



# Traversing the topsy-turvy terrains: The coconut sector in Kingdom of Tonga

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## Abstract

Coconuts are inextricably linked to the culture, tradition and economy of Tonga from time immemorial. Although coconut sector enjoyed a predominant position in the national economy until the late 1980s, thereafter the sector has experienced a downfall. The 1990s and 2000s witnessed a stagnant coconut economy in Tonga and in the recent times, the role played by the sector has become insignificant. The comparative position of Tonga with respect to the major Pacific islands, in terms of production, trade and competitiveness is not advantageous to the country. The contribution of coconut sector in the national economy and export earnings has been dwindling in recent years. It was also seen that the export diversification in products and markets are absent. There are only a few exporters operating in the sector, therefore the benefit of perfect competition and economy of scale is not realized. In contrast, the coconut sector in Tonga still has the potential to provide year round income to the farmers. Therefore, the sector needs an adequate impetus in all the nodes from production to the exports, with plausible options and strategies to make it sustainable.

*Keywords:* Coconut, Pacific islands, sectoral challenges, Tonga

## 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 per cent 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 to 24 per cent 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. 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 the sectoral development in order to put a renewed focus for coconut sector of the country. The present article portrays the overall operating environment of the coconut sector of the country and also analyses the comparative position of Tonga with respect to the major Pacific islands with special focus on coconut. It also provides a detailed account on agriculture and allied sectors of Tonga and illustrates the story of downfall of coconut sector which was the most vibrant sector of 1970s. The present scenario of Tonga's coconut sector, the trade dynamics, and the sectoral challenges are also described in detail.

## Data and methodology

The comparative position of Tonga with respect to the major Pacific islands was analyzed with

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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 the major focus is on coconut sector, only those Pacific countries which are members of the Asia and Pacific Coconut Community (APCC) were considered. 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 year book. 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 the 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. The qualitative research tools such as Focus Group Discussion (FGD) with the traders and in-depth interviews with the stakeholders were employed to elucidate information on sectoral challenges faced by the coconut economy of Tonga.

### Comparative analysis with respect to economic indicators

The figures on economic development indicators among the major Pacific island countries

are depicted in Table 1. 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 third in terms of per capita income (US\$ 4280) following Fiji and Marshall Island. As far as the economic growth is concerned, Papua New Guinea (despite of their low per capita income) recorded the highest annual growth rate with 8.5 per cent followed by Fiji (5.5%). Tonga has registered an annual growth rate of 3.7 per cent and stands at fifth position in comparison with other islands. Contribution of agriculture sector to the total GDP in Tonga is 19.7 per cent. The contribution of exports to the GDP is a meager 17.5 per cent, whereas the import as percentage of GDP is as high as 60.6.

It is noteworthy that the percentage share of remittance in the GDP is highest in Tonga, which accounts for 27 per cent 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 per cent, whereas for Samoa it is as high as 76 per cent. 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

**Table 1. Comparison of economic indicators of Pacific island countries**

Country	Population (million)	GDP (US\$ million)	Per capita income (US\$)	GDP growth (%)	Agriculture (% in GDP)	Export (% in GDP)	Imports (% in GDP)	Credit (% in 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
Solomon 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 WDI, 2015

**Table 2. Comparison of coconut production statistics**

	Area (000'ha)	Production (million nuts)	Area (%)	Production (%)	Productivity (Nuts ha <sup>-1</sup> )
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

Source: APCC, 2015

is at lower levels, we need to really find out plausible options to develop these aspects. What we can apparently infer from the comparative statistics is that, 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 per cent of the total area of the nine major islands under consideration (Table 2). Tonga has 31,000 ha under

coconut and stands at sixth position among the nine islands and accounts for 5.3 per cent of the total area under coconuts. In the case of coconut production, again Papua New Guinea tops the list with 55.2 per cent share of the total production of the islands under comparison, whereas Tonga produces 75 million nuts, which accounts for 2.8 per cent share in the total coconut production of the nine Islands. The productivity of Tonga is one of the lowest among the Islands (2423 nuts ha<sup>-1</sup>), 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

**Table 3. Comparison of coconut product exports and its contribution**

Country	Export (MT)							% Export contribution*
	Coconut	Copra	Coconutoil	Copra	VCO meal	Cream	Desiccated Coconut	
F.S. 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	-	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

