



**REPORT
On**

**Deputation to Kingdom of Tonga for Developing the
National Strategy for the Coconut Sector
(3 March 2017 -5 October 2017)**

Supported By

**Indian Technical and Economic Cooperation (ITEC)
Ministry of External Affairs
Government of India**

Submitted by

**Jayasekhar Somasekharan
ITEC-Coconut Development Expert**

October 2017

1. Background Information

1.1. Genesis

The Ministry of Commerce, Consumer, Trade, Innovation and Labour (MCCTIL), Government of the Kingdom of Tonga has requested the Ministry of External Affairs (MEA), Government of India through the High Commission of India, Suva for the deputation of a coconut development expert under the Indian Technical and Economic Cooperation (ITEC) programme of the MEA for a period of seven months. The specific objective was to develop a National Coconut Development Strategy for Tonga, and also to establish linkages and potential funding programmes for the implementation of the strategy. Subsequent to the selection process of the suitable candidate, with reference to the letter No: DPA-II/B-2311/02/2016/ITEC-II dated September 01, 2016, Mr. Jayasekhar Somasekharan, Scientist (Sr. Scale), Agricultural Economics, ICAR- Central Plantation Crops Research Institute, Kasaragod, Kerala was selected for the deputation. Subsequent to this, the President, MEA has sanctioned the deputation, and the under secretary (TC-II) has conveyed the approval of Competent Authority *vide* letter No. DPA-II/B-2311/02/2016/ITEC-II dated 18 January 2017. Accordingly, I have proceeded to Kingdom of Tonga based on the office order No.F.26.11 Deptn./Tonga-Confl. Dated 27 February 2017 from ICAR-CPCRI, Kasaragod.

1.2 Purpose

Deputed as ITEC (Coconut Development Expert) to develop a coconut revitalization strategy for the Kingdom of Tonga.

1.3 Period

03 March 2017 to 05 October 2017

1.4 Institution/Organization/Laboratory and Country visited

Ministry of Commerce, Consumer, Trade, Innovation and Labour, Kingdom of Tonga

1.5 Sponsoring agency/Organization including name of programme, if any, under which the visit has been undertaken

MEA, Government of India through High Commission of India, Suva (ITEC Programme)

1.6 Visit schedule

Departure			Arrival			Mode of Conveyance
Date	Time	Place	Date	Time	Place	
28.02.2017	10.00am	Kasaragod	02.03.2017	03.55pm	Nuku'alofa	Air
03 March 2017 to 05 October 2017: MCCTIL, Kingdom of Tonga						
06.10.2017	04.30 pm	Nuku'alofa	07.10.2017	8.00pm	Kasaragod	Air

2. Report Details

2.1 Scientific/Technical

The final report is enclosed (Appendix)

2.2 Institutional (Linkages, Collaboration etc.)

Provided as Chapter-4 (strategic frame work) in final report

2.3 Administrative (issues if any)

Not Applicable

2.4 Financial Implications if any, in exchange of information, collection of materials etc.

Not Applicable

2.5 Policy

The policy frame for the Kingdom has been developed

2.6 Trade/Market/Research/Development Intelligence

Country specific reorientation on trade and marketing aspects are recommended (Chapter 3 & 4 of the report-Appendix)

3. Practical/Scientific utility of the visit performed

It was a novel experience to work on unique issues confronted by a small island country in the South Pacific. Especially the outer islands which are situated at far

off are facing inherent problems due to the huge transaction costs. Hence, it is highly complex to come out with generic marketing strategies. The challenges made me re-orient the conventional trade dimensions, and helped me to come out with regional specific recommendations, which has been well received by the stakeholders.

4. Write up of not more than one page

The project goal was to evolve the strategy for a vibrant, equitable and sustainable coconut sector in Tonga through innovative and inclusive programmes and policies that contribute towards prosperity of all stakeholders. In this respect, a work plan was submitted and presented to the important coconut stakeholders' of Tonga. Subsequently developed a trade database on coconuts and conducted a comprehensive scenario analysis of the sector to bring out a working paper for discussion. Thereafter, a stakeholder analysis was carried out through qualitative research methods which include conduct of field study, interviews, and focus group discussions. The farmers and traders were empowered through the conduct of workshops and trainings in main island as well as outer islands of the Kingdom. The insights garnered by all these activities are channelized for evolving a strategic frame for transforming and revitalizing the coconut sector of Tonga. A National Coconut Development Council has been constituted for the implementation of the strategies.

5. Conclusions and Recommendations

The recommendations are given in the format of strategic framework (action plan mode with time frame) in Chapter 4 of the final report (Appendix)

6. Follow-up Actions

It is important to train the selected stakeholders of the coconut sector on various activities including production and value addition. It is requested that the High Commission of India, Suva may facilitate this by providing ITEC Scholarships for the selected participants to get trained at Central Plantation Crops Research Institute, Kasaragod, Kerala, India.

**Final Report Submitted to the
Government of Kingdom of
Tonga**

Strategic Framework for the Development of Coconut Sector in Kingdom of Tonga

Report to the



**Government of the Kingdom of Tonga
Ministry of Commerce, Consumer, Trade, Innovation and Labour**

**Supported By
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Strategic Framework for the Development of Coconut Sector in Kingdom of Tonga

Table of Contents

1. Problem Statement and Objectives	3
2. CHAPTER 1: Scenario Analysis & Comparative Trade Dynamics.....	4
3. CHAPTER 2: Field Study, Activities and Reflections	20
4. CHAPTER 3: Sectoral Challenges and Strategies	36
Sectoral issues.....	37-41
Sectoral strategies.....	42-44
Formation of National Coconut Development Council.....	45-46
5. CHAPTER 4: Strategic Framework-Action Plan	47
6. References	52
7. Appendices	54-56
Appendix 1: Journal article published (Cover page)	54
Appendix 2: Working Paper developed (Cover page).....	55
Appendix 3: Certificate of honour awarded (Copy)	56

Problem Statement and Objectives

Problem Statement

The coconut economy of the Kingdom of Tonga has been experiencing a crisis with respect to production technology, palm senility, natural calamities, value addition, farm gate prices, stable domestic market, export orientation, professionalism, stakeholder synergy and convergence. This is in contrast to the earlier scenario, way back in the 1970s through 1990s, during which coconut sector has dominated the export scenario in Tonga with copra making providing a robust livelihood security to the people. Above all, the emerging market and trade related challenges in the liberalized regime are difficult to cop up. As a matter of fact, coconut sector in Tonga still has the potential to provide year round livelihood security. In view of these issues it is imperative to assess the current status of the coconut sector in the country and identify the gaps, commonalities and recommend opportunities for sectoral development in order to put a renewed focus for coconut sector in the country.

Project Goal

Evolve the strategies for a vibrant, equitable and sustainable coconut sector in Tonga through innovative and inclusive programmes and policies that contribute towards prosperity of all stakeholders.

Project Objectives

- Submit a work plan to the Ministry of Commerce, Consumer, Trade, Innovation, and Labour, Kingdom of Tonga

- Conduct a comprehensive scenario analysis of coconut sector of Tonga that encompasses the trade evolution, competitiveness, issues, and challenges
- Undertake an in-depth stakeholder analysis of the coconut sector through qualitative research methods which include conduct of field study, interviews, and focus group discussions
- Empowering the stakeholders by widening their knowledge base, and by developing an auto-pilot mechanism on sustaining the strengthened coconut sector.
- Evolving a strategic frame for transforming the coconut sector of Tonga into a prosperous and sustainable one.

CHAPTER 1

Scenario Analysis and Comparative Trade Dynamics

Introduction

Coconuts have assumed considerable significance in the economy of Tonga for centuries in view of the rural employment and income generation. The traditional coconut farming in Tonga is an integral part of their life, culture and identity. The export of coconut products such as copra, coconut oil and desiccated coconut contributed as much as 60 percent of the total merchandise export earnings of the country during the late 1960s and 1970s. The mid-1970s onwards, there had been a rapid decline of the industry, caused by low prices that resulted in low investments. All forms of coconut products have fallen sharply between mid-1970s and 1987, and the share of coconut products fell from to 24 percent of the total exports by this time (Wickramasekara, 1993). In recent times, the coconut sector of the country plays an insignificant role in terms of productivity, competitiveness, and export earnings.

Data and Methodology

The comparative position of Tonga with respect to the major pacific islands was analyzed with respect to the indicators such as population, gross domestic product (GDP), per capita income, growth rates (in GDP, trade and agriculture), credit support, and remittance inflow. Since our major focus is on coconut sector, we have considered only those pacific countries which are members of the Asia and Pacific Coconut Community (APCC). The data on various indicators were sourced from World Development Indicators (WDI)-Database. In a similar fashion, the comparative position of Tonga *vis a vis* other pacific island countries with regard to the coconut production and trade was carried out by extracting the data from APCC statistical yearbook. The contribution of agriculture and allied sectors to Tongan economy was studied through compiling and analyzing eight years data on agricultural sector of the country. The database in this respect was developed from monthly statistical bulletins for the period 2008-15. The pattern of contribution of coconut sector to the country's economy was also studied in the similar fashion. The data on dynamics of trade destinations of coconut was sourced from quarterly bulletins of National Reserve Bank of Tonga (NRBT) for the period 2008-15.

Comparative analysis with respect to economic indicators

The figures on economic development indicators among the major Pacific Island countries are depicted in the Table 1 (since our major focus is on the coconut sector, we have considered the Pacific countries which are members of the Asia Pacific Coconut Community). In terms of population, Tonga and Kiribati shares the eighth position (0.11 million each) among the Pacific Islands, whereas Papua New Guinea is way ahead than the other countries with the population of 7.62 million. Among the nine island countries compared, in terms of GDP, Tonga stands at sixth position with US\$ 435 million in the year 2015. On the other hand, Tonga is positioned 3rd in terms of per capita income (US\$ 4280) following Fiji and Marshall Island. As far as the economic growth is concerned, surprisingly Papua New Guinea recorded the highest annual growth rate with 8.5 percent followed by Fiji (5.5 percent). Tonga has registered an annual growth rate of 3.7 percent and stands at 5th position in comparison with other islands. Contribution of agriculture sector to the total GDP in the case of Tonga was 19.7 percent. The contribution of exports to the GDP is a meager 17.5 percent, whereas the import as percentage of GDP is as high as 60.6.

