INTERNATIONAL SCENARIO OF COCONUT INDUSTRY

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1. Introduction

The coconut, (*Cocos nucifera* L.) is popularly known as 'Tree of Life', 'Tree of Heaven', 'Tree of Abundance', 'Kalpavriksha' 'King of Palms' and 'Nature's Super Market'. Tender nut and dry fruit, as a source of food, drink, oil and milk have been used by humans and their immediate ancestor species for at least half a million years. Its geographical spread literally around the world – was aided by waves of mariners migrating and trading between countries, homeland and even more distant islands from Asia to America. It is socially, culturally, and religiously associated with millions of people around the world. Apart from healthy food and drink, it provides shelter, health, wealth, ecofriendly environment and aesthetic sense. It not only provides sustainable income to millions who are directly or indirectly depending on this crop but also contributes to food security, nutritional security, employment generation, poverty alleviation, export earnings and import substitution. Coconut is a symbol of national and international integration.

2. Global Scenario of Coconut Area, Production and Productivity

Coconut is grown in more than 93 countries around the world in an area of 12.19 million ha producing 61,165 million nuts or 13.68 million tonnes of copra equivalent. Asia and Pacific countries account for10.68 million ha which is 78.07% of total area under coconut. The production indicates that 70.32% (9.62 million tons) of copra equivalent is from the APCC countries (Table 1).

Table 1
World Area, Production and Productivity

Particulars	1990	2000	2001	2004	Growth rate (%/Yr)
Area (Thd HA)					
World	10,808	11,711	11,795	12,190	0.89
APCC	8,973	10,300	10,378	10,682	1.06
Production (Copra Thd.MT)					
World	9,301	10,584	10,939	13,684	4.36
APCC	7,983	8,911	9,244	9,623	2.09
Productivity, MT/ha					
World	0.86	0.90	0.93	1.12	3.79
APCC	0.80	0.87	0.89	0.9	1.07

Over a period of 30 years, India, Indonesia and Philippines had considerably increased the area under coconut, while Malaysia, Sri Lanka, Thailand and Vietnam among Asian countries showed a negative trend in area expansion. Samoa had doubled the area (Table 2).

Though there is an increase in production in some of the APCC member countries there has been no corresponding increase in the output of coconut. The productivity in many countries remains below 1-ton copra/ha/ year, whereas the crop is capable of producing 3 to 6 tons of copra per hectare depending upon the standard of input management. Only few countries such as Indonesia, Thailand, Viet Nam and Sri Lanka could achieve the productivity level above 1-ton copra/ ha/year (Table 3 and 4). However, very high yield of 480 nuts/palm/year or 13.84 tons of copra equivalent has been

recorded in the holdings of some farmers in India and many progressive farmers in the country are getting yields ranging between 150–200 nuts/palm/year. High yields of 300 nuts/palm are also observed in some gardens in South India.

Table 2
APCC: Area of Coconut ('000 Ha)

Countries	1980	1990	2000	2004	Growth (%/yr)
FS Micronesia	28	17	17	30	5.06
Fiji		56	54	61	1.44
India	1,100	1,472	1,768	1,899	2.41
Indonesia	2,990	3,394	3,696	3,866	1.61
Kiribati			25	27	2.00
Malaysia	395	323	164	132	-3.56
Marshal Islands			7	8	3.57
Papua New Guinea	221	260	260	260	0.59
Philippines	3,126	3,112	3,119	3,258	0.36
Samoa	42	47	96	96	5.80
Solomon Islands	62	59	59	59	-0.16
Sri Lanka	451	419	442	395	-0.94
Thailand	415	393	325	343	-0.29
Vanuatu	69	96	96	96	1.30
Vietnam		225	172	133	-4.01
Total	*8,497*	*9,873*	*10,300*	*10,682*	

The area under coconut in India has increased from 1.1 million ha in 1980 to 1.89 million ha in 2004 while that of Sri Lanka showed a reduction from 451,000 ha to 395,000 ha during the same period. Thailand, Malaysia and Viet Nam also showed a decreased trend. While the production has doubled in India and Indonesia it has decreased in Sri Lanka at the rate of 0.37% per annum over the period 1980-2004. However, the increase in productivity at 0.22% in India has been the lowest when compared to that of Indonesia at 3.22%; Sri Lanka at 1.91%; and Thailand at 18.96%.

Table 3
APCC: Production in copra e.q. ('000 MT)

Countries	1980	1990	2000	2004	Growth (%/yr)
FS Micronesia	20	8	6.5	8	-0.70
Fiji		34	27	10	-8.90
India	966	1,391	1,750	1,740	2.84
Indonesia	1,727	2,332	3,023	4,072	5.04
Kiribati		-	19.2	26	8.85
Malaysia	177	225	136	86	-3.66
Marshal Islands			1	5	100
Papua New Guinea	230	194	172	162	-1.39
Philippines	2,089	2,629	2,544	2,377	0.35
Samoa	40	47	55	35	-1.84
Solomon Islands	45	39	30	82	13.23
Sri Lanka	111	514	535	449	0.37
Thailand	139	342	320	350	5.57
Vanuatu	42	52	50	60	2.61
Vietnam	-	130	232	161	-3.36
Total	*5,765*	*7,983*	*8,911*	*9,633*	

Table 4
APCC: Productivity in copra e.q. (MT/Ha)

Countries	1980	1990	2000	2004	Growth (%/yr)
FS Micronesia	0.71	0.47	0.39	0.27	-4.18
Fiji	-	0.60	0.50	0.16	-9.33
India	0.79	0.95	0.99	0.92	0.22
Indonesia	0.64	0.68	0.82	1.05	3.22
Kiribati	-	-	0.77	0.96	6.2
Malaysia	0.50	0.69	0.83	0.85	0.13
Marshal Islands	-	-	0.14	0.62	9.11
Papua New Guinea	1.04	0.63	0.66	0.62	-4.99
Philippines	0.66	0.84	0.81	0.73	-0.10
Samoa	0.95	0.51	0.57	0.36	-4.22
Solomon Islands	0.72	0.66	0.50	1.39	41.24
Sri Lanka	0.91	1.23	1.21	1.14	1.91
Thailand	0.33	0.87	1.01	1.05	18.96
Vanuatu	0.61	0.64	0.52	0.62	3.42
Vietnam	-	0.84	1.35	1.13	33.42
Average	0.68	0.89	0.87	0.80	

3. Global Coir Fibre and Coir Pith Production

The global annual production of coir fibre is shown in table 5. The five year data indicate down ward trend of coir production with India and Sri Lanka accounting for 90% of the total output. It is also a fact that only a fraction of the available husk is being processed in the coir industries and the bulk is wasted.

Table 5. World: Coir Production, 2000 – 2004 (MT)

Countries	Year				
	2000	2001	2002	2003	2004
India	468,000	450,000	450,000	450,000	450,000
Malaysia	29,400	28,000	28,000	28,000	28,000
Sri Lanka	165,000	155,000	127,250	129,500	133,000
Thailand	9,000	14,000	20,000	20,000	20,000
Others	9,390	9,389	9,128	9,387	9,386
Total	**680,790**	**656,389**	**634,378**	**636,887**	**640,386**

Source: FAO database recalculated

4. Global Potential Availability of Coir Fibre and Coir Pith

The potential availability of coconut fibre and coir pith taking into coconut 50% availability of coconut husk is given in table 6.

Table 6. Global Coconut Production and Potential Availability of Coir Fibre and Coir Pith(at 50% availability of husk)

	Total Nut Production (million)	At 50% availability of husks	
		Fibre (million tonnes)	Coir pith
World	61,165	3.67	8.5
Asia – Pacific	52,936	3.17	7.4
APCC Countries	51,558	3.10	7.2
Africa	2,187	0.13	0.30
American	6,047	0.36	0.84
Assumption	Husk	: 400 gram	
	Fibre	: 120 gram (30%)	
	Coir dust & shorts	: 280 gram (70%)	

Through 93 countries are growing coconut, India and Sri Lanka are the major producers of coir and coir products. The potential availability of coir fibre and pith in major Asian and Pacific countries is given in table 7. But, the production is much lower than the availability. There is greater scope for increasing the availability of these raw materials.

Table 7. Coconut Production in Major Asian and Pacific Countries and Potential availability of Coir Fibre (at 50% of available husk)

	Total Nut Production (million)	At 50% availability of husks	
		Fibre (million tonnes)	Coir pith
India	12,160	0.73	1.70
Indonesia	19,537	1.17	2.73
Philippines	14,366	0.86	2.01
Sri Lanka	2,591	0.155	0.362
Malaysia	400	0.024	0.056
Thailand	1,199	0.072	0.168
Vietnam	681	0.041	0.095

5. Global Scenario of Coconut Oil vis a vis other Oils

Copra, coconut oil and copra oil cake were the common commodities traded and exported to various countries for years. Coconut oil is one among the 17 different kinds of oils and fats. In general vegetable oil production has increased considerably over a period of 44 years as shown in Table 8; soybean and palm oil have made tremendous increase from 3.30 million and 1.26 million tons to 30.68 and 30.45 million tons respectively from 1960 to 2004 with an annual growth rate of 19.3% and 53.7% respectively. For the same period the coconut oil production increased from 1.95 million to 3.02 million tons with a growth rate ranging from 0.36% to 2.46% up to 1990 and practically zero growth rate during the recent years. Similarly, the palm kernel oil increased from 0.421 million tons to 3.524 million tons with a growth rate ranging from 4.39% during 1970-80 to 16.51% during 1980-90, 8.56% during 1990-2000 and currently 7.74%. Though palm kernel oil (PKO) and coconut oil are the major sources of lauric oils, it is noteworthy to observe the substantial increase of PKO over the years. It is likely to exceed coconut oil (CNO) in due course, because of organised plantations of oil palm with optimum input management that give yields of 0.3 to 0.4 ton/ha of PKO in addition to 3 to 6 tons of palm oil/ha/year. Coconut oil always face problem because it has to compete with all cheaper oils. Now that the virgin coconut oil has been introduced into the market, it may enjoy a good market potential if proper market promotional efforts are made highlighting its intrinsic qualities for use in functional foods, and in pharmaceutical, nutriceutical, cosmoceutical preparations etc. and by maintaining the quality standards (Table 8 and 9).

Table 8
World Production of coconut oil Vs. other oils
1960 - 2004 (in '000 MT)

Particulars	1960	1970	1980	1990	2000	2004
Soybean oil	3,300	6,477	13,382	16,097	25,541	30,677
Palm oil	1,264	1,742	4,543	11,014	21,874	30,453
Rapeseed oil	1,099	1,833	3,478	8,160	14,466	14,850
Sunflower oil	1,788	3,491	5,024	7,869	9,700	9,440
Groundnut oil	2,587	3,044	2,864	3,897	4,560	4,737
Cotton oil	2,325	2,503	2,992	3,782	3,864	4,393
Coconut oil	*1,949*	*2,020*	*2,717*	*3,387*	*3,281*	*3,017*
Olive oil	1,339	1,442	1,701	1,855	2,540	2,891
PKO	421	380	547	1,450	2,691	3,524
Total	16,069	22,932	37,248	57,511	88,517	103,582

Table 9
World : Annual Growth of Production of coconut oil Vs. other oils (%)

Particulars	1960-70	1970-80	1980-90	1990-00	00-04
Soybean oil	9.63	10.66	2.03	5.87	5.02
Palm oil	3.78	16.08	14.24	9.86	9.8
Rapeseed oil	6.68	8.97	13.46	7.73	0.66
Sunflower oil	9.52	4.39	5.66	2.33	-0.67
Groundnut oil	1.77	-0.59	3.61	1.70	0.97
Cotton oil	0.76	1.95	2.64	0.22	3.42
Coconut oil	*0.36*	*3.45*	*2.46*	*-0.31*	*-2.01*
Olive oil	0.78	1.79	0.90	3.69	3.45
PKO	*-0.97*	*4.39*	*16.51*	*8.56*	*7.74*
Total	4.27	17.97	5.44	5.39	4.37

Coconut products like copra, coconut oil and desiccated coconut have been exported since 1960. The export of copra had considerably decreased over the years due to the fact that the countries exporting copra earlier have started making CNO, which could be seen in Table 10 and 11, indicating an increasing export of CNO and copra meal. This is the first step of value addition.

Table 10
World: Coconut Products Exported

Products	1960	1970	1980	1990	2000	2004
Copra (Thd MT)	1,522	911	426	284	216	137
CNO (Thd MT)	270	509	1,103	1,481	2,144	1,836
Copra Meal (Thd MT)	343	589	975	1,250	1,087	777
D. C. (Thd MT)	127	122	129	151	278	260
Coco Cream (MT)	n.a.	n.a.	n.a.	Neg	15,264	22,000
Coco Powder (MT)	n.a.	n.a.	n.a.	Neg	5,248	7,756
Coco Chem. (MT)	n.a.	n.a.	n.a.	17,389	23,537	52,640
Shell Charcoal, MT	n.a.	n.a.	n.a.	55,472	59,044	57,600
Act. Carbon, MT	n.a.	n.a.	n.a.	22,147	74,948	110,500
Coir Products, MT	n.a.	n.a.	n.a.	106,200	117,000	250,745

The export of coconut products from APCC countries has indicated that the export of coconut oil, copra meal, coco chemicals and activated carbon has growth rates of 8.35, 5.05, 12.41 and 34.42 over the period 1990 to 2004 (Table 11). The export volume and value of coconut products including coir products from major producing countries for the year 2004 are given in Table 11, 12 and 13. Annually, more than US$ 1 billion is earned through export and the larger exporter is Philippines followed by Indonesia and Sri Lanka. Sri Lanka and India are the largest exporter of coir fibre products followed by Thailand (Table 14). The leading coconut growing countries like Indonesia and Philippines have not exploited the situation fully in the area of coir fibre products

Table 11
APCC Exports of Coconut Products, 1970 - 2004

Exports (MT)	1970	1980	1990	2000	2004	Growth
Copra	805,470	384,262	283,510	131,206	223,452	-2.13
Coconut Oil	467,659	1,054,256	1,471,515	1,728,762	1,627,552	7.28
Copra Meal	264,804	540,554	1,116,701	971,610	642,631	4.20
Desiccated Coconut	110,151	120,336	150,759	201,021	224,055	3.05
Coco Chemicals	-	-	20,500	38,865	52,640	11.20
Coir and Coir Products	-	102,782	105,557	190,936	308,374	8.29
Shell Charcoal	101,871	75,651	55,472	59,043	41,567	-1.75
Activated Carbon	0.0	9,499	19,544	74,919	71,657	29.17

Table 12
Export Value of Coconut Products in Main Producing Countries (US $ M)

Country	1999	2000	2001	2002	2003	2004
Philippines	546.2	653.5	618.3	582.1	757.3	841.0
Indonesia	279.0	401.2	187.9	248.5	228.7	341.5
Sri Lanka	169.8	164.0	118.7	130.1	152.6	101.1
Malaysia	66.9	57.8	41.4	43.6	42.0	42.0
India	70.2	71.6	71.8	42.8	83.4	97.9
Thailand	11.0	34.5	13.9	13.7	13.5	23.9
Total	*1,143.1*	*1,382.6*	*1,052*	*1,060.8*	*1,235.1*	*1,447.4*

Table 13
APCC: Export in Fiber Products 1980-2004 (in MT)

Countries	1980	1990	2000	2004
1. India	23,867	28,932	54,571	78,285
2. Sri Lanka	78,915	68,356	127,988	178,473
3. Thailand	-	7,606	7,255	44,625
4. Vietnam	-	-	252	325
5. Indonesia	-	250	483	310
6. Malaysia	-	413	387	540

Table 14
APCC: Export Earning per Ha, 2004

Countries	Coconut Area (m Ha)	EXPORT	
		Total Value in US $ m	Per Hectare in US $
1. Philippines	3.120	841	269
2. Indonesia	3.701	341.5	92
3. Sri Lanka	0.442	101.1	229
4. Malaysia	0.159	42.0	264
5. India	1.892	97.9	52
6. Thailand	0.327	23.9	73

Though India is exporting many of the products, like desiccated coconut, milk powder, etc. there is no proper statistics available either with Coconut Development Board, India or APCC. Only for coir products, the statistical information is available with Coir Board. If we compare the export earning per hectare, Philippines ranks first with US$ 269 followed by Malaysia (US$ 264), Sri Lanka (US$ 229), Indonesia (US$ 92), Thailand (US$ 72) and India (US$ 52). Malaysia imports coconut and its products and re-export directly or after processing.

