overall aim of the Vanuatu study is to demonstrate, through the collection of key data on fresh produce market channels in Port Vila and its use to assess the potential implications of an increase in tourist numbers on those channels, the value of investing in systems of domestic market data and analysis in support of improved policy interventions.

The tourism industry is a vital sector for the Vanuatu economy contributing around 20% of GDP and is a major source of employment and foreign exchange. A government tourism policy target is to increase total tourist annual visitors to reach 300,000 by 2015¹. This means an almost doubling of current arrivals, excluding cruise ship passengers² (Figure 1). The focus of this study therefore is to elaborate on the potential impacts (positive and/or negative) of increased tourist numbers on the Port Vila markets and the different stakeholders engaging in those markets.

¹ Department of Tourism, Business Plan 2010-2012.

² Although cruise ship arrivals currently exceed other visitor arrivals this group usually stay for less than a day and are not considered likely to consume much local food during their stay.

Figure 1: Monthly International Visitor Arrivals in Vanuatu (2010-2011)



Source: VNSO <http://www.vnsso.gov.vu/>

Drawing on existing data and making use of key informants together with the collection of additional primary market data the study aims to map the structure of the domestic urban and suburban fresh produce market channels of Port Vila and to specifically answer the following questions:

- i) What is the volume of fresh produce supplied to hotels, restaurants, institutional canteens and kava bars in Port Vila?
- ii) Where does this fresh produce supply originate from?
- iii) What is the current demand for fresh produce by hotels, restaurants, institutional canteens and kava bars as a proportion of total supply?

The key areas of investigation covered were: the volume of fresh produce traded through the Port Vila Municipal Market (PVMM) and the roadside markets on the Efate Ring Road; the quantities of fresh produce purchased by hotels, restaurants, institutional canteens and kava bars; and the roles that market vendors and the food service sector played in the distribution of fresh produce in Port Vila.

Following this introduction, the report includes a brief account of the methodology used in collecting data and survey information and an overview and discussion of the main survey results to provide answers to the specific study questions. In the concluding section these findings are drawn upon to derive tentative conclusions with respect to the potential implications of increasing tourist numbers and to make some recommendations in relation to policy formulation and to required data collection activities.

2. Methodology

The study was conducted in two phases; an inception phase, conducted during January/February 2011, sought to provisionally map out the urban and suburban fresh produce market channels in Port Vila and identify key market segments for more detailed study during the main data collection phase which took place during April/May 2011.

Following a desk review to identify any relevant secondary data and key government policy pertinent to the study, interviews were carried out with a wide range of key informants. Amongst those interviewed were representatives of government agencies, farmers, traders, municipal market vendors, roadside market vendors and different food service groups using fresh produce. The sub-sectors selected for further detailed study were root crops and fruit and vegetables.

The primary data collection was through three formal surveys conducted with; (i) the food service sector (hotels, restaurants, institutional canteens and kava bars), (ii) roadside market vendors on the main Efate Ring Road and (iii) market vendors at the Port Vila Municipal Market.

Prior to the interviews, each of the selected hotels, restaurants, institutional canteens/kitchens and kava bars were notified of the survey through official letters sent from the VNSO Government Statistician. Notification was also sent to the Shefa Provincial Government to inform the Provincial authority and give notice to all Efate ring road-side market vendors. All the vendors and food service industry actors were notified of the survey well in advance.

Including training of enumerators and testing of questionnaires the surveys were conducted over an 18 day period from 17 May to 3 June. Sample size as an absolute value, and as a percentage of the population for each sub-sector is summarised below in Table 1.

Table 1: Surveyed samples as percentage of overall estimated population

Sector	Estimated population	Sample size	% of population
Main hotels in PV	12	7	58
Main restaurants in town	48	6	12.5
Institutional canteens	8	4	50
Kava bars	53	5	9.4
Efate Ring Road markets	14	8	60
PVMM stalls	188	51	27

The seven hotels surveyed were the Melanesian; Hide Away Resort, Erakor Island Resort, Le Lagoon, Iririki Resort, Chantilly's and Le Meridian. The Sebel was not included as it was considered to be under the same management as the Iririki Resort. The Hotels and Others verification survey was conducted during 3 days in May, Thursday 19th, Friday 20th and Monday 23rd.

Advance notices did not help in having the managers responsible meet enumerators on a specified day and time, so the survey was prolonged to enable interviews to take place, at a time convenient to the Purchasing Manager but within the 3 day period. Representatives at all the selected outlets were interviewed. Considerable effort was made to ensure that the interview took place with the right people.

The survey of road-side markets on Efate Ring Road-Side were conducted on Friday 27th May. All 14 market sites were visited. Only 8 out the 14 road markets had vendors selling produce at the time and these were the sites where vendors were interviewed. Sample size as an absolute value, and as a percentage of the population for each market site visited is summarised below in Table 2.

Table 2: Survey samples as percentage of overall estimated population

Road Market Name	Estimated population	Sample size	% of population
Magaliliu	N/A	-	-
Tanoliu	2	2	100
Natapau(Ielepa Is.)	N/A	-	-
Ekipe	5	5	100
Meten	N/A	-	-
Malafau	N/A	-	-
Siviri	N/A	-	-
Saama	3	3	100
Emua	4	4	100
Pauganisu	4	4	100
Epule	1	1	100
Matarisu	3	3	100
Epau	8	8	100
Eton	N/A	-	-

N/A refers to no market activity on the day of the survey



Interview at the Emua road-side market.

