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Strategic framework for the development of coconut sector in the Kingdom of Tonga

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Abstract

Strategic framework for the coconut sector is an important tool for small South Pacific countries such as Kingdom of Tonga in view of the time bound implementation of the strategic actions for revitalizing the sector. It is also important in terms of receiving the funds from developmental agencies, since the agencies assess the funding requests based on the planned framework developed in a convincing fashion. The present strategic framework for coconut sector of Tonga was evolved from a systematic study conducted through stakeholder discussions, focus group discussions, personal interviews, workshops/seminars and field demonstrations. Initially we have identified the sectoral challenges on production, trade and institutional facets. Subsequently, through the conduct of workshops, we have developed plausible strategies in a participatory mode wherein the concerns and suggestions of the stakeholders are very well reflected in the strategic framework developed. A National Coconut Development Council (NCDC) has been constituted which is a multi-agency body which is responsible for the implementation of the proposed strategic action plan in a time bound manner.

Keywords: Coconut, strategic framework, Tonga

Introduction

Kingdom of Tonga is a South Pacific archipelago also known as friendly islands due to the exceptional hospitality offered by the inhabitants of the islands. The economy and livelihood of the Tonga had been very much linked with the coconut sector during the 1960s and 1970s. The worldwide price crash of coconut oil during the late 1970s badly affected the Tongan coconut economy. In the recent times, the sector had lost its earlier glory as the major sector in the Kingdom. The lack of interest in the coconut cultivation practices and replanting of old coconut plantations 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. With regard to the production, the frequent cyclones caused long time impact on productivity of the coconut palms. Tonga produced 71 million nuts from 31 thousand hectares in the year 2015 (APCC, 2016). The sectoral sustainability is very much depends on the replanting, especially in view of the food security that the sector continues to provide. It is also noteworthy that the value addition is meager and the export sector is monopolized in the country (Jayasekhar *et al.*, 2017). In this context, it is utmost important to identify the current sectoral challenges faced by the country to design a plausible and time bound strategic framework to revitalize the coconut sector. This strategy paper is essentially an attempt in this direction.

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

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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.

Sectoral issues and challenges

Challenges in production facet of coconut sector

It was observed that the productivity of coconuts in Tonga (2423 nuts per ha) is lower than the average productivity of South Pacific countries (3407 nuts per ha). In view of the competitive environment among the South-Pacific countries, this is a matter of concern, and Tonga needs 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 per cent. The productivity per palm 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 which are adversely affecting the yield of the palms.

The land act of the Kingdom highlights the importance given to the coconut cultivation, wherein each adult male attaining the age of 16 is allotted with 8.25 acres of land, and it is mandatory to plant 200 coconuts in the allotted land. According to the Chief Executive Officer (CEO) of Ministry of Agriculture and Food, Forests and Fisheries (MAFF): "Though theoretically the practice is still active, the coconut plantations are the neglected sector of late due to low prices and absence of value addition. 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".

There exists a huge knowledge gap among farmers regarding the scientific production practices of the coconuts. To some extent, there was an attempt to teach the production practices through on-farm demonstrations and workshops through the Indian Technical and Economic Cooperation (ITEC) programme, but it has to be widely implemented to create any impact. The average coconut consumption per house hold was 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, except some unique attempts by the front line movers. It is also important to mention about the lack of any incentives for the replanting of coconuts, especially in view of the very long pre-bearing stage of the coconut palms. About 92 per cent 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, seedlings and the replanting procedures are erroneous and needed to be corrected at the earliest.

Challenges in trade and product diversification facet

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 1, which substantiates the year to year volatility of coconut supply.

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

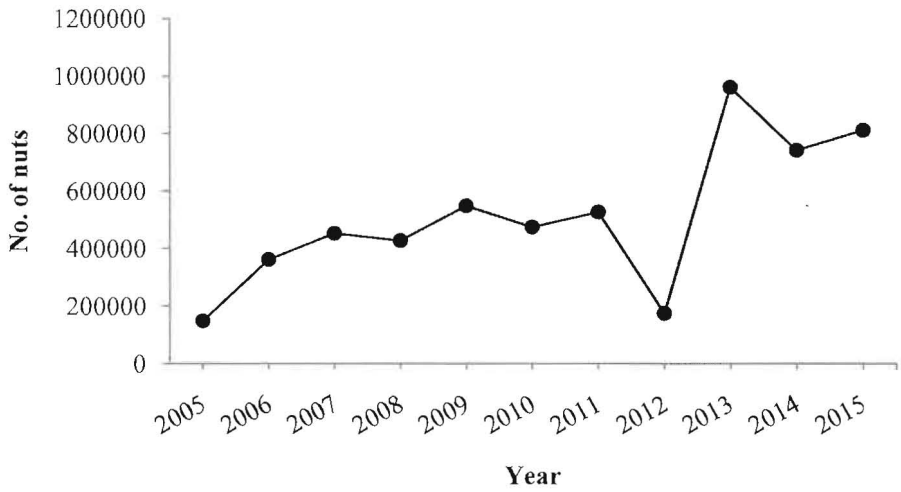


Fig. 1. Depiction of brown coconut procurement of a major trader (2005-15)

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 focused on VCO alone.