As far as export is concerned, Sri Lanka is doing better than India. The export earning is almost double than that of India. Sri Lanka is exporting coconut products to India. India and China can be potential importers in Asia with high population to feed.

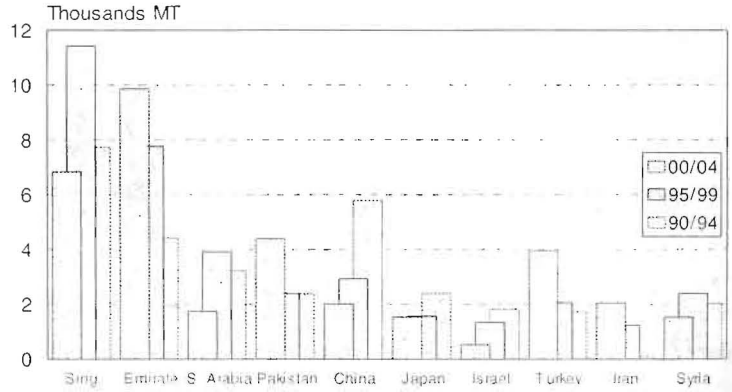
8. Import of Coconut Products

8.1. Desiccated coconut

During the past 40 years the market for desiccated coconut, which is largely used in food and confectionary industries increased from 121,044 MT in 1960 to 223,672 MT in 2004, an increase of 84.8%. For the last 15 years many countries in the Asia and Pacific were importing to the tune of about 23.3% of total world import for the period concerned for meeting domestic needs as well as re-exporting to other countries.

Figure 1. Import of Desiccated Coconut by Asia and Pacific Countries, 1990-2004 (5-year average)

Figure 1. Import of Desiccated coconut by the Asian countries, 1990-2004.



The total import of desiccated coconut in these countries was 47,684 MT in the last five years, of which U.A. Emirate, Singapore, Australia, Pakistan, Saudi Arabia, Turkey, China, Iran and Japan accounted for more than 89.2%. The import trend of desiccated coconut by the Asia and Pacific countries during 1990-2004 is shown in Fig. 1 while the other figures (2 and 3) displayed the same for European and American consumers. The global trend of world demand of this commodity was up annually at rate of 2.02% during 1965-2004.

Figure 2. Import of Desiccated coconut by the European countries, 1990-2004.

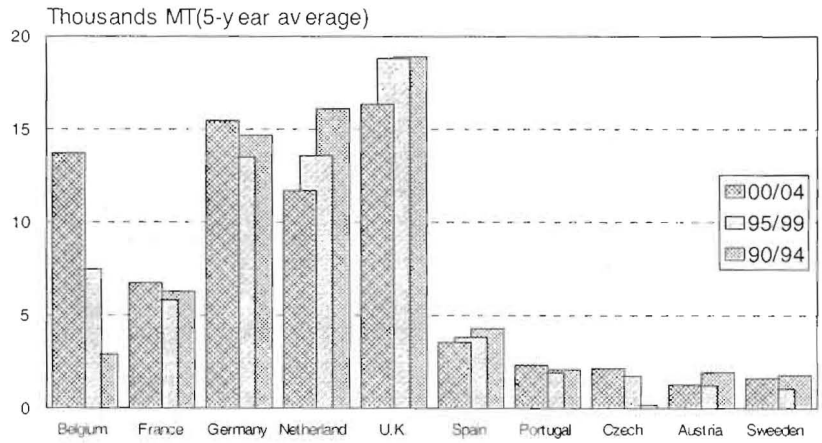


Figure 3. Import of Desiccated coconut by the American countries, 1990-2004

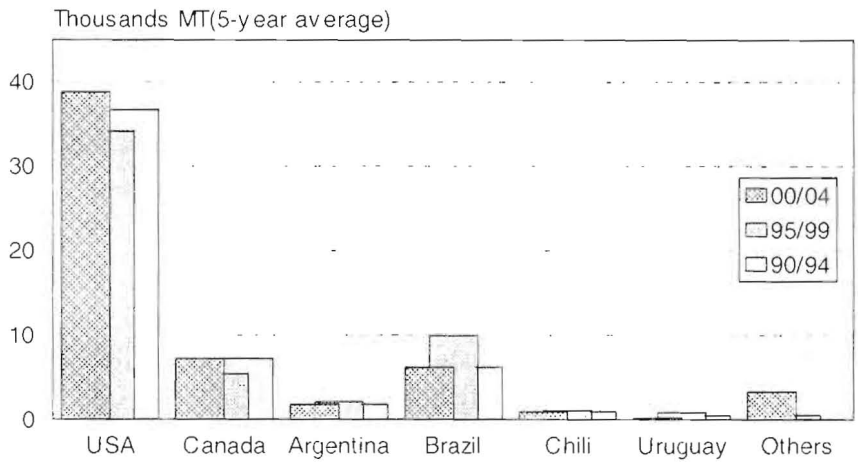


Table 15. DC Producing Countries and Marketing Destinations

Coconut Product	Country Producing & Exporting	Market Destination by Regional and Country Wise			
		Europe	America	Asia & Pacific	Africa
Desiccated Coconut	Indonesia	Belgium	Brazil	Australia	Egypt
	Malaysia	Czechoslovakia	USA	China	South Africa
	Philippines	France	Canada	India	Morocco
	Sri Lanka	Germany	Argentina	Korea	Mauritius
		Netherlands	Chile	Malaysia	
		Poland	Colombia	New Zealand	
		Russia	Guatemala	Pakistan	
		Spain	Peru	Singapore	
		United Kingdom	Puerto Rico	Syria	
		Denmark	Venezuela	Taiwan	
		Greece		Turkey	
		Hungary		United Arab Emirate	
		Ireland		Bahrain	
		Italy		Brunei	
		Sweden		Hongkong	
		Norway		Japan	
		Portugal		Kuwait	
		Romania		Saudi Arabia	
		Switzerland		Yemen	
		Austria		Israel	
		Croatia		Jordan	
		Cyprus		Lebanon	
		Malta		Afghanistan	
				Iran	
				Oman	
				Qatar	

8.2. Coconut oil (CNO)

Amount of coconut oil (CNO) exported to world market during the period 1980 -2004 jumped up from 1.10 million MT to 2.06 million MT, increase by 87.3%, of which the European market absorbed about 44.5% share, and other markets such as USA and Asia and Pacific markets received 23.3% and 24.7%, respectively. The balance 7.6% share was for other countries. The Asia and Pacific countries contributed 90.9% of the total export of CNO.

The import quantity of CNO by the European market for the past 5 years was about 854,180 MT of which Belgium, France, Germany, Netherlands, Italy, Spain, Russia, and United Kingdom accounted for 90.5%. USA, Canada and Mexico together imported 462,780 MT during 2000-2004, which was equal to 99.2% share of the total market in America. On an average annual import demand for American market was around 466,580 MT for the last five years.

The import by Asia and Pacific countries was 562,120 MT, equal to 29.13% of the total world import. The countries that were importing significant quantities of CNO are China, India, Japan, Malaysia, Singapore, Korea, Turkey and Australia, which held 76.06% share. Africa, Algeria, Egypt, Kenya, Tunisia, and South Africa were also noted as nations with relatively high import demand of CNO, amounting to 3,900 MT per annum for the last five years. The Fig 4,5, and 6 shows the import demand of CNO for Asia and Pacific, European, and American countries

Figure 4. Import demand of CNO by Asia and Pacific countries, 1990-2004 (5-year average)

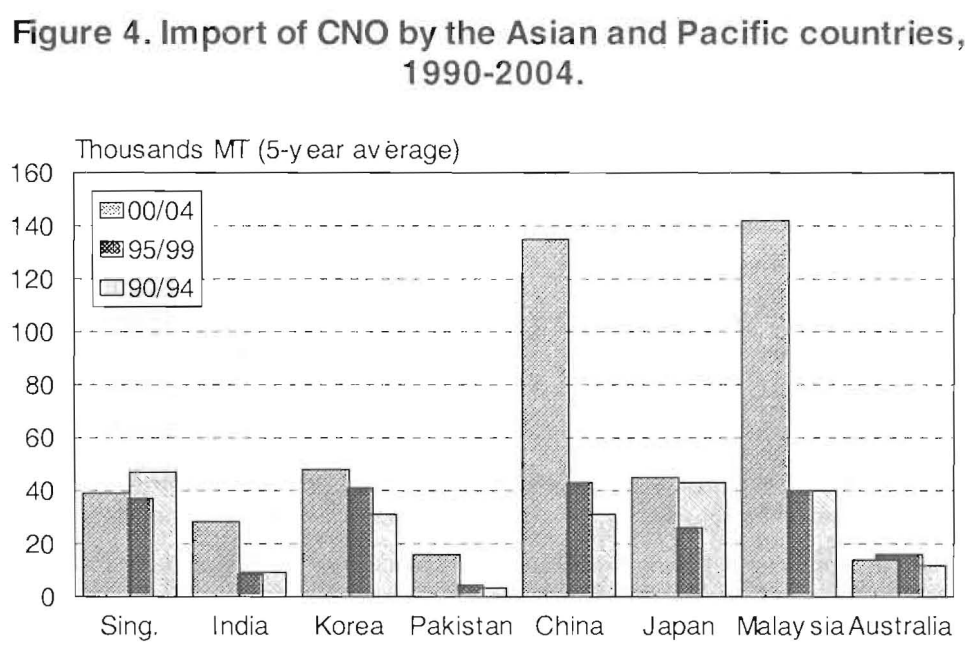


Table 16. CNO Producing Countries and Export Destinations

Coconut Product	Country Producing & Exporting	Market Destination by Regional and Country Wise			
		Europe	America	Asia & Pacific	Africa
Coconut Oil	Fiji	Germany	Canada	China	Algeria
	Indonesia	Italy	USA	India	South Africa
	Malaysia	Netherlands	Chile	Korea	Tunisia
	Philippines	Spain	Mexico	Malaysia	
	PNG	Sweden		Pakistan	
		Italy		Singapore	
		Ukraine		Turkey	
				Australia	
				Bangladesh	
				Burma	
				Hongkong	
				Kuwait	
				Nepal	
				Taiwan	
				Japan	
				Korea	
				New Zealand	
				Jordan	

8.2. Virgin coconut oil

Virgin coconut oil is defined as naturally processed, chemical-free and additive-free product from fresh coconut meat or its derivatives, which has not undergone any further chemical processing after extraction. Virgin coconut oil is emerging as ingredient in the preparation of natural personal care products. The organic Virgin coconut oil is enjoying increasing demand both in USA and European countries. The export figure of VCO originated from Philippines was up by 71.8% in 2004 over that of the previous year. The export jumped to 177 MT from 103 MT. The country's export earning from this commodity was US$ 553,470, which was 36.1% higher than that of the previous year at US$ 406,580. The average composite F.O.B. price in Manila was US$ 3,130/MT in 2004. The USA was almost an exclusive export destination (96% share) and seven other countries viz. Korea, Japan, Netherlands, Singapore, Malaysia, South Africa, and Australia shared the balance.

8.3. Coconut dietary fibre (Flour)

Coconut flour obtained as residue while making virgin coconut oil is being introduced as excellent sources of dietary fibre for health foods. This fibre contains proteins, nutrient elements and sugars that were present in fresh coconut meat.

8.5. Coconut milk and milk powder

During the past 10 years, the market for coconut milk and milk powder improved from 5,865 MT in 1993 to 12,572 MT in 2004. The Philippines, Sri Lanka, and Malaysia are among countries having significant contribution to the export. Other countries like India, Indonesia and Samoa also exported relatively lower quantities of the products to the world market.

The export of the two products in 2004 going to Asia and Pacific market was 3,194 MT, about 25.4% of the total. Other markets in Europe, America, and Africa held 50%, 20% and 4.6% shares, respectively. The global demand trend for the commodity was up by14.13% per annum; with the region wise increase in trend being 18.95% for Asia and Pacific countries, and 14.14% for Europe. However, a downward trend was found in African and American markets at respective rates of 28.09% and 8.20% per annum, over the last ten years.

Table 17. Coconut Milk/Milk Powder Producing and Export Destinations

Coconut Product	Country Producing & Exporting	Market Destination by Regional and Country Wise			
		Europe	America	Asia & Pacific	Africa
Coconut Oil	Philippines	Belgium	Canada	Australia	
	Sri Lanka	Denmark	Jamaica	Bahrain	
	Malaysia	France	Mexico	Brunei	
	Indonesia	Germany	USA	China	
	India	Italy		Hongkong	
	Samoa	Netherlands		Israel	
		Norway		Japan	
		United Kingdom		Korea	
				Malaysia	
				Oman	
				Jordan	
				Saudi Arabia	
				Singapore	
				Taiwan	

8.6. Coconut water

Tender nut water and matured coconut water can have a wider market as a health drink both at domestic and international level. The Philippines export amounted to 0.57 million liter in 2004, decrease by 8.9% over the export in 2003 at level of

0.62 million liter. The major export destination was America where USA and Canada together shared 42.2%, followed by Asia and Pacific countries accounting for 38.2% with Japan, Malaysia, and Taiwan as the main importers.

Thailand and India are also exporting tender/matured nut water in the form of ready to drink as well as concentrate form but the statistics are not available.