Following a pre-test of the survey form, the survey of the PVMM was conducted on Friday 3 June. Although only one day, a Friday, was selected to conduct the survey, this was very much representative of a week's sell as most vendors had already been selling for a few days within the week and would not be returning again until the following week. The total vendor population on the day was 188 vendors. Given the size of the vendor population the original 5 enumerators used in the study were assisted by 5 VNSO officers to ensure the survey could be completed within the allocated time.

A sample size of 70 vendors (30%) was selected to be interviewed. Each enumerator took 14 vendors for interview. Related VNSO surveys conducted on the Port Vila Municipal market commenced at 11 am to allow time for marketers to have fully started selling produce on the day, therefore a similar start time was used for this survey.

The interviews went well and were all completed by 5 pm on the same day. However, a setback discovered at the count of return forms was that 19 of the forms were not completed. Whilst Friday is always a busy day for the vendors (a key reason for selecting the day for the survey), quite a number of vendors usually leave before close of business (COB) as they have to travel long distance back home, particularly those that came from North Efate and Efate off-shore Islands. Therefore out of the original sample of 70 vendors selected only 51 were interviewed.

In each of the market surveys the average weight of produce common trade units (CTU) were established by first weighting five representative samples. A conversion table for CTU to weights which is used for establishing total volumes of produce traded is included at Annex 1.

3. Survey Results

Fresh food produce is supplied into Port Vila Municipal Market through weekly shipments from other provinces, and daily transport from Efate and Efate off-shore islands of Moso, Lelepa and Nguna. They are also supplied from peri-urban areas of Teoma, Etas, Airport area and Snake Hill. The fresh food produce supplied into PVMM is used to feed the ever growing Port Vila population, and to meet the increasing demand from hotels, restaurants, institutions and kava bars.

The provinces have been a source of supply of fresh food produce such as; water (Fiji) taro, yam, wild yam, sweet potato, cassava and island taro. Vegetable and fruits however are supplied mainly (but not exclusively) from Efate and peri-urban area such as Teoma, Airport, Etas, and Snake Hill. North Efate villages of Paunganisu, Saama, Epule, Emua, Taloniu, and Ekipe and East Efate villages of Eton, Eratap, Pango and Rantapou are also key suppliers. However, currently there is not enough information to indicate the importance of fresh produce supply from the provinces. Nor is there sufficient information on fresh food imports through the retail sector to add to overall picture of supply into the Port Vila market.

3.1. Demand for fresh produce by hotels, restaurants, institutional canteens and kava bars

The Melanesian Hotel buys every day from the PVMM. Iririki Island Resort buys from small farmers once a week. Le Lagoon buys twice a week from small farmers, traders and other markets but not the PVMM. Hide Away Resort buys 3 times a week with 50 per cent from the PVMM, 25 per cent from Mele small farmers and the other 25 per cent from commercial farmers (NUKRO and TEOMA farms). Le Meridian buys 3 times a week from small farmers, traders and other markets but not PVMM. Erakor Resort buys twice a week from small farmers and other markets but not PVMM. Chantey's buys 3 times a week from other island provinces and PVMM. The pattern of purchasing by the main hotels therefore varies significantly meaning that statistics calculated from data collected from the sampled hotels may not be representative of the total population of hotels. Caution should therefore be taken in interpreting the average values calculated below.

The most used fresh food items by the hotels are as follows:- sweet potato, yam, pawpaw, manioc, ripe banana, carrots, Chinese cabbage, Island cabbage, cucumber, lettuce, green banana/plantain, passion fruit, and Fiji taro.

Table 3: Weekly quantities of fresh produce purchased by hotels in Port Vila

Root crops	Quantity (kg)	Fruits	Quantity (kg)	Vegetables	Quantity (kg)	Nuts	Quantity (kg)
Fiji Taro	46	Ripe Banana	80	Ball (head)cabbage	36.3	Dry Coconut	36
Island Taro	17	Grapefruit	37.2	Beans	23	Green Coconut	10
Manioc	135	Mango	0.5	Brocoli	10.4	Navara	7.5
Sweet potato	184	Orange	37.8	Capsicum	6.5		
Yam	180	Passion fruit	53	Carrot	77.5		
		Pawpaw	150	Chillies	0.2		
		Pineapple	2	Chinese Cabbage	70.8		
		Melon	5	Cucumber	62.6		
		Limes	30	Egg plant	5.5		
				Garlic	19		
				Ginger	22		
				Green Onion	31.2		
				Island Cabbage	70		
				Lettuce	60		
				Parsley	0.9		
				Sugar Cane	23		
				Pumpkin	34		
				Sweet Corn	5		
				Tomatoes	31		
				Watercress	24		
Subtotal	562		395.5		612.9		53.5
Sample Average (s=7)	80		57		88		7.64
Hotel population size.s	12		12		12		12
Total	963		678		1051		92

The data in Table 3 on fresh produce bought by hotels is disaggregated according to crop types; root crops, fruits, vegetables and nuts. The weights of each crop product, the average weight from each crop sub-group from the hotels surveyed (calculated from total weight divided by number of hotels in the sample survey i.e. 7) and the estimated total weight for each crop type demanded by all the hotels (calculated by multiplying the average weights per hotel by the total population size n=12) are provided in the table.