Table 1. Comparison of economic indicators of Pacific Islands

Country	Population (million)	GDP (US\$ million)	Per capita income (US\$)	GDP growth (%)	Agriculture (%) in GDP	Exports (% GDP)	Imports (% GDP)	Credit (% GDP) *	Remittance (% of GDP)
F.S.Micronesia	0.10	315	3560	3.7	28.2	..	..		7.6
Fiji	0.89	4426	4830	5.5	11.2	51.8	58.2		5.6
Kiribati	0.11	160	3390	3.5	..	12.4	96.6		9.9
Marshall Islands	0.05	179	4770	0.6	14.7	..	..		14.9
PNG	7.62	16929	2240	8.5	..	..	..		0.1
Samoa	0.19	761	3930	1.6	..	27.2	50.5	76.1	17.2
Soloman Islands	0.58	1129	1920	3.7	..	46.1	54.5	24.9	1.6
Tonga	0.11	435	4280	3.7	19.7	17.5	60.6	33.5	27.0
Vanuatu	0.26	742	..	-0.8	..	..	..	65.5	3.2

Note: PNG is Papua New Guinea, *Domestic Credit by financial sector (% of GDP)

Computed from World Development Indicator, 2015

It is noteworthy that the percentage share of remittance in the GDP is highest in Tonga, which accounts for 27 percent of the total GDP. It is interesting to observe that the share of credit provided by the financial sector as a percentage of GDP is only 33.5 percent, whereas for Samoa it's as high as 76 percent. The credit provision is an indicator (admittedly crude) of domestic investment opportunities and entrepreneurship development. When we realize that the remittance is at higher levels and the comparative intensity for investment is at lower levels, we need to really find out plausible solutions to develop these aspects. What we can apparently infer from the comparative statistics is, Tonga enjoys a higher per capita income mainly due to the remittance inflow, and the potential for the domestic investment and acceleration of the economic growth rate is still in the nascent stages.

Coconut production and trade: A comparative analysis

Among the Pacific Islands, Papua New Guinea has the largest coconut area, accounts for 37.5 percent of the total area of the nine major islands under consideration (Table 2). Tonga has 31000 ha under coconut and stands at sixth position among the nine islands and accounts for 5.3 percent of the total area under coconuts. In the case of coconut production, again Papua New Guinea tops the list with 55.2 percent share of the total production of the islands under comparison, whereas Tonga produces 75 million nuts, which accounts for 2.8 percent share in the total coconut production of the nine Islands. The productivity of Tonga is one among the lowest among the Islands (2423 nuts/ha), which is lower than the average productivity of the nine Islands. The low productivity is a matter of grave concern not only in view of the comparative disadvantage, but also in terms of sustainability of the coconut sector. It is evident that the comparative picture of Tonga on the aspects of coconut production is bleak as of now and requires adequate impetus to make it competitive and sustainable.

Table 2. Comparison of coconut production statistics

	Area (000'ha)	Production (million nuts)	Area (%)	Production (%)	Productivity (Nuts/ha)
F.S.Micronesia	18	59	3.1	2.2	2197
Fiji	62	200	10.5	7.4	2387
Kiribati	20	55	3.4	2.0	2730
Marshall Islands	8	35	1.4	1.3	4375
Papua New Guinea	221	1483	37.5	55.2	6710
Samoa	99	267	16.8	9.9	2697
Solomon Islands	38	100	6.5	3.7	2631
Tonga	31	75	5.3	2.8	2423
Vanuatu	92	415	15.6	15.4	4512
Total	589	2689	100	100	3407*

*Average productivity of the nine Islands

The share of revenue of a commodity/sector in the total merchandise trade of a country implies the importance of the particular commodity/sector to the country. In the case of coconut exports of the nine Island countries, the share of coconut export revenue in the total revenue is highest for Kiribati and Vanuatu (46 percent and 44 percent respectively, see Table 3). Tonga's coconut export revenue accounts for a meager 4.15 percent of the total merchandise revenue of the country. It should be noted that up to mid-1980s, the share of coconut export earnings accounted for more than 40 percent of the total merchandise revenue of the country. Tonga lags behind in terms of export diversification as well, whereas the value added products (even minimal processed copra) have not registered an export entry in the recent years.

Table 3. Comparison of coconut product exports and its contribution

Country	Export (MT)							% Export contribution*
	Coconut	Copra	Coconut oil	Copra meal	VCO	Cream	Desiccated Coconut	
FS.Micronesia	---	76	---	---	---	---	---	---
Fiji	74	---	1630	75	---	---	---	2.57
Kiribati	---	1332	2939	216	---	---	---	46.25
Marshall Islands	---	---	124	482	---	---	---	0.04
PNG	---	48228	11068	5250	25	---	---	0.43
Samoa	1311	na	82	2094	---	100	13	4.66

Solomon Islands	---	1586	---	---	---	---	---	2.22
Tonga	1644		---	---	---	---	---	4.15
Vanuatu	---	25194	9208	4786	---	---	0.1	43.98

* Share of revenue from coconut exports in the total export revenue of the country

Source: APCC, 2015

Agriculture scenario of Tonga

The contribution of agriculture and allied sectors to the merchandise export from Tonga is depicted in Table 4. The share of agriculture and allied sectors in the total exports for the past eight years averages at 83.1 percent, thereby implying the importance of the sector in the external trade of the country. The agriculture sector alone accounts for 45 percent of the total merchandise exports (average of eight years). The major contributor in the allied sectors of agriculture is the fisheries. Although there is a year to year fluctuation in the export earnings from these sectors (Figure 1), the agriculture and allied sectors are indubitably the life blood of the Tongan merchandise exports.

Table 4. Share of agriculture and allied sectors in merchandise exports from Tonga

Year	Total export (TOP million)	Agriculture sector (TOP million)	Agri& allied sectors (TOP million)	Contribution of agriculture sector (%)	Contribution of agri& allied sectors (%)
2008	17.5	7.3	12.8	41.7	73.1
2009	15.6	4.7	13.4	30.3	86.1
2010	15.6	3.8	14.0	24.6	89.6
2011	24.7	12.9	21.1	52.5	85.5
2012	23.8	10.6	18.8	44.5	78.9
2013	21.8	12.4	18.9	56.9	86.6
2014	28.2	12.5	24.9	44.3	88.1
2015	28.5	14.8	22.0	51.7	77.0
Average (2008-15)	22.0	9.9	18.2	45.0	83.1

Source: Computed from monthly bulletin of statistical department (various issues), Tonga

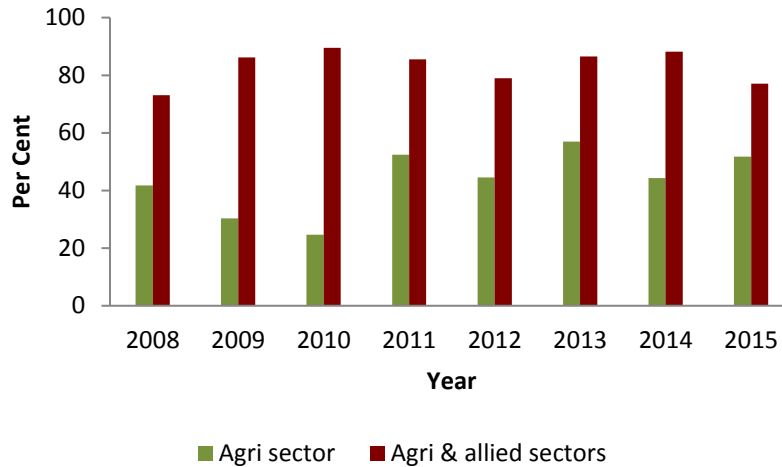
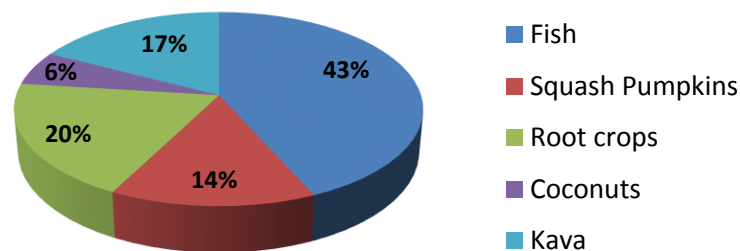


Figure 1. Contribution of agriculture and allied sectors to total merchandise exports from Tonga

The Figure 2 provides the detailed average account on shares of different sub components within the agricultural and allied sectors. The figures are the average of last four years available data at disaggregated levels. Here, we find that fish is the major contributor of primary exports from Tonga in terms of value realization which accounts for 43 percent of the total primary exports, followed by exports of root crops which accounts for 20 percent share. Kava emerged as an important item of export, and squash pumpkins, although lost its earlier glory, still managed to maintain an average share of 14 percent. The export share of the coconuts is the lowest among primary exports with 6 percent of the total exports of agriculture and allied sectors.

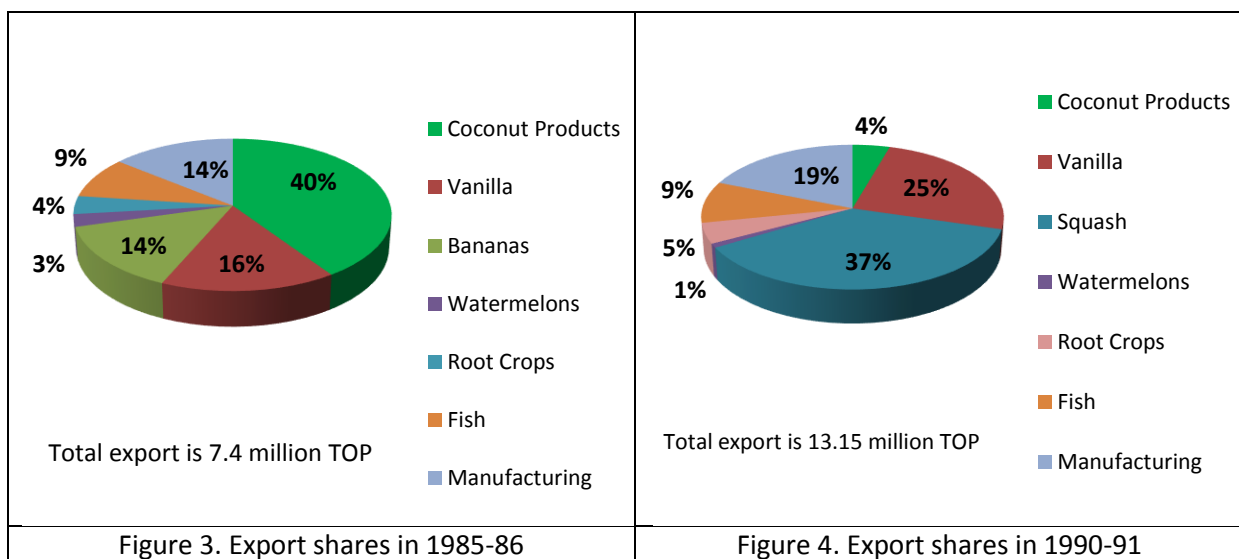


Average total exports (TOP)=26344076

Figure 2. Breakup of primary exports (Average of 2012-15)
Source: Quarterly Bulletin NRBT Tonga (various issues)

The coconut sector: From glory to worry

A very short span of five years from 1985 to 1990 witnessed a massive decline in the share of coconut and coconut products in the total merchandise export share of Tonga. The coconut sector contributed around 40 percent share in the export earnings from the island during 1985-86 was reduced to a meager four percent during 1990-91 (Figures 3 & 4). It is also striking that banana which has contributed 14 percent of total exports during 1985-86, literally vanished during the latter period. The emergence of squash as a major export earner accounting for about 37 percent of the total exports from Tonga was the remarkable feature in the year 1990-91. It is important to observe that within a period of five years, a complete re-structuring of the export sector was experienced in the Kingdom, which certainly had long-term repercussion in terms of agrarian structure, decisions and farming sector re-orientation of the island. The agriculture sector has generally stagnated during the 1980s. As we have seen, this stagnation has been wholly due to the declining trend in commercial exports, particularly coconut and banana exports. The earlier studies show that there had been a continuous decline in the real prices of exports of coconut products from the mid-1970s onwards, especially due to the decline in international prices for coconut oil (Esterly, 1991; Fleming & Blowes, 2003; Malua, 2003). Seeking other alternatives, the trend of migration to countries such as Australia and New Zealand was apparent during this period, which had obviously resulted in higher wage rates in the Kingdom.