Figure 7. Philippines' export of coconut water by market destination, 1999-2004

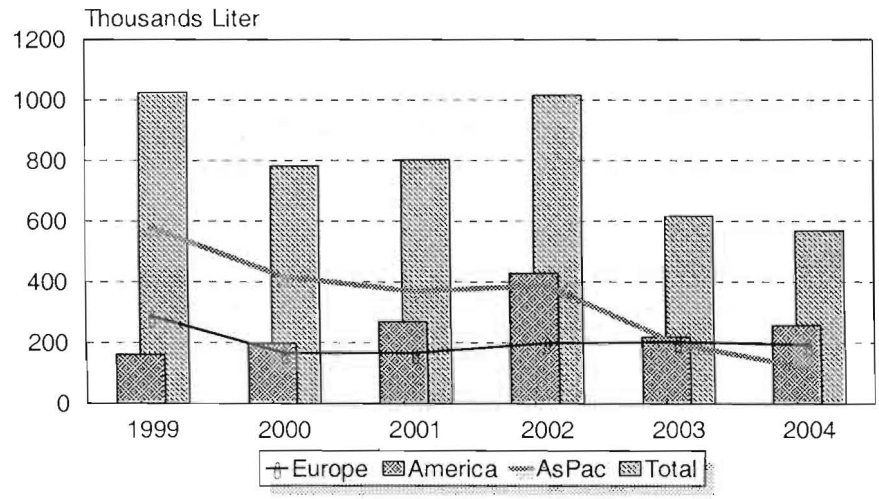


Table 18. Coconut Water/Nata de Coco Producing Countries and Markets

Coconut Product	Country Producing & Exporting	Market Destination by Regional and Country Wise			
		Europe	America	Asia & Pacific	Africa
Coconuts Water/ Nata de Coco	Philippines	Belgium	Canada	Bahrain	
	Indonesia	Netherlands	Mexico	Brunei	
	Thailand	United Kingdom	Puerto Rico	Hongkong	
	Malaysia		USA	Israel	
	India		Antigua	Japan	
				Korea	
				Lebanon	
				Malaysia	
				Singapore	
				Palau	
				Taiwan	
				United Emirate Arab	

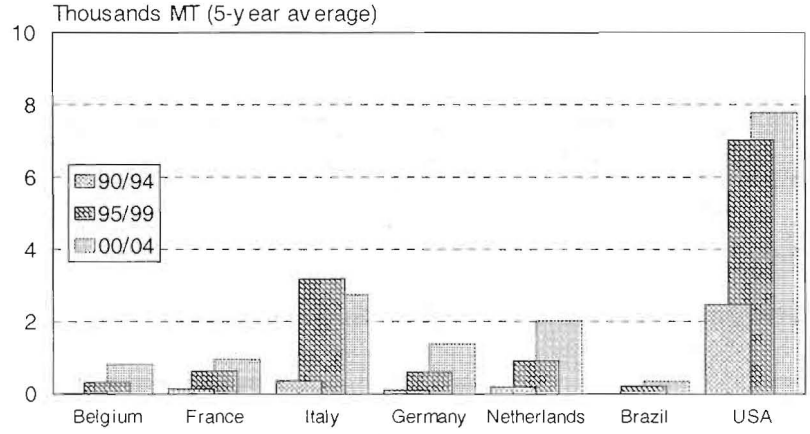
8.7. Activated carbon

The United States of America is a robust market for activated carbon made from coconut shell charcoal (CSC). The country's total import of activated carbon made from all types of raw materials including CSC was 52,786 MT as of October 2004 as opposed to 48,191 MT a year ago, an increase by 9.53%. For 2004, the import demand of the same commodity was around 63,400 MT as against 56,343 a year ago, an increase by 12.52%.

APCC's member countries such as Philippines, Sri Lanka, Indonesia, India, Thailand, and Malaysia are the important suppliers of the CSC activated carbon to the USA. Philippines sold 9,213 MT of the commodity to the USA in 2003. For the period January-October 2004, Philippines supply amounted to 7,057 MT, or it would be about 8,468 MT by the end of 2004. Sri Lanka exported the commodity mainly to the USA and the volume was as much as 6,294 MT for the same period, and it is estimated that the export for 2004 would be around 7,553 MT as opposed to 7,282 MT a year earlier, up slightly by 3.7%. Indonesia, India and Thailand met part of the import demand of the USA for the same period by exporting 899 MT, 1,511 MT, and 715 MT, respectively. Meanwhile the export from Malaysia was 571 MT. Altogether those countries satisfied about 32.3% (17,047MT) of the domestic demand of USA for January-October 2004.

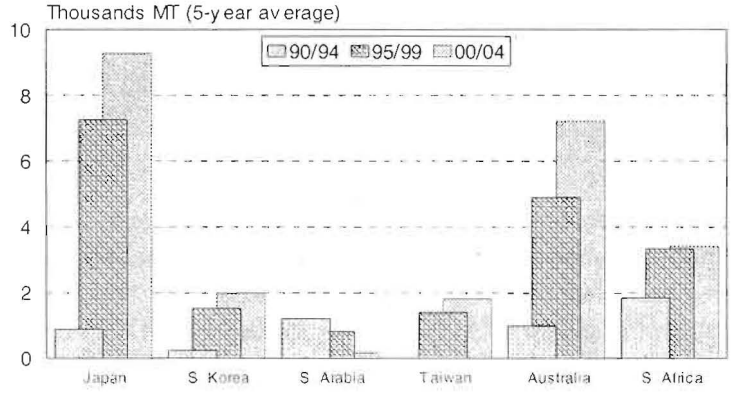
In 2003, China's export of activated carbon to USA amounted to 31,138 MT, and its share during the period of January-October 2004 was 30,695; it would be about 36,840 MT by the end of December 2004, an increase by 18.31% over previous year's figure. Export Price of the composite activated carbon varies between US$ 655/MT – US$1,170/MT at CIF the USA ports.

Figure 8. Import of Coconut Shell Activated Carbon by European and American countries, 1990-2004.



The average price in Philippines indicated the highest figure and was relatively stable over the period concerned as compared to prices in other countries. The import prices from Philippines ranged from US$1,432/MT to US$1,628/MT. The cheapest price of activated carbon was found in Indonesia and India. The prices prevailed between US$655/MT and US$1,136/MT. It is natural to have such price variation in the activated carbon market since it depends on the specification of the activated carbon sold. The prices of activated carbon imported from European countries were relatively higher as compared to the prices of the products from the APCC countries; this may be due to the different qualities and specifications of activated carbon. For instance, the import price from Canada ranged between US$ 8,000 and US$ 11,000 per ton; from Japan the prices were between US$ 4,000 and 10,400 per ton

Figure 9. Import of Coconut Shell Activated Carbon by Asia and Pacific, and African countries, 1990-2004.



The future demand of activated carbon in developed countries will be high, especially for water recycling in municipalities, manufacturing and electric utilities. The high demand is forecasted for pharmaceuticals, where it will be driven by favorable advancements in production of nutriceuticals, vitamins and pharmaceuticals. The use of activated carbon in air filters will also increase.

Table 19. Activated Carbon/Charcoal Producing Countries and Market Destinations

Coconut Product	Country Producing & Exporting	Market Destination by Regional and Country Wise			
		Europe	America	Asia & Pacific	Africa
Coconuts Water/ Nata de Coco	Philippines	Belgium	Canada	China	South Africa
	Sri Lanka	Switzerland	USA	Hongkong	
	India	France		Japan	
	Indonesia	Netherlands		Korea	
	Thailand	Germany		Saudi Arabia	
				Singapore	
				Taiwan	

9. Global Export of Coir

India and Sri Lanka are the main exporting countries of coir products to the world market. India contributed about 32.7% of world total export in 1995, and its share was a little high at 33.7% in 2003. Mean while Sri Lanka's share for the same period was 39.2% in 1995, but declined to 24.3% in 2003. The two countries together accounted for 66.4% share in 1995 of world export, but it was only 63.5% in 2003. There is a small shift of export contribution from the two countries to other countries such as Philippines, Indonesia, Thailand, Malaysia and others, as much as 2.6% share. Consequently total export share of these countries (Philippines, Indonesia, Thailand, Malaysia and others) increased from 4.8% in 1995 to 17.5% in 2003.

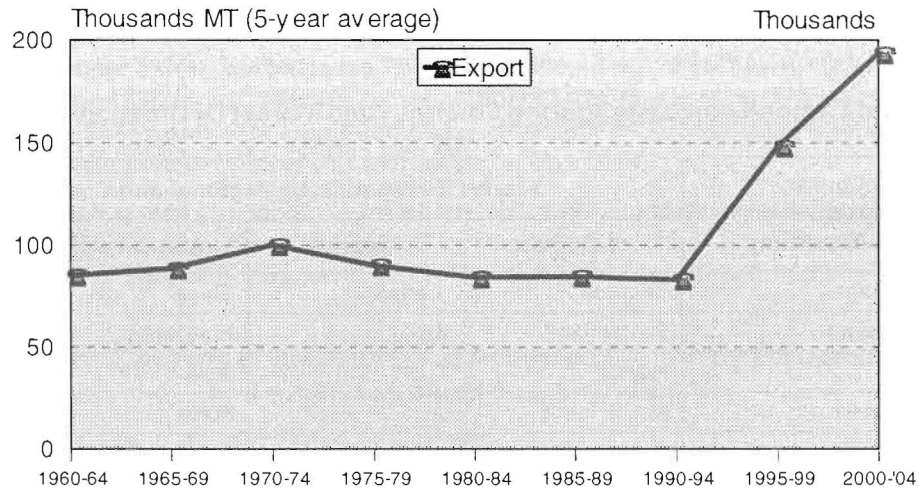
Table 20. Exports of Coir Fiber for Major Asia Countries, 1994 – 2003 (MT)

Year	India	Indonesia	Malaysia	Philippines	Sri Lanka	Thailand	Total
1994	42,738	460	259	549	60,765	-	106,762
1995	48,383	704	1,108	1,055	57,962	4,257	115,464
1996	44,660	866	873	1,696	52,402	3,318	105,811
1997	46,223	595	2,531	2,095	51,975	4,793	110,209
1998	51,139	30	2,582	3,624	59,106	5,105	120,584
1999	41,163	59	2,630	3,949	50,757	6,898	107,455
2000	44,473	102	2,977	3,630	52,430	7,255	112,867
2001	49,365	191	2,187	3,066	52,684	12,257	121,751
2002	49,264	112	2,778	2,235	60,944	18,628	135,963
2003	70,550	150	3,094	2,933	50,952	30,789	160,471
2004	78,285	250	3,100	3,000	62,033	44,625	191,293

The global export of coir over a period of 10 years for major Asian countries is given in table 21, and the total world export trend is presented in figure 10.

Global Coir Export Trend, 1960-64 to 2000-04, as shown in figure 10 indicates that after 1990 – 1994, the export had risen sharply.

Figure 10. World Coir Export (MT) , 1960-2004



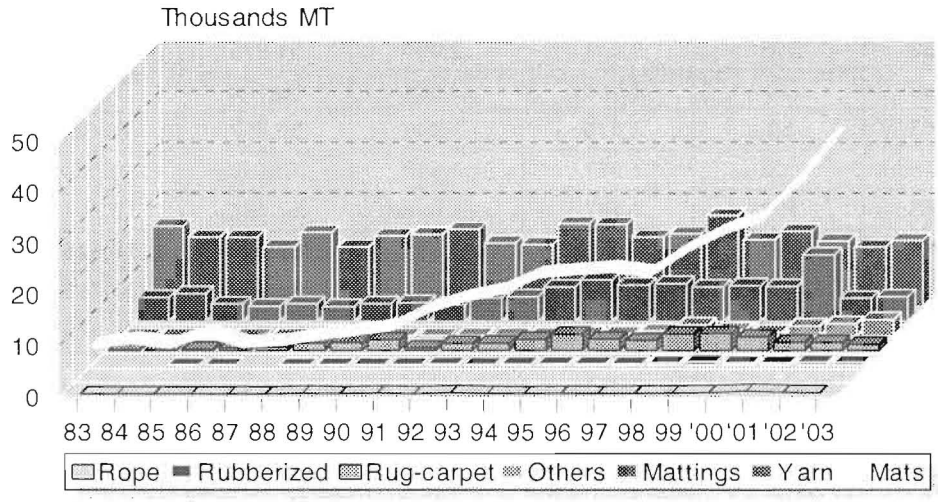
9.1. Indian export

India, the major coir products manufacturing country, is exporting largely value added products like yarn, mats, matting, rug-carpet, rubberised coir, ropes etc. The details are given in Fig. 11 and table 21.

Coir mats, matting, and yarn are the main export products from India. The export of these commodities showed upward trend, at least for the last 22 years. The 5-year average export volume of coir mats significantly increased to 28,952 MT per annum in 1998-2002 from the level of 7,238 MT in 1983-1987, up by 3 folds. Meanwhile the export quantity for 2003 was much higher at 47,643 MT. Export of coir matting was also up significantly, which jumped up from 3,946 MT in 1983-1987 to 7,603 MT in 1998-2002, increase by 92.7%. The export volume of the commodity for 2003 was 4,786 MT.

Export trend of coir yarn to the world market from India was relatively unchanged during the period concerned, and a small growth rate of 0.63% per annum was noted. The trend of rug-carpet has shown an increase at the rate of 15.3% per annum for the period 1983-2003. The export volume changed from 297 MT (5-year average) in 1983-1987 to 2,429 MT per annum in 1998-2003. Meanwhile the export for 2003 was only at 1,203 MT. Other products such as rope, rubberized coir and other types of coir showed an upward trend in export.

Figure 11. India Export of Coir Products, 1983-2003



21. India Export of Coir Products, 1983-2003 (MT)

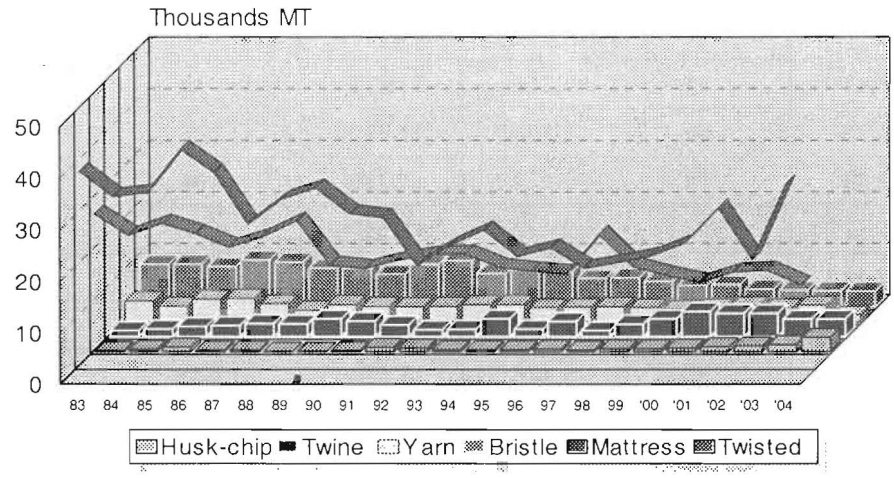
	Mats	Rope	Mattings	Yarn	Rug-carpet	Rubberized	Others Coir
1983	6,578	44	4,612	15,746	67	-	18
1984	7,477	21	5,366	13,652	33	-	12
1985	6,582	32	3,394	13,612	227	4	16
1986	8,830	54	2,924	11,706	494	10	12
1987	6,725	45	3,432	14,537	666	-	28
Average	**7,238**	**39**	**3,946**	**13,851**	**297**	**3**	**17**
1988	7,126	31	2,799	11,689	1,396	2	27
1989	8,199	145	3,428	13,853	1,575	22	45
1990	9,074	68	3,583	14,127	2,020	19	41
1991	9,997	199	3,234	15,141	455	24	27
1992	13,548	58	4,576	12,486	1,311	116	111
Average	**9,589**	**100**	**3,524**	**13,459**	**1,351**	**37**	**50**
1993	15,709	311	4,792	12,161	1,352	102	89
1994	17,161	119	6,725	16,276	2,108	174	175
1995	20,375	73	8,145	16,132	3,125	218	315
1996	20,962	108	7,136	13,631	2,190	209	424
1997	21,450	87	7,392	14,238	1,895	227	934
Average	**19,131**	**140**	**6,838**	**14,488**	**2,134**	**186**	**387**
1998	20,560	183	6,769	17,845	3,183	431	2,168
1999	25,344	243	6,932	13,095	3,285	650	1,148
2000	28,944	298	6,833	14,817	2,603	402	694
2001	31,376	518	12,943	12,863	1,558	410	1,900
2002	38,542	357	4,536	11,698	1,517	544	2,362
Average	**28,953**	**320**	**7,603**	**14,064**	**2,429**	**487**	**1,654**
2003	47,643	310	4,786	12,948	1,203	499	3,161
2004	57,202	283	4,260	11,311	1,931	451	2,844

9.1. Sri Lankan export

Sri Lanka primarily exports fibre, twine, yarn, mattresses, coir pith and husk chip. Among these products, only coir twine and husk chip had exhibited positive export trends for the period 1983-2004. The two products recorded the export growth at 3.95% per annum for twine and 9.5% per annum for husk chip. For twine, the average export volume of 1,879 MT in 1983-1987 increased to 4,026 MT in 1998-2002. And for the last two years the export figures remained stable at the level of 3,446 MT and 3,439 MT in 2003 and 2004, respectively (Fig 12 and table 22).

