

OVERVIEW OF AGRICULTURE AND THE NATIONAL
AGRICULTURE DEVELOPMENT PLAN



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Dept. of Agriculture and Livestock

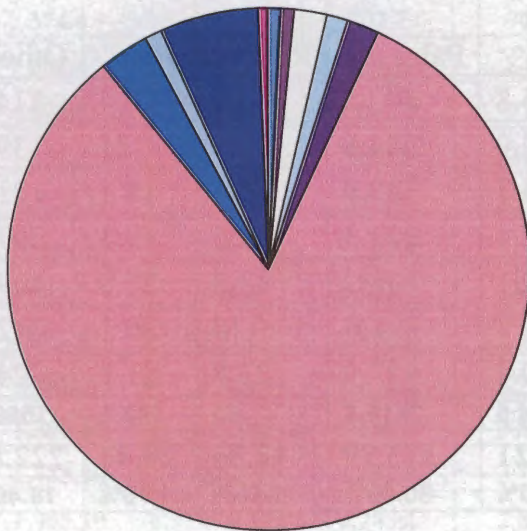
November 2007

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Introduction

Agriculture touches many lives in Papua New Guinea, with 82.26% of the population engaged in agriculture, animal and fishery work [Fig 1]. Agriculture is the source of sustenance, food security and income generation for many households

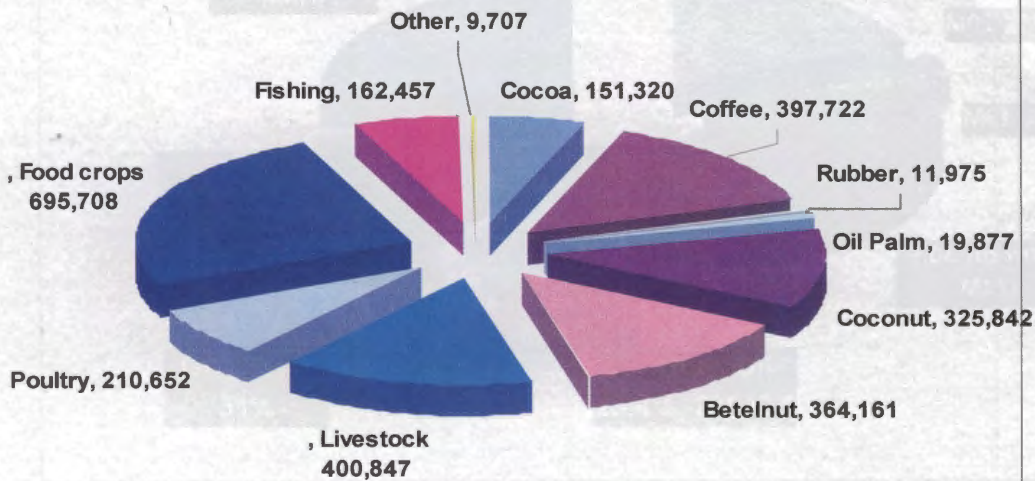
Fig. 1. Percent of PNG Citizen 10 years and over in private dwellings and employed by occupation in 2000



- Legislators, senior officials and managers [0.71%]
- Professionals [1.03%]
- Teaching and associate professionals [1.98%]
- Clerks [1.16%]
- Service workers, shop & market sales workers [1.97%]
- Agriculture, animal & fishery workers [82.26%]
- Craft & building trade workers [3.08%]
- Plant & machine operators and assemblers [1.14%]
- Elementary occupations [6.13%]

Many households are engaged in multiple agricultural activities, with the majority in food / root crops and vegetable production followed by livestock, coffee, betel nuts, coconut, poultry, fishing, cocoa, oil palm, rubber and other agricultural production (spices, floriculture etc) [Fig.2].

Fig 2. PNG Households Engaged in Agricultural Activities [2000 Census]

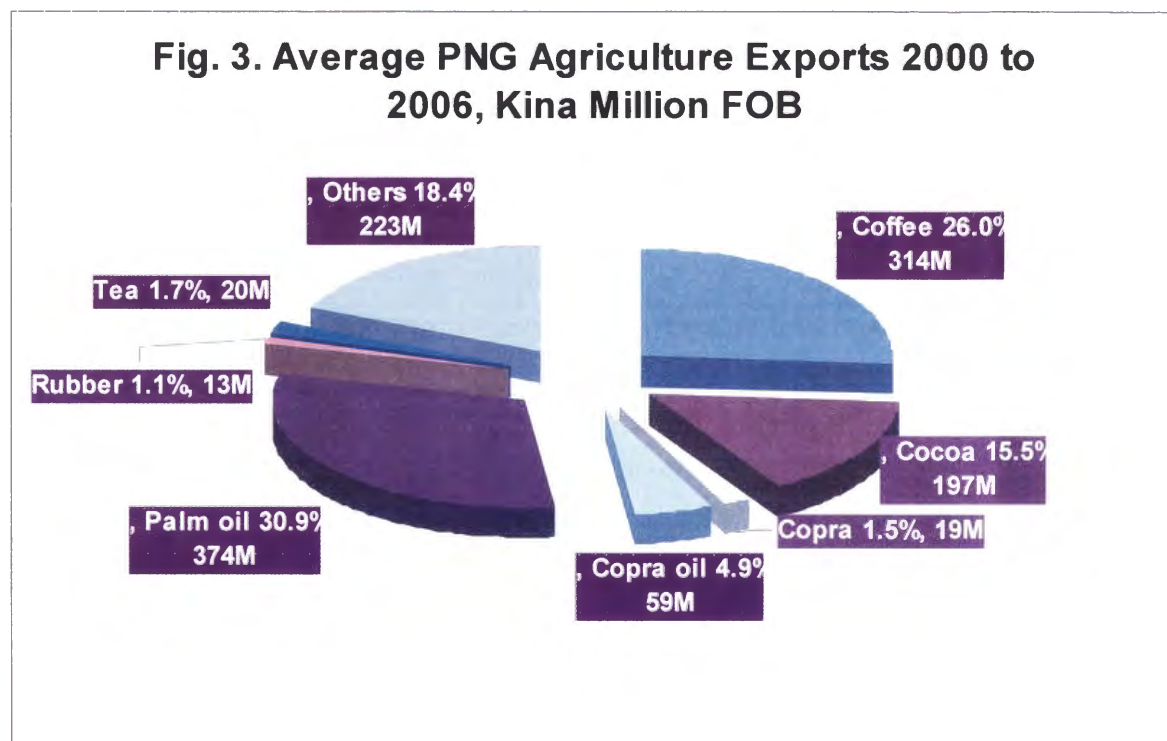


It is estimated that agriculture production that is not marketed, but used for home consumption is equivalent to K5.0 billion annually.