“Coconut products, the "traditional" export of Tonga, have declined dramatically, as a result of low world market prices, processing problems, high wage rates, and the better returns offered by other crops, particularly root crops. While the government wishes to rehabilitate the industry, the report contends that copra and other coconut products will not be viable as exports, unless the return to farm labor can be greatly increased. On the other hand, in its traditional role as the 'Tree of Life' in Polynesian society, the coconut will continue to be grown as an intrinsic part of the multi-storey cropping system and used for a wide variety of food and other domestic uses. Thus, the report sees the need for further research designed to increase the productivity of coconuts within the existing farm system” (World Bank, 1990, p v.).

Coconut sector: The present scenario

An exclusive scrutiny of the performance of coconut sector exports *vis a vis* total agriculture exports and total merchandise exports for the past eight years shows there is no trend of improvement of the coconut trade sector (Table 5; Figure 5). The average contribution of the coconut sector in the total exports is a miniscule 4.2 percent and even the sector contributes only 10 percent of the total agricultural exports (average of eight years).

Table 5.Share of coconut exports in agriculture and total exports

Year	Total coconut (TOP)	Coconut in agriculture (%)	Coconut in total export (%)
2008	0.69	9.4	3.9
2009	0.65	13.8	4.2
2010	0.54	14.0	3.4
2011	0.83	6.4	3.4
2012	1.01	9.6	4.3
2013	1.41	11.3	6.4
2014	1.36	10.9	4.8
2015	0.82	5.6	2.9
Average (2008-15)	0.91	10.1	4.2

Source: Computed from monthly bulletin of statistical department (various issues), Tonga



Figure 5. Share of coconuts in merchandise exports

A component wise disaggregated export details of coconut and coconut products from Tonga is depicted in Table 6. A further lucid illustration of the same is provided in Figures 6 & 7. It is found that brown coconut is the major item of export while considering the data for past eight years. The green coconut exports were also consistent. The average of the last eight years shows that the brown coconuts account for 69 percent share of the coconut exports, whereas green coconuts accounts for 10 percent of the total coconut exports. Edible coconut endocarp contributes 20 percent of the total exports (mainly due to the huge exports in the year 2014), but the export trend of this component was found to be highly fluctuating.

Table 6. Coconut Export earnings in TOP (Item wise)

Year	Edible endocarp*	Green Coconuts	Brown Coconuts	Coconut Oil	Total
2008	32500	33835	622856	0	689191
2009	218096	125026	306865	0	649987
2010	64	213552	516760	0	730376
2011	3000	28692	801777	0	833469
2012	230	84285	929286	0	1013801
2013	80	35957	1368531	980	1404568
2014	1074872	130908	100843	57800	1306623
2015	201476	61262	553672	5770	816410
Average (2008-15)	191290	89190	650074	8069	930553

*Edible (dried, peeled, desiccated)

Source: Monthly bulletin of statistical department (various issues), Tonga

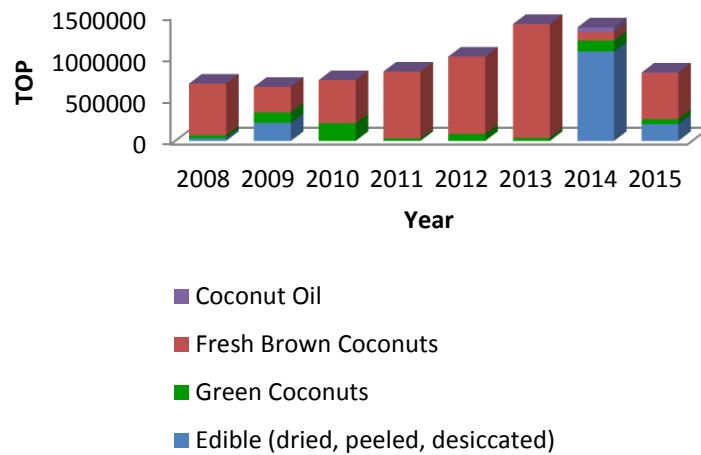


Figure 6. Trend in item wise share of coconut export earnings

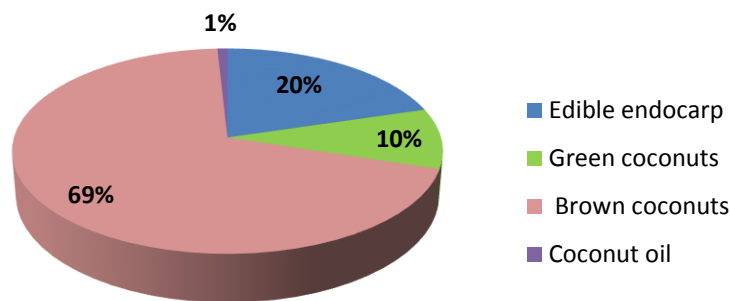


Figure 7. Component wise average share (2008-15) in coconut export revenue

Coconut sector: The export destinations

A detailed account on the trend and share of market destinations of coconuts and coconuts products are illustrated in Tables 7 & 8. The Australia and New Zealand are the major destinations of the coconut exports from Tonga. Although other countries such as USA and Samoa has imported coconut and coconut products in some of the years under consideration, since the quantity of import was insignificantly low, we have not taken those countries into account for the purpose of analysis. While considering the period from 2008-15, New Zealand has a slight edge over Australia in terms of average quantity imported (51.7 percent), and similarly Australia has a slight edge over New Zealand on account of value of import of coconut

and coconut products (52.9 percent). Australia has provided a better average unit value (Figure 8) for the coconut products imported (TOP 1.11/kg) than that of New Zealand (TOP 0.99 /kg). It is striking that the export product diversification and the export market diversification never happened in the coconut sector of Tonga after 1980s. There are obvious reasons for lack of export market diversification for a small island country like Tonga due its inherent structural rigidities and huge transaction costs. Nevertheless, in the ongoing competitive sectoral scenario in the liberalized regime, it is high time that the potentials like geographical specifications and unique selling propositions (USPs) are explored at least to cater the niche market segments.

Table 7.Coconut Export earnings in TOP (Market wise)

Year	Australia		New Zealand		Total	
	Quantity (kg)	Revenue (TOP)	Quantity (kg)	Revenue (TOP)	Quantity (kg)	Revenue (TOP)
2008	357460	347339	320911	341851	678371	689191
2009	93298	341377	262031	309450	355379	649987
2010	168202	363794	139942	363231	313707	538179
2011	142064	335744	415879	497677	557993	833469
2012	502008	490722	513605	523079	1015613	1013801
2013	1085960	991576	512686	413929	1598646	1404568
2014	694936	617640	909544	746782	1592501	1306623
2015	424100	347892	628255	474147	1051755	816410
Average (2008-15)	433504	479511	462857	458768	895496	906528.5

Source: Computed from Quarterly Bulletins NRBT Tonga (various issues)

Table 8.Coconut exports: Major marketwise shares and unit value realization

Year	Australia			New Zealand		
	Share (quantity)	Share (revenue)	Unit value	Share (quantity)	Share (revenue)	Unit value
2008	52.7	50.4	0.97	47.3	49.6	1.07
2009	26.3	52.5	3.66	73.7	47.6	1.18
2010	53.6	67.6	2.16	44.6	67.5	2.60
2011	25.5	40.3	2.36	74.5	59.7	1.20
2012	49.4	48.4	0.98	50.6	51.6	1.02
2013	67.9	70.6	0.91	32.1	29.5	0.81
2014	43.6	47.3	0.89	57.1	57.2	0.82
2015	40.3	42.6	0.82	59.7	58.1	0.75
Average (2008-15)	48.4	52.9	1.11	51.7	50.6	0.99

Source: Computed from Quarterly Bulletin NRBT Tonga (various issues)

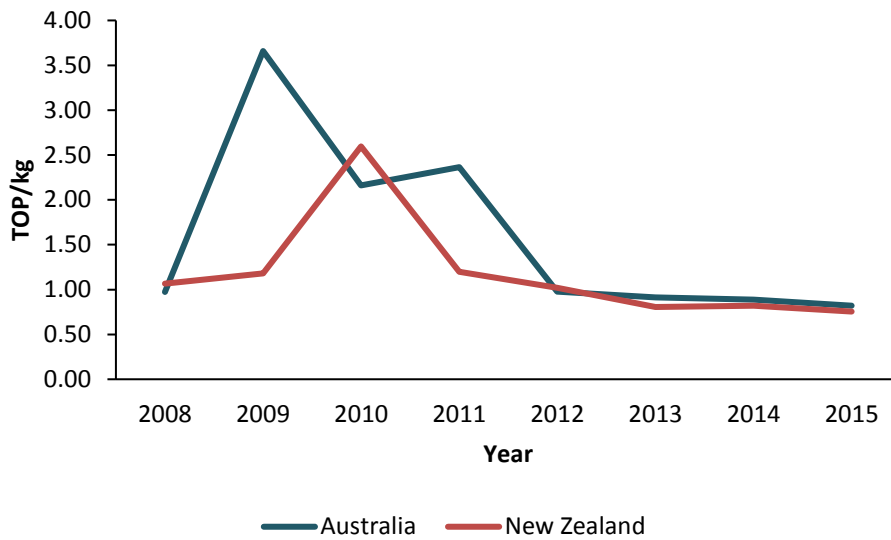


Figure 8. Coconut exports: Trend in unit value realization

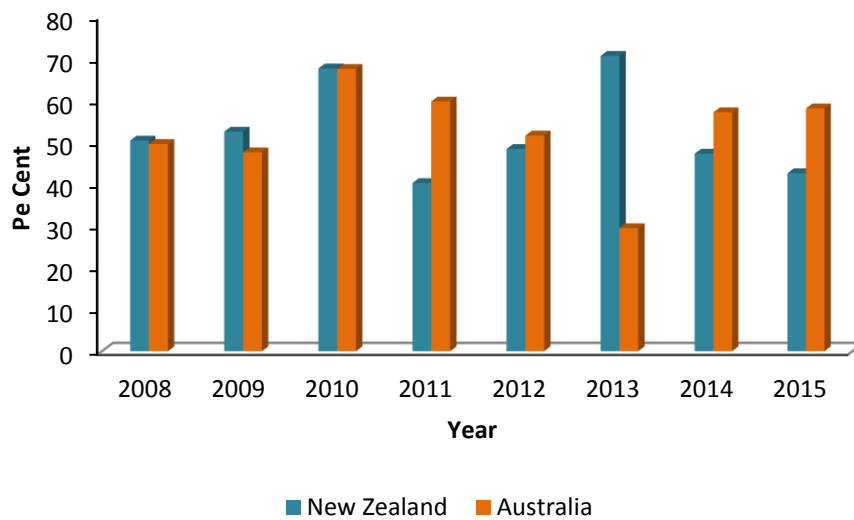


Figure 9. Coconut exports: Trend in export revenue share (major markets)