For the husk chip, the export quantity increased significantly to the 5-year average of 756 MT for 1998-2002 from only 393 MT for 1983-1987. During 2003-2004, the export was 1,334 MT and 2,718 MT, respectively.

Figure 12. Sri Lanka Export of Coir Products, 1983 -2004



Bristle fibre was facing a downward trend in export at the rate of 5.1% pr annum for period 1983-2004, where the export figure dropped to 4,026 MT in 1998-2003 from 8,481 MT in 1983-1987. Meanwhile for the last two years, the export figures were still under pressure. The negative trend in export also occurred for the rest of coir products: coir yarn decreased at the rate of 2.24%, mattress 2.03%, and twisted fiber2.3%, annually for 1983-2004.

Table 22. Sri Lanka Export of Coir products, 1983-2004 (MT)

	Bristle	Twine	Yarn	Husk-chip	Mattress	Twisted
1983	8,298	1,163	4,082	149	40,882	29,690
1984	8,381	1,512	3,103	391	35,972	25,583
1985	7,822	1,981	4,392	838	36,734	27,870
1986	9,180	2,181	4,600	294	45,150	25,874
1987	8,722	2,558	3,518	294	40,587	23,255
Average	**8,481**	**1,879**	**3,939**	**393**	**39,865**	**6,454**
1988	7,491	2,474	2,275	58	30,634	25,312
1989	7,435	3,495	3,380	58	35,562	28,362
1990	6,397	3,096	3,054	194	37,666	19,737
1991	8,276	2,319	2,958	820	32,652	19,162
1992	8,892	1,396	3,035	666	31,930	20,797
Average	**7,698**	**2,556**	**2,940**	**359**	**33,689**	**2,674**
1993	6,558	1,426	3,305	350	22,633	21,758
1994	7,278	3,497	3,414	350	26,631	21,939
1995	6,835	1,496	2,797	353	29,482	19,347
1996	5,515	3,019	2,845	515	24,384	18,635
1997	5,696	1,174	2,942	286	26,069	18,086
Average	**6,376**	**2,122**	**3,061**	**371**	**25,840**	**19,953**
1998	5,014	2,468	2,778	557	22,083	25,761
1999	4,081	3,486	2,485	528	23,202	19,512
2000	4,325	4,966	2,768	692	24,508	17,854
2001	3,457	4,586	3,189	925	27,016	16,437
2002	3,255	4,586	2,798	1,077	33,802	18,453
Average	**4,026**	**4,018**	**2,804**	**756**	**26,122**	**19,603**
2003	3,136	3,446	3,227	1,334	23,793	18,771
2004	3,014	3,439	1,357	2,718	38,355	15,868

9.3. Export of coir dust and husk chips

The available information on the export of coir pith and chips is given in table 23. Sri Lanka is exporting large quantities of coir chips and husk in the form of grow bags. In the horticulture crops, these are very much used in the European countries. There will be great demand for the same.

Table 23. Export of Coir Dust and Husk Chip, 1994 – 2004 (MT)

Year	Product Name			
	Coir Dust / Pith			Husk Chip
	India	Philippines	Sri Lanka	Sri Lanka
1994	-	80	7,210	-
1995	-	138	26,745	353
1996	-	766	18,377	515
1997	-	1,094	53,585	286
1998	-	1,806	50,425	557
1999	-	2,460	95,825	528
2000	6,501	2,121	74,866	692
2001	9,927	1,393	78,500	925
2002	13,725	1,348	79,891	1,077
2003	21,064	2,037	91,059	1,334
2004	38,304	3,000	87,245	2,709

Despite the declining trend in the export of most coir products from Sri Lanka, the country has significantly gained from exporting coir dust, where the export volume was considerably up from only 7,210 MT in 1994 to 87,245 MT in 2004 with annual growth rate of 23.18%. Philippines also got advantage from exporting the same commodity where the export volume of only 80MT in 1994 shifted up to 3,000 MT in 2004, an increase by 32.8% per annum during that period.

The export earning from coir products is US$ 77.469 million for India and that of Sri Lanka it is US$ 30.233 million.

10. Import Demand

The import demand of coconut products from major coconut producing countries is given in Table 24a, b, and c. This table gives the choice of products which different countries import. It will help to identify such countries and to promote the products and also identify the emerging market.

Table 24c
Import Demand of Coconut Products from Main Producing Countries for Last 5-years (2000-2004)

Products/ Exporters	Volume (MT)	Europe (%)	America (%)	Aspac (%)	Africa (%)
Coir yarn					
India	12,727	69.97	16.18	13.60	nil
Sri Lanka	1,067	9.90	23.40	66.69	nil
Coir Matting					
India	7,508	42.30	16.79	40.91	nil
Coir Mats					
India	30,570	30.68	63.67	5.65	nil

Table 24b
Import Demand of Coconut Products from Main Producing Countries for Last 5-years (2000-2004)

Products/ Exporters	Volume (MT)	Europe (%)	America (%)	Aspac (%)	Africa (%)
Coco Milk					
Sri Lanka	2,972	56.50	33.74	7.03	nil
Philippines	1,762	5.44	45.03	44.66	nil
Activated Carbon					
Sri Lanka	16,312	18.27	43.25	41.56	17.38
Malaysia	14,311	30.84	6.20	58.74	5.01
Indonesia	10,240	27.04	8.08	64.82	0.2
Thailand	4,364	9.86	46.33	42.73	1.42
C.S. Charcoal					
Philippines	21,737	0.64	0.27	99.09	nil
Indonesia	24,474	4.09	0.21	95.6	nil
Sri Lanka	5,011	83.29	2.10	5.03	nil
Mattress Fiber					
Sri Lanka	29,434	47.61	7.92	44.47	nil
Bristle					
Sri Lanka	4,443	41.63	9.29	48.13	nil

Table 24a
Import Demand of Coconut Products from Main Producing Countries for Last 5-years (2000 - 2004)

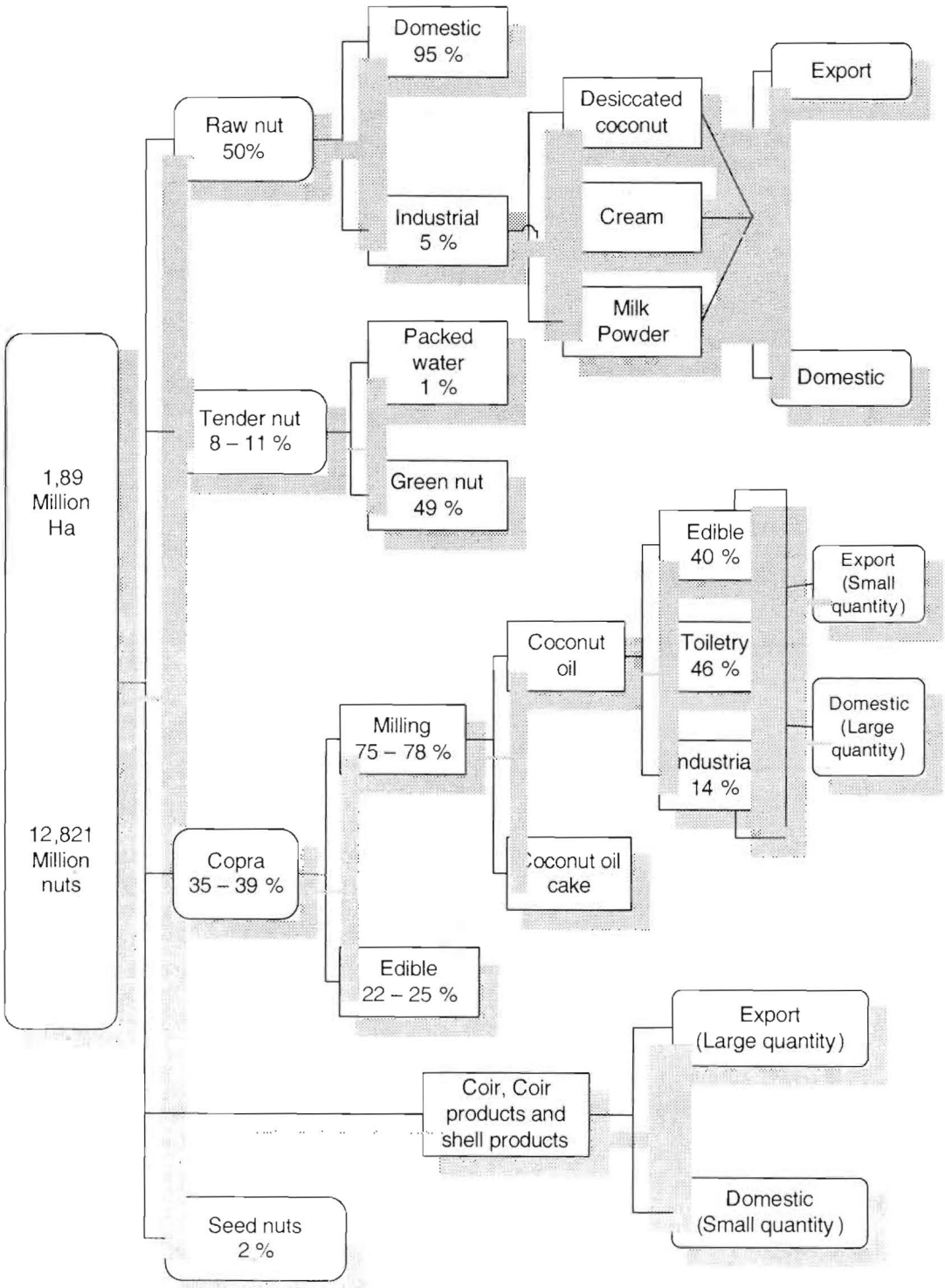
Products/ Exporters	Volume (MT)	Europe (%)	America (%)	Aspac (%)	Africa (%)
Fresh Nut					
Sri Lanka	38,698	14.77	8.12	76.97	8.53
Philippines	5,356	8.14	3.58	88.56	0.4
Thailand	8,842	2.2	29.66	58.22	nil
CNO					
Philippines	1,161,765	49.2	35.34	23.44	0.82
Indonesia	478,535	46.76	10.85	42.21	0.93
Malaysia	92,633	12.24	5.85	88.31	nil
Desiccated coconut					
Philippines	94,883	13.35	45.24	18.55	3.28
Sri Lanka	51,134	35.76	5.25	35.94	53.83
Indonesia	46,892	11.31	3.68	74.37	10.65
Malaysia	84,367	21.93	2.88	68.98	7.22
Coco Milk Powder					
Sri Lanka	3,818	32.27	4.22	42.28	nil
Malaysia	2,324	25.42	4.72	66.86	nil
Philippines	5,817	62.22	3.86	34.72	nil

11. Coconut Consumption Pattern

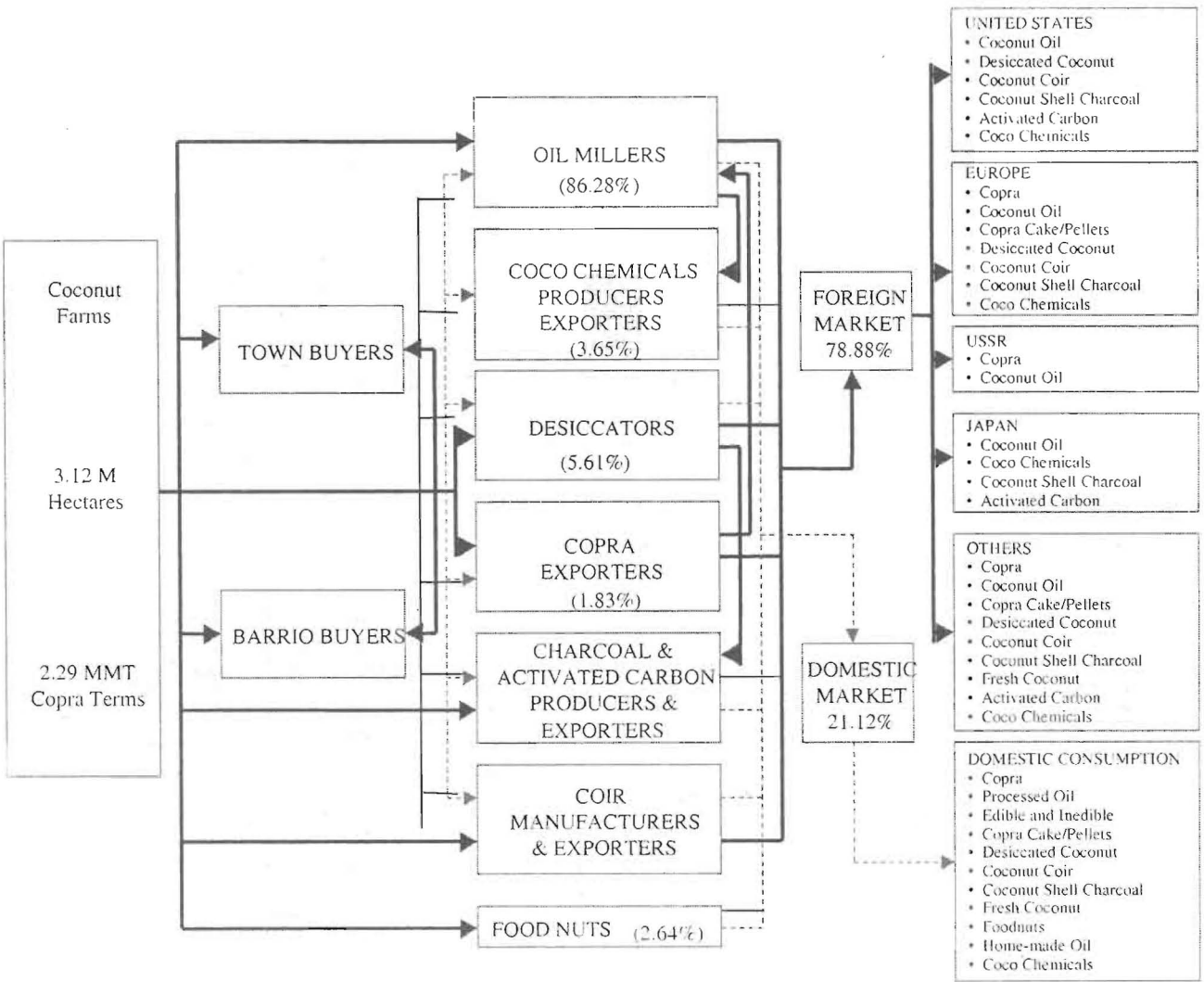
The consumption and utilization pattern of coconut in India, Philippines and Sri Lanka are given in the following three flow charts.