Tree Crop Exports Revenue

Export tree crops production generates cash income for the households and the national economy, generating on the average K1.2 billion annually during the period 2000 to 2006. Oil palm, followed by Coffee are the highest agriculture sector export earners; accounting on the **average** for K374 million or 31 % and K 314 million or 26% respectively of the agriculture export revenue during the period 2000 to 2006 [Table 1 and Fig 3]

Table 1. Agriculture Exports 2000 to 2006, Kina Million FOB									
Year	Coffee	Cocoa	Copra	Copra oil	Palm oil	Rubber	Tea	Others	Total
2000	291.4	83.5	59.6	65.8	302.5	6.4	20.4	114.1	943.7
2001	246.6	120.5	11.2	12.9	244.8	6.9	21	139.9	803.8
2002	276.6	226.3	10.7	33.3	389.9	8.8	18.1	121.2	1,084.90
2003	298.5	257.7	6.5	67.4	421.3	12.3	19.3	307.8	1,390.80
2004	283.8	218	17.2	81	438.7	13.8	22.9	409.8	1,485.20
2005	471	198.7	17.3	93.7	391.4	18	20.2	242.8	1453.1
2006	337	204.4	8.3	60.4	427.9	23.8	21.2	224.1	1307.1
Total	2204.9	1309.1	130.8	414.5	2616.5	90	143.1	1559.7	8468.6
Average	314.99	187	18.69	59.21	373.79	12.86	20.44	222.81	1209.8
Percent	26%	15.50%	1.50%	4.90%	30.90%	1.10%	1.70%	18.40%	100%



PNG Total Exports Revenue

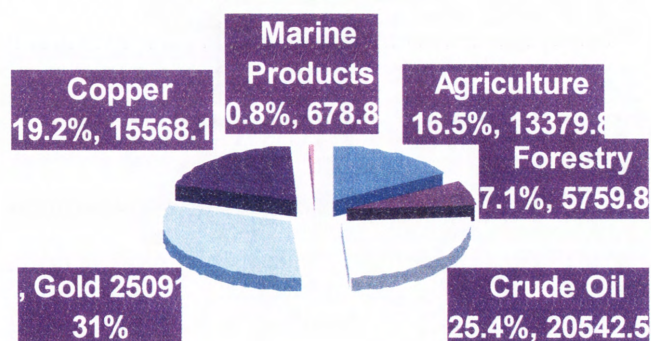
In terms of total PNG Exports (Table 2 and Fig.4), Agriculture contributed only 16.5% to Export Revenue for the 15 year period of 1992 to 2006, lacking behind Gold [31%], Crude oil [25.4%] and Copper [19.2%].

Agriculture however outperformed Forestry [7.1%] and Marine Products [0.8%].

Table 2. PNG Exports FOB, Kina Million, 1992 to 2006

Year	Agriculture Exports	Forestry	Crude oil	Gold	Copper	Marine Products	Total Excel
1992	223.6	148.2	301.4	745.9	313.5	9.3	1,741.9
1993	270.1	410.4	817.8	681.6	256.3	7.8	2,444.0
1994	374.6	494.4	702.7	702.3	367.4	10.3	2,651.7
1995	502.4	449.7	827.7	840.1	754.5	12.3	3,386.7
1996	578.6	480.3	1,073.9	773.6	387.0	10.4	3,303.8
1997	777.2	433.6	852.2	718.7	259.8	9.6	3,051.1
1998	1,020.1	173.2	813.1	1,227.8	395.7	42.2	3,672.1
1999	1,164.6	265.9	1,382.4	1,546.1	574.3	30.4	4,963.7
2000	943.7	308.8	1,921.7	1,950.8	595.4	33.7	5,754.1
2001	803.8	310.1	1,883.9	2,115.1	859.1	76.7	6,048.7
2002	1,084.9	414.1	1,431.2	2,294.8	1,018.7	94.1	6,337.8
2003	1,390.80	416.00	1,631.9	2,811.2	1,415.0	125.3	7,790.20
2004	1,485.20	458.50	1,652.2	2,779.5	1,544.2	58.2	7,977.80
2005	1,453.10	476.3	2,283.1	2,834.1	2,497.7	69.4	9,613.70
2006	1,307.10	520.3	2,967.3	3,069.4	4,329.5	89.1	12,282.70
Total	13,379.8	5,759.8	20,542.5	25,091.0	15,568.1	678.8	81,020.0
Average	892	384	1,369.5	1,672.7	1,037.9	45.3	5,401.30
Percent	16.5%	7.1%	25.4%	31%	19.2%	0.8%	100%

Fig. 4. PNG Exports 1992 to 2006, K Million FOB



The Future

Minerals, Oil and the Gas sector, that employ about 4% of the population contribute 75.6% to PNG's export earnings, while the renewable sector [Agriculture, Forestry and Fisheries] with 82.26% of the population accounts for only 24.4% of the export earnings. It is however, a reality that the minerals, gas and oil are not renewable and may get exhausted sooner or later. In addition, not many households are engaged or benefit financially from the mineral, gas and oil sector. Thus, the long-term sustainability of the Country would depend more on the sustainable management of the renewable resources sector.

A look at the Export Price Indices (Table 3) and the Export Volume Indices (Table 4) indicate that, on the average favourable commodity prices rather than increased production are responsible for the increased revenue in the agricultural sector. This is especially true for coffee and copra

Table 3. Export Price Indices of the Renewable and Non-Renewable Sector.

	Cocoa	Coffee	Copra	Copra Oil	Palm Oil	Logs	Non-Mineral	Gold	Copper	Crude Oil	Mineral Index
1994	100	100	100	100	100	100	100	100	100	100	100
1995	132.5	135.1	147.1	144.6	220.3	107.4	131.9	120.8	195.8	140.7	148.2
1996	136.9	104.8	170.2	166.5	198.2	107.3	129	131	170.6	170.3	156.6
1997	160.3	177.3	183.4	169.5	216.4	103.8	154.8	128.8	141.9	190.7	160.2
1998	264.9	198.6	235.9	213.3	372.1	88.7	218.4	166.9	198.6	181.3	176.3
1999	246.9	177.8	354.2	314.4	379.5	119	245	193.1	220.8	282.8	229.2
2000	188.5	156.2	278.9	215.2	268.8	122.2	191.8	211.9	264.1	515.7	348.1
2001	260.3	124.9	120.5	169.9	260.3	116	179.6	245.6	284.9	546.9	376.1
2002	508.8	143.3	182.7	238.6	388.5	124.4	270.3	303.9	338.2	585.9	401.8
2003	523.2	146.2	189.2	289.2	409	116.3	292.7	326	344	681.3	438.5
2004	429.1	147.5	219.9	360	410.8	111.9	279.1	327.5	499.5	826.6	502.2
2005	369.5	215.5	187.5	345.3	367.8	113.2	255.9	319.5	617.3	1040.7	614.2
2006	377.4	217.1	159.7	289.7	378	117.3	255.1	437	1113.7	1290.7	959.3

Data Source: Quarterly Economic Bulletin, June 2007

The overall rise in export price indices for the non-mineral sector is far lower than that for the mineral sector; 255.1 and 959.3 respectively in 2006 (Table 3). This unequal rise in export price indices will affect agricultural production and productivity in the future, for example, agriculture is dependent on crude oil, for production, processing and marketing, yet, while the index for crude oil is 1290.7 in 2006, that for the agricultural sector is only 255.1. If this trend continues the productivity and production in agriculture is likely to decline, unless more economical and productive agricultural strategies could be developed to make agricultural productive sustainable in the medium to long term

Table 4. PNG Agricultural Export Volume Indices (1994 = 100)

Year	Cocoa	Coffee	Copra	Copra Oil	Palm Oil	Logs
1994	100	100	100	100	100	100
1995	117.7	85.2	127.6	95.4	80.9	85.3
1996	157.7	96.3	197.2	143	115.7	88.6
1997	148.5	91.5	179.5	140.1	119.1	80.7
1998	100.4	129.1	115.5	153.3	92.3	36.3
1999	111.5	122.4	126.3	145	110	44.6
2000	146.2	102.9	133.6	138.4	145.7	47.5
2001	140.4	79.8	92.2	78.1	141.9	41.2
2002	128.8	76.9	65.1	139.6	148.7	55
2003	148.8	83.9	34.8	236.2	150.1	60.4
2004	153.2	76.8	79.6	223.3	155.7	60.3
2005	163.2	87.9	92.4	269.4	158.8	68.1
2006	162.4	63.7	52.6	205.5	166.4	79.6

Data Source: Quarterly Economic Bulletin, June 2007

In addition, the **population of PNG** is estimated to reach 8.4 million by 2015 and it is expected that the majority of the population would continue to be engaged in agricultural activities [as a result of the small manufacturing base and the limited number of individuals in the minerals, oil, gas and other industries.]