Item wise export share of market destinations for the coconut and coconut products from Tonga is provided in Table 9. Major share of the edible endocarp (56%) and brown coconuts (53%) goes to Australia and the major share of green coconuts (69%) goes to New Zealand. It is

noteworthy that though the export of coconut oil is meager, the entire quantity is absorbed by the New Zealand.

Table 9.Total share in export earnings (market and item wise)

Item	Australia	New Zealand
Edible (endocarp)	56.1	43.8
Green coconuts	30.8	69.3
Fresh brown coconuts	53.0	46.9
Coconut oil	---	100.0

Source: Quarterly Bulletin NRBT Tonga

Coconut sector: The import dynamics

It is interesting that, there has been a continuous inflow of coconuts to the island in the form of imports, although there is a huge year to year fluctuation. Considering the average of eight years (2008-15), there is an import of 11995 kg of coconut and coconut products to the country per annum worth TOP 38941 (Table 10, Figure 10). The detailed scrutiny of the item wise imports of coconut and coconut products revealed that the major share of these imports is in the form of coconut oil which accounts for 56 percent of the total imports (Figure 11) followed by the edible nuts (39 %).

Table 10.Total quantity and value of imports of coconut and coconut products

Year	Quantity (kg)	Value (TOP)
2008	4876	16847
2009	7719	40811
2010	7959	14937
2011	31830	70259
2012	10957	36172
2013	3204	18980
2014	24383	78003
2015	5035	35515
Average (2008-15)	11995	38941

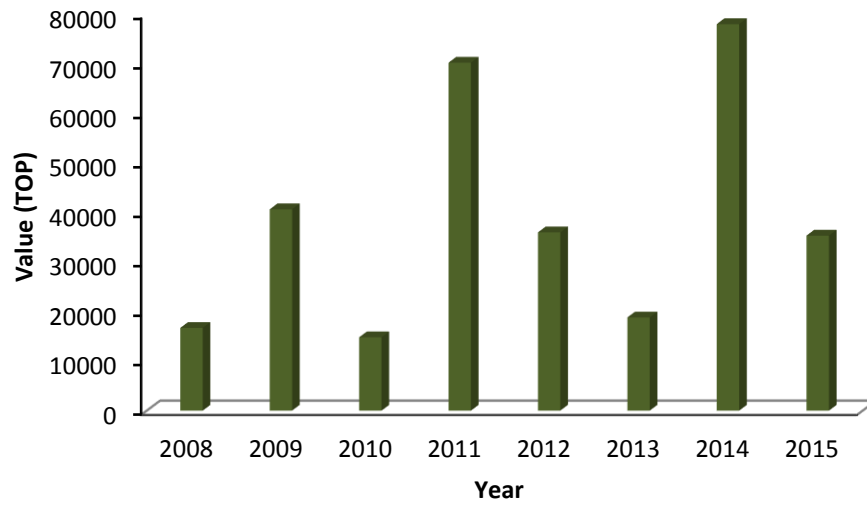


Figure 10. Coconut and coconut products import (Value in TOP)

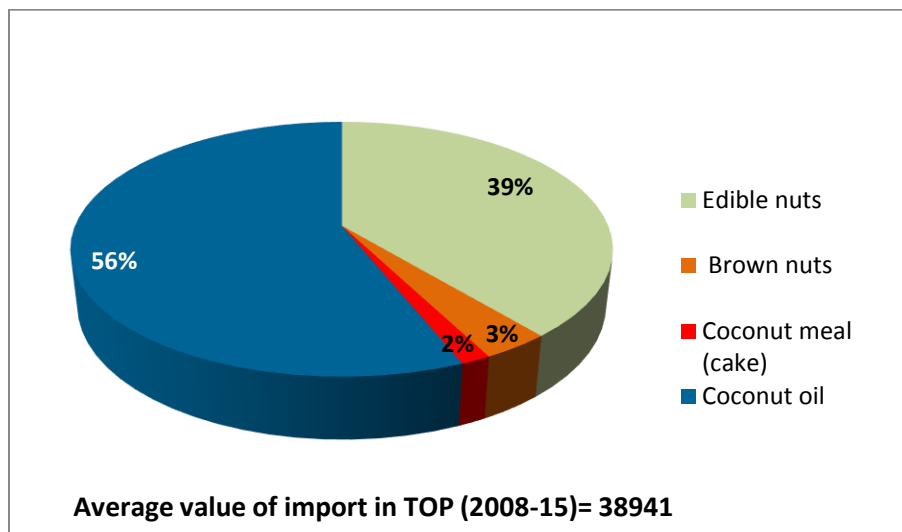


Figure 11. Item wise coconut products import (Average Value for 2008-15)

CHAPTER 2

Field study, Activities and Reflections

Introduction

Different methods were employed to elucidate information on sectoral issues and challenges confronted by the coconut economy of Tonga. The qualitative research tools such as Focus Group Discussion (FGD) with the traders and in-depth interviews with the stakeholders' were useful in this respect. A structured questionnaire was designed to collect the comprehensive information on various aspects of coconut production and marketing. Workshops and trainings were organized for the knowledge sharing. In-depth personal interviews were conducted with selected stakeholders to garner the information and suggestions. The importance activities conducted in the main island as well as the outer islands are elaborated in this chapter.

Workshops/Trainings conducted

i) Workshop on scientific production technologies and value added products of coconuts at Vava'u MAFF office on 12 June 2017

Ministry of Commerce in collaboration with Ministry of Agriculture organized one day workshop in Vava'u for the benefit of 25 selected participants from different districts of Vava'u. Various production technologies and different aspects of value addition including coconut chips production, snow ball tender nut were presented and video presentations of the same were exhibited. Subsequent to the presentations, feedbacks were collected and discussions were held with the participants. It was suggested to incorporate the component of coconut replanting in the ongoing FAO –ILAMS project running at Vava'u. Disease management was one of the important aspects that were highlighted in the discussion session. The response from the coconut farmers' of Vava'u was indeed encouraging. As for them, it is high time that the coconut sector in the outer islands of kingdom is given adequate importance with respect to the revitalization of production and marketing activities.



ii) Workshop on “Evolving strategies for development of coconut sector” for the staff of forestry conducted on 3rd August 2017

A one day workshop and training programme was successfully conducted at the office of forestry, MAFF, Tongatapu for the staff of forestry. Mr. Tevita Faka’osi, head forestry and other staff were the participants. The aim of the workshop was to educate the participants about the scientific production technology, the potential for the value addition in coconut sector and also to encourage participatory discussion and suggestions. As the forestry division has important role as a government agency for the development of coconut sector, the workshop was utmost important. The problems with the ongoing method of seed nut sowing and seedlings production was corrected and more appropriate scientific practices were suggested. The head of the forestry informed that, specific budget allocation for seedling production and coconut sectoral development is needed for sustaining the activities. He has agreed that for quite a long time, the coconut sector in the Kingdom is not given adequate support and facilitation especially due to the emergence of squash as an economic important crop earning foreign exchange, and in the recent times “kava” has emerged as the most profitable crop.



iii) Workshop on production & processing of coconuts at Ha’apai on 14 August 2017

One day workshop on coconuts was conducted for the stakeholders of Ha’apai on 14th August 2017. About 25 participants including farmers and government officials have attended the workshop. The scientific cultivation practices of coconuts were taught in the workshop. Discussions were conducted for the opinion garnering and questionnaires were distributed for collecting feedback. The MAFF officials of Ha’apai were present in the workshop and promised to take adequate measures to incorporate the teachings on seedling production and cultivation practices.



iv) Workshop on production & processing of coconuts at ‘Eua on 22 August 2017

One day workshop on coconuts was conducted for the stakeholders of ‘Eua on 22 August 2017. About 18 participants including farmers and government officials have attended the workshop. The scientific cultivation practices of coconuts were taught in the workshop. Discussions were conducted for the opinion garnering and questionnaires were distributed for the feedback documentation. The MAFF officials of ‘Eua were present in the workshop and promised to take adequate measures to incorporate the teachings on seedling production and cultivation practices.



v) Coconut stakeholders’ workshop held at Ministry of Commerce (MCCTIL) on 13 September 2017

The stakeholders’ workshop for the farmer, scientists of MAFF research station, traders, extension agents (MAFF), and grower federations was conducted on 13 September 2017 at the conference room, Ministry of Commerce (MCCTIL). The workshop aimed to share knowledge and encourage participatory discussion among stakeholders’ for evolving strategy for coconut development. The workshop also intended to share the information on various production and value addition potentials of the sector. The workshop was a knowledge enriching experience for the participants on various facets of the coconut value chain.



Workshop, MCCTIL



Stakeholders' Tongatapu

Field visits/on-farm field demonstrations

i) Field visits in Tongatapu to study the coconut procurement (15-22 March 2017)

The coconut procurement pattern of the major exporters in Tongatapu was studied by visiting 22 procurement hubs in the main island on 15th and 22nd march 2017. Unique weekly procurement is practiced in Tonga wherein the agents of exporters collect the de-husked nuts from various collection hubs. The larger nuts are paid 60 cents and the smaller ones are paid 40 cents.