11.1. Consumption and Utilization Pattern of Coconut in India

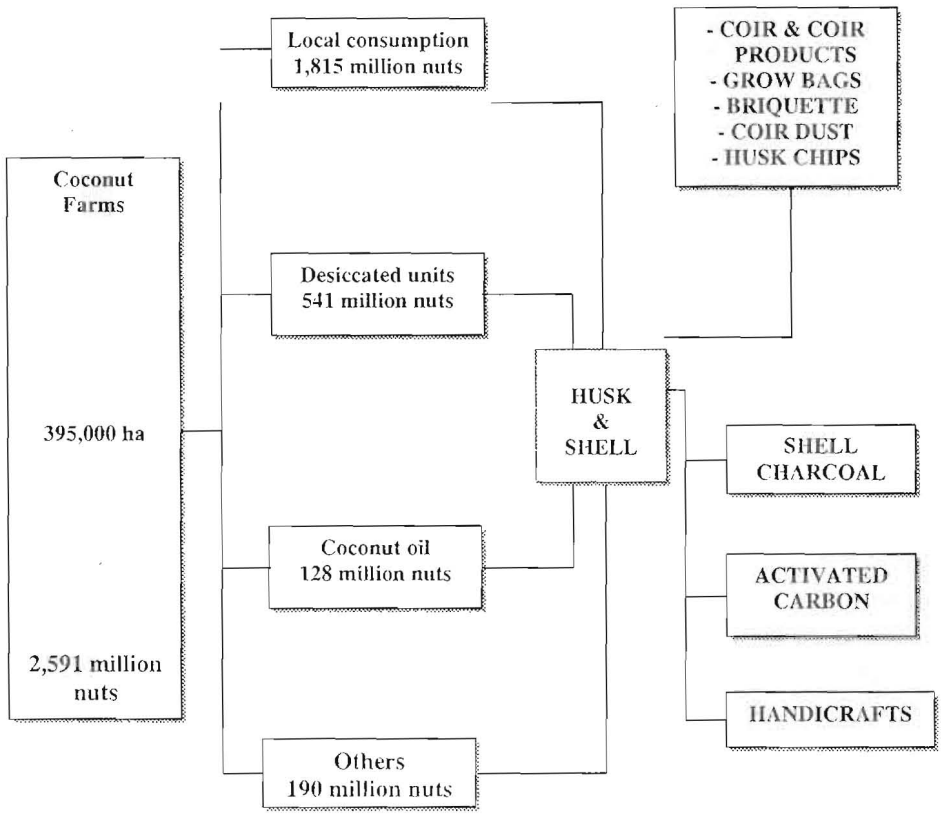
Consumption and utilization pattern of coconut in India



11.2. Consumption and Utilization Pattern of Coconut in Philippines



11.3. Consumption and utilization pattern of coconut in Sri Lanka (2003)Desiccated units 541 million nuts



In India, domestic market is more due to the high population; the domestic needs are going on increasing and resulting in imports also. In the Philippines, the export market is more, as they convert coconut into as many value added products as possible.

Sri Lanka with 395,000 ha produced 2,591 million nuts during 2004 of which 1,815 million nuts were used for local consumption, 541 million nuts for desiccated coconut, 128 million nuts for CNO and 190 million nuts for other purposes.

12. Trading and Marketing of Products

12.1. Coconut and lauric oil market

World trade in oils and fats has increased from 3.8 million MT in 1960 to 47.02 million MT in 2004, which is almost ten times more. While the palm oil and soybean oil made tremendous increase, coconut oil made only 13.21% increase annually from 0.27 million MT to 1.84 million MT during the above period. Despite its low quantity in the oils and fats trade CNO has a niche market in its lauric fatty acids and medium chain triglycerides (MCT s) category for which there is no alternative source except Palm Kernel Oil (PKO). These are having many industrial uses like detergents and cosmetics and

edible uses like neutriceuticals and pharmaceuticals. Large portion of lauric oil is used for oleochemical industry for production of wide range of surface active or surfactants including fatty acids and fatty alcohols. CNO is a preferred source of caprylic and caproic acids due to its higher c8 – c10 acids. As an antiviral, antibacterial and antiprotozoal monoglyceride, monolaurin may therefore represent, the new health lipid for the future especially in the fight against HIV/AIDS.

12.2. International Trade

The share of the importing countries for a period of 13 years from 1989 to 2002 shows that the trade in coconut products is dominated by CNO with Philippines contributing 67.5% followed by Indonesia 19%. More than 80 countries are importing, with US and EU countries being the traditionally large markets. Copra meal market is concentrated in EU countries and South Korea is an emerging market. Asia and Pacific Countries consume major quantity of fresh nuts while European and American markets consume bulk of coconut oil. The food products like coconut milk, milk powder and desiccated coconut have a wider market in all countries including European, American, Asian and Pacific.

World export of desiccated coconut (DCN) declined in 2001 by 13% mainly due to weak performance of Sri Lanka. More than 60 countries are importing DCN and almost 60% is shipped to EU and US. The market is anticipated to remain stable. Similarly, for shell charcoal and activated charcoal, Korea and Japan are the major markets. However, the European and American markets are also growing. Emerging applications as alternative to petro-based carbons for industrial and environmental purposes like water desalinisation, waste water treatment, air purification, gold recovery purification, wine processing and even specialized black coating for stealth bombers are opening new possibility for shell products.

The pattern in the international trade for coir fibre products has remained unchanged with India and Sri Lanka dominating the supply side. Geotextile, coir ply composites, coir pith, etc. are having wider application in the fields of soil-water conservation, erosion control and growing horticultural plants. Coir ply composites can be used as crates, collapsible and re-useable containers, building materials, etc. Coir yarns mixed with other natural yarns and synthetics can be used for making high-tech and high value products like safety belts.

12.3. Domestic Trade

The domestic consumption at the origin is a three way process i.e. as kernel gratings and milk extract for culinary and confectionery preparations, as oil for edible and non-edible applications and young coconut as natural beverage. Sri Lanka is the highest per capita consuming country (110 nuts/year). Presently, the Asia and Pacific countries growing coconut have the capacity to absorb 60-65% of the domestic production. These countries with 4 billion population and with fast growing economic development will be emerging as the consuming countries for not only coconut but also for many products. India consumes almost its entire production except a small quantity for export. India, Sri Lanka, Thailand and Vietnam are now producing coconut largely for domestic market and with increasing population and purchasing power, the upward trend in domestic consumption of coconut products is likely to continue in the future.

13. Prices of Coconut Products

The price trend of coconut oil is always fluctuating but the price of various coconut products given in Table 25 shows that the value added products like coconut milk, powder, cream, desiccated coconut, etc. have reasonably good price in comparison with that of coconut oil. The other value added by products like coconut water, coconut water concentrate, vinegar, charcoal, activated carbon, coir, coir pith, coir based products also have higher price and good market demand.

A special mention has to be made regarding the coconut oil price in four major coconut oil producing countries. The data shown in Table 26 reveal that compared to global price, Indian price is almost more than double followed by Sri Lankan price. How long it is possible to maintain the high price under the situation of trade liberalisation and globalisation? This point needs careful consideration.

Table 25
ANNUAL AVERAGE PRICES OF SELECTED COCONUT PRODUCTS (US$/MT)

	1999	2000	2001	2002	2003	2004	2005
Copra	452	305	252	286	330	439	450
Coconut Oil	738	450	318	421	467	570	880
Desiccated Coconut	1,149	791	781	878	675	887	904
Fatty Alcohol	1,146	1,082	1,130	1,138	1,125	1128	1125
Fatty Acids	895	833	593	830	840	830	830
Coco Milk (Liquid)	1,436	1,361	1,218	1,278	1,224	796	800
Coco Milk (Powder)	3,156	3,097	2,512	2,516	2,770	2,796	2800
Mattress Fiber	188	198	164	156	219	163	165
Bristle Fiber	577	528	490	528	470	452	460
Coir Rope	624	598	629	648	767	767	770
Rub. Fiber	1,722	1,528	1,838	1,815	1,667	1,845	1845
Coir Dust	205	195	189	186	171	198	165
Shell Charcoal	253	258	220	184	241	257	265
Act. Carbon	1,033	994	933	917	943	832	845
Coco Water	775	870	824	742	750	785	800
Nata de Coco	1,207	1,114	1,114	947	935	935	940
Coco Vinegar	833	779	768	735	780	785	780

Table 26
COCONUT OIL PRICES IN 4 MAJOR COCONUT PRODUCING COUNTRIES (US$/MT)

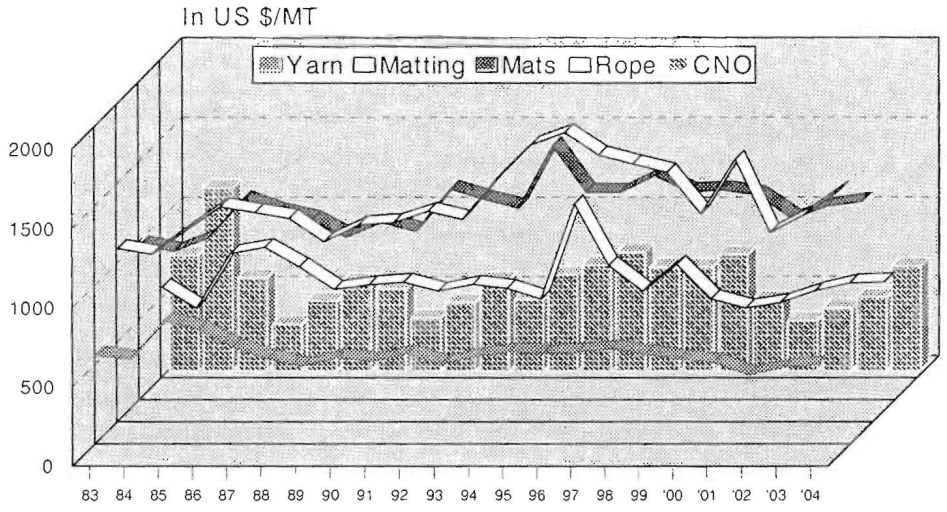
	1998	1999	2000	2001	2002	2003	2004	As of May 2005
India	1,067	1,265	762	649	926	1,201	1,433	1,424
Indonesia	474	628	380	267	397	424	628	579
Philippines	637	775	415	292	418	421	683	641
Sri Lanka	1,030	945	616	680	869	668	866	1,068

14. Price of Coir and Its Products

The price trend of coir products varies across the product types. In India as high-value coir product like matting fibre showed price variation between US $1,157/MT and US $1,923/MT for the period 1983-2004, the average price was US $1,485/MT. The price was stable and firmed up with upward trend at the rate of 1.2%, showing an instability index of 14.7%. Mats fibre is also having upward trend with the average price at level of US $1,313/MT and its instability index lesser than that of matting at 11.7% meaning that the price fluctuation is less as compared to the matting price.

Two commodities viz coir yarn and rope indicated downward trend during the period of 1983-2004 and prices were US $658/MT and US $714/MT, respectively. The price of yarn fibre is firmer as compared to that of rope. This is indicated by its instability index of 11.36% as against 20.89% for rope As compared to the prices of CNO in the world market, all of the coir products exported from India, especially yarn, mats, matting, and rope, were having premium price (Fig. 13).

Figure 13. Export Prices of Coir Products in India , 1983-2004

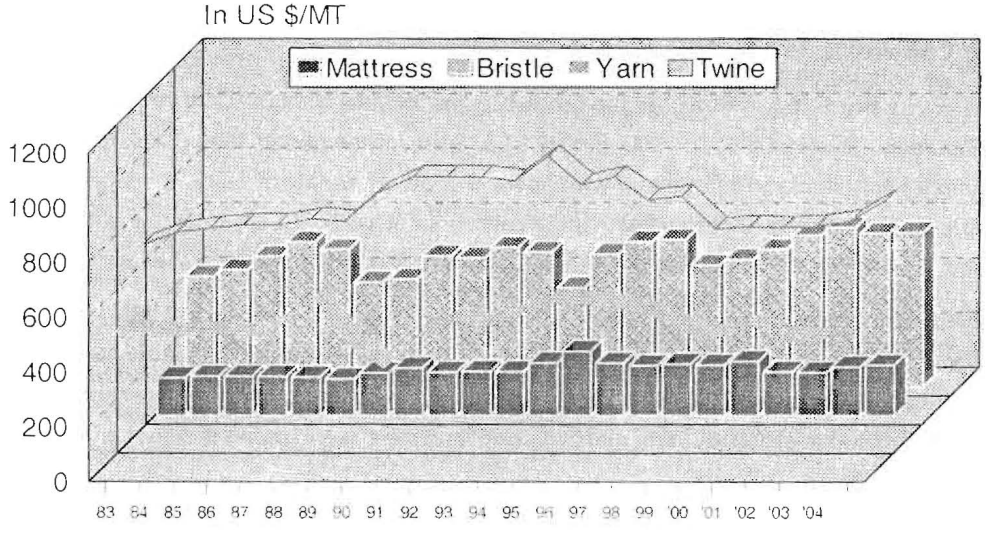


Since the import demand of coir products in the world market was relatively stable the main cause of price fluctuation was the condition of export supply.

In the case of Sri Lanka, twine fibre is regarded as high-value coir product. The price of this commodity was the highest as compared to the other coir products exported. During the period 1983-2004, the price of twine fibre varied from US $775/MT to US $1,053/MT with lower instability index at 9.77%. The average price was US $877/MT. During the period 1991-1999, the export price of twine was relatively higher at level of US $943/MT as compared to the average price of US$877/MT for the period 1983 – 2004 (Fig. 14).

The reason was low export supply from the country while the import demand was unchanged. Other products like bristle, mattress, and yarn have firm price at levels of US$ 532/MT, US$ 169/MT, and US$ 485/MT, respectively. All prices were experiencing positive trend at the rate of 0.2% for bristle, 1.5% for mattress, and 1.2% for yarn, per annum. Meanwhile their instability indices were 11.13% for bristle, 14.7% for mattress, and 12.8% for yarn.