Table 3. PNG Population Outlook

Year	1990	2000	2005	2006	2007	2008	2009
Population	3,761,964	5,106,786	6,097,376	6,286,873	6,602,897	6,716,662	6,935,889
Year	2010	2011	2012	2013	2014	2015	
Population	7,162,304	7,386,644	7,638,862	7,888,677	8,146,679	8,413,227	

Source: National Statistics Office 2006.

The active engagement of the agricultural population in meaningful agricultural activities would therefore contribute greatly to improving on the welfare of the masses of the PNG population as well as to the PNG economy. It is with these in mind that the Government instructed the Department of Agriculture and Livestock, to coordinate the recently formulated and approved National Agriculture Development Plan [NADP].

The Highlights of the National Agriculture Development Plan [NADP 2007 to 2016]

The **vision** of NADP is sustainable transformation of the country's agriculture sector into a vibrant and productive economic sector that contributes to economic growth, social wellbeing, national food security and poverty alleviation.

The Mission of NADP is to enhance and improve the quality of life for over 87% of the rural population in 89 districts and 19 provinces; through increased productivity, sustainable and quality

production coupled with integrated planning and environmental sustainable management.

The **overall goal of NADP** is to stimulate economic growth in the agriculture sector in all districts through the development of a well coordinated planning and implementation that are interactive, and effective, involving the full participation of the stakeholders, which promotes food security, income generation and poverty alleviation.

The objectives of NADP are;

- To reduce costs of production and improve quality of agricultural produce for both domestic and international markets
- To increase income earning opportunities of those dependent on agriculture.
- To allocate resources based on priority areas
- To ensure that development is socially, economically, and environmentally sustainable
- To improve the recognition of women's contributions to rural industries and increase opportunities for women's decision making in agriculture.

The eight priority areas in NADP are;

(1) Agriculture research, extension, information and training;

The research, extension, information and training sub-components aim; at providing appropriate technology packages, backed up by extension information and human resources capacity building for farmers to effectively participate economically in agriculture activities in their respective communities. Out comes include; improved technology packages and delivery systems, increase knowledge and skills of farmers and extension agents, and efficient market intelligence networks.

(2) Food and horticultural crops development;

The food and horticultural crops sub-component will promote economic production of food and horticultural crops, for domestic consumption and for exports in crops that PNG has competitive advantage. Down stream processing will be promoted for value addition. Out comes includes; increased production of local food crops and vegetables, establishment of efficient marketing systems, downstream procession and value adding facilities, reduction of imports (rice), increased income, employment, improved nutritional status and livelihood of rural households.

(3) Tree and industrial crops development;

The tree and industrial crops sector aim at mobilizing the population in the various production areas, to increase on the productivity and production of the various crops. This will be achieved through; rehabilitation of plantations, planting of new plantations / farms, promotion of nucleus

estates where feasible, organizing farmers into cooperatives for production and marketing purposes, promoting access to credit and markets and encouraging down stream processing where feasible. The tree crop sector will continue to play an increasing role in income and revenue generation for the country. Out comes include; increased production, productivity, and marketing systems, export earning opportunities, improved employment and income of smallholders and contribute to increased GDP.

(4) Livestock, apiculture and aquaculture development;

The main aim of this component is to promote livestock, apiculture and aquaculture production for import replacement and to provide affordable quality protein nutritious foods to Papua New Guineans. This would entail rehabilitation of breeding centers; introduction of improved breeds, promotion of small and large livestock for food, and draught and pack animals for cultivation and transport. Out comes will include; revitalized livestock industry, increased domestic livestock production, employment and income generation, improved protein nutrition, enhanced nutritional status, and import replacement / reduction.

(5) Spice and minor crops development;

Spices and minor crops that are economically sustainable will be promoted as alternative export crops; through capacity building, supply of quality planting materials and post harvest quality management/control and improved marketing opportunities. Out comes include; revitalized spice industry, increased production, and improved processing and marketing systems.

(6) Gender, social and HIV/AIDS related issues;

It is recognized that women's contribution to the well being of society is essential in agriculture production in PNG. The Gender social and HIV/AIDS sub component goals are; to promote equal participation of women in all aspects of agriculture and livestock development, improve the status of women through economic development, ensure that, gender, social and HIV/AIDS are mainstreamed in all agriculture development programs. Women would be empowered through training, skills development and small credit scheme in the production, processing and marketing of agricultural products. Out comes will include; empowered participation of women in all aspects of agriculture development, and gender, social and HIV/AIDS mainstreamed in the agriculture sector.

(7) Regulatory and technical services;

The regulatory and technical services include agricultural quarantine, land use planning and development and Codex and food safety.

The Quarantine component is to preserve and protect the animals, plants and fish from exotic pests, diseases and weeds in the interest of national, social and economic development, and also to facilitate international trade through export and import risk analysis and quality assurance systems and thereby contributing to the Government's export driven economic recovery policy. Outcomes include; improved surveillance and intelligence systems on exotic pests and diseases, improved quality control and assurance on import and export products and improved human resource capacities.

The Land use planning and development component will develop sustainable land resource plans for the provinces, enhance geographical presentation of land resources and maps, and improve land resource inventory and database management. Outcomes include: improved land use planning, management and technical capacity.

Codex will promote against contaminated food and protect consumer's health, facilitate international trade by eliminating trade barriers and develop food standards and food policies in compliance with Codex requirements. Outcomes include; improved food safety standards and consumer health,

(8) NADP management and coordination.

A management structure for the overall coordination and monitoring of the implementation of the NADP to ensure that the programs and projects are successfully implemented within the time frame and allocated resources/budgets have been outlined. The current funding level to the agriculture sector has been reviewed and an indicative budget for development activities has been proposed. Outcomes include; well coordinated planning, management and monitoring of the sector through NADP.

The successful implementation of this plan hinges on the commitment of all players and the resources allocated at all levels (national, provincial and district). The targeted private sector investment programs are; rice, wheat, cattle, feed for domestic animal production, cashew, cassava, noni, jatropha, sago, spices, downstream processing, through the nucleus and out grower production systems.

The NADP Budget and Projected Revenue:

The estimated total budget required for the implementation of NADP for the period 2007 – 2016 is K1,199 million [Table 5]

With adequate financial support to implement the activities outlined for each sector, the population would be mobilized, with their lands, and be provided with technology packages, backed up by extension information, skills and knowledge to improve on agricultural production, productivity, processing and marketing. It is projected that all sectors will see good returns on the investment.

The total projected revenue from the various components for the period 2007 – 2016 would be K24,133 million. The break up is; Tree crop sector K22,294 million, Food and Horticulture crops K1,168 million, Spice and minor crops K322 million, Livestock, Aquaculture and Apiculture K347.3 million. The output (projected revenue) to input (budget) is highly positive, hence funding to NADP needs to be supported.

In addition, the value of food and horticultural crops that are not marketed but produced and consumed/utilized by households is estimated at K5 billion annually.