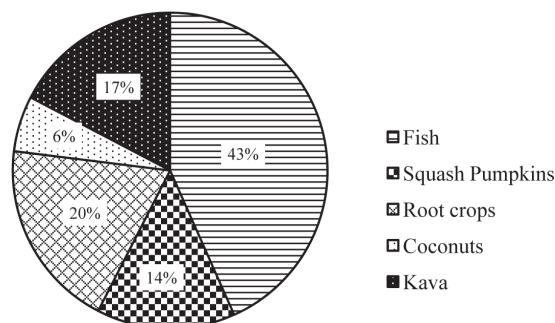
picture of Tonga on the aspects of coconut production is bleak as of now, and requires adequate impetus to make it competitive and sustainable.

The share of revenue of a commodity/sector in the total merchandise trade of a country implies the importance of the particular commodity per 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 and 44 per cent respectively, see Table 3). Tonga's coconut export revenue accounts for a meager 4.2 per cent of the total merchandise revenue of the country. It should be noted that until the mid-1980s, the share of coconut export earnings accounted for more than 40 per cent 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.

### 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 per cent, thereby implying the importance of the sector in the external trade of the country. The agriculture sector alone accounts for 45 per cent 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, the agriculture and allied sectors are indubitably the life blood of the Tongan merchandise exports.



Average total exports (TOP)=26344076

**Fig. 1. Breakup of primary exports (Average of 2012-15)**

Note: Fish include crustaceans and molluscs; Source: Quarterly Bulletins NRBT Tonga (various issues)

Figure 1 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 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 per cent of the total primary exports, followed by exports of root crops which accounts for 20 per cent share. Kava<sup>1</sup> emerged as an important item of export, and squash pumpkins, although lost its earlier glory, still managed to maintain an average share of 14 per cent.

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

Year	Total export (TOP million)	Agriculture sector (TOP million)	Agri. and allied sectors (TOP million)	Contribution of agriculture sector (%)	Contribution of agri. and 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

Note: TOP is the abbreviation of Tongan currency namely Tongan Pa'anga

The export share of the coconuts is the lowest among primary exports with 6 per cent of the total exports of agriculture and allied sectors.

**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 per cent share in the export earnings from the island during 1985-86 was reduced to a meager four per cent during 1990-91 (Fig. 2). It is also striking that banana which has contributed 14 per cent 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 per cent 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 restructuring 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 and 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.

According to a study conducted by the World Bank, “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).

**Coconut sector: The present scenario**

An exclusive scrutiny of the performance of coconut sector exports *vis a vis* total agriculture

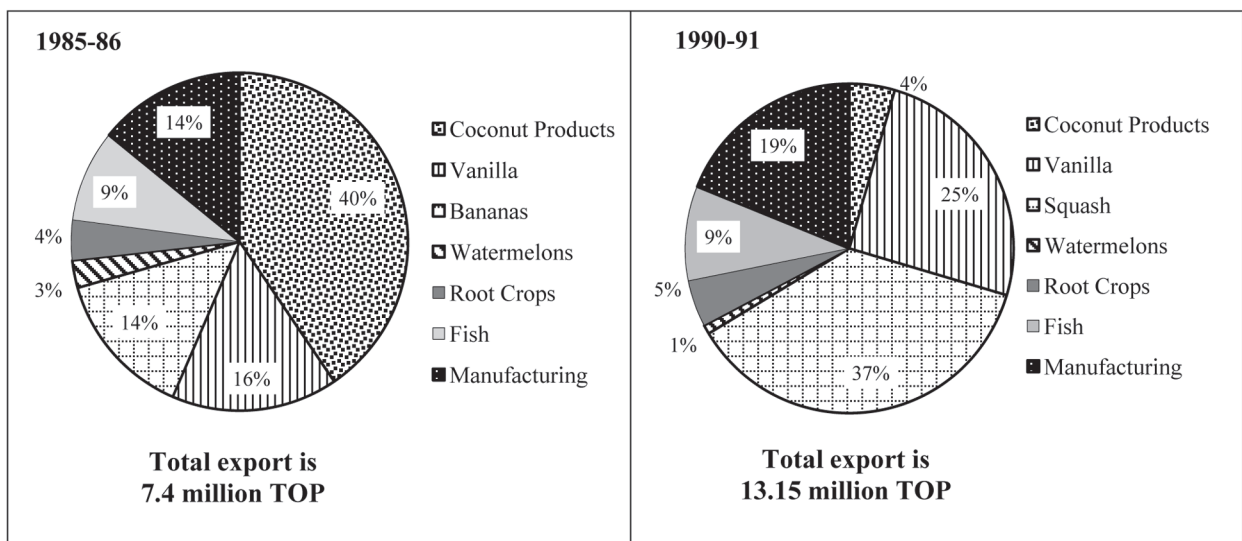


Fig. 2. Export shares in 1985-86 and 1990-91



**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 Quarterly bulletin of statistical department (various issues), Tonga