The estimated total weekly demand by the Port Vila hotel sector for root crops was 963kg, for fruits 678kg, for vegetables 1051kg and for nuts 92kg

3.2. Demand from restaurants

The six restaurants and food stalls surveyed were La Casa, Rendez Vous, L'oustalet, Harbour View and two food stalls located by the PVMM. All the 4 restaurants including one of the food stall bought produce from the PVMM. Harbour View, L'oustalet, La Casa and Rendez Vous all buy once a week. The food stall buys three times a week from the PVMM. The other food stall buys twice a week from other market outlets and traders.

Fresh food produce purchased by restaurants is very similar to that bought by hotels. Items included, Chinese cabbage, manioc, broccoli, ripe banana, mango, cucumber, green onion, sweet potato, garlic, green banana/plantain, island cabbage, carrot, beans, orange, capsicum, melon, crabs, lettuce, and island taro.

Further telephone contact with owners and supervisors of the four restaurants surveyed indicated that of all clients visiting the restaurants, tourist clients represented an estimated 10 per cent, 15 per cent, 20 per cent and 60 per cent for La Casa, Rendez Vous, Harbour view and L'oustalet respectively. Cross checking this with their turnover shows that the higher their turnover the higher the proportion of tourist client visitors received by the restaurants.

Results from the survey on weekly quantities of fresh produce purchased by restaurants and calculations of estimated total use by the total restaurant population in Port Vila town (n=48 restaurants) is shown in Table 4 below. The estimated total weekly demand by the restaurant sector for root crops was 524 kg, for fruits 757 kg, for vegetables 2022 kg and for nuts 48kg.

3.3. Demand from institutional canteens

The institutions surveyed included the main referral hospital, the USP and the Correctional Service kitchens and the USP canteen. The Hospitality and Leisure Training centre canteen was not surveyed although several unsuccessful attempts were made and the three secondary schools within the town area were on holiday during the time of survey and were not included. Four institutions, representing fifty per cent of the population, were surveyed.

The hospital buys fresh food produce once a week from small farmers on Efate. The Correctional Service buys once a week mainly from a trader and gets its vegetable from the PVMM. The USP canteen buys every working day on Monday to Friday from the PVMM whilst its kitchen buys every day of the week from the PVMM.

Table 4: Weekly quantities of fresh produce purchased by restaurants in Port Vila

Root-Crops	Quantity (kg)	Fruits	Qty (KG)	Vegetables	Qty (kg)	Nuts	Quantity (kg)
Fiji Taro	1	Limes	7	Beans	12.8	D. coconut	6
Island Taro	7.5	Ripe Banana	26	Broccoli	26		
Manioc	35	Mango	25	Capsicum	12.5		
Sweet Potato	22	Orange	12.6	Carrot	15.5		
		Passion fruit	7	Chillies	4		
		Pawpaw	7	Chinese Cabbage	51.6		
		Melon	10	Cucumber	32.2		
				Egg plant	3.5		
				garlic	21		
				Ginger	4		
				Green Onion	22.8		
				Island Cabbage	16		
				Lettuce	9.6		
				Limes	7		
				Parsley	3.3		
				Sugar Cane			
				Pumpkin	2		
				Sweet Corn	3		
				Tomatoes	3		
				Watercress	3		
Subtotal:	65.5		94.6		252.8		6
Sample Average (s=6)	11		16		42		1
Restaurant population size	48		48		48		48
Total	524		757		2022		48

Table 5: Weekly quantities of fresh produce purchased by canteens in Port Vila

Root-crops	Qty(Kg)	Fruits	QTY(KG)	Vegetables	Qty(KG)	Nuts	Qty(Kg)
Fiji Taro	164	Orange	24	Pumpkin	360	D. coconut	12
Is. Taro	117	Pawpaw	58	Is. Cabbage	184		
Manioc	117	Melon	40	Tomato	40		
S.Potato	117	R.Banana	10	C.cabbage	39		
Yam	90	Passion F	10	Cucumber	31		
		G.Banana	60	Lettuce	31		
				Beans	28.4		
				B.Cabbage	22		
				S.Corn	20		
				Capsicum	16		
				E.plant	10		
				Watercress	10		
				Carrot	9		
				G.Onion	7.2		
				garlic	3		
				Ginger	2		
Subtotal	605		202		812.6		12
Sample Average (s=4)	151		51		203		3
Population size	8		8		8		8
Total	1210		404		1625		24

Results from the survey on weekly quantities of fresh produce purchased by institutional canteens and calculations of estimated total use by the total canteen population in Port Vila (n=8 canteens) is shown in Table 5 above. The estimated total weekly demand by the institutional canteens for root crops was 1210 kg, for fruits 404 kg, for vegetables 1625 kg and for nuts 24kg. Given the differences in the relative size of the canteens and their likely purchasing pattern, these estimates are indicative.