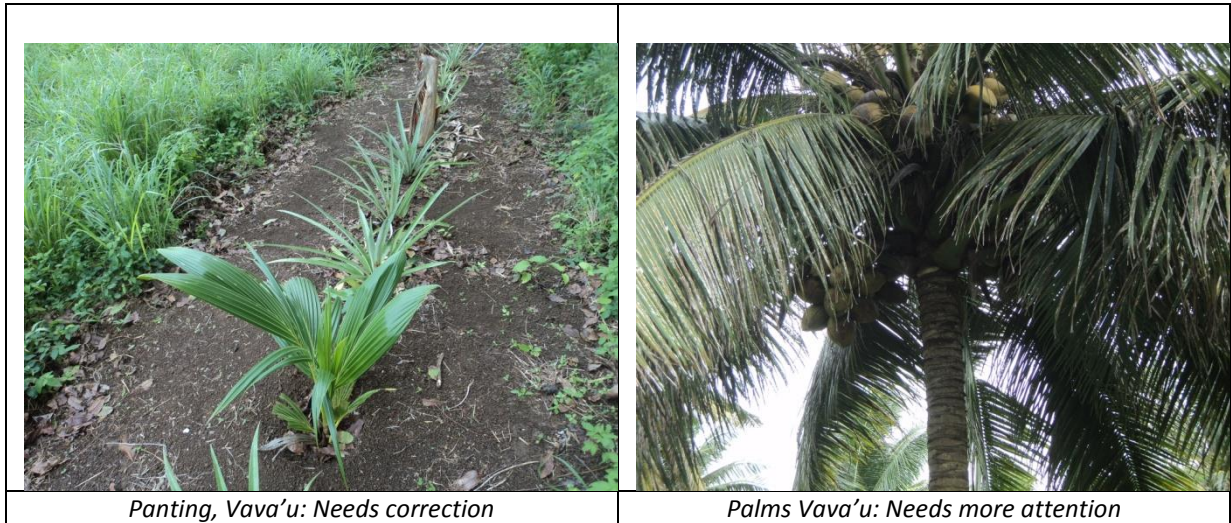
Procurement, Tongatapu



Brown nuts, Tongatapu

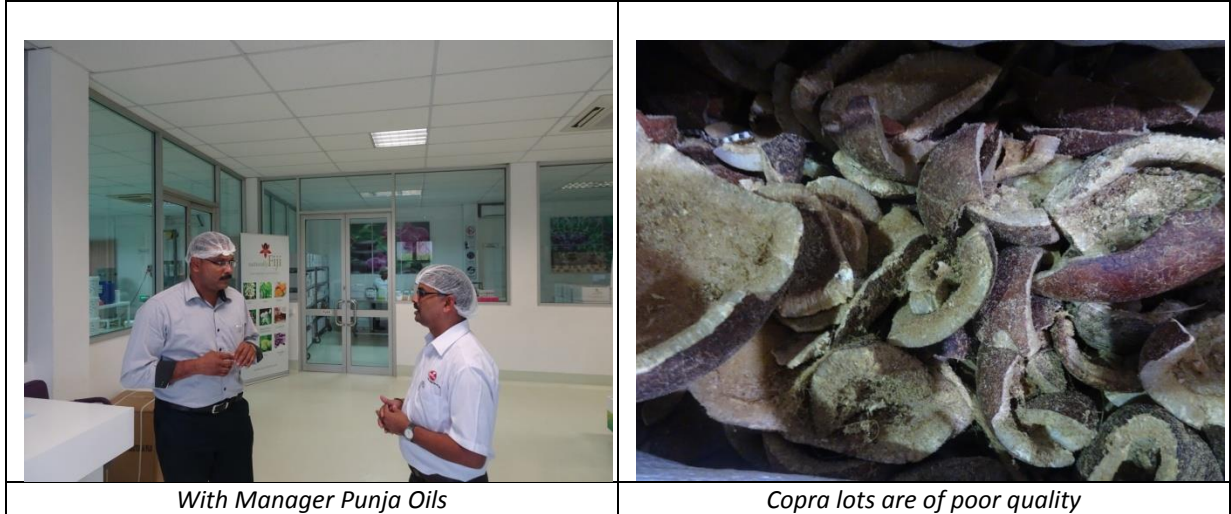
ii) Field visits in Vava'u (13-16 June 2017)

Coconut gardens of the various districts of Vava'u were visited during 13-16 June 2017. The current cultivation practices were documented and the yields of coconut palms were noted. The inadequacy of scientific production practices and the detrimental impact of that on the productivity of coconut palms were apparent. The officer in-charge of MAFF was informed on this aspect.



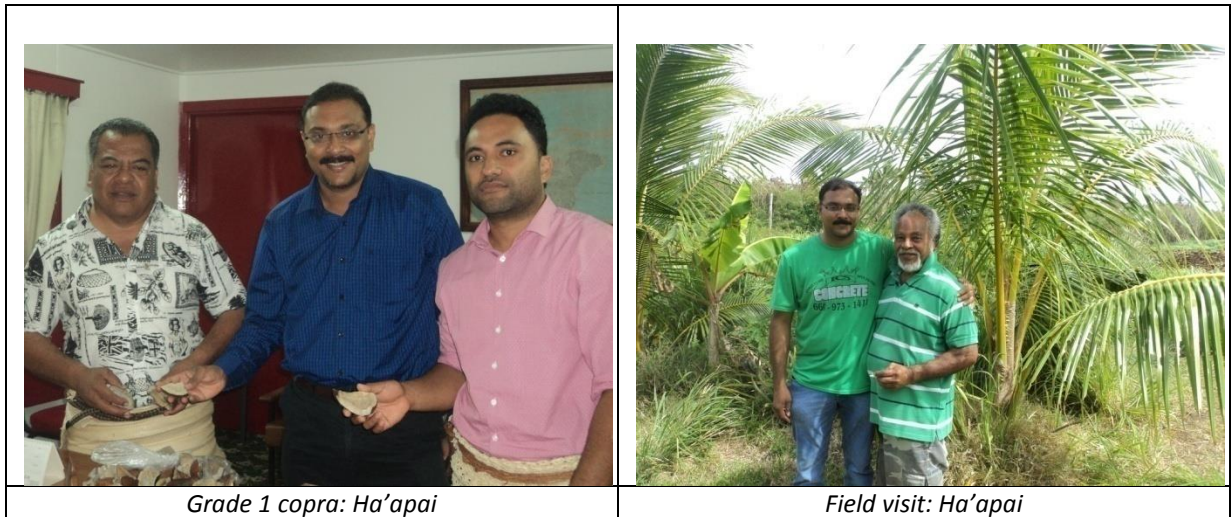
iii) Punja & Sons (oils) factory visit at Lautoka, Fiji on 13 July 2017

The oil factory was visited keeping in view of the possible linkages with the coconut sector of Tonga. During the visit the copra lots supplied by major pacific countries were examined, and found that the quality is far inferior. Since Kingdom of Tonga is historically renowned for the production of first grade copra, there is still potential to initiate the copra production especially in the outer islands of Niua's and Ha'apai wherein the regular procurement of fresh and brown coconuts are minimal. In this regard a discussion was held with Mr. Shabu Chemmanghot, Manager Punja (oils) and he has assured the help if Tonga can assure the regular supply of good quality copra.



iv) Field visits at Ha’apai (14-16 August 2017)

The coconut gardens in Ha’apai were visited during 14-16 August 2017. During the course of field visits, examined the newly planted gardens as well as old gardens. The farmers’ were trained on scientific cultivation practices as well as the selection of quality seedlings for planting.



v) Field visits in ‘Eua (22-23 August 2017)

Field visits of the ‘Eua Island was conducted during 22-23 August 2017. A representative sample of coconut gardens from various locations across the island was visited. The corrective measures on planting method were demonstrated to the coconut farmers in the field. The

farmers were encouraged to apply the recommended fertilizer dosage to the palms for increasing the productivity.



vi) On-farm field demonstrations in Tongatapu (19-21 September 2017)

On farm field demonstrations were conducted at two locations in Tongatapu. Extension officials from MAFF, forestry staff, selected farmers, traders and grower federation personnel attended the field demonstrations. The demonstrations covered the major aspects such as mother palm selection, seed nut selection, seed nut sowing methods, application of fertilizers, the package of practices to be followed, the mulching and other water conservation methods. The participants were provided with booklets on scientific cultivation practices. The trained extension/forestry personnel are empowered to replicate such field trainings in the outer islands.



Information sharing/Awareness creation through participation in meetings/seminars

i. Donor/Donor funded network meeting held at Tonga skills office on 24 March 2017

A perfect cross section of the NGOs and other developmental agencies were participated in the meeting that include Pacific Horticulture and Agriculture Market Access Programme (PHAMA), Australian Center for International Agricultural Research (ACIAR), World Bank/ADB, MORDI, ILO, Tonga Skills, and representatives from High Commissions'. The opportunity was utilized to introduce and present the proposed project and shared information/awareness on the sectoral development of coconuts in Tonga.

ii. Development Partners' Network Meeting held at World Bank/ADB on 28 April 2017

The focal theme of the meeting was "Youth Employment in Tonga". In the meeting I have shared the insights on the ongoing project and explained the opportunities of cluster formation of Tongan youth with the support of World Bank for the initial capital investment for small scale value added business in the coconut sector which includes Snow Ball Tender Nut, Virgin Coconut Oil and coconut chips. Mr. Tatafu Moeaki, the country representative of ADB/WB had promised his facilitation and support for such proposals.

iii. Coconut industry development for the Pacific programme stakeholder meeting held at Nadi, Fiji during 11-13 July

Represented the Kingdom of Tonga for the CIDP meeting on coconut value chain. The meeting was to develop a situational analysis of the coconut industry in the pacific region and to prioritize the key activities. The programme is funded by European Union and implemented through Pacific Community (SPC). I have presented the country scenario and the challenges faced by the coconut sector of the Kingdom. The meeting provided a launch pad for the sectoral findings on coconuts in Tonga. The working paper on situational analysis of Tongan coconut sector was shared among the stakeholders.



iv. Development Partners’ Network Meeting held at MCCTIL on 31 August 2017

There were two presentation in the meeting 1) Coconut Sector of Tonga: Scenario Analysis, Comparative Trade Dynamics, and Challenges Confronted 2) ILO’s Decent Work Country Programme (DWCP)- TONGA. It was an opportunity to formally present the findings of sectoral issues and way forward to the consultants and developmental agencies.