The major source of NADP funding will be the national government. Other anticipated funding sources are bilateral and multilateral donor agencies and the private sector investment, particularly in the tree crop sector where further development is linked to Clean Development Mechanism Policies. Provincial government's commitment and counterpart funding is crucial to support those programs that will be implemented in the respective provinces. It is encouraging to note that under the new Provincial Finance Management Plan the derivation grants will be utilized for agriculture development in the districts.

NADP Individual component breakups

12.2.1. Food Production

Food production will increase to provide food security and income to households. A revenue of K201.4 million can be expected from marketable 'traditional' food crops within five years [Table 6] and K5 billion annually from food that is not marketed [NADP 1]. Increased down stream processing and preservation of food crops will be pursued for value addition.

Table 6: Projected Revenue from Food Crops in 10 years.

Commodity	Volume ('000 tonnes)	Revenue (K million)
Sweet potatoes	120	108
Staples	60	54
Potatoes	8	12
Onions	3	3.4
Peanuts	6	6
Vegetables	10	15
Fruits	4	3
Total	211	201.4

Source: NADP 1.

12.2.2. Wheat and Rice

Cereal Crops; such as wheat and rice will see increase in production.

Wheat is a new crop and its annual production will increase gradually from the current 100 tons in 2006 to 404 tons in 2016. Domestic wheat production will replace imports to the value of K4.6 million over the period 2007 to 2016 (Chart 1).

Annual rice production will increase from the current 20,000 tons in 2006 to 73,470 tons by 2016. This will replace import to the value K961.5 million for the period 2007 to 2016 (Chart 2).

Chart 1: Wheat Projections, 2006 to 2016

Year	Quantity (Tons)	Value (Kina million)
2006	100	0.20
2007	115	0.23
2008	132	0.26
2009	152	0.30
2010	175	0.35
2011	201	0.40
2012	231	0.46
2013	266	0.53
2014	306	0.61
2015	352	0.70
2016	404	0.81
Total	2334	4.65

Assumption: 15% increase per year. Valued at K2000 per ton

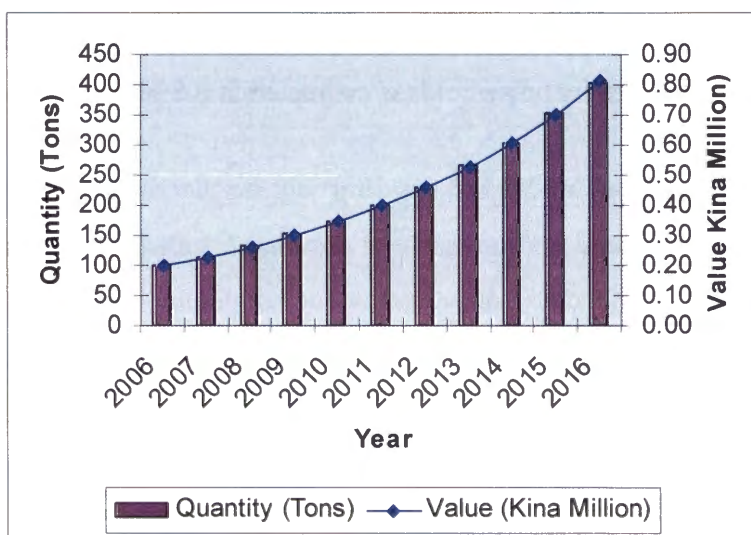
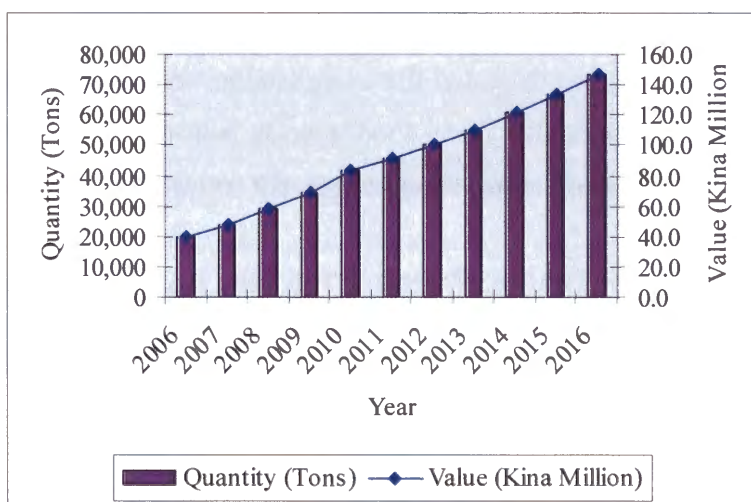


Chart 2: Rice Projections, 2006 to 2016

Year	Quantity (Tons)	Value (Kina million)
2006	20,000	40.0
2007	24,000	48.0
2008	28,800	57.6
2009	34,560	69.1
2010	41,470	82.9
2011	45,620	91.2
2012	50,180	100.4
2013	55,200	110.4
2014	60,720	121.4
2015	66,790	133.6
2016	73,470	146.9
Total	480,810	961.5

Based on 20% annual production increase



12.2.3. Livestock, Aquaculture and Apiculture

Annual beef production will increase gradually, from 3,000 tons in 2006 to 4,887 tons in 2016 and will replace imports to the Value of K237.5 million for the period 2007 to 2016 [Chart 3].

Aquaculture [Inland Fish Production] will increase from 1000 tons in 2006 to 2,593 tons in 2016, for the import replacement value of K105 million, for the period 2007 to 2016 [Chart 4].