3.4. Demand from kava bars (nakamals)

Nine per cent of the main kava bars in town were surveyed. These were Kalaxy, Chief's Nakamal, Green Light nakamal, Renault nakamal, and Last Flight kava bar. Kalaxy kava bar buys fresh food produce 5 times in a week from the Fresh Water produce market and not the PVMM. Chief's Nakamal buys fresh food items 5 times a week from the PVMM. Green Light

nakamal buys 6 times a week, sixty (60) per cent of time from PVMM and forty (40) per cent from the other markets (Fresh water market). Renauld buys once a week from the PVMM. Last Flight buys 6 times a week, ninety (90) per cent of time from PVMM and 10 per cent from the other markets (Fresh Water market).

Fresh food items sold at kava bars included dry coconut meat, sugarcane, navara (the bulb of a sprouting coconut), sweet potato, island taro, manioc, island cabbage, yam, pawpaw, and Fiji taro.

Table 6: Weekly quantities of fresh produce purchased by kava bars in Port Vila

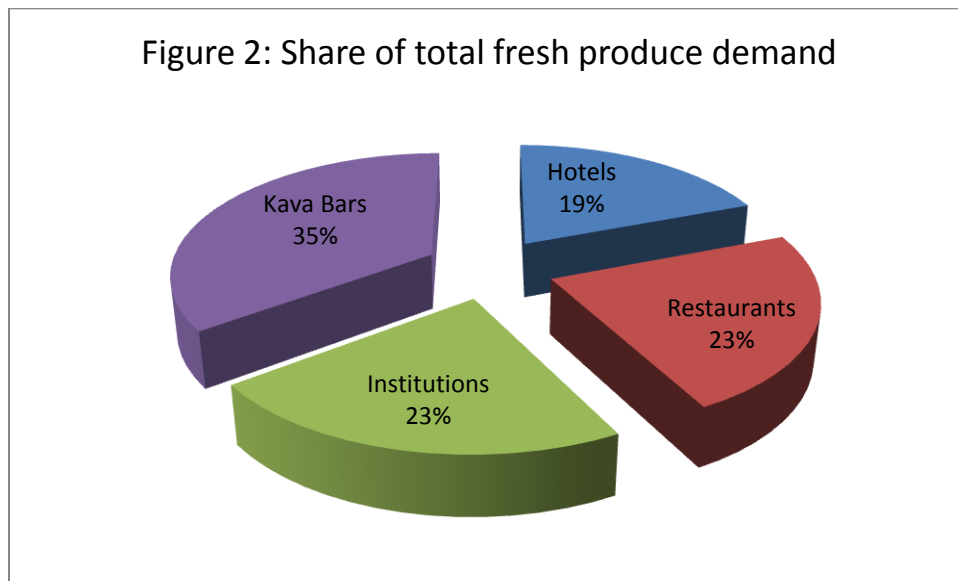
Root-Crops	Qty (Kg)	Fruits	Qty (Kg)	Vegetables	Qty (KG)	Nuts	Qty(Kg)
S.Potato	76	G.Banana	36	Egg Plant	36	D.Coconut	36
Is.Taro	45.5	R.Banana	17	Sugarcane	34.5	Navara	4.5
Manioc	31	Pawpaw	15.3	Cucumber	32		
Yam	27	Passion F	5	Is.Cabbage	30		
Fj Taro	9	Mango	2.5	Ball Cab.	8.8		
		Orange	1.8	C.Cab	7.2		
		Naus	1.2	G.Onion	7.2		
		Namambe	0.6	Beans	7.2		
				Capsicum	3.5		
				Ginger	3		
				Carrot	1.4		
				Garlic	1		
				Pumpkin Top	0.8		
Subtotal	188.5		79.4		172.6		40.5
Sample Average (s=5)	37.7		15.9		34.5		8.1
Population size	53		53		53		53
Total	1998		842		1830		429

Results from the survey on weekly quantities of fresh produce purchased by kava bars and calculations of estimated total use by the total kava bar population in Port Vila (n=53 bars) is shown in Table 6 above. The estimated total weekly demand by the kava bar sector for root crops was 1998 kg, for fruits 842 kg, for vegetables 1830 kg and for nuts 429kg. However a

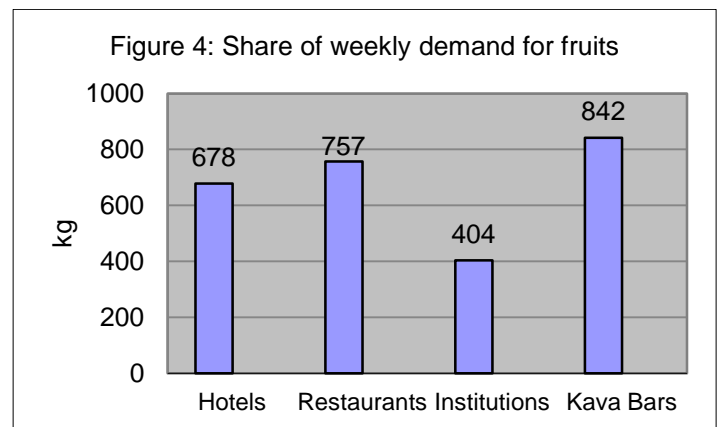
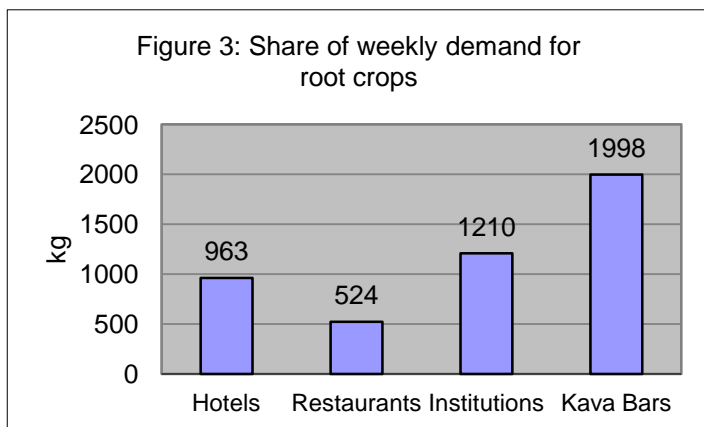
concern in these estimations is that not all kava bars are believed to use fresh produce and therefore the estimation of total use based on the population of 53 may be inflated.

