

# Inclusive Growth and Sustainability in coconut sector

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## Introduction

India is the world's second largest producer of coconut having the 3<sup>rd</sup> largest area under the crop and number one in productivity among member countries of the Asian and Pacific Coconut Community (APCC). Coconut is cultivated in 18 states and 3 Union Territories in the country. Widely acclaimed as the *Kalpavriksha or Gift from Heaven*, the Coconut palm provides food security and livelihood opportunities to more than 20 million people across the Globe and 10 million people in India. World production of coconut as per APCC Statistical Year Book 2010 is 64,897 million nuts from an area of 12.15 million ha. India occupies a prominent position in the world map with an annual production of 15,730 million nuts from an area of 1.89 million ha. Productivity in India among the four major players viz., Indonesia, Philippines, India and Sri Lanka is the highest with 8,303 nuts per ha. Brazil and

Chairman, CDB, India

Myanmar are the only two countries outside APCC framework, with productivity higher than that of India with 12,619 nuts per ha and 10,192 nuts per ha respectively, which are considered as minor growing countries.

In India traditional coconut growing states are Kerala, Tamilnadu, Karnataka, Andhra Pradesh, Goa, Pondicherry and the Andaman and Nicobar Islands. These States / UTs account for more than 90% of the coconut production in the country. Coconut has also been introduced to non traditional areas in Bihar, Chattisgarh, the North-Eastern states like Assam, Tripura, Meghalaya, Arunachal Pradesh, Nagaland and pockets of Gujarat and Maharashtra. Coconut cultivation in the country has witnessed many ups and downs during the past few decades. Being a crop of greater significance in livelihood sustenance, poverty alleviation and income generation to sizeable segment of the rural population of the coconut growing countries and of India in particular, concerted efforts of international

organizations like APCC, COGENT and R & D Institutions of various countries are needed to ensure the profitability of coconut farming on a sustainable basis. This article reveals the ways and means of Inclusive Growth and Sustainable Development of Coconut Industry in India and the policies and programmes envisaged for the purpose through Coconut Development Board (CDB). A preview of the growth of coconut sector in India would be appropriate before going deep on this topic.

## II. The Growth of Coconut Sector in India - A preview

- Formation of Coconut Development Board (CDB) in 1981 was a breakthrough in the history of coconut development in the country. The growth was not only in widening the area and production but also in opening new vistas for technology development, product diversification, by-product utilization and value addition.
- The growth of coconut sector in the country during the past three decades of the post-CDB period can be segmented under three distinct phases. Firstly it is expansion of area under coconut to the non traditional belts from the coastal areas of the country. Secondly, increasing production and productivity of coconut in the country. The decline in the consumption of coconut oil in both edible and non-edible sectors has led to the development of broad based processing technologies for product diversification and by-product utilization and also to launch intensive campaign in favour of the edible use of coconut oil. Thirdly, the problem of low income from the coconut holdings due to price fluctuations, low value realization etc. The non competitive nature of the industry has necessitated the need for adoption of an integrated approach in the development of coconut cultivation and industry in the country.
- Though coconut and its products have found extensive uses throughout the country, 90% of coconut production is from the four southern states, viz. Kerala, Tamil Nadu, Karnataka and Andhra Pradesh.

States like Goa, Orissa, West Bengal and Assam also account for a sizeable area and production.

- Kerala, a small state with 1.18 per cent of the total land area of the country, though accounted for 58 per cent in area under and 50 per cent in production of coconut in the country in the past, has shown a progressive decline in the contribution in both production of and area under the crop. However, the growing dimension of population warranted the need for enhancing the production of coconut in the state as well as in other states. After the establishment of the Board, various measures were initiated for the integrated development of coconut cultivation and industry in the country. Even though 28 per cent of the total cropped area in Kerala is under coconut and the crop is an important source of livelihood to both growers, traders and processors in small and micro sectors, the state is losing its share to other states. From the original level the share of Kerala in area and production of coconut has slumped to 42 and 37 per cent respectively. Bulk of the coconut acreage in the state is now concentrated in low-land and mid-land regions. The unique feature of this crop in the state is its homestead nature of cultivation and diverse farming system. It is estimated that there are 5 million coconut holdings in the country out of which about 3.5 million holdings are distributed in Kerala. Average size of the coconut holdings in the state is only 0.2 ha. The contribution of the crop to the annual income of the state is around 15 per cent and to the agricultural income is 35 per cent. Coconut based processing industries and other activities provide direct employment opportunities to over a million people in the state and sustain inter state trading in coconut products amounting to a gross annual turn over of about Rs. 20,000 crores (M. Thomas Mathew, 2011).
- Area and production of coconut in the country has been increasing since the formation of the Board. Coconut cultivation in the country during 1960s was in an area of 7.17 lakh ha with a production of 4,639 million nuts and that at the time of setting up of the