Personal interviews with the stakeholders’

i) Dr. Villiami Toalei MANU, CEO, MAFF (on 6 March 2017)

The CEO has highlighted the importance given to the coconut cultivation in the Kingdom through the land act, wherein the adult male is allotted 8.25 acres of land and it is mandatory to plant 200 coconuts in the allotted land. He has stated that; though theoretically the practice is still active, the coconut plantations are the neglected sector of late due to low prices, absence of value addition. He added that, the production and export pattern has been re-oriented towards pumpkins, watermelon, vanilla and kava. Low rate/absence of replanting is the major aspect to be addressed for the revival of the coconut production sector.

ii) Mr. Tevita Faka'osi, Head Forestry, MAFF (on 7 March 2017)

In his opinion, coconuts, in the recent time had lost its earlier glory as the major crop in the Kingdom. The lack of interest in the coconut cultivation practices and replanting is very much evident in the main island as well as in the outer islands of the country. The earlier dominant industries like Desiccated Coconut and copra making had vanished. He has stated that the sectoral sustainability is very much depends on the replanting. Moreover, the aspect of food security that the sector continues to provide is cannot be ignored. The value addition is meager and the export sector is monopolized. He has also highlighted the importance of scientific package of practices of coconut cultivation.

iii) Mr. Pousima Afeaki, Manager, Tinopai farm: March 10, 2017

According to Mr. Afeaki, the history copra and coconut oil trade from Tonga to Europe can be traced ever since 1860s. During the 1880s the copra exports from Tonga was more than that of Fiji and Samoa and the major destination of exports was Europe. The copra trade was successful until the late 1970s. During the 1970s and 1980s, The US came up with an anti propaganda on coconut oil. Later, it has been categorically revealed that, this false propaganda was to favour the sunflower industry of the States. But by that time the enough damage has already been done. Now there exists the market for brown de-husked coconuts from Tonga in New Zealand and Australia. A Tinopai farm procures coconuts from 150 farmers from the villages of Main Island on a weekly basis. The big brown nuts are paid 60 cents and the smaller ones are paid 50 cents. Tinopai farm had earlier ventured into VCO production (hot process) but stopped the unit in the year 2010 due to low profit margin. His long term trust based relation with the New Zealand import firm (Turners and growers ltd) helped him to sustain the business even in the times of low supply from farmers.

iv) Mr. Saia Lasike (Owner, SUL trading) on 27 March 2017

Mr. Saia deals with at least 10 product lines of agricultural export. This include: papaya, water melon, squash, colocasia, yam, cassava, dry coconut, green coconut (with husk for drinking). Saia's specialization is on the export of green coconut (in coconut product lines). He

provides climbing gears to the farmers if they wish to use it for green coconut harvesting. The gears are imported from USA. Some of his farmer suppliers have their own climbing gears. According to him, although dwarf coconut palms are easily climbed to harvest the nuts, the taste of coconuts from the tall palms is unparalleled and got more demand. He said, the demand for coconuts (green) in New Zealand is surging and in this regard he has been able to compete and edge over the major Fijian and Samoan exporters, which he considers as a land mark achievement.

His procurement strategy is unique. He procures around 60-70 per cent of his export demand through the direct procurements from the farmers. The remaining 30 per cent is met from his own leased in land meant for cultivation of coconuts, tuber crops and other fruit crops. He has initiated the arrangement of leased in land as a cushion (fall back option) due to the erratic supply conditions owing to the climatic vagaries. He has been in this business for the last 10 years and majority of his export goes to New Zealand and a lesser portion goes to Australia. He pays as of now 80 cents/green coconut and 65 cents/dry nut. According to Saia the major reason for why the farmers are not converting coconuts into copra is because of the pure economic logic. This is even the reason, why the exporters are not interested in copra business.

v) Mrs. Lavinia Palei-Tongan National Youth Council (TNYC) on 29 March 2017

The TNYC initiated the 5 years project of Virgin Coconut Oil production and marketing under the funding of OXFAM, New Zealand. They have started off well with the establishment of linkages with the organic coconut suppliers in the Main Island as well as outer islands. According to the demand of the export markets, they have entered into the organic certification programme which costs around 35,000\$/year. The approximate cost of production was estimated to be 12.5 TOP/litre and the astonishing fact that the selling price was not covering much of a profitable margin. Hence, the commercial viability of VCO export is unsustainable in the long run.

vi) Mr. Taniela Hoponoa, Live & Learn environmental education (on 18 April 2017)

The main purpose of the interview was to garner the insights of Mr. Taniela, as he has adequate experience as the head of the division, MAAF, Tonga. He had also represented the country in the Asia Pacific Coconut Community conference in the year 2013. He has stressed upon the need for a new study on coconut inventory for the entire Kingdom. He has opined that the available information in this respect is quite old (the classic work by Burrows in 1996). According to him; the replanting is the most important aspect which needs adequate emphasis in the national policy. He has also suggested that, medium-tall varieties/hybrids are the best suited and practical for Tongan situation.

vii) Mr. Ian Jones, Entrepreneur, Vava'u (on 13 June 2017)

Ian Jones has been successfully running the VCO unit for the last three years, but had to stop the process due to the low profitability and inadequate/erratic supply of coconuts. According to him the cost of production of VCO in Vavau is comparatively much higher due to the exorbitant wage rates. Since Vavau is an outer island, the shipment cost is also higher. Moreover, the organic certification and the proliferating food safety standards in the export markets are issues of great concern. It would be difficult to run small scale coconut industry especially because of lack of guarantee in assured consistent supply of coconuts.



Ian is an innovative farmer and entrepreneur



Small scale unit, Vava'u

viii) Mr. Haniteli Fa’anunu, founder of ‘Ene’io Botanical Garden (on 14 June 2017)

Mr. Fa’anunu is the former Director of MAFF and an experienced agronomist. According to him; during the 1960s, the Kingdom used to produce the best copra in South-Pacific. Subsequent to the anti-propaganda on the consumption of coconut oil by the soya bean lobby of United States in the 1970s, the demand for and the price of coconut oil had nosedived world-wide. This had strong adverse impact on the Tongan economy, which had been entirely dependent on copra for the livelihood. With regard to the production, the frequent cyclones caused long time impact on productivity of the coconut palms. He has opined that the replanting and integrated planting systems are the options for the revival. There is an urgent need for capacity building of the MAFF officials through proper trainings.



ix) Mr. Drew Havea, President-TNYC (on 17 July 2017)

Mr. Havea informed that the VCO production by the TNYC started in the year 2012. The product was meant for export to the Australian buyer and the organic certification of the process was mandatory. The certification was done by NASAA Certified Organic. In Tongatapu 400 farmers were certified organic and 600 farmers from the outer islands were also certified organic. The business has been running smooth, but the high wage rate and cost of organic certification of late had eroded the profit margin. The matter was aggravated due to the inadequate supply of nuts especially in the post-cyclone season from 2016. Hence the export process is on temporary halt for the past 8 months. On the other hand TNYC has targeted the domestic market wherein the VCO is sold through four outlets in Nuku’alofa.



TNYC: VCO unit

TNYC: Value added products

x) Mrs. 'Elisapesi Fineanganofa, Manager Lending, Tonga Development Bank (on 27 July 2017)

Since the locally rooted financial institutions are the life blood of the small scale sectors of the island countries such as Tonga, it was emphatic to brief the project on coconut sector to the Tonga Development Bank. The presentation was made to the manager (lending), and in response she has shared the new interest policy for the genuine entrepreneurs in agriculture and related sectors. She has assured that, any viable proposals on coconut value added activities would be supported by the bank. She has suggested that, any such proposals if channelized through the Ministry of Commerce would be considered with adequate priority.

xi) Dr. Sela Tupouniua, Pathologist, MAFF Research Station (on 3 September 2017)

The specific aim of the visit was to discuss the possibilities of production of coconut leaf vermicompost in the coconut gardens of Kingdom. Since there is n ongoing organic movement in Tonga, it is very important to develop n organic package of practices for the coconut palms. Coconut leaf vermicomposting is a successfully practicing method in India. We need to release the *Eudrilus sp.* Earthworms to the dried leaves for the production of vermicompost. The pathologist has assured the help to initiate the research activities in this regard.

CHAPTER 3

Sectoral Challenges and Strategies

Sectoral Issues and Challenges

As we are discussing the issues faced and challenges confronted by the coconut sector of Tonga, it is imperative to reiterate the conclusion by Burrows and Douglass (1996), who have done the last authentic study on inventory of coconut resources through an extensive field survey in 1996. According to them “All products derived from coconut palms in Tonga other than for the domestic consumption, are unsustainable in the medium to long term due to low levels of re-establishment, ongoing clearances and subsequent stem density reduction” (Burrow’s and Douglass. 1996, p 16.). They have reported that in the last 16 years (before 1996), the coconut plantation has been declining by 25.6 percent or at a rate of 72,500 palms per year, due to mortality, urban expansion, felling for timber and others. By stating this, the authors indeed indicated the major issue Tonga facing in the production facet. We have already learned that the productivity of the Tongan coconut palms is below the national average of the Pacific Island countries, and to a great extent this issue could have been solved, had we resorted to a scientific replanting regime much earlier. It is striking that, while coconut replanting is recognized as the key to future sustainability of the coconut sector in Tonga, there is no official coconut replanting programme with a specific budget appropriation by the state machinery of the Tonga (FAO, 2014)

During the field work on this project, we had in-depth discussions with the important traders of coconut in the main island. According to one of the major coconut exporters,

“While tracing the history of coconut evolution in Tonga, The Tonga Copra Board which was active in the 1970s and early 1980s and subsequently forming the Tonga Commodity Board by including banana also in the product line is to be noted. Early 1980s the cyclone took its toll and the copra business had been badly affected. It is noteworthy that a World Bank report prepared by a Philippines researcher advocated the scientific replanting of the coconut palms. Nevertheless, the implementation of this recommendation was rather took a snail’s pace”.

Though slightly in a different manner, the World Bank document on agriculture strategy review of Kingdom of Tonga discusses this issue of replanting as follows,

“Several replanting schemes have been implemented and many new palms have been planted, but this has not had any impact on supplies of copra for export. Any plan to encourage replanting or introduce new varieties must take account of the extremely poor returns to labor that the farmer earns from copra production and the many alternative uses of coconut, and fully assess farmers' incentives to replant” (World Bank, 1990, p12.).

Challenges in production facet of coconut sector

We have already observed the low levels of coconut productivity in Tonga. In view of the competitive environment among the South-Pacific countries, this is a matter of concern, and we need to act urgently to improve the productivity of coconut palms in the country. The field study revealed that the average age of the farmer who is engaged in coconut cultivation is 52. As far as the sustainability and future orientation of the farming is concerned, this has to be viewed with adequate importance, as it is important to re-orient the youth into the scientific farming activities. The replanting percentage was estimated to be abysmally low at the level of 0.25%. The per palm productivity per year is as low as 24.7 nuts. This has to be raised at least to the world average of 45 nuts. The low productivity is not only caused by the senility of the palms, but the absence of scientific cultivation practices and disease/pest management is also important factors adversely affecting the yield of the palms.