Let us illustrate the above mentioned with a case study of the Tongan National Youth Council (TNYC) which had ventured into the VCO production. The TNYC initiated the five years project of VOC 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 per year. The approximate cost of production was estimated to be 12.5 TOP per 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. 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 eight months (from January 2017 onwards).

The cost of production of VCO in outer islands was comparatively much higher due to the exorbitant wage rates. For instance in Vavau (an outer island), the shipment cost is very high. Besides, the organic certification and the proliferating food safety standards in the export markets are issues of great concern. It would be difficult to run a small scale coconut industry especially because of lack of guarantee in assured consistent supply of coconuts.

The study conducted in supermarkets of Tonga, with randomly selected 14 shops revealed that 95 per cent 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 initiate the import substitution. It is also 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.

The irony is that Kingdom of Tonga is historically renowned for the production of first grade copra. A quote from a report by Silsoe (1963) states: "Today, Tonga Grade-1 hot-air dried copra is equal to, if not better than, the best copra produced by any other country in the world, including Ceylon. In fact, it is a Super Grade-1. What is more,

approximately 70 per cent of the total annual export tonnage is made up of this grade. Grade-2 hot-air dried which may be regarded as equal to world top quality, accounts for about 6 per cent and Grade-3 fair merchantable, equal to world second quality, for about 24 per cent." Having said this, 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.

Institutional challenges

With respect to the production node of the coconut sector, MAFF is the major government machinery who should provide timely facilitation to the farmer. It was observed that, for quite a long time, the coconut sector has been stagnant and other crops were given more emphasis and the scientific knowledge on production aspect is fading. The opinion of the head of forestry is as follows: "Specific budget allocation for seedling production and coconut sectoral development is needed for sustaining the activities. 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 economically important crop earning foreign exchange, and in the recent times "kava" has emerged as the most profitable crop". Since replanting is the most important aspect which needs adequate emphasis in the national policy, it is important to initiate a new study on coconut inventory for the entire Kingdom. The available information in this respect is quite old (the classic work by Burrows, 1996).

There is urgent training need for the MAFF extension personnel on the basic and advanced scientific cultivation practices of coconuts. The ITEC coconut project has 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 Ministry of Commerce, Consumer, Trade, Innovation and Labour (MCCTIL) is responsible marketing and trade aspects of the coconut sector. It is pertinent to note that, the production and trade aspects 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 booklet on "Coconut Cultivation Practices" circulated among all the stakeholders' during the in-house workshop and the field demonstrations/trainings conducted by the ITEC programme during September 2017. 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 in split doses should be correctly followed. The worrisome factor is the availability of the exact proportion of fertilizer in the country. 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 apply the exact requirement. The National Coconut Development Council (NCDC) 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 per cent 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 per cent 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 the additional funding for such activities from the Coconut Industry Development Project-South Pacific Community (CIDP-SPC), in which we have a Tongan farmer-entrepreneur as the 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 per cent of the total palms), particularly in view of the certification purpose. Therefore, it is important to develop an organic package of practices for such farms. The idea of coconut leaf vermicomposting is a pragmatic and cost effective technique, which can be taken up by the research wing of MAFF. It should be initiated 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 can be made simple and the benefit for the farmers who follow organic practices would be enormous.

Strategies for trade 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, we 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 train the selected personnel on the functioning of the above mentioned machineries under skill development programmes. 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 per cent 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 super grade copra production in Tonga. It is encouraging that the Governor of Ha'apai (a major outer island) has initiated small scale copra production in Ha'apai. In this regard, there is provision to link with the Punja oils, Fiji for a tie up. We propose that 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. MCTTIL through the NCDC will facilitate the correspondence in this regard through the already developed networking with the authorities of Punja oils.

The health benefits of coconut oil as cooking oil due to 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 in such countries. As of now, in Tonga the availability of good quality cooking grade 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 National Coconut Development Council (NCDC) overarching various nodes and facets of the coconut sector and accountable for the

implementation of the strategies proposed through appropriate correspondence and networking. We propose MCCTIL to be the Secretariat of the council and the council to be co-chaired by the CEO MAFF, and the CEO MCCTIL (that they have six months turns as chair of the council). We also propose one member each from leading coconut exporters, Grower's federation, and coconut farmers.

The council, once approved by the cabinet, should function as an autonomous body with adequate power to monitor and implement the proposed strategies in a time bound manner. 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 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 project on coconut sector.