Coconut Development Board in 1981-82 was 10.91 lakh ha and 5,940 million nuts respectively. The compound growth rate in area and production of coconut during these periods was only 1.89 per cent and 1.3 per cent per annum respectively. Productivity of coconut declined considerably to 5,445 nuts per ha in 1981-82 from the level of 6,466 nuts per ha in 1960-61. Growth in the sector expressed a giant leap after the formation of the Board. Area stagnated at around 10.91 lakh ha has reached the level of 18.95 lakh ha in 2008-09 and production from 5,940 million nuts to 15,730 million nuts recording an annual compound growth rate of 1.95% in area and 3.41% in production.

- The productivity which recorded a negative growth during the pre-CDB period had shown an encouraging trend during the post-CDB period. The high dependence on copra-coconut oil centered industry has been dissolved and considerable progress achieved in the field of product diversification and by-product utilization of coconut. Many technologies were developed in association with premier research institutions in the country.
- Technologies developed for the manufacture of various products like coconut cream, spray dried coconut milk powder, packed and preserved tender coconut water, virgin coconut oil and by-products like coconut water based vinegar, industrial utilization of wood for the manufacture of particle boards etc. are the milestone achievements of the Board. Thus CDB played a pivotal role in enhancing the production and productivity of coconut in the country besides bringing a structural change in the field of post harvest management. Four southern states viz., Kerala, Tamil Nadu, Karnataka and Andhra Pradesh are continuing to hold the hegemony in coconut acreage and production in India.
- Although Kerala accounts for major share in area and production of coconut, its position in supply and trade is diminishing due to the declining trend in production and productivity. Though various reasons are attributed to this unimpressive situation, wide spread incidence of root (wilt) disease, prevalence of old

and unproductive palms in the existing populations and poor quality of management are the major factors for low productivity of gardens. Declining productivity and diminishing rate of return per unit holding are the major causes of concern in the coconut sector of the state. Salubrious and catalytic role played by the Board during the past three decades in the state have changed the coconut situation considerably. While the area has been increasing only at low rate of 0.62 per cent the production and the productivity of coconut has increased at a compound growth rate of 2.47 and 1.83 per cent annually.

- **Tamil Nadu** ranks second in the production of coconut in the country. Coconut occupies 4.7 per cent of the total cropped area of the state and is considered the largest among all the horticultural crops grown in the state. It is grown in all the 28 districts of the state and the spread of the crop gained momentum subsequent to the formation of the Board. The production of coconut which was as low as 1,945 million nuts in 1985 has now reached 5,365 million nuts, recording a significant increase of 259 per cent. Similarly, the area under coconut in the state has also reached to 3.9 lakh ha from the level of 1.5 lakh ha in 1985 recording a compound growth rate of 4 per cent per annum. The share of Tamil Nadu in the national production has reached to 34 per cent. It could be seen that the area and production of coconut in the state are increasing since 1981 with annual fluctuation in the production. The compound growth rates recorded for area, production and productivity were 4.58 per cent, 5.14 and 0.53 per cent respectively. When comparing with the increase in area under coconut with that of production, the rate of increase in production was more pronounced. Coconut cultivation and allied industries have now become the main source of livelihood and employment for a sizable section of the population in the state. It has been reported that there are 3.52 lakh coconut holdings in the state of which 95.4 per cent are less than 1.25 ha. There are about 7,000 coir based

industries and 200 coconut based industries in the state.