Figure 14. Export Prices of Coir Products in Sri Lanka , 1983-2004



Export prices of coir dust varied between US$ 168.6/MT and US$ 211.8/MT with the average price of US$ 186.2/MT. The price trend was up at rate of 2.1% per annum for 2000-2004. The husk chip's price indicated a good sign where average price was US$ 286.6 / MT and it varied between US$ 222 and US$ 327 per metric ton. The price tends to increase at rate of 6.2% per annum for 2000-2004.

15. Import Trend in Coir Products

Total demand of coir products in the world market is increasing at a low rate as indicated by low growth rate of export volume from India and Sri Lanka for the last 22 years. There is no dependable data to analyse the import demand of coir products from importing countries. The import demand was only estimated by using the export supply mainly from India and Sri Lanka. Since the global export of coir products as a whole increases at a low rate, which is only 0.83% per annum for the last 22 years, the import demand of the same would be most likely the same. However, the import demand for each commodity by country wise is not necessarily low as well.

Several countries such as China and Japan in Asia, and Belgium and Netherlands in Europe show progressive import demand of coir products. Germany and United Kingdom used to have a high import demand of coir fibre but in the last five years the import demand for the product showed a decreasing trend. As a whole, the total import demand for EU countries remains stable at the rate of 1.0% per annum. The performance of import demand of coir fibre and coir yarn by country wise is presented in Fig. 15 and 16.

Figure 15. Main Importer of Coir Yarn, 1990-2004

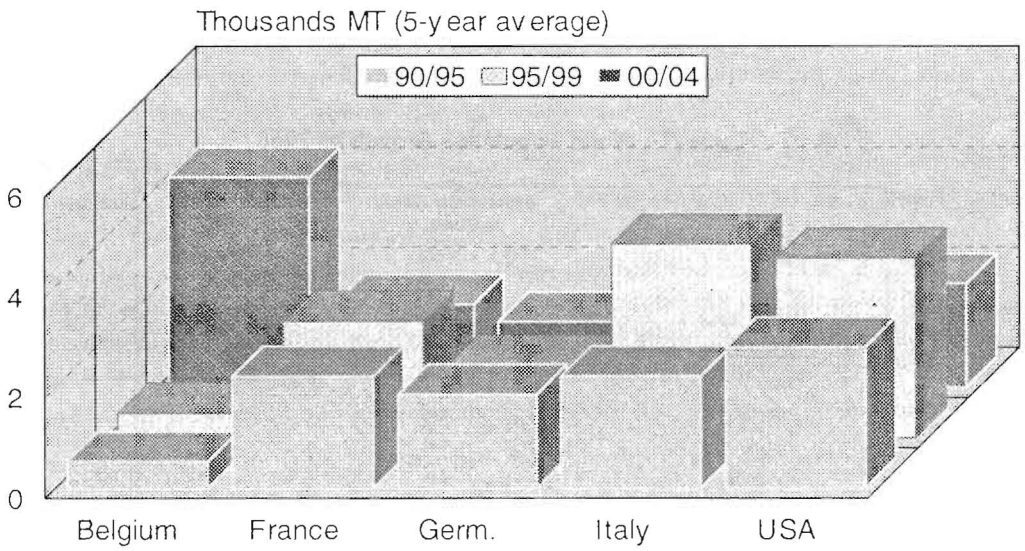
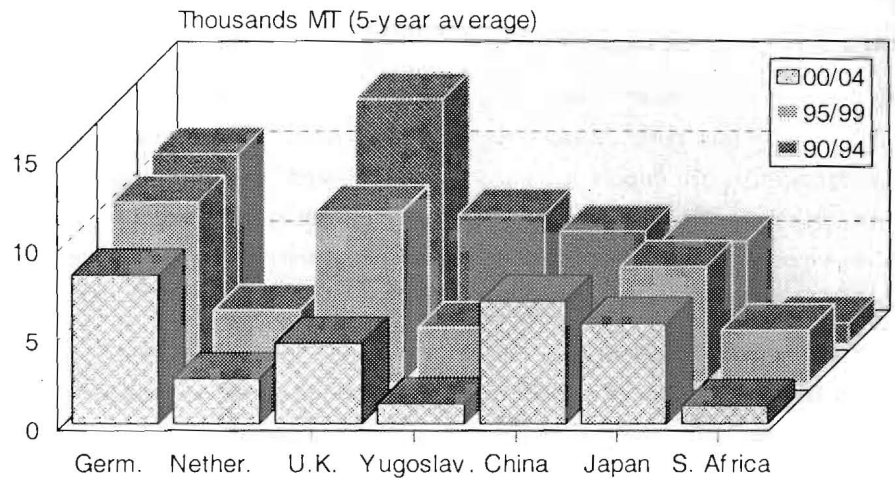


Figure 16. Main Importer of Coir Fiber, 1990-2004



16. Opportunities for International Markets

16.1. Demand projection

The global demand for coconuts and coconut products has increased considerably. As world population is expected to grow steadily the consumption of coconut products including coconut oil will increase (Table 27).

Table 27. World Population Growth by 2050

Rank	Country	Population in 2001 (millions)	Population in 2050 (millions)
1	China	1,273	1,431
2	India	1,033	1,363
3	United States	287	346
4	Indonesia	206	272
5	Brazil	172	252
6	Pakistan	145	219
7	Russia	144	204
8	Bangladesh	134	181
9	Japan	127	137
10	Nigeria	127	131
11	Mexico	100	121
12	Germany	82	118
13	Vietnam	79	108
14	Philippines	77	106
15	Egypt	70	104

Growth in income, particularly in developing countries is anticipated to lead to an increase in demand. Global Gross Domestic Product (GDP) has increased by nearly 87% over the past 25 years and is predicated to continue rising by 40% by 2010 despite threats of downturn in global economy. The per capita GDP is expected to rise by more than 20% and as per capita income increases so will per capita consumption. At an annual growth rate of 1.3% world population, the challenge is to produce more coconut, at the very least, at an average of 1.3% production growth annually.

It has been assessed that 9% increase per annum for desiccated coconut, 5% increase per annum for fresh coconuts, 45% increase for coconut milk, 45% for activated carbon, eight fold increase for coir products and 100% increase for coir dust will take place during the next 5 – 10 years. Coconut and its products for diverse uses such as functional foods, nutriceutical, pharmaceutical and cosmetics and also as bio fuel are expected to enjoy greater market demand in the years to come. The use of medium chain fatty acids and the lauric acid in producing antiviral, antifungal, antiprotozoal, and anti microbial medicines, particularly use of lauricidin in the cure of HIV / AIDS virus will go a long way in creating market potential for coconut oil and virgin coconut oil. The tender nut water as a health beverage has unlimited market potential. The world demand for coir pith is growing at the rate of 15% per annum.

16.2. Developing regional marketing

Because of geographical and climatic limitations for growing coconut, the bulk of region's needs has to be met through imports from the producing countries by the middle/North Africa, 22 nations of the league of Arab States. In Asian and Pacific countries, as population grows, demand for the food products will also increase and so also coconut. Asia and Pacific being the largest producer of coconut, have to meet the regional demand for various coconut-based products. The existing regional markets can be strengthened and utilized till such time the country concerned can develop its own market.

17. Emerging New Applications

17.1. Organic foods

Till recently, organic foods were considered as luxury, high value products with price premium over conventional foods. Health conscious people in the Europe and United States of America and in other countries as well are conscious of the quality of their food and prefer those free from pesticides, chemicals, etc. Organic foods are niche products, which come from organic farms, certified by state registered certification bodies.

The largest organic markets in terms of revenue distribution are EU (53% market share) and North America (40%), the growth rate being 20 – 25% per annum. In United States, the growth rate for the sale of organic products is 17% as compared to 3% growth for food industry as a whole. Organic products account for 2.3% of total food sales in US. World consumption of organic oil is 95,000 t, which is only 0.1% of the total oil consumption. EU alone consumes 53,500 t. Compared to any other oils, organic coconut oil, particularly organic virgin coconut oil, can easily be produced since the bulk of coconut is raised without the application of inorganic fertilizer and pesticide. The guidelines for producing organic coconut has also been developed by APCC and circulated to member countries. Now, the UNESCAP is also working out to simplify the procedure to produce organic foods by small growers as a way of poverty reduction.

17.2. Virgin coconut oil

Now, virgin coconut oil (VCNO) processed from kernel gratings and coconut milk with very low FFA is gaining popularity as healthy oil, nutritive oil and has wider use in pharmaceuticals, nutriceuticals and cosmoceuticals. Natural and organic virgin coconut oil enjoys a niche market with premium prices. Large number of small-scale units of VCNO has been set up in many countries using different methods. It is all the more necessary to strictly follow the quality standards. This market seems to be fast growing. Export quantity of VCO from Philippines increased significantly over time. In 2001, the total export of the country was only 1.8 MT to USA and Hawaii. The export jumped to 176.6 MT in 2004 to countries such as USA, Korea, Japan, Netherlands, Singapore, Malaysia, South Africa, and Australia. For the first quarter of the year 2005, the Philippines have exported 159.32 MT of VCNO. Countries in Pacific region like Fiji and Samoa are also exporting VCNO mostly to Australia. Indonesia is also producing VCNO and the domestic demand for this commodity is booming now

There are about 200 small and medium VCNO manufactures in the country, and most of the production goes to the domestic market and some being exported to Malaysia and Singapore.

The export value of VCNO of Philippines was about US $553,469 in 2004, which was significantly up from only US $19,810 in 2001. The export value for period January-March in 2005 was US $504,377, which was 24.05%-increase over the export value of the whole year of 2003, and about 91.1% of the total export value last year. It is estimated that the export value for 2005 would be US $2.0 million.

17.3. Functional foods

The market is attracting health conscious groups with functional food buzz words like designer foods, medical foods, longevity foods, hyper nutritional foods, super foods, pharma foods, perspective foods, phyto foods, therapeutic foods and others. They contain biologically active components thought to enhance health and wellness. While the conventional food sector has an expected growth rate of 1 – 3%, the functional foods are catching up with growth rate of 7 – 8%. Between 1998 and 2003, global sales value of functional food increased by almost 60% and is further set to rise by 40% by 2008, says Global Market Analyst Euromonitor. By 2010, Western Europe, US and Japan will account for 90% of total estimated market size with shares of 34%, 34% and 25% respectively.

High levels of new product activities are continuing to stimulate growth in the global confectionery market worth US$ 95 billion in 2002 with total volume of 15 million tonnes. The estimated consumption is 17kg per year in Denmark, 16 kg in Sweden, 13kg in Norway and in Europe and North America (8.8 kg – 10.7 kg). It is a fast growing market. Coconut milk, milk powder and desiccated coconut have good potential for use in confectionery products as source of lauric acid, which on consumption can help to build up resistance / immunity against viral, fungal and bacterial diseases. Coconut oil is also a good substitute for cocoa butter.

Coconut oil and its products with a high content of medium chain fatty acids have a greater role to play in the fast developing functional foods particularly baby foods, nutriceuticals, pharmaceuticals, etc.

17.4. Functional drinks from coconut

The beverages market showed strong growth between 1998 and 2003, at a Compound Annual Growth Rate of almost 11%. Functional juices also showed good growth with value added sales up by 73% between 2003 and 2008. One reason behind the success of functional beverages is convenience, they can be consumed on the move and therefore tap into key consumer demand pattern of health, convenience and portability. The global functional food drinks market, defined as soft drink with added health benefits, was valued at US$ 13.86 billion in 2000 which is expected to double making US$ 24 billion by 2005 (global). Sports drink is mainly isotonic and hypotonic based with leading brand names. Energy drink includes glucose-based products; the marketed value was US$ 3.5 billion in 2000. Most of the energy drinks contain caffeine, vitamins and minerals. This sector has faced problems from regulations about caffeine levels in drink in some countries. Beside these, many small players are also selling drinks with or without enrichment.

Young coconut water (tender nut water) and matured coconut water with various minerals and vitamins as well as enriched natural drink can have a wider market, both domestic and international.

17.5. Cosmoceuticals

Production of cosmetics and personal care products in Asia and Pacific countries is just developing with emerging popularity of whitening products. With the growth of 10% for cosmetics and personal care products and 5 – 19% for soap in Asia and Pacific the requirement is enormous. Many of the Pacific Countries are importing all products from outside. Coconut oil rich in C12, C14 fatty acids fractions (lauryl and myristyl) are good for skin care and cleaning products and will have wider acceptance.

Besides lauric and myristic acids coconut oil contains many other fatty acids including capric, caprylic, caproic, palmitic, steoric and oleic acids. These can be used as cosmetic ingredients.

17.6. Oleochemicals

The long-term trend for oleochemicals is favourable with world capacity expected to rise to 12 MMT and production to 10.8 MMT by 2010. Consumer trend is increasing towards the application of oleochemicals in the detergent, soap and personal care products and hence there is good scope for coconut-based oleochemicals.

17.7. Bio-fuel / bio-lubricants

Energy security perspectives, besides environmental aspects, are the driving forces for the use of vegetable oil based bio diesel fuels. Numerous countries are in the process of making bio fuel. Three challenges the bio fuel sector must overcome are price considerations, lack of awareness about the fuel and impact on glycerine supply.

Bio lubricants are functional fluids made from vegetable oils and down stream esters. Coconut oil as bio lubricant is being used in some places in India for three wheelers. Overall global usage of renewable raw material in lubricants and related functional fluid applications is about 250.000 MT, about 0.7% of total lubricant marketed by tonnage and 0.25% of total oils and fats produced annually. Philippines are moving forward followed by Thailand, Vanuatu, Marshall Islands, etc. Philippines and Vanuatu are using bio fuel for running a few government vehicles.

17.8. Premium grade monolaurin and HIV/AIDS

Over a period of 22 years, 42 million people in the world have been affected by HIV/AIDS, of which 7.2 million is from Asian and Pacific countries. In India the reported incidence is 3.5 million to 5.0 million. Coconut oil with 48.6 % lauric acid is a potential source for producing monolaurin (lauricidin), which has been experimentally found to reduce the virus load. Dr. Jon Kabara, US Scientist, had done the preliminary work. However, a pilot scale testing with large number of AIDS patients has to be done. Philippines have done some basic studies and would like to take up pilot study. If a small amount of donor funds, which are received for AIDS Awareness Campaign, were spent on this research, it would be possible to develop cost effective control measures. If this happens, then the coconut produced now in the world may not be adequate for this purpose.

17.9. Coir and Coir Pith

- Natural fibres are now considered to be important from the angles of environment friendliness, cost factor and reduction of weight
- Natural fibres as reinforcements in industrial products have made considerable inroads in the automotive interiors especially in Europe for reducing cost and weight. Several European firms are testing whether coir can play a role as "bio composites" or as thermal insulation in home construction. It is also used as fillers to replace talc and calcium carbonate.
- Coir fibre products for soil strengthening as reinforcement in tropical soils has been shown to be effective and has to be further tested and popularised.
- Being lightweight materials, the natural fibres have the potential to contribute towards reduced energy consumption, for instance in the transport sector.
- In horticulture sector, natural fibre can play a vital role as a planting medium for plants and also as containers for transporting flowers, vegetables, fruits etc.