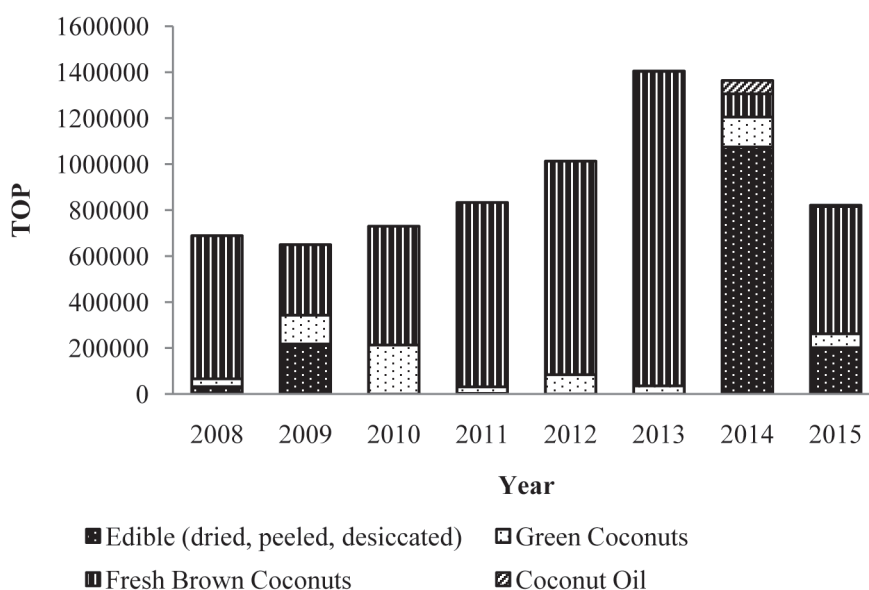
exports and total merchandise exports for the past eight years shows there is no trend of improvement of the coconut trade sector (Table 5). The average contribution of the coconut sector in the total exports is a miniscule 4.2 per cent and even the sector contributes only 10 per cent of the total agricultural exports (average of eight years).

A component wise disaggregated export details of coconut and coconut products from Tonga is depicted in Figure 3. While considering the data

for past eight years, it was found that brown coconut is the major item of export (Fig. 4). The green coconut exports were also consistent. The average of the last eight years shows that the brown coconuts account for 69 per cent share of the coconut exports, whereas green coconuts account for 10 per cent of the total coconut exports. Edible coconut endocarp contributes 20 per cent 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.

### Coconut sector: The export destinations

A detailed account on the trend and share of market destinations of coconuts and coconut products are illustrated in Table 6. The Australia and New Zealand are the major destinations of the coconut exports from Tonga. Although other countries such as USA and Samoa had 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%), and similarly Australia has a slight edge over New Zealand on account of value of import of coconut and coconut



**Fig. 3. Trend in item wise share of coconut export earnings**

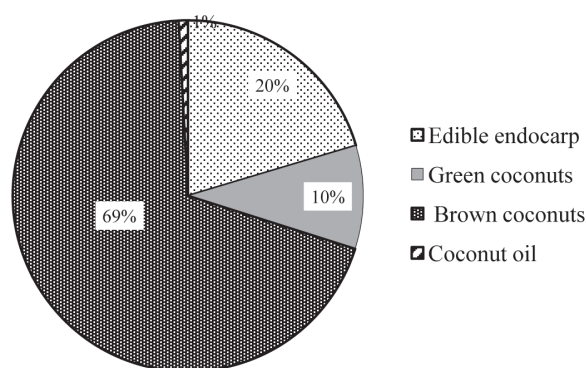


Fig. 4. Component wise average share (2008-15) in coconut export revenue

products (52.9%). Australia has provided a better average unit value for the coconut products imported (Tongan Pa'anga (TOP) 1.1 kg<sup>-1</sup>) than that of New Zealand (TOP 0.99 kg<sup>-1</sup>). 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.