- Karnataka accounts for 18.14 per cent of area under and 13.93 per cent of production of coconut in the country. Coconut is the second largest horticultural crop of the state occupying 31 per cent of the total area under horticultural crops and 2.85 per cent of the total cropped area of the state. The crop is grown in all the districts of the state, mainly under rain fed conditions. The total area under coconut in the state is 4.19 lakhs ha with an annual production of 2,176 million nuts. Despite the area under coconut in the state is the second highest in the country and is increasing at compound growth rate of 3.26 per cent per annum, the state recorded the lowest productivity. The trend in the production indicates that it is increasing at a compound growth rate of 3.25 per cent per annum which is commensurate with the increase in area. About 25 per cent of the nuts are converted into edible ball copra and desiccated coconut and 15 per cent is utilized as tender coconut. About 95 per cent of the edible ball copra produced in the country is Karnataka's share. Similarly Karnataka holds the prime position in desiccated coconut production. The first manufacturing unit of packed and preserved tender coconut water unit in the country has been established at Maddur in the state during 1999 with the technology developed by CDB and DFRL Mysore.
- The fourth position in coconut map in the country is of **Andhra Pradesh** which is an emerging state in the country in production of coconut. East and West Godavari, Srikakulam, Visakapattanam, Krishna and Chittoor districts are the important coconut growing districts of the state. The state accounts for 5 per cent of area and 10 per cent of production in the country. As against the increase in area under coconut at a compound growth rate of 3.3 per cent per annum, the production and productivity are increasing significantly at a higher rate of 6.46 and 3.06 per cent per annum which is considered as the highest in

the country. A major portion of the production of coconut in the state is used for upcountry sales in the form of partially dehusked nuts which are mainly traded in the non-producing states of Northern India.

- CDB also contributed much in expanding the area under the crop, establishing coconut gardens, producing quality seedlings, popularizing coconut based farming systems etc. Demonstration cum Seed Production Farms established in different agro climatic regions in the country have triggered the efforts of the Board in popularizing scientific methods of farming practices and in the production and supply of coconut in the north and north-eastern states of the country. Area and production of coconut in these states have been considerably enhanced and as a result there has been a significant increase in the supply of coconut from the region. At present these states in the region together account for a share of 10 per cent in area and 9 per cent in the total production in the country. Increase in area and production of coconut in the north-eastern region during the past 30 years was at a compound growth rate of 2.96 and 4.32 per cent respectively. The efforts of CDB will help bring the states like Assam, West Bengal and Odisha as the major suppliers of coconut in the north eastern region in the near future.

### III. Why do we think of Inclusive Growth and Sustainable Development?

Integrated development of coconut cultivation and industry coupled with a stable market are the determining factors for the sustainability of coconut economy of the growing countries. Climate change on account of global warming and the resultant epidemic and endemic outbreak of pests and diseases, rain fed nature of the crop and prolonged drought have been causing considerable damage to coconut crop. Acute shortage of labour caused by the displacement of agricultural labour from the traditional farming sector, price crash at the time of peak production season due to surge in import of cheap substitutes and the resultant agrarian distress are also contributing factors for treating coconut cultivation as a non profitable proposition.

Moreover, many major and minor diseases are also causing distress to the farmers. Root wilt in Kerala, India, Lethal Yellowing disease of Philippines, Weligama wilt disease of Sri Lanka etc are examples. Infestation of coconuts by eriophyid mite has resulted in significant dip in the production of coconut both at micro and macro-level. Many pests infesting coconut are also alarmingly increasing due to the lack of field sanitation and abnormal climate change which again is causing substantial reduction in the yield and concern among the farmers. Lack of interest and confidence in the proper management of gardens due to resource exhaustion further aggravated the sector and manifested in restricted farm activities. This state of affair is mostly common to all coconut growing countries. The situation therefore warranted a holistic approach for the revival of the coconut economy of all countries.

#### **IV. Approach to attain Inclusive Growth and Sustainable Development**

##### ***Policies and Programmes***

While the focus of the Board till the 10<sup>th</sup> Five Year Plan was on triggering the production, processing and value addition, stimulating the farmers for self help and group action was not attempted.