Chart 3: Beef Projections, 2006 to 2016

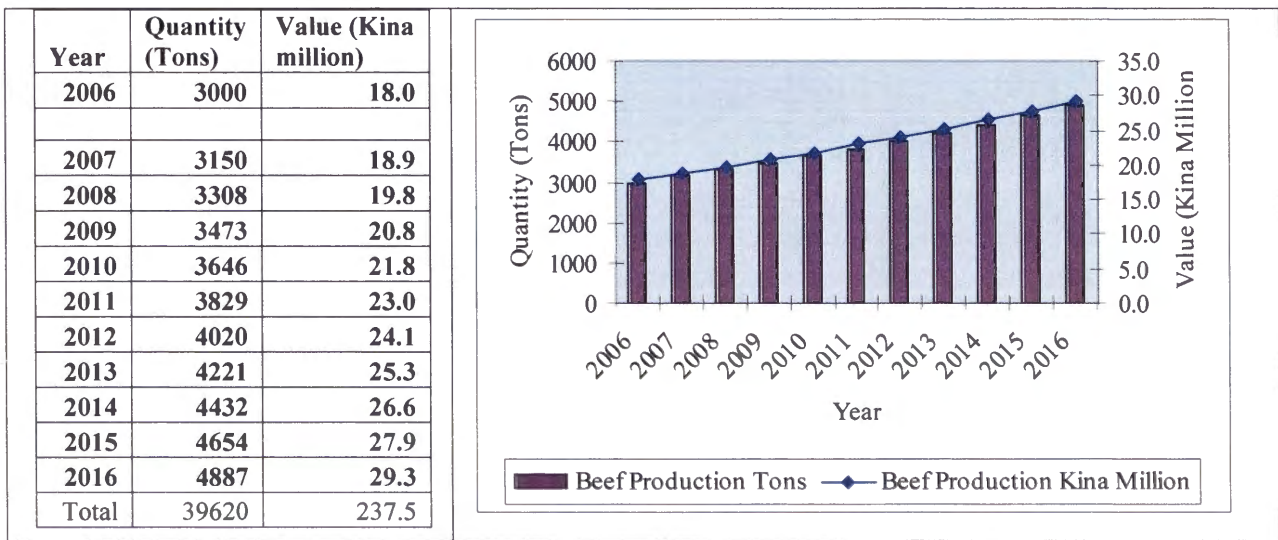
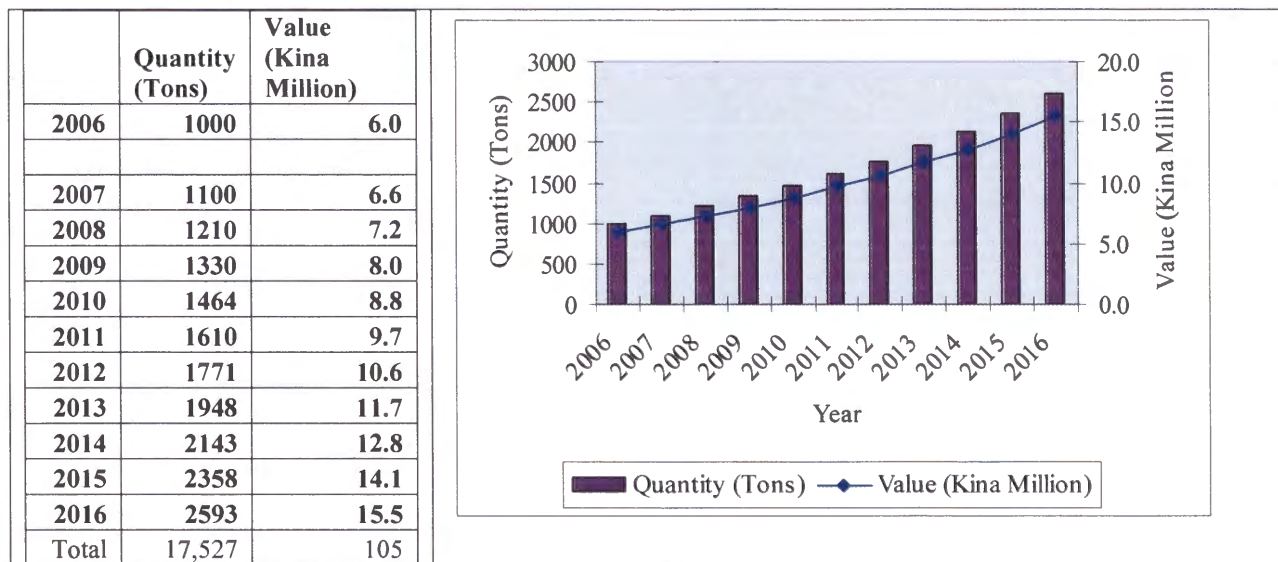


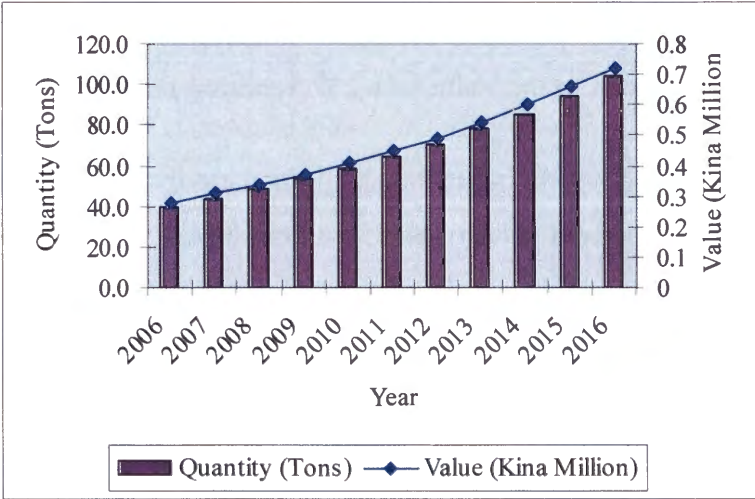
Chart 4: Inland Fish Projections, 2006 to 2011



Annual honey production will improve from 40 tons in 2006 to 103.7 tons by 2016 [Chart 5], for the cumulative value of K4.89 million.

Chart 5: Honey projections, 2006 to 2016

Year	Quantity (Tons)	Value (Kina million)
2006	40.0	0.28
2007	44.0	0.31
2008	48.4	0.34
2009	53.2	0.37
2010	58.5	0.41
2011	64.4	0.45
2012	70.8	0.49
2013	77.9	0.54
2014	85.7	0.60
2015	94.3	0.66
2016	103.7	0.72
Total	700.9	4.89



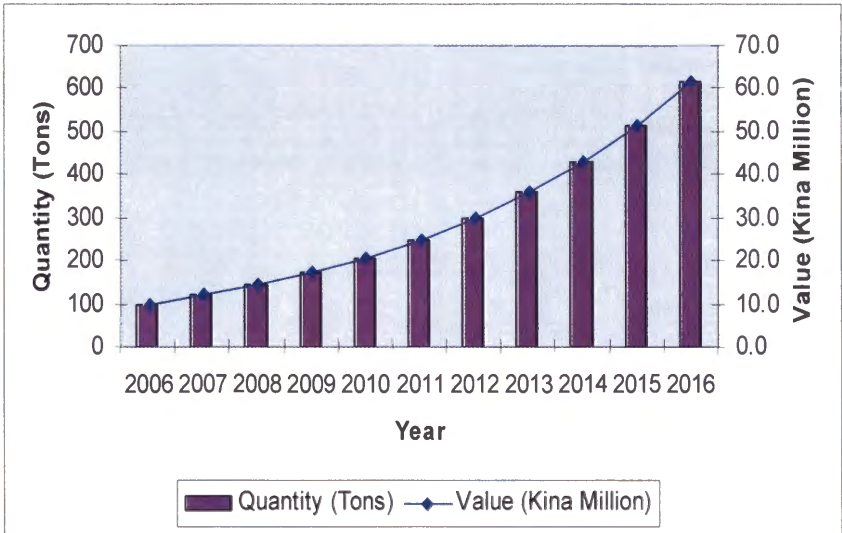
12.2.4. Spice Crop Projections, 2006 to 2016

Gradual increase in spice crops production is projected. **Vanilla** production will increase from 100 tons in 2006 to 616 tons in 2016 and generate income of K311.2, million for the period 2007 to 2011 (Chart 6a).

Chart 6; Spice crops projection, 2006 to 2016

Chart 6a. Vanilla Projections

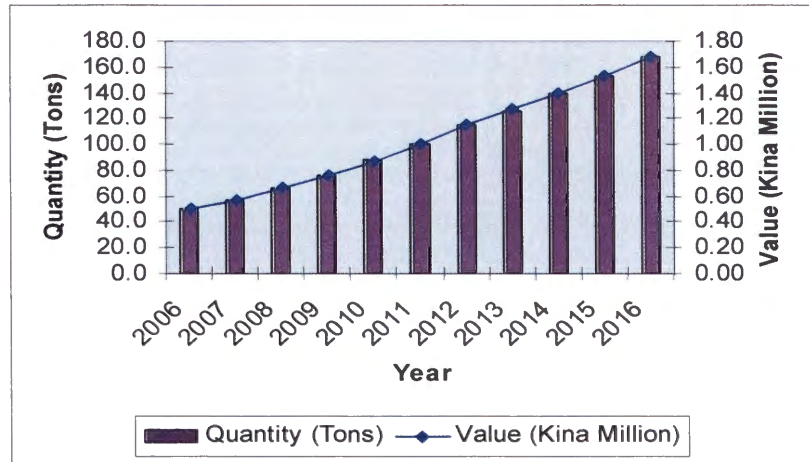
	Quantity (Tons)	Value (Kina million)
2006	100	10.0
2007	120	12.0
2008	144	14.4
2009	173	17.3
2010	207	20.7
2011	249	24.9
2012	298	29.8
2013	358	35.8
2014	430	43.0
2015	515	51.5
2016	618	61.8
Total	3,112	311.2



Based on 20% yearly production increase.