3.5. Relative fresh produce demand from the different consumer segments

The relative share of total fresh produce demand (14497kg) from the hotel and other outlets is depicted in Figure 2. The kava bar segment with an overall estimated weekly demand of just over 5000kg of fresh produce had the largest share (35%) followed by restaurants (3,352kg) and institutional canteens (3,263kg) both representing about a 23% share and hotels lowest with about a 19% share (2,784kg).

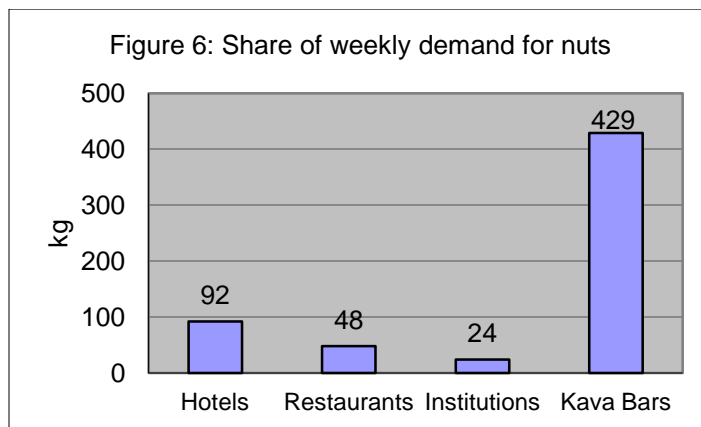
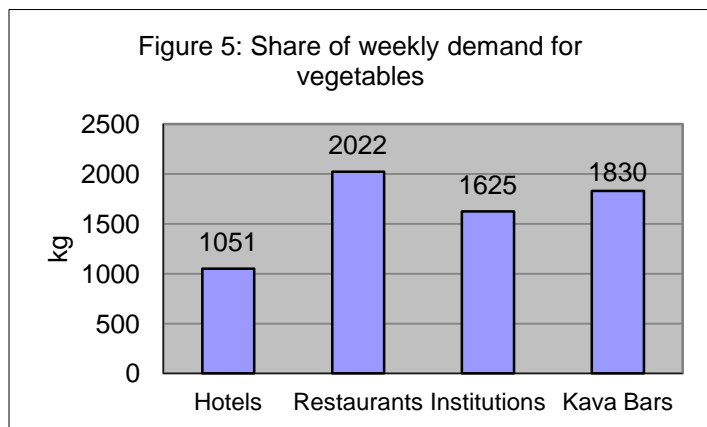


The relative shares in weekly demand for the four fresh produce sub-groups; root crops (total = 4695kg), fruits (total = 1968kg),



vegetables (total = 2118kg) and nuts (total = 1670kg) is shown in Figures 3 to 6. The kava bar segment had the largest demand in all of the product sub-groups except for vegetables where

the restaurant sector had the highest demand. But the kava bar estimated must be treated with some caution as mentioned above.



Restaurants have a strong demand for vegetables and fruit, but the lowest demand for root crops. The largest demand for root crop was from kava bars and institutional canteens. Hotels followed restaurants in their demand for local fresh fruits, but had a relatively low share of the demand in the other product sub-groups. The institutional canteens had the lowest share in demand for fresh fruits and nuts.

4. Supply of fresh produce from PVMM, Efate Ring Road markets and imports

4.1. Port Vila Municipal Market Survey

The PVMM survey was conducted between 11 am and 5pm on Friday 3 May. A sample size of 51 vendors out of a total population of 188 was interviewed for the survey. The PVMM vendors in the previous week operated at the market between 1 and 6 days a week from Monday to Saturday but not Sunday. Only 9 % (5 vendors) from the 51 surveyed operated from Monday to Saturday. Forty three percent of vendors originated from North Efate, thirty one percent from areas just outside Port Vila, sixteen percent from Efate off-shore islands and ten percent from East Efate. Around 90% of vendors were farm producers selling their own produce and only 10% were traders.

The types of fresh food produce sold at the PVMM included root crops, vegetables, fruits, nuts, flowers, plants, herbs, spices and other leafy plants. The data collected on the four fresh product sub-groups is shown below in Table 7.

The estimated total quantities of produce brought to the market are 5,788kg of root crops, 9,909kg of fruits, 6841kg of vegetables and 11383kg nuts (which comprises largely coconuts).