Competitiveness of coconut sector is largely depending on higher and sustainable productivity of the crop. There is scope and need for productivity improvement in India. While 1 ha of oil palm produces nearly 4-5 tonnes of oil, output from 1 ha of coconut is only 0.6-1.0 tonne of oil. Resource poor coconut farmers will not be able to survive the onslaught of competition unless there is a quantum jump in productivity. Therefore there should be a 2-3 fold increase in productivity during the 12<sup>th</sup> plan period.

Small scale of operation in coconut farming is yet another disadvantage in the sector. There is an urgent need to move towards consolidation of farm / holdings through proper strategies. The Board therefore initiated coconut productivity improvement programmes on cluster basis all over the country during the 11<sup>th</sup> Plan period. This had created enthusiasm and confidence in farmers. Similarly a pilot programme for Replanting and Rejuvenation of

coconut gardens in Kerala and A&N Islands and a Palm Insurance scheme were also introduced during the Plan period.

##### ***Cluster approach for Productivity Improvement***

One of the factors that limit production and productivity of coconut in the country is the small and fragmented holdings. Aggregation of farmers at ground level and mobilizing them for collective farming practices, collective processing and collective marketing would yield good results in reducing the cost of cultivation, improving efficacy and impact of farming operations, achieving economy in procurement of inputs and above all encouraging farmers in adopting recommended packages in the otherwise neglected gardens.

To overcome the problem faced by the small and marginal growers whose average holding size is less than 0.2 ha and whose marketable surplus is very negligible, the Board is promoting the productivity improvement programme on cluster basis in contiguous areas of about 25-50 ha in a farmer participatory mode. The cluster is made the vehicle for dissemination of technology and adoption of management practices for achieving higher productivity and increased income. This approach helps in improving the efficiency of land and water use, adoption of a community approach in plant protection, procurement and application of inputs, raising of intercrops etc. Each cluster involves the participation of about 150-200 farmers who will work in tandem for achieving the goal. This arrangement is an important tool for overcoming the problems associated with scarce resources, fragmentation and dispersion of coconut cultivation and inadequate levels of marketable surpluses. Under this programme farmers are given incentive subsidy of Rs. 35,000 per ha on costs of towards inputs and of planting material of intercrops.

##### ***Replanting and Rejuvenation of Coconut Gardens***

There is wide intra -state and inter -state variation in productivity of coconut in the country. In Kerala, which is the single largest producer of coconut, more than 30% of the coconut area is estimated to be senile and unproductive. A large scale replanting and rejuvenation

programme was therefore planned to bring in substantial improvement in productivity. The Government of India, in 2009-10 cleared a Pilot project for the three districts of Kerala and A&N Islands for the last 3 years of 11<sup>th</sup> Plan.

The programme envisages cutting and removal of about 140 lakhs old, senile and unproductive palms from an area of 1.35 lakh ha. The programme also envisages the replanting of the area with 70 lakh quality seedlings of high yielding dwarf and hybrid varieties and rejuvenation of the existing palms through improved management practices. Financial support available under the programme is Rs. 28,320/- per hectare in two years. Under the programme, compensation was made available to the farmers for cutting and removal of old and senile palms and also assistance for taking up integrated nutrient management and pest management for rejuvenating the other palms in the garden. The per ha productivity is expected to increase from the current level of 6,889 nuts per ha to 10,000 nuts per ha by the end of the project period.

Since the project was implemented only on Pilot scale, in selected districts only, the extension of the scheme to the remaining districts of the state and other traditional coconut growing states is absolutely essential. With this motive the Board has moved a proposal to the Government of India on the same line so that the genetic potential of coconut in the country could be enriched regularly and gradually which will be beneficial in the long run.

#### ***Coconut Palm Insurance Scheme***

Coconut crop, with a long gestation period of 6-7 years, is always subjected to the perils of storm/ cyclone, heavy rains/ flood, pest and disease of widespread incidence, fire, earthquake / landslide, riot, severe drought etc. However, the crop is not covered under the purview of any insurance scheme in the country. The Board has therefore introduced a Coconut Palm Insurance scheme in collaboration with a leading National Agricultural Company by meeting a portion of the premium. The share of the Board will be remitted to the Company. The scheme will encourage long term investment in raising coconut plantations which have a long gestation period of 6-7 years.