6b. Cardamom projections

Year	Quantity (Tons)	Value (Kina million)
2006	50.0	0.50
2007	57.5	0.57
2008	66.0	0.66
2009	76.0	0.76
2010	87.5	0.87
2011	100.0	1.00
2012	115.0	1.15
2013	126.5	1.27
2014	139.2	1.39
2015	153.0	1.53
2016	168.0	1.68
Total	1,088.7	10.88

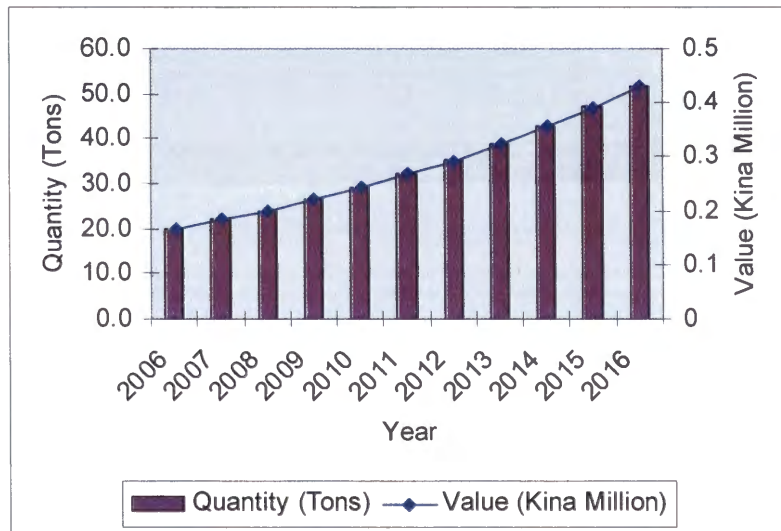


Based on 15% per year increase and priced at K10,000 / ton

Cardamom production will increase from 50 tons in 2006 to 168 tons in 2016, and generate income of K10.88 million for the period 2007 to 2016 (Chart 6b).

6c; Chilli projections

Year	Quantity (Tons)	Value (Kina million)
2006	20.0	0.166
2007	22.0	0.183
2008	24.0	0.199
2009	26.5	0.220
2010	29.2	0.242
2011	32.2	0.267
2012	35.4	0.292
2013	38.9	0.323
2014	42.8	0.355
2015	47.1	0.391
2016	51.8	0.430
Total	349.9	2.902



Based on 10% yearly production increase and priced at K8,300 / ton.

12.2.5. Tree Crops

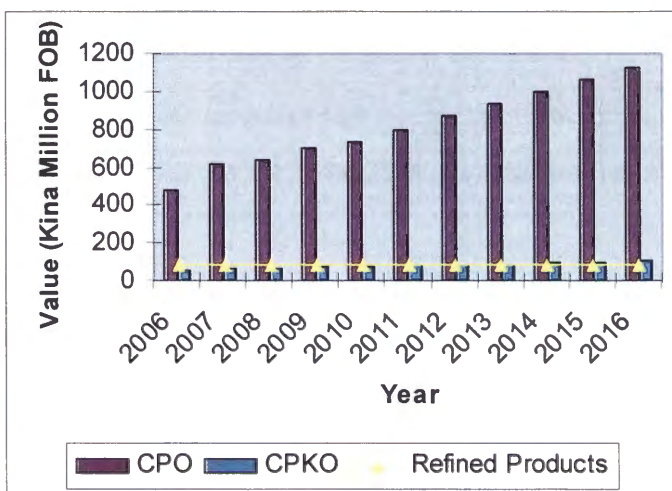
Empowerment of the tree crops producing households, rehabilitation of old and abandoned plantations, planting of new crops, increased research and extension delivery systems, backed up by road, transport and marketing infrastructure will ensure increased productivity and production in the tree crops industry.

Oil Palm

The Oil palm industry will pursue rehabilitation and new plantations on the nucleus estates and smallholder plots. The export revenue from Crude Palm Oil [CPO] and Crude Palm Kernel Oil [CPKO] is projected to increase from K478 million in 2006 to K1,126 million for CPO and from K49.0 million to K105 Million for CPKO. Refined products will bring in additional K90.0 million annually [Chart 7].

Chart 7: Oil palm industry projected exports value, 2006 to 2016

Year	CPO	CPKO	Refined Products
2006	478	49	90
2007	613	59	90
2008	642	63	90
2009	698	70	90
2010	737	76	90
2011	801	80	90
2012	866	85	90
2013	931	90	90
2014	996	95	90
2015	1061	100	90
2016	1126	105	90
Total	8471	823	900
Grand total	10194		

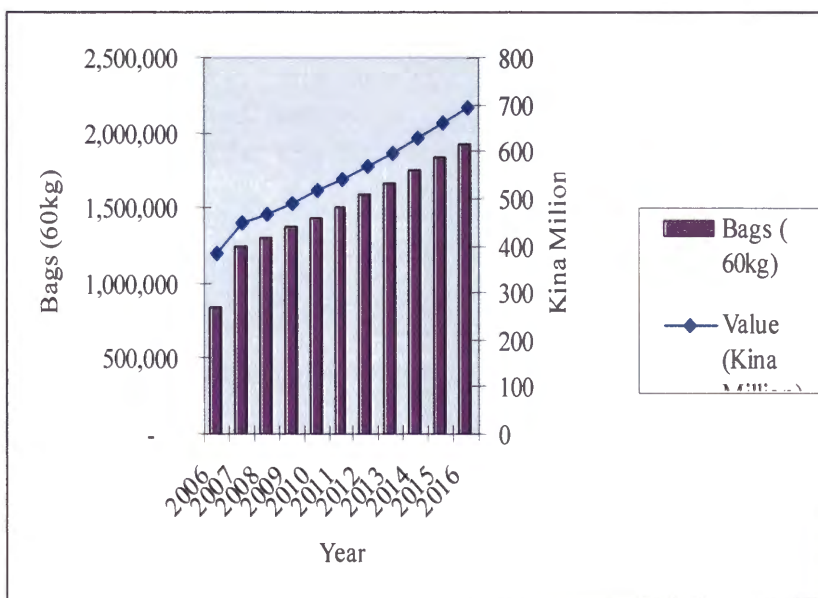


Based on 5% increase from 2007.

Coffee

Chart 8: Coffee projections for the period 2006 to 2016

Year	Bags (60 kg)	Kina Million
2006	842,297	382
2007	1,240,000	446
2008	1,302,000	469
2009	1,367,100	492
2010	1,435,455	517
2011	1,507,228	543
2012	1,582,589	570
2013	1,661,719	598
2014	1,744,805	628
2015	1,832,045	660
2016	1,923,647	693
Total	15,596,587	5,616



Coffee is projected to increase at the rate of 5% per annum from 2007. The projection target set at 1.5 million bags will be reached in 2011 and increase to 1.9 million bags in 2016.