There exists a huge knowledge gap among farmers regarding the scientific production practices of the coconuts. To some extent, we have attempted to teach the production practices through on-field demonstrations and workshops, but it has to be widely implemented to create any impact. The average coconut consumption per house hold estimated to be 10 nuts per day,

wherein the major share go for feeding the pigs. The ratio of animal feed: household consumption was found to be 1.8. In the outer islands the trading and value addition activities of coconuts are meager and erratic. The negligence of the tree of life is very much evident across the Kingdom of Tonga, except some unique attempts by the front movers. It is also important to mention about the lack of any incentive for the replanting of coconuts, especially in view of the very long pre-bearing stage of the coconut palms. About 92 percent of the farmer respondents complained about the lack of availability of the quality seedlings from the institutional mechanism. The field visits proved that the selection of seed nuts, seed lings and the replanting procedures are erroneous and needed to be corrected at the earliest.

Issues in trade/marketing facet

The World Bank report rightly points out the important of trade expansion, value addition and market access for a sustainable and profitable coconut sector of the island in the long run. But the worrisome factor is the lack of entrepreneurs in the sector. There are only very few coconut traders who are active at present. High labour costs, eight times higher than those in a competing country like Philippines remain a constraint. This makes returns to labor from copra about one tenth of the rural wage and the lowest of any recorded rural activity in Tonga. According to a major coconut exporter of the Tongatapu,

“The major reason for why the farmers are not converting coconuts into copra is because of the pure economic logic. This is even the reason, why the exporters are not interested in copra business. According to the simple economics, about 2500-3000 dry coconuts are required for the production of one tonne of copra. That much dry coconut if sold to the exporter at the rate of 65 cents per nut fetches around TOP2000, and that too the payment of the money is on the spot basis, without causing any delay. On the other hand the processing of copra takes around 14 days, and interestingly one tonne of copra gets only TOP1000”.

The issue related to the economy of scale and continuous functioning of the value chain is apparent from the experience of the Tonga National Youth Congress (TNYC) who had ventured into Virgin Coconut Oil production catering to a specific buyer.

In the case of procurement and export of brown and green coconuts, the assured supply is the major issue of concern. Various factors are found to affect the steady supply of coconuts such as climatic vagaries, low productivity and lack of coordination. Since the exporters are few, they have developed a trust based (relationship) value chain both at the upstream and downstream ends. Nevertheless, in the competitive regime, we need to ensure the steady supply of coconuts in the island. The pattern of the last 11 years of coconut procurement of the major coconut (brown) exporter of the Kingdom is graphically depicted in the figure, which substantiates the year to year volatility of coconut supply.

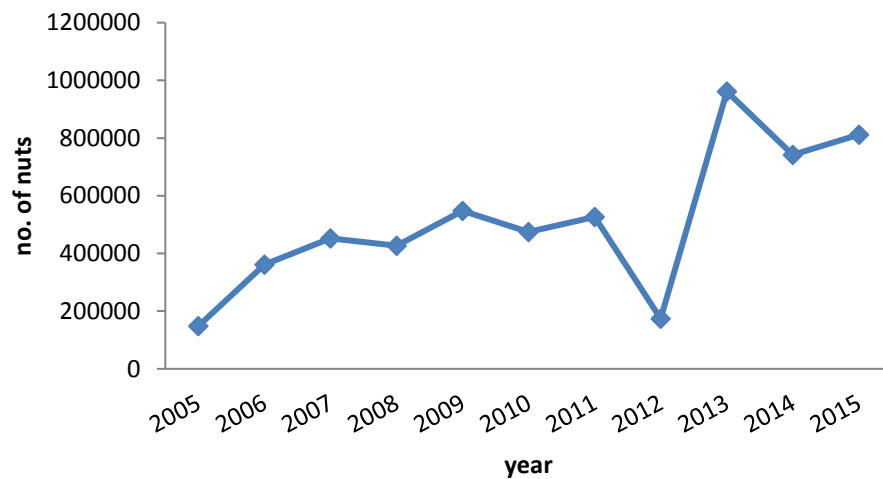


Figure 12. Depiction of brown coconut procurement of a major trader (2005-15)

Challenges in processing/product diversification facet

It is apparent from the field study and stakeholder perception analysis that the attempts for export of value added coconut products such as Virgin Coconut Oil (VCO) were not successful. The inefficient production techniques which include high labour cost and low economies of scale are the major factors which detrimentally affected the sustainable and profitable export orientation of the value added products. Moreover, the product

diversification in the value added segment is minimal, wherein the few players present in the sector are concentrating on VCO alone. The study conducted on supermarkets in Tonga, with randomly selected 14 shops revealed that 95% of the value added coconut products such as coconut milk, Desiccated Coconuts and coconut cream are imported from Asian countries. In a way the presence of such products reveals the domestic demand for the value added coconut products and our incapability to turn on the import substitution. It is also important to be noted that the first grade coconut oil (for cooking) is not available in the supermarkets except in American shop outlet. The basic product from coconut is copra which could be produced with minimal processing, which unfortunately Tonga has completely neglected due to the country's inherent structural difficulties. Lack of knowledge on the production techniques of value added coconut products and the lack of equipments to produce such products are important observations.

Institutional challenges

With respect to the production node of the coconut sector, MAFF is the main government machinery who should provide timely facilitation to the farmer. It was observed that, since for quite a long time, the coconut sector has been stagnant and other crops were given more emphasis, the scientific knowledge on production aspect is fading. There is urgent training need for the MAFF extension personnel on the basic and advanced scientific cultivation practices of coconuts. During the tenure of the coconut project, we have opened the pavement in this aspect by providing trainings and workshops to the MAFF extension officers and forestry officials. Similarly, the research aspects also needed to be strengthened especially the development of organic package of practices. It was found that exclusive research on such an important crop in the island is not yet designed. The MCCTIL is responsible marketing and trade aspects of the coconut sector. It is pertinent to note that, the production and trade aspect of the sector should be well coordinated and therefore the exploration of synergy between MCCTIL and MAFF is inevitable, which at present we are lacking due to the exclusive mandates of both the ministries.

Sectoral Strategies

Strategies for the production front

The immediate strategy for increasing the productivity of the existing coconut palms is to adopt the scientific package of practices as it is mentioned in the book let on “coconut cultivation practices” circulated among all the stakeholders’ during the in-house workshop conducted as well as during the field demonstrations/trainings conducted. The soft copy of the same is available with the MCCTIL and also with the MAFF extension officials.

The MAFF extension officials and the forestry staff who have attended the in-house trainings and the field demonstration should take an active role in this regard. They should replicate the demonstration in the major coconut growing tracts of the main island. They should also train the farmers of the outer island through conducting the field demonstrations.

The fertilizer recommended to be applied (N: P: K=500g: 320g: 1200g) in split doses should be correctly followed. The worrisome factor is the availability of the exact proportion of fertilizer. It is important to make available the correct fertilizer dosage and name it as coconut mix, so that farmer, once attained the training can easily practice. The Coconut Development Council (CDC) should take appropriate action in this regard.

As a medium-term strategy, the removal of senile and disease affected coconut palms which are beyond recovery, regulating the palm density and replanting with high yielding planting materials along with adoption of suitable agro-management practices are also important.

Practically, replacing the old palms will require enormous quantity of seedlings, and the MAFF-Forestry division, as of now is not fully equipped for the large scale production of quality seedlings. Hence, a decentralized production mechanism is to be envisaged. In this respect, in line with the training provided on seed nut selection and seedlings production, MAFF-Forestry division should increase the production of seedlings to 20% of the current production and also

encourage the farmers to raise their own seedlings for replanting. The farmers should be encouraged to remove the 10% of the most senile palms in their garden annually and replant accordingly. Thereby following a phased manner slowly the replanting activities can be continued. It is also advised to source any additional funding for such activities from the CIDP-SPC, in which Mr. Posuma Afeaki is a regional working group member.

We need to respect the ongoing organic movement in Tonga, and at least some portion of the coconut farms should be maintained as organic farms (25% of the total palms), especially in view of the certification purpose. Hence, it is important to develop organic package of practices for such farms. The idea of coconut leaf vermicomposting is a pragmatic and cost effective technique, which has been discussed with the plant pathologist of MAFF research station. It should be taken as an important prioritized research activity of the station. Once we are able to identify the *Eudrilus sp.* Earthworm and culture it, the entire process for compost making is simple. In this respect, the ITEC expert (Jay) can be contacted for any need of further expertise.

Strategies for trade, commerce and value addition

It is important to revamp the existing coconut value chain which is solely depended on dry and green coconut exports without any value addition. We have already seen the issues related to the VCO trade from Tonga. As it was discussed, we do have a growing domestic market for the coconut value added products which is captured by the Asian coconut products. As a pragmatic strategy we need to test the market initially. For that, I propose a plausible short term strategy wherein we should encourage entrepreneurs in coconut sector by establishing Coconut Incubation Centre by the MCCTIL.

We need to explore the possibility of importing selected machineries for coconut processing through the High Commission India, Suva. The letters requesting for the machineries 1) Snow Ball Tender Nut unit 2) Coconut Chips Making Unit 3) Advanced VCO units (hot process and fermentation) and 4) Copra dryer should be formally sent from the MCCTIL to the HCI. It should be mentioned as the follow up of ITEC project on coconut sector for the purpose of establishing the incubation centre at MCCTIL.

Simultaneously we need to be trained in the functioning of the above mentioned machineries (the modus-operandi is separately mentioned). Once we establish the incubation units, the training can be provided to the entrepreneurs, and the MCCTIL can also take the lead role in pilot market testing. This activity would certainly open new market windows for capturing the growing internal market.

The demand for copra and coconut oil in the world is at encouraging levels of 14% growth rate. As it was mentioned earlier, the quality of copra produced by the pacific countries is of poor standards. It is the most appropriate time to revert to the super grade copra production in Tonga. It is encouraging that the governor of Ha'apai, Mr. Mo'ale Finau has initiated small scale copra production Ha'apai. There is provision to link with the Punja oils, Fiji for a tie up. I propose the copra making to be initiated in outer islands at the earliest (in traditional sun drying) and send the sample product for grade determination to the Punja oils, Suva. The ITEC expert (Jay) will facilitate the correspondence in this regard the already developed networking with the General Manager.

The health benefits of coconut oil as cooking oil due its excellent heat resistance and chemical properties are well known in the developed countries and the best quality coconut oil is preferred over olive oil. As of now in Tonga the availability of good quality cooking coconut oil is restricted only to high value shops like 'Cost low'. The MCCTIL can take up the lead role in popularizing the health benefits of coconut oil through conducting road shows and awareness creation programmes. This can be counted as a pragmatic step to slowly change the consumption pattern and positioning of the coconut oil.

Formation of the National Coconut Development Council

The implementation of the strategies mentioned above requires synergy and collaborative efforts from different agencies. Therefore, it is pragmatic to propose a Coconut Development Council (CDC) overarching various nodes and facets of the coconut sector and accountable for the implementation of the strategies proposed through appropriate correspondence and networking. I propose the following names for constitution of the council.