## **V. Coconut Development - the way forward**

With increased awareness on the beneficial effects of coconut products especially tender coconut water and virgin coconut oil more attention is focused on coconut. Where do we stand in terms of its commercial significance? At present why are the returns low? We are looking at the crop essentially as an edible oil crop. This approach towards the crop needs a paradigm shift.

### ***A structural change in the utilization pattern***

In India, almost the lions' share of coconut production is consumed internally in one form or the other. About 50% of coconut production in the country is utilized for edible and social purposes, 35% is converted into copra and 15% is consumed as tender nut water. Of the 50% consumed as raw nut, 92% is consumed in the edible sector and 8% in the industrial sector for the production of value added products like desiccated coconut, coconut milk, milk powder and other convenience foods. Of the total coconut oil production, 40% is consumed in the edible sector, 40% is consumed in the toiletry sector and the rest in the industrial sector. Various products made out of the natural and eco-friendly coconut other than copra and oil have a good potential for growth, both in national and international markets.

A structural change in the utilization pattern of coconut is needed to break the present over dependency on coconut oil-copra. Considering the high demand for tender coconut water globally we should aim at harvesting more tender nuts and increasing the population of dwarf varieties. For enabling this 25% of the planting should be dwarf and 25% of the total production should be consumed in the form of tender nuts. Rather than a minuscule quantum a sizeable quantity of the production say, at least 15% should be converted into value added products outside copra-oil route. The percentage of nuts processed for copra-coconut oil route shall be slowly reduced. Instead production of virgin coconut oil can be triggered. Thus a basic structural change is felt imperative for achieving the desired goal.

### *Means to Overcome the Present Crisis*

- The Board is dovetailing all development activities in such a way as to elevate India as the world leader in production, productivity, processing for value addition and export. With this objective Board is formulating programmes for formation of Coconut Producer's Societies in major coconut growing states, creating adequate manpower for coconut climbing and plant protection operations under the banner 'Friends of Coconut Tree', ensuring availability of more high yielding quality seedlings, promoting sufficient processing units with quality specifications etc. The coconut sector has to rely increasingly on non traditional products and explore new markets. Tender coconut water is becoming the world's finest natural drink and its demand in bottled form is growing manifold. India will try to cash in the opportunity by promoting more tender coconut packaging units in the country.
- The capacity of the present tender nut processing units is 2,500 million nuts per year. This approximately yields 4 million litre of tender coconut water of which 40% is exported to various countries in packed form. Although the processed and packaged tender nut water is still in a nascent stage, almost all the units have succeeded in making a small entry into markets in the Gulf region, and Europe. The US market is undoubtedly large and attractive. Being a natural health drink a growth rate of 20% is anticipated for this product during the next Five Year Plan period in export market.
- Other value added products like coconut milk, coconut milk powder, cream, desiccated coconut, virgin coconut oil, edible copra, activated carbon etc. will be more focused with stringent quality parameters, eyeing the export potential. For coconut milk powder at present there are only 2 fully operational units functioning in the country with a production of 750 tonnes per year. Forty percent of this product is exported to various Western and Middle East countries. Being a ready-to-use convenient product, this product is poised for a growth rate of

20% per annum. The present total annual production of the product is estimated at 45,000 tonnes. Because of the large scale demand for the product in the confectionery industry, a growth rate of about 25% per annum is estimated for the product in the coming 5 year period. Price competitiveness and quality upgradation have to be ensured to achieve this growth.