Item wise export share of market destinations for the coconut and coconut products from Tonga is provided in Table 7. Major share of the edible

Table 7. 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

endocarp (56 per cent) and brown coconuts (53 per cent) goes to Australia and the major share of green coconuts (69 per cent) 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.

### Coconut sector: The import dynamics

It is an interesting fact that, there has been a continuous inflow of coconuts to the island in the form of imports, albeit the 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 8). 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 per cent of the total imports (Fig. 5) followed by the edible nuts (39%).

### Sectoral issues and challenges

As we are discussing the issues faced and challenges confronted by the coconut sector of

Table 6. 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)

**Table 8. Total quantity and value of imports of coconut and coconut products**

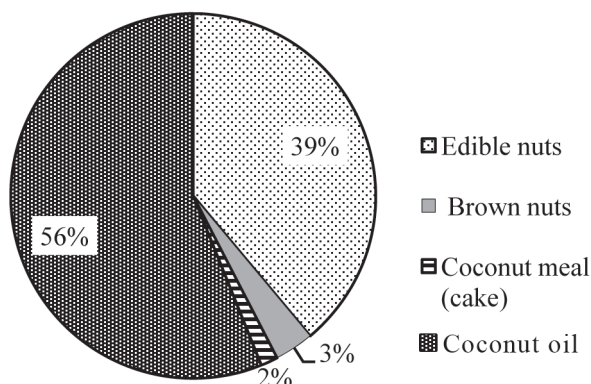
Year	Quantity (kg)	Value (TOP)
2008	4876	16847
2009	7719	40811
2010	7959	14937
2011	31830	70259
2012	10957	36172
2013	3204	18980
2014	24383	78003
2015	5035	35515
Average (2008-15)	11995	38941

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 in Tonga through an extensive field survey. 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). They have reported that in the last 16 years (before 1996), the coconut plantation had been declining by 25.6 per cent 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 was facing in the production facet. We have already

learned that the productivity of the Tongan coconut palms is below the 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 Kingdom (FAO, 2014).

During the field work on this project, we had conducted 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 the subsequent formation of Tonga Commodity Board by including banana also in the product line is to be marked on the timeline. 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 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). The World Bank report rightly points out the importance 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 labour from copra about one tenth of the rural wage and the lowest of any recorded rural activity in Tonga.



Average value of import in TOP (2008-15)= 38941

**Fig. 5. Item wise coconut products import (average value for 2008-15)**



According to another major coconut exporter of the Tongatapu (main island): “The major reason for why the farmers are not converting coconuts into copra is 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 TOP 2000, 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 TOP 1000”. 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 (VCO) production catering to a specific buyer.

### Summary

It is evident from the analysis that the present operating environment of coconut sector of Tonga has to be thoroughly restructured with the provision of adequate consideration of the economic incentives to the farmers. As far as international competitiveness is concerned, among the Pacific island countries’ Tongan coconut sector is suffering from disadvantages on various facets. The production segment is characterized by very low productivity and dominance of senile palms. The contribution of coconut sector in the GDP and export earnings has been dwindling in recent years. It was also seen that the export diversification in terms of products and markets are absent. There are only a few exporters operating in the sector, therefore the benefit of perfect competition and economy of scale is not realized. Although scientific replanting is necessary coupled with scientific package of practices, the return to investment in this regard has to be ensured. The return to investment is crucial, because as of now, Tonga is suffering from lack of comparative advantage in terms of coconut exports.

In a nutshell, the coconut economy of Tonga has been experiencing a crisis with respect to production sphere, palm senility, natural calamities, value addition, farm gate prices, stable domestic market, export orientation, stakeholder synergy and

convergence. This is in contrast to the earlier scenario, way back in the 1970s through 1990s, during which the 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 cope with. On the other hand, coconut sector in Tonga still has the potential to provide year round security. There exists a fairly good domestic market for coconut and coconut products. The health benefits of coconut oil as cooking oil is popular by now. There is a potential to change the consumer perception in this regard and thereby entering into a huge domestic segment. Similarly, by effectively popularizing the benefits of products like Virgin Coconut Oil (VCO), there is huge scope to enter into the segment of domestic health care. For the coconut sector of Tonga, we need to have a very well chalked out domestic market orientation coupled with a unique strategy to enter the niche export segments.

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