For the period 2007 to 2016 a total production of 15.6 million bags will be produced, giving export value of K5,616 million [Chart 8]

Cocoa

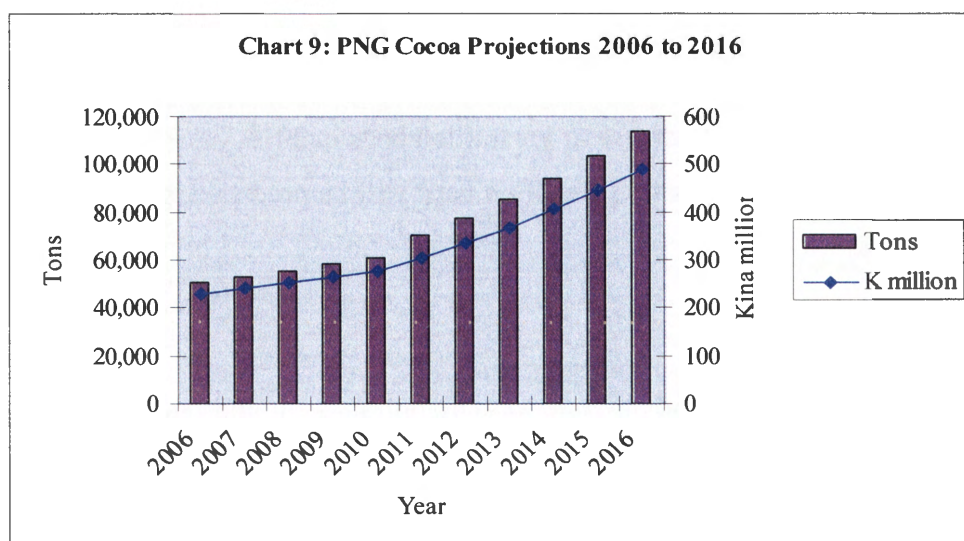
The average cocoa production for the period 1995 to 2006 was 39,000 tons. In 2005 the production increase to 47,813 tons [22.6% higher than the average], and in 2006, the production increase was 28.7% higher than the average [at 50,253 tons]

Projecting on a modest increase of 5% per annum over 2006 base year, Cocoa production will reach 113,623 tons by 2016 [Table 7 and Chart 9], with 10 year (2007 – 2016) revenue total of K3,383.4 Million [Table 6]. This is far in excess of the K1,724 earned in the 12 year period 1995 to 2006.

Table 7: Cocoa projections, 2006 to 2016

Year	Quantity (Tons)	Value (Kina million)
2006	50,253	228
2007	52,766	239.4
2008	55,404	251.4
2009	58,174	263.9
2010	61,083	277.1
2011	70,551	304.8
2012	77,606	335.3
2013	85,366	368.8
2014	93,903	405.7
2015	103,293	446.2
2016	113,623	490.8
Total	771,769	3,383.4

The projection is based on 5% increase from 2006 to 2010, and 10% increase thereafter.



Coconut

The coconut industry projections are based on;

An estimated 115,160 hectares, including existing senile coconuts, will be replanted with coconuts over the 10 year period starting in 2007. At the same period an estimated new area of 136,445 hectares will also be planted with coconuts.

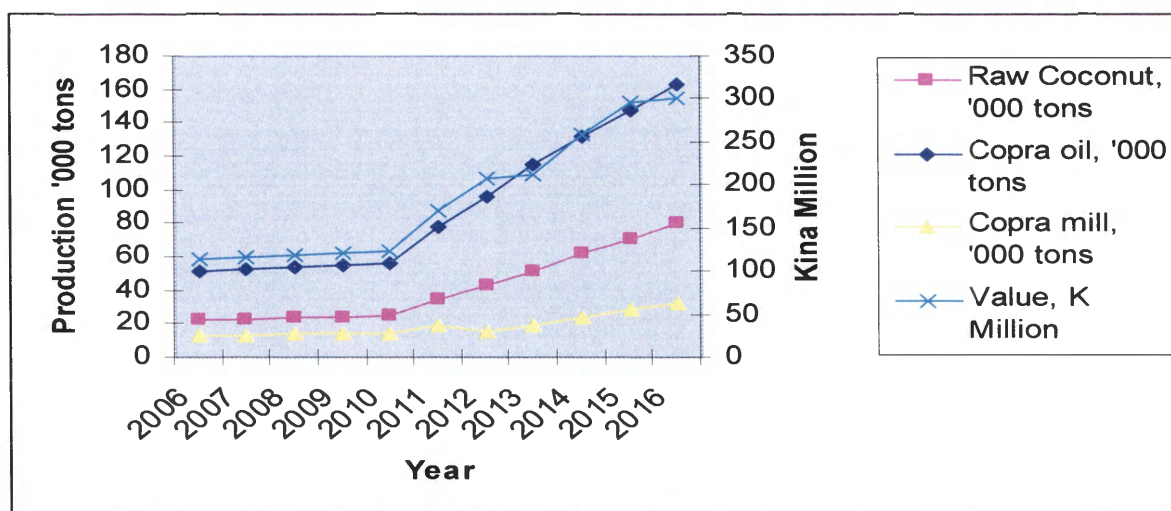
Copra production is expected to be slight from 2007 - 2010 because the replanted and new areas planted with coconuts will only come into full production after 2011.

Table 8: Coconut projections 2006 to 2016

Year	Raw Coconut ('000 tons)	Copra oil ('000 tons)	Copra mill ('000 tons)	Value (K Million)
2006	23	52	26	113.8
2007	23	53	26	116.1
2008	24	54	27	118.4
2009	24	55	27	120.7
2010	25	56	28	123.2
2011	35	78	38	170.3
2012	43	97	31	206.7
2013	52	115	37	211.9
2014	62	132	46	259.0
2015	71	148	55	295.4
2016	80	163	64	300.6
Total	439	951	379	1922.3

Chart 10; PNG coconut projections, 2006 to 2016

Chart 10; PNG coconut projections, 2006 to 2016



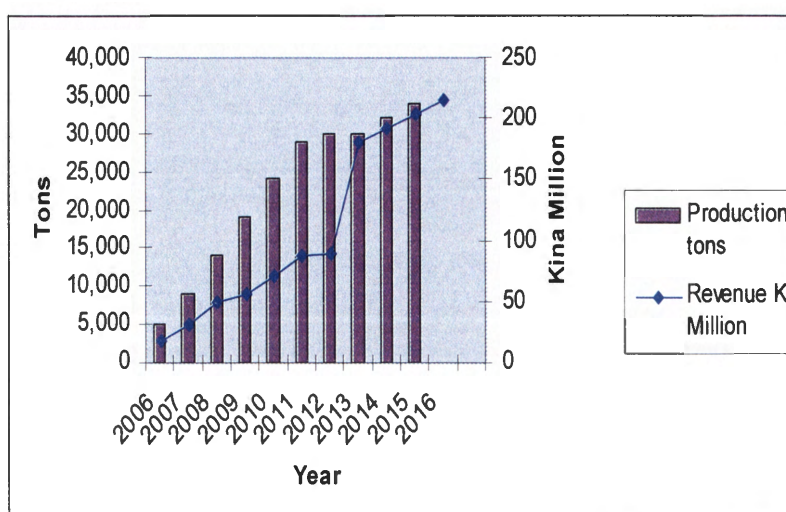
Increased production from replanted coconuts and those planted in new areas will be realized after 2011 when these coconuts come into full production. The projected copra yields from smallholders after 2011 is estimated to increase from the current 0.7 tons/ha to 1.0 ton/ha per annum from these new coconuts. The value of coconut products will increase from K116.9 in 2006 to K300.6 in 2016, giving a total income of K1,922.3 million, for the period 2007 to 2016 (Table 8 and Chart 10).