- 1. Mr. Tevita Lautaha, MCCTIL (Chairman)**
- 2. Mr. Posuma Afeaki, Tinopai farm (Member)**
- 3. Mrs. Sinai Tu'itahi, Grower's federation (Member)**
- 4. Extension Head, MAFF (Member)**
- 5. Farmer representative (Member)**
- 6. Secretary (assistance), MCCTIL**

The council, if approved should function as an autonomous body with adequate power of monitoring and implementation of the proposed strategies in a time bound manner. If the proposal of the council is approved, the ITEC Expert (Jay) will provide further assistance for the development of by-laws and structuring of the council. The council should meet once in a month to evaluate the progress of the implementation of the strategies and should report to the hierarchy not less than the rank of the Minister. It is also important to strengthen the weak coordination between multi-agencies and put in concerted efforts in a synergetic fashion for obtaining good results. Hence the formation and approval of the council is an important step for sustaining the initiatives of the completed project on coconut sector.

Strategy for training

The CDC is responsible to communicate to the High Commission of India, Suva-ITEC division for ensuring the ITEC scholarship programme, which has already been discussed with the ITEC representative. According to the number of scholarships available, the CDC should select the stakeholders' to be trained in India on coconut production and processing aspects. It

would be appropriate to select one person each from research station, farmers, trader/entrepreneur who can act as change agents once trained. Hence the scrutiny and selection of the participants for the training is very crucial.

“Though coconut sector in the Kingdom of late confronted by umpteen challenges, there are way outs to combat and conquer the obstacles and steer the sector to a profitable, vibrant and sustainable road map”.

CHAPTER 4

Strategic Framework: Action Plan

Strategic Framework: Action Plan

No	Strategy	Priority	Action (Responsibility)
1	A national Coconut Development Council should be constituted to function as an autonomous body with adequate power of monitoring and implementation of the proposed strategies in a time bound manner. The tentative structure is proposed in the report	Immediate	Hon. Minister, MCCTIL kindly make effort for the approval in the cabinet with appropriate changes/suggestions from his own perspective
2	Immediately initiate the scientific cultivation practices as explained during the field demonstrations and workshops, This include scientific fertilizer applications (exact dosage) and mulching in two seasons -the end of October and end of February	Immediate	MAFF Extension officials and Forestry officials. Mr. Pousima Afeaki to coordinate
3	Replicate the field demonstration on scientific coconut practices in the major coconut growing tracts of the main island. farmers of the outer islands are also to be trained through conducting the field demonstrations	Immediate	MAFF Extension officials and Forestry officials. Mr. Pousima Afeaki to coordinate
4	Circulate the booklet on scientific cultivation practices among all the stake holders'. The soft copy is available with MCCTIL	Immediate	Business division, MCCTIL
5	Forestry division should increase the good quality seedling supply to 20% more than the current supply for next 5 years. The seed nut selection and nursery raising should follow the scientific protocols demonstrated	Immediate	Forestry Division

6	The farmers should be encouraged to remove the 10% of the most senile palms in their garden annually and replant accordingly (encourage them in on-farm production of good seedlings for replanting)	Immediate	Extension Division
7	Source the funding from the CIDP-SPC for 1) fertilizer application 2) training for farmer initiation of replanting and 3) production of coconut mixture	Immediate	Mr. Posuma Afeaki (Regional working group member of CIDP) through NCDC and MAFF
8	Explore the possibility of importing selected machineries for coconut processing through the High Commission India, Suva. The letters requesting for the machineries 1) Snow Ball Tender Nut unit 2) Coconut Chips Making Unit 3) Advanced VCO units and 4) Copra dryer	Immediate	Requests should be formally sent from the MCCTIL through PM to the HCI as follow up of ITEC project. NCDC to coordinate
9	Synergize the copra making initiatives at the Ha'apai Island through networking and correspondence with Punja oils, Fiji for possible tie ups	Immediate	NCDC in coordination with Mr. Mo'ale Finau, Governor Ha'apai. ITEC Expert will facilitate the communication
10	Ensure the ITEC scholarship for the training on coconut production and processing in India with respect to the time to send proposals, number of scholarships and other relevant criteria	Immediate	Mr. Tevita Lautaha through the ITEC Division HCI, Suva
11	Translate the booklet on scientific cultivation practices into Tongan language and make it available among all the farmers	Short term	Business division, MCCITL in collaboration with MAFF (for translation of

			scientific terms)
12	Make available the complex fertilizer (can be named as coconut mixture) for application with proportion N: P: K-170g:120g:400g as first doze for end of October and N: P: K=330g:200g:800g as 2 nd doze during the end of February	Short term	MAFF, Grower's Federation. Mr. Pousima Afeaki to coordinate
13	Establishing Coconut Incubation Centre by the MCCTIL.	Short term	NCDC
14	Scrutinize and select the most appropriate personnel to be trained in India on coconut production and processing aspects (ITEC Scholarship). Ensure a balanced representation of the entire stakeholders' (farmer, entrepreneur, researcher (agronomist), and extension)	Short term (depends on approval and number of scholarship)	NCDC
15	Initiate the production of coconut leaf vermicompost by culture and multiplication of <i>Eudrilus sp.</i> Earthworm	Medium term	Pathologist, MAFF Research Division to take lead, ITEC Expert to facilitate the technical support
16	Develop an organic package of practice for the coconut cultivation	Medium term	Research Division MAFF
17	Design coconut based research projects on cultivation practices, disease / pest control by attending training in Central Plantation Crops Research Institute, India (for agronomists, pathologist)	Medium term	CEO MAFF should encourage the research training by specific budget allocation
18	Popularizing the health benefits of coconut	Medium	Business Division,

	oil through conducting road shows and awareness creation programmes. This can be counted as a pragmatic step to slowly change the consumption pattern and positioning of the coconut oil	term	MCCTIL
19	Formation of exclusive coconut farmer clusters preferably employing youngsters who can integrate the farming as well as minimal processing and also venture into exports. Each district can have one cluster	Long term	NCDC can plan it based on the success of incubation centre. World Bank/ ADB can be a partner agent as they have specific rural youth employment missions
20	Initiate the coconut hybridization programme in the Kingdom, with exclusive mother palm gardens following all the scientific protocols. The scientists (plant breeders) shall equip themselves with adequate training in this respect	Long term	MAFF-Research Division

Notes:

- 1) **Immediate: Initiate within 6 months**
Short Term: 6 months-1.5 years
Medium Term: 1.5 years-3 years
Long Term: 3-5 years
- 2) **Although not specifically mentioned, each activity will be monitored and evaluated by the National Coconut Development Council (NCDC)**

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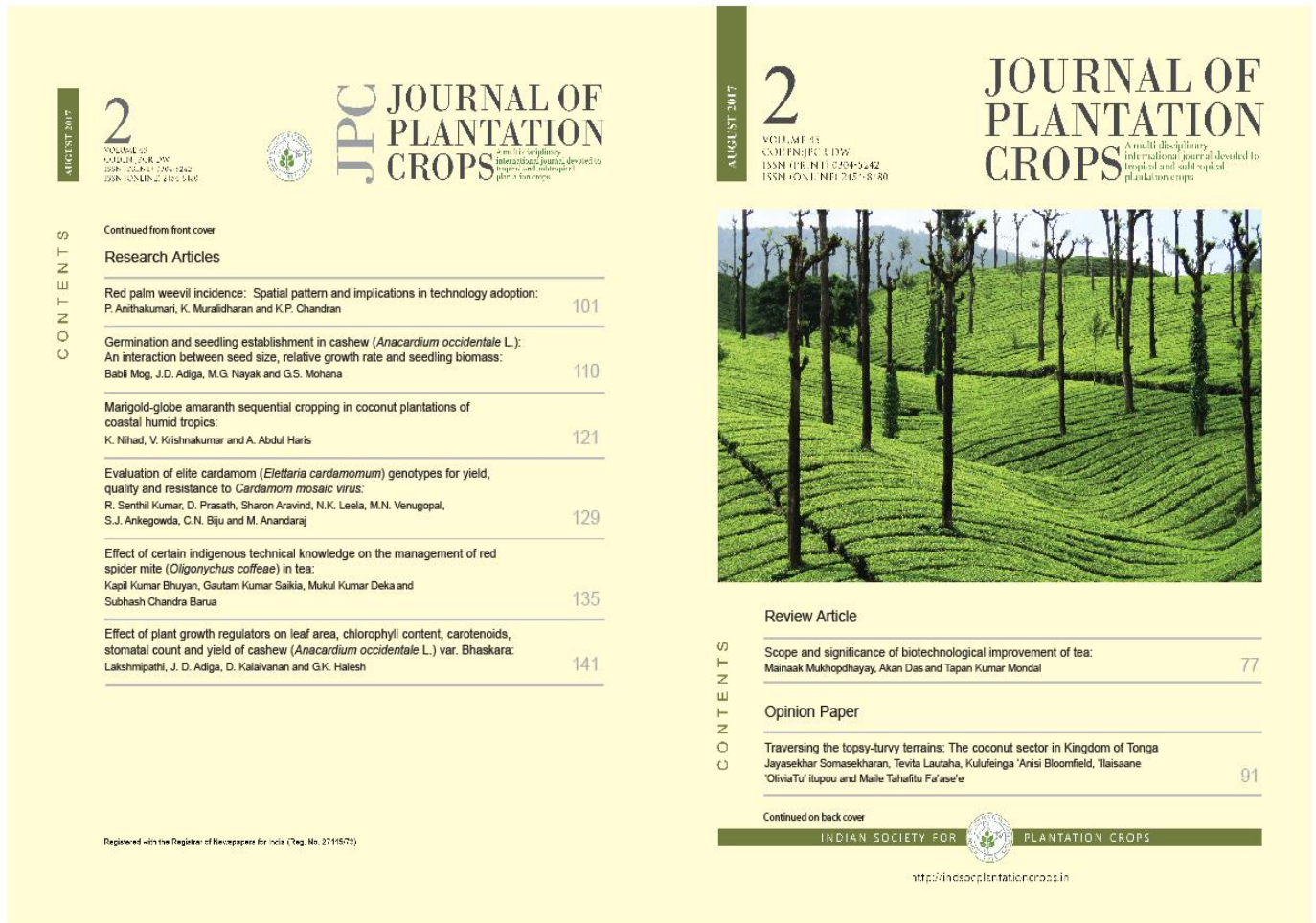
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Appendix 1

Cover page of the international journal in which our article about Tongan coconut sector appeared as opinion paper



The cover page of the Working Paper developed at MCCTIL

Ministry of Commerce Consumer Trade Innovation and Labour, Kingdom of Tonga

Coconut Sector of Tonga: Scenario Analysis, Comparative Trade Dynamics, and Challenges Confronted

Working Paper

Jayasekhar Somasekharan, Tevita Lautaha and Kulufeinga
'Anisi Bloomfield