Since the inception of the coir industry in India and Sri Lanka in the 1860s, the corky pith and the finer dust had been considered a nuisance because of disposal problem with little beneficial uses. Over the decades, mounds of accumulated pith gradually grew in the countryside around coir mills. Although the use of peat moss like material as a good potting soil ingredient was known since the early 1900s, it was only in the late 80s that the potential of coir pith for application in horticulture received realization. Its high compressibility also makes it possible to be shipped overseas at reasonable cost.

Initially, demand for coir pith grew fast and it made inroads into domestic and commercial horticulture. Unfortunately, quality control didn't keep up with demand. While the high salt content in pith had been leached out from the originally "mined" mounds over time, more recent product in the fresh form had high salt content and caused some crop failure. At the same time, low cost peat from the Baltics and Canada created stiff competition. Through improved quality control and more aggressive marketing, pith exporters are now regaining export volume. At the same time, pith sales have become crucial to the economic survival of many husk defibring mills since the slow past growth in fiber price was insufficient to balance growing labor cost.

- In Netherlands about 1,850 million pots of plants are produced consuming about 30,000 tonnes of synthetic plastics. Biodegradable pots using the natural fibres can be produced replacing synthetic plastics.
- Optimum percentage of coir fibre improved the properties of cohesive soils where 0.6% fibre content of 10 mm length had considerably improved strength. Use of coconut fibres in asphalt and unpaved rural roads can be tested on pilot scale for bulk utility.
- Rubberised coir used to be the material of choice for car seats, but largely lost out to competition from synthetic foams. Yet, the existing use of coir in several high end European car models is an example of how natural fibre products can stay competitive and possibly regain ground. Even when compared to high end foams, seat covers from rubberised coir provide better feel and support. Manufacturing these covers used to be a multi step labour intensive process, but in 2000/2001 two major German automotive suppliers jointly developed a novel one step injection process offering shorter cycling times, higher productivity, more consistent quality and, ultimately, lower production cost. The process requires that the used twisted coir fibre is virtually free of husk pieces and very consistent in the weight per length of twisted strand. Achieving this quality has taken much cooperation between the fibre exporters and users. Development and industrial implementation of this process is a good example of how technological innovation could keep and improve an existing application for natural fibres possibly extend its benefits to other uses. Aside from this limited use of coir in car seats, the European automotive industry has become a key user of natural fibres, such as flax and hemp, in composites, where they replace wood or fiberglass. What drives this trend? Natural fiber composites can be lighter and less expensive than their competitors and being a renewable resource can provide environmental benefits during production, use, and disposal. So far, coir has not been used in these applications. However, several research and commercial projects are now investigating whether the special properties of coir high lignin content and elasticity combined with its comparatively low price could open up new applications in that growth market.
- Geotextiles – made out of coir fibre is an important ecofriendly product which is gaining market in Europe, Asian and US countries as erosion control blankets, nets for slope protection, mulch blankets, basket linens, 'coir bio roll', roof greening mat, grow sticks, coco logs, plant growth media as well as stuffed coir for river bank / canal bank support.
- Low cost wall panels from Blast Furnace Slag Cement using coir fibres have been developed in Brazil as a low cost environmental sensitive technology. This technology is available in the Institute de Pesquisas Technologie do Estado de Sao Paulo S.A., Brazil.
- High-tech products of industrial textiles may possibly be using special quality coir fibres in spinning which needs to be exploited.

There are about 150 high-tech coir industries in Europe making value added products.

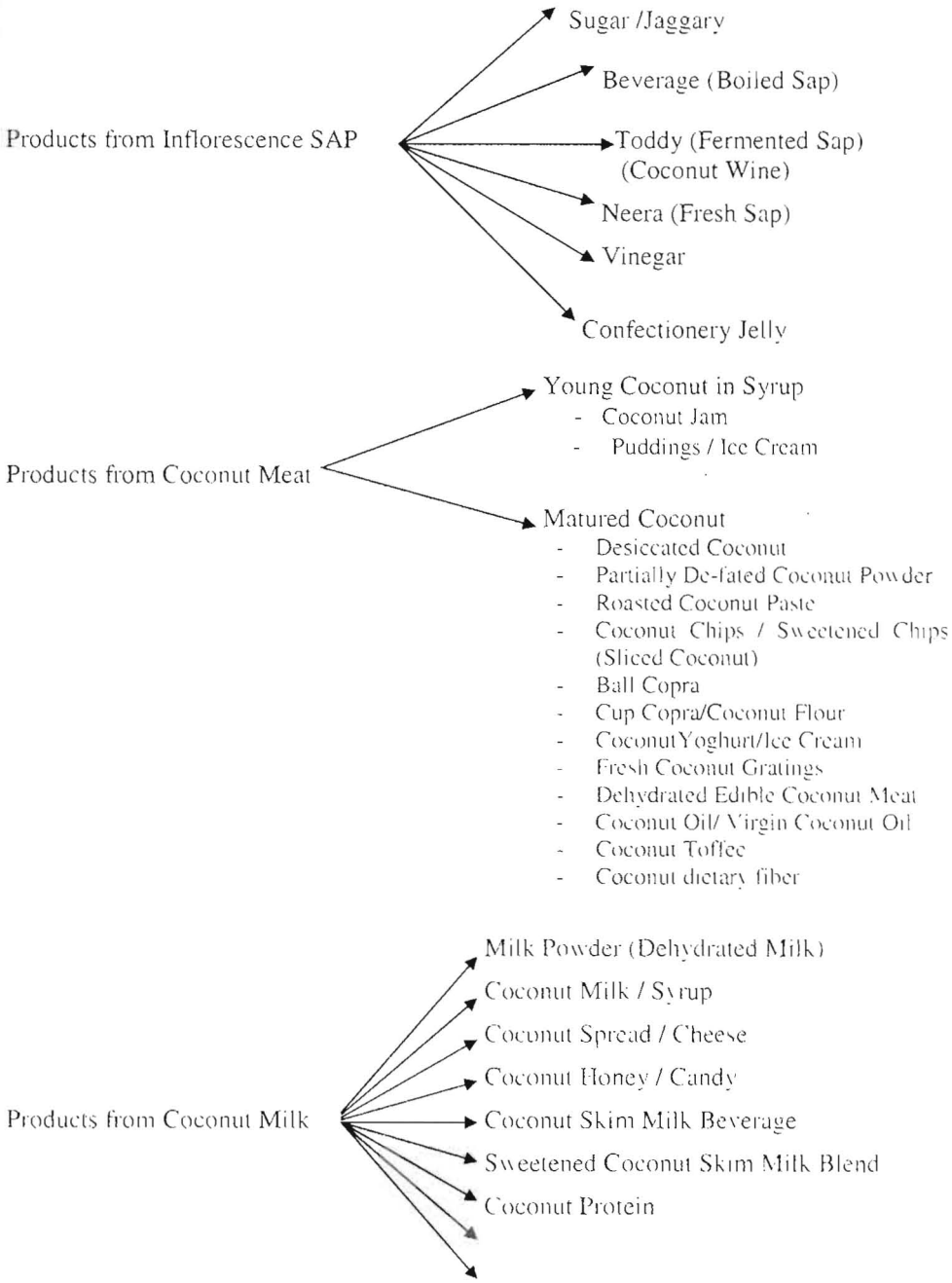
18. Coconut and Its Products for Providing Health and Nutrition

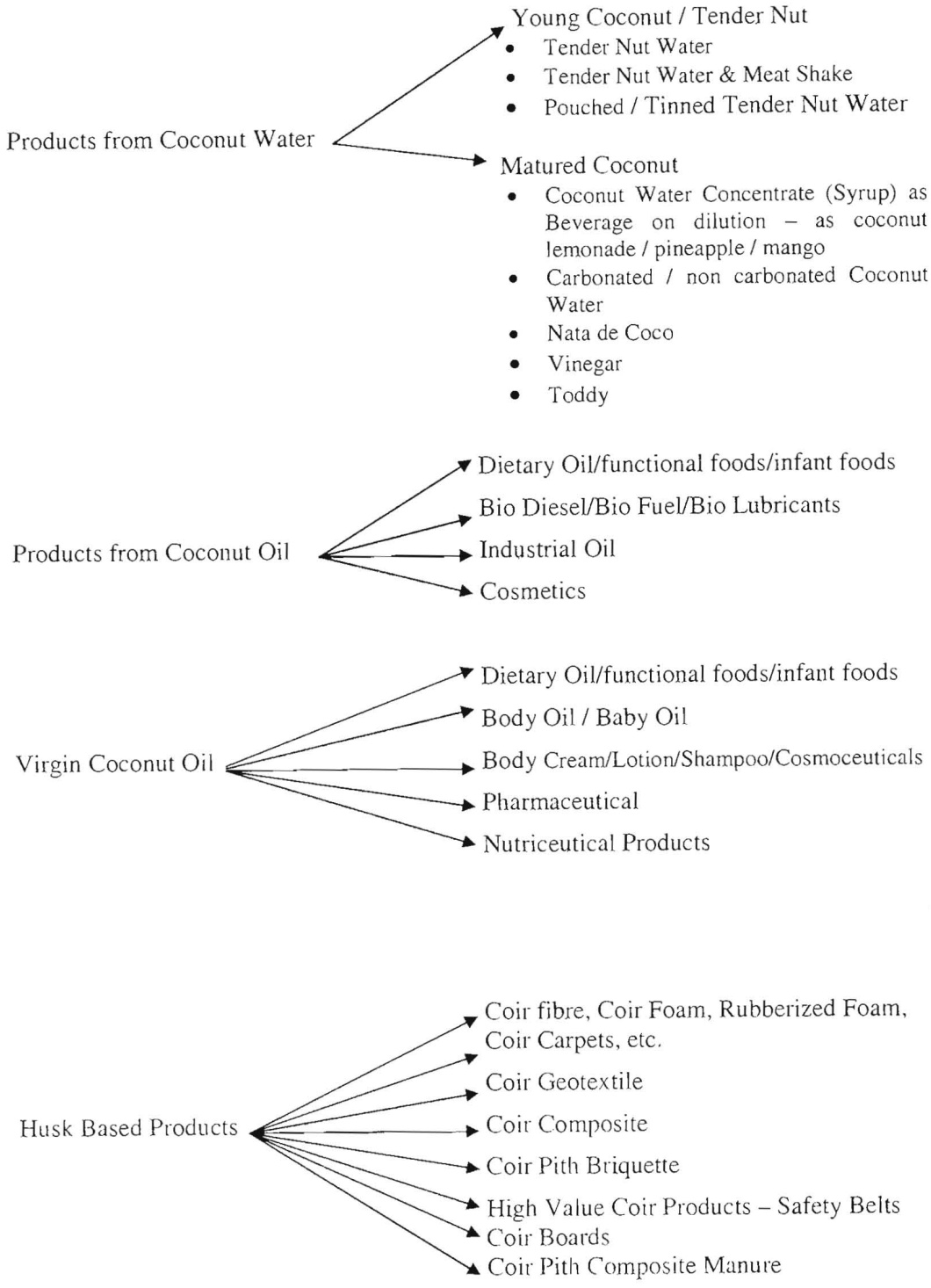
Coconut and its products like coco milk, coconut oil and virgin coconut oil because of the presence of Medium Chain Fatty Acids (MCFA) and high content of lauric acids (48.6%) have lot of health and nutritional benefit, particularly in developing immunity to various kinds of virus, fungal, bacterial and protozoal diseases It is heart friendly, it increases the

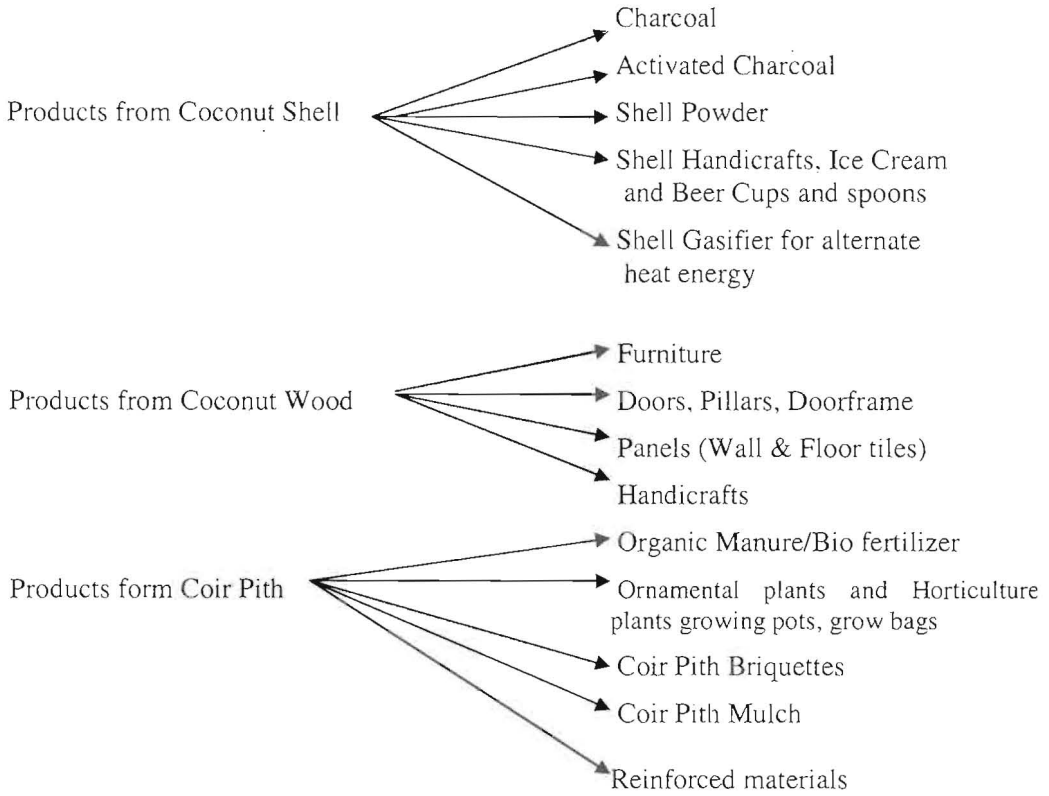
HDL cholesterol, has anti-carcinogenic properties, it helps to reduce weight, reduces diabetes, retards aging process, improves digestion and promotes hair growth. The tender coconut water is another health and energy tonic, which can reduce the risk of kidney stone. Coconut and its products have been in use in native medicines for centuries. In Ayurvedic medicines, the uses and applications have been mentioned 4000 years ago.