Thus the total estimated volume of fresh produce available on the day of the survey was 33.92 tonnes.

Maniok (cassava) and sweet potatoes constituted the largest share of root crops available, whilst citrus products (grapefruit, mandarin and orange) held the largest share in fruits. Island cabbage, Chinese cabbage, cucumber, green bean and onion held the largest share for vegetables. Coconut (dry and green) was the most important in the nut category. Navara was the next most significant nut available.

Table 7: Quantity of fresh produce brought to the PVMM on the survey day

Root-Crops	Qty(KG)	Fruits	Qty(KG)	Vegetables	Qty(Kg)	Nuts	Qty(Kg)
Manioc	684	Grape fruit	851.6	Island Cabbage	760	Dry Coconut	2,574
Sweet potato	639	Naus	354	Chinese Cabbage	357.6	Green coconut	478.7
Fiji Taro	135	Mandarin	303.9	Cucumber	307.2	Navara	30
Island taro	70	Orange	203.8	Beans	118.4	Nangae	3
Yam	42	Ripe banana	157	Green Onion	73.2	Navele	2
		Pineapple	112	Lettuce	64		
		Pawpaw	104.7	Coconut oil	58.5		
		Limes	94.5	Brocoli	26		
		Korosol	89.7	Carrots	21		
		Raspberry	15	Water cress	20		
		Mango	5	Snake beans	13		
		G. Banana	397	Sutsut fruit	9		
				Sutsut top	8.8		
				Pumpkin top	8		
				ball cabbage	5.5		
				Sweet corn	5		
				Chilly	0.4		
				Ginger	0.3		
Subtotal	1570		2688.2		1855.9		3,088
Sample Average (s=53)	30.9		52.7		36.4		60.5
Population size	188		188		188		188
Total	5787		9909		6841		11383

4.2. Efate Ring Road market survey

Sixty percent of the Efate Ring Road markets were surveyed on Friday 27 May 2011. The 8 roadside markets operating were Tanoliu, Ekipe, Emua, Matarisu, Paunganisu, Epau, Epule, and

Saama. Twenty-nine (97 per cent) vendors sold produce intermittently, either once, twice, 3 times a week or each day except Sunday. Only 1 vendor (3%) sold produce every day of the week including Sunday. This particular vendor operated from Matarisu road-side market. All the vendors at Epau, Epule, Ekipe, and Saama market sites sell one time a week except one had no records of number of days she operated the market in the last week. Paungangisu vendors sell 6 times a week. Tanoliu vendors sell two times a week. One vendor at Matarisu sells 7 times a week, another sells two times a week and another sells one time a week. At Emua, two vendors sell two times a week, one sells three times a week and another sells 6 times a week.

Out of the 30 vendors interviewed, 28 (94 per cent) were grower-vendors. The 2 (6%) exceptions operated as traders who buy produce from farmers and on-sell at the road-side markets. They originated from Paunangisu and Epau road-side markets. The produce available for sale at the road-side markets and weights are shown in table 8 below.

Table 8: Quantity of fresh produce brought to the road-side markets on the day of the survey

Root-Crops	Qty(Kg)	Fruits	Qty(Kg)	Vegetables	Qty(Kg)	Nuts	Qty(kg)
Fiji Taro	8	Mandarin	56.5	Is.Cab	86	D.Coconut	198
Manioc	135	Grapefruit	126	C.Cabb	31.2	G.Coconut	77
Is.Taro	14	Orange	95.8	Sugarcane	27.6	Navara	28.7
		R.Banana	59	Beans	12.8	Navele	3.2
		G.Banana	114	Cucumber	5.6	R. Peanut	0.5
		Naus	37.8	Parsley	0.1	Nagae	0.5
		Kastaple	3				
		pawpaw	15.3				
		Korosol	5.2				
Subtotal	157		512.6		163.3		307.9
Sample Average	19.6		64.1		20.4		38.5
Population size (s=8)	14		14		14		14
Total	275		897		286		539

The estimated total quantities of produce brought to the market are 275 kg of root crops, 897 kg of fruits, 286 kg of vegetables and 593 kg nuts (which comprises largely dry coconuts). Thus the total estimated volume of fresh produce available on the day of the survey was 1,997 kg, a little less than 2 tonnes . Clearly at this time the Efate Ring Road markets represent a very small supply outlet for fresh produce compared to the PVMM which had available around 34 tonnes