Strategic framework: Action plan

Sl. No.	Strategy	Priority	Action
1.	A national Coconut Development Council to be constituted to function as an autonomous body with adequate power of monitoring and implementation of the proposed strategies	Immediate	Hon. Minister, MCCTIL: For the approval in the cabinet
2.	Initiate the scientific cultivation practices as explained during the field demonstrations and workshops of the ITEC programme	Immediate	MAFF Extension officials and Forestry officials. Validate-Research wing
3.	Replicate the field demonstration on scientific coconut practices in the major coconut growing tracts. Farmers of the outer islands are also to be trained through conducting the field demonstrations	Immediate	MAFF Extension officials and Forestry officials.
4.	Enforce the replanting of coconuts with the land Act legislation clause which states that every tax allotment of 8 acres must plant at least 200 coconut plants in the farm. We propose a target of 10,000 plants per year to start with in the first year and increases annually subject to the review by MAFF	Immediate	Extension Division
5.	Follow the replanting scheme by providing incentive to the farmer with payment for each coconut palm planted. Focus in Tongatapu for the start and replant one village such as Kolonga since we have been consulting few selected champion farmers as a starting point to the model replanting scheme	Immediate	MAFF
6.	Circulate the booklet on scientific cultivation practices among all the stake holders'. The soft copy available with MCCTIL should be translated into Tongan language for wide reach of the same	Immediate	Business division, MCCTIL
7.	Forestry division should increase the good quality seedling supply to 20 per cent 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
8.	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	Regional Working Group member of CIDP through NCDC and MAFF

9.	Tangible commitment from the Indian Government for acquisition of equipments for a pilot project: 1) Snow ball tender nut unit 2) Coconut chips making unit 3) VCO units and 4) Copra dryer	Immediate	Formal request to the HCI, Suva to for sourcing. NCDC to coordinate
10.	Syncrgize the copra making initiatives at the Ha'apai island through networking and correspondence with Punja oils, Fiji for possible tie ups	Immediate Ha'apai.	NCDC in coordination with Governor
11.	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	Business Support Division, MCCTIL through the ITEC Division HCI, Suva
12.	Make available the complex fertilizer (can be named as coconut mixture) for application with correct proportion N:P:K	Short term	MAFF, Grower's Federation. Validate-Research Wing
13.	Establishing Coconut Incubation Centre (CIC) at the MAFF Food Division or MCCTIL Business Support Division	Short term	NCDC
14.	Select the most suitable candidates to be trained (ITEC Scholarship). Ensure a balanced representation of the entire stakeholders' (farmer, entrepreneur, researcher/ agronomist, and extension)	Short term	NCDC
15.	Initiate the production of coconut leaf vermicompost by culture and multiplication of earthworm *Eudrilus sp.*	Medium term	MAFF Research Division to take lead.
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 ICAR-CPCRI, India (for agronomists, pathologist)	Medium term	CEO- MAFF should encourage the research training by specific budget allocation
18.	Popularizing the health benefits of coconut oil through conducting road shows and awareness creation programmes as a pragmatic step to change the consumption pattern and positioning of the coconut oil	Medium term	Business Division, 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
20.	Initiate the coconut hybridization programme in 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)

Conclusion

Sectoral strategies are crucial for countries such as Tonga wherein the livelihood of the people is very much embedded in the agrarian patterns and practices. One important aspect of the crop based exclusive strategies for such small island countries is the easiness to implement the action plans due to the small geographical area and possibility of quick decision making from the authorities. We have seen that coconut sector was an erstwhile dominant sector of the Kingdom with proven ability to support the livelihood and employment of people of the country. The long period of stagnancy in the sector has reflected in the fading scientific cultivation practices and value addition in the coconut sector. The strategies suggested in this paper have been evolved from a systematic study conducted in the major islands of the Kingdom of Tonga. The strategic framework was presented to the stakeholders and the concerns and suggestions were incorporated to refine the final strategy report. The most important aspect is the approval of the proposed strategy report by the cabinet of the Kingdom. The implementation of the time bound strategic action plan would certainly steer the Tongan coconut sector into a prospering and sustainable road map.

References

APCC. 2016. *Coconut Statistical Year Book-2015*, Asia Pacific Coconut Community, Jakarta, Indonesia, 351p.

Burrows, L.E. and Douglass, R. 1996. *Inventory of the Coconut Palm Resources, Kingdom of Tonga*. Draft Report to the Ministry of Foreign Affairs and Trade, New Zealand, 41p.

Jayasekhar, S., Tevita, L., Kulufeinga, A.B., 'Ilaisaane, T. and Maile T.F. 2017. Traversing the topsy-turvy terrains: The coconut sector in Kingdom of Tonga, *Journal of Plantation Crops* **45**(2): 91-100.

Silsoe, L. 1963. *Report of the Fiji Coconut Industry Survey*, The Crown Agents for Overseas Governments and Administration, London, 95p.