- Virgin coconut oil, the oil extracted from fresh coconut kernel/milk is rich in vitamin E and possessing long shelf life of one year. A plant processing 100,000 nuts per day can produce 7.5 tonnes of virgin coconut oil, 9 tonnes of medium fat desiccated coconut, 11,500 liters of matured coconut water, 16.5 tonnes of skim milk and 11.5 tonnes of coconut shell.
- Now that the technology for producing virgin coconut oil is under commercialization and that more than 150 units of 500 nuts per day processing capacity each are expected to come into production stage, an output of 6.75 million litres of virgin coconut oil is expected. This product is expected to grow at a rate of 10% per annum in next 5 year period. More than 80% of this production is likely to go into the export market in view of its therapeutic and nutraceutical properties.
- APCC reports indicate that major coconut products traded in the world market are coconut oil, desiccated coconut, coconut milk, coconut cream, coconut milk powder, coconut shell charcoal, activated carbon, coir and coir products. New products like packaged tender coconut water, virgin coconut oil, coconut flour and oleochemicals, vinegar, syrup etc. have entered in the market. Value added products traded in the global market in the last five years showed an increasing export volume. APCC member countries contribute lions' share of export volume. India's export is also increasing significantly mainly from activated carbon. It is also important to tap the market for products like packaged tender coconut water, virgin coconut oil, coconut milk, milk powder and cream.
- Coconut shell based activated carbon is considered to be superior to all activated carbon obtained from

other sources due to its small macro pore structure which renders it more effective for the adsorption of gas/vapour and for the removal of color and odor of compounds. It is widely used in the refining and bleaching of vegetable oils and chemical solutions, water purification, recovery of solvents and other vapors, recovery of gold, and in gas masks for protection against toxic gases. On an average 3 tonnes of coconut shell charcoal would yield 1 tonne of activated carbon. The total capital outlay for a unit of 1 tonne/day capacity of finished product would be around Rs.8.5 million. At present there are nearly 15 activated carbon units in India. The present production is estimated at 15,000 tonnes per year. Being a product of unique utility this is likely to gain a growth rate of 20% per annum in the export market.

- World production of vegetable oils is presently dominated by four major oils such as soybean oil, palm oil, rapeseed oil and sunflower oil. Among these oils, palm oil tops with the production of 46.11 million tonnes in the year 2009-10. Soya bean oil holds second position with 33.84 million tonnes, rape seed oil and sun flower oil the 3<sup>rd</sup> and 4<sup>th</sup> position with 23.63 million tonnes and 12.51 million tonnes respectively. Over the last five years rapeseed oil production increased by 30% and palm oil production by 27%. The increase in coconut oil production during this period was only 12.62% where as palm kernel oil production increased by 24.68 percent. Sun flower oil and soya bean oil production too increased at 13% and 14% respectively. Indian vegetable oil economy is the fourth largest in the world next to USA, China and Brazil. The share of coconut oil both in the domestic and world market is possible to be augmented through the adoption of appropriate promotional strategies highlighting the intrinsic quality of coconut oil.
- In India a Price support mechanism is in operation. Government of India declares Minimum Support Price in every season. Whenever prices go down below the support price the government intervene and declare a Minimum Support Price which protects the basic interest of farmers

- In the context of the opportunities and the strength of the Indian coconut industry a paradigm shift by making use of the available options and the selection of best methods of production is the need of the hour. The domestic coconut industry should be made globally competitive promoting technical efficiency and by operating at the right scale of production. To achieve these goals in a perspective manner it is necessary to re-engineer and revitalize both coconut cultivation and industry by promoting appropriate farming systems for generating multiple sources of food, income and employment as well as economically viable product and by product utilization for value addition.

## VI. Conclusion

Indian coconut industry has recorded a perceptible increase in production and productivity of coconut in the country. This increase has to be translated in terms of fair and remunerative income to the producers. Now India should aim at a quantum jump in export and look forward to have bigger share in the international markets. It is also necessary to give utmost attention to quality assurance to Indian products to make them globally competitive. For achieving price stability and increased returns the strategy shall be to divert at least 20-25 per cent of the total production for value added products other than copra and coconut oil. Thrust is also required for replanting and rejuvenation, promotion of early bearing and high yielding planting material of hybrids and other varieties, aggregation of small and marginal farmers, strengthening of farmer collectives and reducing dependency of coconut industry on copra and coconut oil by promoting farm level processing and marketing. Considering the diminishing market for traditional coconut products, R&D has to be directed towards production of more value added products. APCC countries should come together to work out strategies for market expansion and market diversification. Liberalization of Trade has opened up new frontiers and India among other countries should take advantage and seize opportunities for greater trade.