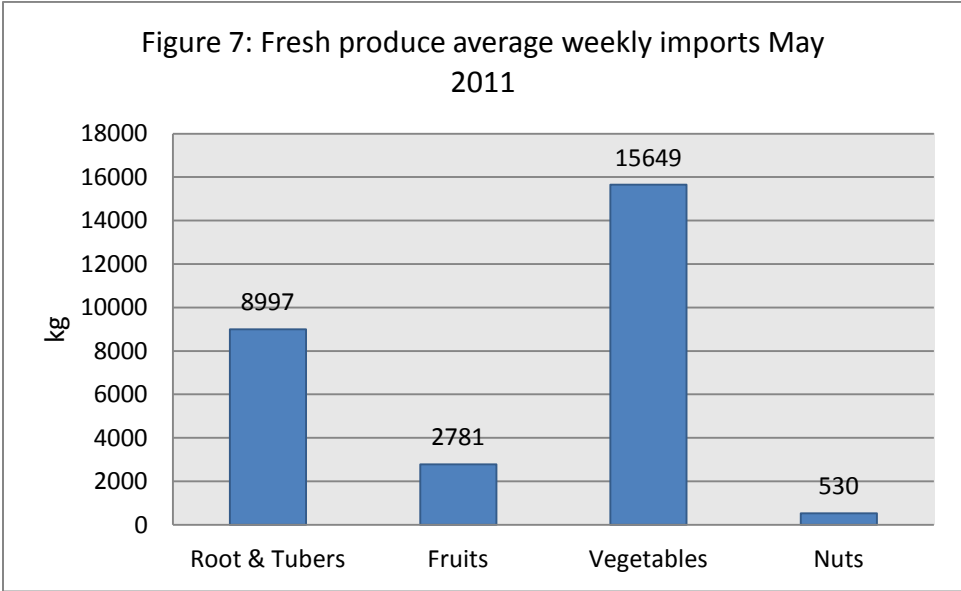
on the Friday the survey was conducted which is some 17 times greater than that available from all the roadside markets combined.

4.3. Other Markets

Marobe Livestock market represents another important supply outlet for fresh produce. Produce is brought into the Marobe livestock market from Sanma, Penema, Malapma and Shefa provinces. Some records are available for the period 2010 that imply that the quantity of fresh produce supplied through the Marobe market was quite substantial. It is estimated that the volume of produce supplied through Marobe and other markets (e.g. Fresh Water market) maybe as high as 50% of that supplied through the PVMM and Efate Ring Road markets combined.

4.4. Fresh Produce Imports

The main types of fresh produce imported are; root & tuber crops (cassava, potato), fruits (including grapefruit, lemon, mandarin, mango, oranges, pineapple, raspberry, banana, and melons), vegetables (including beans, head lettuce, potatoes, carrots, cucumbers, tomatoes, onions, sweet corn and garlic) and a small quantity of nuts (including chestnuts, cashew, pistachio and walnut). The average weekly fresh produce imports during May 2011 are shown in Figure 7.



Source: VNSO

Total average weekly imports of fresh produce reached almost 28 tonnes with vegetables holding the largest share at 15.6 tonnes, followed by almost 9 tonnes of roots and tubers, 2.8 tonnes of fruits and 0.5 tonnes of nuts.

5. Demand from the hospitality sector as a proportion of total supply

Acknowledging the limitations and probably inaccuracies in the calculation of demand and supply quantities on a weekly basis, an attempt is made in this section to estimate the proportion of supply (domestic and imported) that is purchased by the hospitality sector (Table 9). To illustrate the difficulty in determining how to estimate supply on the basis of data collected from market sellers who often participate intermittently (i.e not on a regular daily basis), two scenarios are developed.

Table 9: Estimations of proportion of supply that is purchased by the hospitality sector

<i>Hospitality sector weekly demand (kg)</i>					
	Root crops	Fruits	Vegetables	Nuts	Total
Hotels	963	678	1051	92	2784
Restaurants	524	757	2022	48	3351
Canteens	1210	404	1625	24	3263
Kava bars	1998	842	1830	429	5099
Total demand	4695	2681	6528	593	14497
<i>Scenario 1: Supply (kg) assuming data from day of survey represents weekly value</i>					
PVMM	5787	9909	6841	11383	
Efate roadside	275	897	286	539	
Other outlets (plus 50%)	3031	5403	3563.5	5961	
Imports	8897	2781	15649	530	
Total supply	17990	18990	26339.5	18413	81732.5
Hospitality % share of total supply	26%	14%	25%	3%	18%
<i>Scenario 2: Supply (kg) assuming weekly values = X * day of survey data, where X = 4</i>					
PVMM	23148	39636	27364	45532	
Efate roadside	1100	3588	1144	2156	
Other outlets(plus 50%)	12124	21612	14254	23844	
Imports	8897	2781	15649	530	
Total supply	45269	67616	58411	72062	243359
Hospitality % share of total supply	10%	4%	11%	1%	6%

In Scenario 1, supply is calculated on the basis that the earlier presented market data values in this report represent a weekly supply³ (scenario 1, Table 9). In that case, the demand from hospitality as a proportion of supply is 18%, but with hospitality sector demand for root crops and vegetables working out at around 25% this seems very high and therefore is considered unlikely. Indeed, if it is correct then a significant increase in tourist numbers could well prove problematic for an adequate domestic supply response to meet increased demand.

³ Data at PVMM and Efate Ring Road markets was collected on a single Friday in the month of May

In the second calculation scenario, total supply is calculated by multiplying the survey results for PVMM and Efate by a factor of 4 under the assumption that the data collected equated to sales on the Friday and Friday sales are assumed to be disproportionately higher than the other 5 days of the week on which sales could take place. In this case the proportion of supply demanded by the hospitality sector is 6%, with roots and vegetables at about 10% and nuts at a more negligible 1%.