19. Marketable Products of Coconut

Coconut being a versatile crop, many value added products could be made out of it. The ranges of products that could be produced from different parts are illustrated below:




Products from Coconut Water
Young Coconut / Tender Nut
Tender Nut Water
Tender Nut Water & Meat Shake
Pouched / Tinned Tender Nut Water
Matured Coconut
Coconut Water Concentrate (Syrup) as Beverage on dilution – as coconut lemonade / pineapple / mango
Carbonated / non carbonated Coconut Water
Nata de Coco
Vinegar
Toddy
Products from Coconut Oil
Dietary Oil/functional foods/infant foods
Bio Diesel/Bio Fuel/Bio Lubricants
Industrial Oil
Cosmetics
Virgin Coconut Oil
Dietary Oil/functional foods/infant foods
Body Oil / Baby Oil
Body Cream/Lotion/Shampoo/Cosmoceuticals
Pharmaceutical
Nutriceutical Products
Husk Based Products
Coir fibre, Coir Foam, Rubberized Foam, Coir Carpets, etc.
Coir Geotextile
Coir Composite
Coir Pith Briquette
High Value Coir Products – Safety Belts
Coir Boards
Coir Pith Composite Manure



21. Threats and Challenges

21.1. The threats and obstacles emerging from the liberalization of trade

- Greater possibilities of import of cheaper substitutes for domestic use in producing countries e.g. import of cheaper vegetable oils such as palm oil for use as cooking oil, instead of locally manufactured coconut oil
- Negative campaigns against coconut and coconut products
- Limited and poor investment incentives
- Inadequate enforcement of product quality standards
- Lack of safeguards for protection on IPR
- Increasing supply and easy availability of immediate substitutes, cheaper plastics in ropes and other utility material replace coir; cheaper synthetic drinks replace healing coconut drink
- Greater competition from substitutes (product competition) in export of coconut products from producing countries
- More competition for market share among producing countries.
- Escalating costs of production, due to higher costs of major inputs and low productivity
- Insistence on stringent technical requirements, such as quality certification and phyto-sanitary certificates, government issuances, bio terrorism legislation, anti-tropical oils campaigns, etc.
- Non-uniformity in standards and classification/nomenclature of common products, among different producing countries
- Lack of constant study, monitoring and co-ordination of the many changes and trends occurring in international markets, for coconut products

- Lack of technologies in producing countries, to manufacture market oriented, value-added products
- Shift from supply (producer/processor) to demand (consumer) driven market.
- High cost of capital and lack of good management practices at small/medium level operations
- Slow progress in the direction of downstream production, in most producing countries
- Fast growing genetically modified oils and products as competitors
- Global uncertainties like war, terrorism, out break of diseases like SARS, birds flu, weak economy, etc.
- Unpredictability of cost of insurance and freight (CIF) due to petroleum prices and security concerns
- Uncertain availabilities and price fluctuations.

21.2. Tariff and non-tariff barriers affecting the free trade of coconut products

Despite the liberalization of trade, with targets set towards reaching a new world order of free trade, obstacles still exist for free movement of coconut products in international markets, hampering the expansion of markets for these products. This is perhaps reflected in two basic parameters, namely, that neither the total contribution of coconut products to global trade, nor the volume of manufacture and export of coconut products in producing countries, has shown any significant increase, in recent years.

21.3. Tariff structures

Historically, tariffs as applicable to both imports and exports, has been a very effective tool in implementing and enforcing trade policies. Tariffs have been used in almost all international trading systems and networks to promote and enhance as well as inhibit trade, among countries.

During the past two decades, the Tariffs, the world over, have been reduced to lower levels, with future time targets set for their complete removal.

The lowering and harmonization of tariffs as applicable to coconut, had their origin to a number of Trade Agreements such as:

(i) The Multilateral trade negotiations, which led to the General Agreement on Tariffs and Trade (GATT) and World Trade Order (WTO), whose broad objectives were establishment of free world trade mechanism.

(ii) The ASEAN Free Trade Agreement (AFTA), which sought to minimize trade restrictions between member countries of ASEAN and promote free trade within the region.

(iii) The Common Elective Preferential Tariff (CEPT) Agreement under ASEAN, which sought to implement preferential tariff structures amongst ASEAN member countries.

More recently, there have been a number of bilateral Free Trade Agreements of Asian Countries, seeking to promote bilateral free trade of broader mutual benefits to partners of such agreements.

The EU import duties on agricultural raw and semi processed products are among the lowest in the world and most of them disappear in 2005 in line with the EU's commitments from 1994 under the Uruguay Round of International Trade Negotiations. In the case of coconut products, the import duties ranked from zero to 12.8% depending on the commodity categories. The coconut products as raw materials for foodstuffs of human consumption get free import duties. The highest import duty at 12 8% is imposed on the packed processed products. The import duties for several coconut products imported from the third country are presented in Table 28.

The import tariff of the EU's market for coconut products decreased fairly over period of time. The import duty for crude coconut oil for example was down by rate of 34.2% during 1998-2005. The rate of import duty decreased to 2.5% in 2005

from 3.8% in 1998. Meanwhile the import duty for RBD coconut oil also decreased to 12.8% in 2005 from 16.4% in 1998, down by 21.9%. A decrease by 15.8% in the import duty for activated carbon also occurred during the same period.

Value Added Tax (VAT) in the European Union (EU) is indirect tax system and part of the EU's own resources since a percentage of VAT revenue, calculated in unified basis, is allocated to finance the EU's budget. One of taxable transaction subject to VAT is importation goods.

Table 28. European Union: Import Tariff of Coconut Products and Other Products, 2005

Product	Description	Rate (%)
Crude Coconut Oil	For technical or industrial uses of non foodstuffs	2.5
	For Other purposes	2.5
RBD Coconut Oil	In immediate packing of a net content of 1 kg or less	12.8
	For other packing	10.9
	For technical or industrial uses of non foodstuffs	5.1
Lauric Acid	-	5.5
	GSP	2.0
Palm Kernel Oil	For technical or industrial uses of non foodstuffs	3.2
	For Other purposes	3.2
Copra	-	0.0
Copra Cake	-	0.0
Desiccated coconut	-	0.0
Coconut shell charcoal	-	0.0
Activated carbon	Powder or other forms	3.2
	GSP	0.0
Coir products	Raw	0.0
	Other	0.0

The EU applies minimum VAT rate for the imported goods. The rate and regulation are approved by the member state where the goods or service are supplied. Each member state can fix rates according to the following limits established by Directive 77/388/EEC:

a. The standard rate may not be less than 15% until 31 December 2005.

b. Member states may also apply either one or two reduced rates, which may not be less than 5%, applied only to very specific supplies of goods.

c. The Directive allows the application of a reduced rate no lower than 12% for some goods or service.

d. It also allows certain member states the maintenance of reduced rates lower than the 5% minimum (super reduced rates).

There are about 17 categories of goods those member states are allowed to apply the reduced rates. These include, among others, foodstuff for human consumption; ingredients normally intended for use in preparation of foodstuffs; products normally intended to be used to supplement or substitute foodstuffs. Pharmaceutical products are also included in this category.

Apart form VAT the European Union is also imposing a regulation that allow the country member to levy products that are often thought to cause external cost to the consumers such as adverse health effects or environmental pollution, so as to discourage their consumption. This kind of charge is called as Excise Duty. The Excise duties in the European Union are indirect taxes levied at one stage of the importation or manufacture of the specific product category.

The Excise duty regulations in the EU countries include products of mineral oils as one of the products to be taxed, of which the bio diesel as one of potential products from CNO or/and CPO is included. The United Kingdom imposed GB £ 271 per 1000 liters of bio diesel and GB £ 313 per 1000 liters of bio diesel used as motor fuel off road. The United Kingdom defines bio diesel as a diesel quality liquid fuel produced from biomass or waste cooking oil with the total ester

content of which not less than 96.5% by weight and the sulphur content of which not exceeding 0.005% by weight. Other taxable agricultural products included in the Excise duty regulation are alcoholic beverages and manufactured tobacco.

The VAT rates of the coconut products entering the European Union markets vary across product wise. Most of the country members appliy lower rate, even zero rate for the coconut products categorized as foodstuffs for human consumption when compared to products classified as non-foodstuffs. The detailed rates of VAT imposed by the EU's member countries are presented in Table 29.

Table 29. European Union: The VAT (%) on the Coconut Products, 2005

Country	Non-Foodstuff		Foodstuff	
	AC	CNO[1/]	DC	CNO[2/]
Austria	20	20	10	10
Belgium	21	6	6	6
Czech Republic	19	19	5	5
France	19.6	19.6	5.5	5.5
Germany	16	16	7	7
Ireland	21	21	0	0
Luxembourg	15	15	3	3
Netherlands	19	19	6	6
Poland	22	22	7	7
Portugal	5-21	21	21	12
Slovakia	19	19	19	19
Spain	16	16	7	7
Sweden	25	25	12	12
United Kingdom	17.5	17.5	0	0

Notes: AC= Activated carbon; 1/ Crude Coconut Oil for non-food industry
2/ Crude Coconut oil for food industry; DC= Desiccated Coconut

21.4. Non-tariff barriers

Since the liberalization of World trade, the coconut industry had encountered a number of serious obstacles to free trade, as a result of numerous non-tariff barriers, introduced by some of the importing countries, as well as producers of competing products.

These non-tariff barriers include:

- Adverse publicity regarding health aspects of coconut oil, based more on fiction than on scientifically proven facts, which resulted in serious curtailment in the use of coconut oil for edible purposes, throughout the world.
- Imposition of strict standards for incidence of Aflatoxins in Copra meal, used in animal feed formulations.
- Directives on the use of vessels/containers, for transport of bulk edible oils, including coconut oil.
- Expansion of the scope of phyto-sanitary certificates at origin, to cover risk factors which are almost totally nil e.g. certification of desiccated coconut consignments as being free of pests and diseases.

22. Factors Affecting Competitive Market of Coconut Products

The following vital issues are to be addressed effectively to be competitive in the domestic and international markets.

a. Cost effectiveness.

b. Quality standards matching with International Standards.

c. Brand names for proper identification.

d. Attractive packaging without deterioration of products and with proper labelling of its contents and usage.

e. Adequate market promotional activities.

f. Continued market survey, identifying new markets, niche market and assessing domestic market, etc.

g. Market Research to identify the gaps in the marketing efforts as well as developing effective marketing strategy.

h. Identifying the proper distribution channel like chain markets spread over many countries.

i. Improving the transport facilities like port development for international carriers.

23. How to Make Coconut Industry Competitive to Face Future Global Challenges

In the wake of mounting intense competition in global markets arising from the liberalized trade environment, the future prospects of the coconut industry lies solely on its overall competitive ability. The industry has to tap the full potential of coconut as a renewable resource, which could be used to generate a range of environmentally friendly, natural products, with a wide variety of end-uses and applications. Likewise, producing countries need to exploit to the fullest, their individual comparative advantages, in cultivation, processing and marketing of coconuts. The key areas to be covered for achieving a sustainable degree of overall competitiveness in the coconut industry are listed hereunder:

23.1. Productivity increase at farm level

Productivity of coconut plantations could be increased through replanting of senile and unproductive plantations with high yielding varieties and hybrids; optimum input management by resorting to organic recycling, nutrient management, micro irrigation, and on-farm soil and water conservation; and adoption of integrated farming in coconut holdings with diverse arable crops and woody species with or without livestock components.

23.2. Farm level processing

Processing for value addition has to be encouraged both at the on-farm and community levels. These activities could be organized efficiently under the aegis of Community-based Organizations in potential villages.

23.3. Promotion of organic agriculture

Organic Farming Associations could be encouraged to take up the farming system in compact areas so that a large number of farmers and holdings could be covered. Nearly 90% of the farmers are presently not applying inorganic fertilizers to coconut. Many of the Pacific Islands countries are not applying fertilizers due to non-availability and inadequate transport facilities to outer islands. As such, potential exists for converting large extent of coconut area spread over the different countries into organically managed units.

23.4. Linking farmers to the market

If farmers are linked to the market by providing market information, and support for organized marketing they will be induced to manage their holdings efficiently for achieving higher productivity.

23.5. Diversifying products / developing niche products for niche market

Large-scale product diversification and by-product utilization will facilitate the production of diverse value-added products that are likely to enjoy consumer demand for satisfying general and specific needs.

23.6. Increasing processing efficiency and quality standards

Product specific processing for making quality products in conformity with international quality standards, proper labelling and packaging with proper brands are important requirements for coconut industry to grow..

23.7. Popularisation of health benefits of using coconut and coconut products including coconut oil

23.8. Joint R&D efforts on strategic or specific applications of coconut oil in cases of HIV, SARS and Avian Flu

23.9. Establishment of intra-regional agro-industrial estates or processing zones

23.10. Harmonization of product/process quality standards among members of the Regional producing Countries

23.11. Creation of support centre/network for product and process testing/certification and commercialisation including capacity building

23.12. Adoption and/or promotion of cluster approach in cultivation and management

23.13. Engagement of public-private sector investment in planting/replanting and rehabilitation programs, transfer of technology, supply of farm inputs, etc

23.14. Implementation of crop insurance for coconut farmers

23.15. Intensive market promotional efforts, market study and market forecasting, etc. Organize trade / investment mission and participation in international trade fairs and exhibitions.

23.16. Conduct holistic and strategic studies on market expansion and marketing strategies

23.17. Developing and promoting E commerce and forward marketing for coconut oil as well as coconut products. Now it is being done in virgin coconut oil.

23.18. Promotion of non-traditional coconut products like bio fuel, bio lubricants, etc. and coir based products like geotextile, coir pith composites, grow bags, etc

23.19. Promotion of coconut based eco-tourism. Many coconut growing countries are having enormous potential for coconut based ecotourism

23.20. Effective transfer of technology through training by setting up Farmer's Field School, farmers participatory demonstration, etc.

23.21 Improving international/national transport facilities particularly seaports and reducing the transport/freight charges. Promote strong regional partnership in trading coconut products and by-products and develop regional markets based on real economic growth and purchasing power.

23.22. Comprehensive Approach to Make the Coir Industry More Competitive

- Coir Industry, which is about 150 years old, is still working in the traditional ways characterized by unhygienic working conditions and inadequate labour welfare measures. Improving the working conditions more and more will help to increase the efficiency of labour.
- Integrated processing as a community approach will facilitate larger availability of husk in a particular place and their processing under better working conditions with higher efficiency. New and improved products should be developed especially in applications where natural fibres have advantage over synthetics. Geotextile is an example. Grow bags using the cut fibres; husk chips and coir pith have potential market in the horticulture sector. However, adhering to the quality standards for such products is very essential.
- Strengthening the institutional capabilities of developing countries for developing coir industry. Since many of the developing countries growing coconut are not utilizing the coconut husk for producing value added products, creation of such facilities can go a long way to increase the income and employment of coconut growers and reduce poverty. For this, there is need to develop and strengthen institutional capabilities and provide training facilities. The donor agencies have to consider the feasibility of funding such projects.
- Social and environmental issues need to be addressed. Efforts are needed to improve the working conditions for women labourers by providing hygienic work areas, medical facilities, rest rooms, etc. Also it is essential to minimize

environmental hazards associated with the production and processing of coir fibre, in accordance with national legislations.

- Check the erosion of market for traditional products. Some of the traditional outlets for coir fibre have contracted markedly since the introduction of synthetic materials in the 1960s and 1970s. However, diverse coir products like mats and matting continue to find market. The quality products with competitive cost will help to check the erosion of markets.

  Information on market conditions for fibres in international market is important for producers, exporters and policy makers. FAO and APCC provide statistics but there are gaps in the information. A holistic database will greatly help in the future trade.

- Enhance cooperation between producing and user countries to resolve quality problems and develop and test concepts for new products.

- Improving the container facility, transport facility and reducing the freight charges can create export opportunities for diverse coir products.

- Organizing shows, exhibitions and participation in the expos, buyers and sellers meet in the potential areas will help to open up new export markets.