Clearly, the calculations are sensitive to how many times daily supply is multiplied, but the latter scenario ($X=4$) seems much more realistic. For comparison, in a recent fresh produce market study conducted in Port Moresby⁴, calculations estimated that weekly per capita consumption of fresh produce would be approximately 5.4kg and this figure is close to what could be estimated by dividing the weekly supply of 243,359 kg by the Port Vila estimated population of 47,850 to give a per capita consumption of approximately 5.1kg. Clearly, further research is required in order to determine the quantities of sales in the different market channels and how these quantities might change for different product groups during the year.

An interesting finding from these surveys is the relatively high proportion of demand for fresh produce from the kava bar sector. This sector does indeed constitute an important market segment for the local producers to trade with. However, kava bars are not very much frequented by tourists, therefore any impacts of increased tourist numbers would most likely be registered through the restaurants and hotel sector demand which under scenario two calculations represents only 2.5% of the estimated total supply. Therefore even a doubling of tourist numbers from the current level would likely not impact significantly total produce supply and availability in Port Vila. Furthermore, a significant proportion of tourist arrivals are short-term cruise ship passengers who likely do not consume much local produce during their visits.

However, seasonality is a distinct feature of the tourism industry – with peaks reflecting the Australia/NZ winter period (especially school holidays) and summer holiday/ Christmas period and seasonality is also a feature of fresh produce supply. Therefore a more detailed comparison of supply and demand patterns for specific crops is needed to ensure maximum supply can be catered from domestic production.

6. Implications for Policy and Recommendations

At the time that this study commenced there was a near complete absence of data on the fresh produce domestic market in Vanuatu. The government authorities currently do not implement any regular market surveys and there are few studies which are easily accessible for use by

⁴ Grant Vinning 2008 Feeding Port Moresby Study

decision makers. This poses a serious limitation for evidence-based policy making. It also constrains the analysis and interpretation that can be achieved from a case study approach such as this one because there is no context and baseline data to assess and validate assumptions being made.

Time and resource constraints available for implementing this study have resulted in a number of areas of weakness which in turn has made drawing firm conclusions and recommendations from the data problematic.

Whilst the study has provided a preliminary snap-shot of the fresh produce market supply and demand, particularly for the food service sector, there are a number of data collection areas that need to be more rigorously addressed. Some of the specific areas where further survey and data collection should be undertaken and strengthened include:

- Collection of data for a full weekly period from the main market outlets to better estimate daily supply and sales and ascertain how representative a Friday sample day might be.
- A more extensive survey covering also the other markets and supply outlets in Port Vila.
- Data collection spread over the calendar year to better account for seasonal supply and demand trends.
- A more representative sample survey of sectors such as kava bars and restaurants to better understand their demand and purchasing practices.
- A more comprehensive survey of hotels because of the apparent wide variation between hotels on their demand and purchasing practices.
- A better appreciation of the supply and purchase of imported foods to identify opportunities for domestic substitution.
- Inclusion of price (and eventually quality) data to see how this impacts demand and supply.

A clear recommendation for policy is to instigate the implementation of systematic domestic market data collection led by the VNSO and supported by MAQFF. Gaining a better understanding of the different market segment demands and the potential to meet these through domestic supply on a year-round basis is critical for policy and strategic planning in the agriculture sector, and also for ensuring positive linkages and synergies between the agriculture and tourism sectors.

With growing demands on Port Vila fresh produce markets due principally to rapid urban population growth, but also to some extent from likely increased demands from the tourist sector on the one hand, and potential negative impacts of climate change, rising fuel costs and

high global food prices negatively impacting food supply on the other hand; the need for good data for effective decision making has never been greater.

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Annex 1: Conversion table for CTU to kg weights

1 Basket Fiji taro=9kg	1bundle cabbage=1.1kg
1 piece Fiji taro=1kg	1bundle Chinese Cabbage=1.2kg
1bundle broccoli=1.3kg	1plastic carrot=5kg
1basket Island taro=7 kg	1bundle bean=0.8kg
1 basket manioc=9kg	1bundle chillies=0.2kg
1 small heap manioc=4kg	1 piece cucumber=0.8,1plastic cucumber=1.6kg
1 Basket yam=12kg	1 unit egg plant=0.5kg
1 piece Capsicum=0.5kg	1bundle lettuce=2kg
1 bundle carrot=0.7kg	1 plastic lettuce=0.8kg
1Bundle garlic=1kg	1bdl watercress=1kg
1Bundle Ginger=1kg	1plastic parsley=10 bundles
1 Plastic lime=1kg	10 bundle parsley=1kg,1 bundle=0.1kg
1unit pumpkin=2kg	1 piece Grapefruit=1.2kg
1 piece tomato=0.2kg	1fruit mango=0.5kg
1bdl Island Cabbage=2kg	1 unit onion=0.1kg
1 Bag tomato=1kg	1 basket mango=10kg
1 ring ripe banana=1kg	1 bundle green onion=1.2
1 whole ripe banana=6kg	1 large bag island taro=20kg
1 plastic passion fruit=1kg	1 ball cabbage=1.1kg
1piece pawpaw=1kg	1 piece capsicum=0.5kg
1 bag cucumber=10kg	1 bundle carrot=0.7kg
1 carton Chicken=12kg	1 piece orange=0.6kg
1 basket sweet potato=9kg	1 Unit pawpaw=0.9kg
small bundle sweet potato=4kg	1 carton carrot=20kg
1 bunch banana=6kg	1piece yam=3kg
1bundle yam=6kg	