Rubber

The rubber industry is projected to increase production from the current 5,000 tons in 2006 to 36,006 tons by 2016. The industry is optimistic to achieve the target, provided the industry receives the amount stated in the NADP. The strategy is to mobilize the farm households to tap all the existing 18,230 ha (as against the 6,000 ha currently being tapped). Revenue is expected to increase from K17.5 million in 2006 to 216 million in 2016. The cumulative income for the period 2007 to 2016 will be K1178.5 million [Chart 11}.

Chart 11: Rubber projections, 2006 to 2016

Year	Tons	Kina Million
2006	5,000	17.5
2007	9,000	31.5
2008	14,000	49
2009	19,000	57
2010	24,000	72
2011	29,000	87
2012	30,000	90
2013	30,000	180
2014	32,002	192
2015	34,004	204
2016	36,006	216
Total	221,006	1178.5



Projection is based on fluctuating rubber prices of K3000 – 6000 /ton

12.3 CONCLUSION

Based on the above projections, it is profitable to invest the K1,199 million to implement NADP over the next 10 years, as the returns far out weigh the cost.

Annual export revenue from the tree crop sector is projected to increase gradually from K1,595 million in 2007 to K3,021.4 million in 2016. The tree crop sector alone will bring in a total of K22,294.2 million over the 10 year period (Table 9).

Table 9: Summary of projected tree crop export revenue, 2007 to 2016 (Kina million)

Commodity / Year	Oil palm	Coffee	Cocoa	Coconut	Rubber	Total
2007	762	446	239.4	116.1	32	1595.0
2008	795	469	251.4	118.4	49	1682.0
2009	858	492	263.9	120.7	57	1791.6
2010	903	517	277.1	123.2	72	1892.3
2011	971	543	304.8	170.3	87	2076.1
2012	1041	570	335.3	206.7	90	2243.0
2013	1111	598	368.8	211.9	180	2469.7
2014	1181	628	405.7	259.0	192	2665.7
2015	1251	660	446.2	295.4	204	2856.6
2016	1321	693	490.8	300.6	216	3021.4
Total	10,194	5,616	3,383	1,922	1,179	22,294.0

Wheat, rice, livestock and spices will generate K1,638.4 million over the period 2007 to 2016 (Table 9)

Table 10: Summary of projected income from other sectors, 2007 to 2016 (Kina Million)

Year	Wheat	Rice	Inland	Beef	Honey	Vanilla	Cardamom	Chilli	Total
2007	0.23	48.0	6.6	18.9	0.31	12.0	0.57	0.183	86.8
2008	0.26	57.6	7.2	19.8	0.34	14.4	0.66	0.199	100.5
2009	0.30	69.1	8.0	20.8	0.37	17.3	0.76	0.220	116.9
2010	0.35	82.9	8.8	21.8	0.41	20.7	0.87	0.242	136.1
2011	0.40	91.2	9.7	23.0	0.45	24.9	1.00	0.267	150.9
2012	0.46	100.4	10.6	24.1	0.49	29.8	1.15	0.292	167.3
2013	0.53	110.4	11.7	25.3	0.54	35.8	1.27	0.323	185.9
2014	0.61	121.4	12.8	26.6	0.60	43.0	1.39	0.355	206.8
2015	0.70	133.6	14.1	27.9	0.66	51.5	1.53	0.391	230.4
2016	0.81	146.9	15.5	29.3	0.72	61.8	1.68	0.430	257.1
Total	4.65	961.5	105	237.5	4.8	311.2	10.88	2.902	1,638.7

Food and horticultural crops that are marketed will bring in at least K201.4 million. While locally produced food that is not marketed but utilised by households is estimated at K5,000 million annually.

In addition to the above, Research, Extension, Information and Training are the catalysts to agriculture development. They will provide improved technology packages and contribute to increased capacity building and skills development in the industry as a result of improved and increased research, extension, information and training activities.

Table 11: Budget request and projected revenue (Kina Million)

Economic Sub- Sector	Budget Request	Projected Revenue (10 years)	Home Grown Food for consumption (Annual)
Apiculture	3.1	4.80	
Wheat	4.1	4.65	
Aquaculture	6.6	105.00	
Livestock	42.0	237.50	
Spices	22.8	325.00	
Rice	46.6	961.50	
Coconut	78.0	1,922.00	
Rubber	83.0	1,179.00	
Horticulture	91.7	201.00	5,000
Cocoa	118.3	3,383.00	
Oil Palm	130.6	10,194.00	

Coffee	193.6	5,616.00	
Sub-Total	820.4	24,133.45	
Service Sector			
Research, Extension, Information, Training, Quarantine, Land use, Codex & Gender, Social, HIV/AIDS	378.6	Unlimited	Value of contribution embedded in service sector figures
Total	1,199	24,133.45 +	

Agricultural Quarantine will safeguard the country from internal and exotic economic pests. Quarantine and codex will contribute to trade facilitation by promoting, safeguarding quality of imports and exports

Land use Management will provide access to land information; in terms of quality and suitability of land, nutritional status and management status. Suitable land information is essential for quality farming.

These contributions from the service sectors of Research, Extension, information, training, quarantine, Land use and codex have unlimited economic value far in excess of funds being required in the budget. They are the invisible building blocks and solid foundation, for the future prosperity of the agriculture industry PNG.

The overall budget request of K1,199 million being requested and if given, will bring in returns of K24,133 million from the tree, food, livestock and spice components (table 11).

However, the Government budget pledge of K100 million a year, would lead to a 10 year budget deficit of 198.99 Million [Table 12]. There is therefore the need to seek donors and the private sector to fund the deficit.

Table 12. NADP Budget, Actual vs Government Pledge, and the expected shortfall Kina [‘000]

	NADP Budget	Government Pledge	Difference
2007	187,948	100,000	-87,948
2008	160,714	100,000	-60,714
2009	127,219	100,000	-27,219
2010	130,069	100,000	-30,069
2011	108,599	100,000	-8,599
2012	103,409	100,000	-3,409
2013	93,264	100,000	6,736
2014	98,814	100,000	1,186
2015	90,604	100,000	9,396
2016	98,354	100,000	1,646
Total	1,198,994	1,000,000	-198,994

The NADP is mindful that, the overall success of Agriculture will also depend on other enabling factors, such as road, sea, air and transport infrastructure, marketing depots and law and order. The state needs to provide and ensure the availability of these in the production areas.

Private sector, Donors, and Government partnership, access to credit and the willingness of the population to participate in agriculture are also essential for success.

The NADP is the blue print and road map for the future success of PNG's agriculture and is expected to improve on prosperity, income and food security of majority of PNG Households. This is the way forward for the future of PNG.

How the NADP will be implemented / Managed

Project formulation

Project screening / review

Project Funding

Project implementation

M&E

Project Reports

Table 5: Summary of the NADP budget estimates, 2007 – 2016 (K '000)

Sector	2007**	2008	2009	2010	2011	2012	2013	2014	2015	2016	TOTAL
Research, Extension, Information and Training											
- Research	15,620	15,310	14,720	15,210	14,530	14,210	14,660	14,390	14,200	15,150	148,000
- Extension	3,700	5,900	6,000	6,100	6,050	6,050	6,050	6,050	6,050	6,050	58,000
- Information and Statistics	2,985	2,845	3,015	12,815	2,815	805	1,805	805	805	1,705	30,400
- Human Resources and Training	3,145	3,130	3,135	2,630	2,635	2,630	3,135	3,130	2,135	2,130	27,835
<i>Sub-total</i>	<i>25,450</i>	<i>27,185</i>	<i>26,870</i>	<i>36,755</i>	<i>26,030</i>	<i>23,695</i>	<i>25,650</i>	<i>24,375</i>	<i>23,190</i>	<i>25,035</i>	<i>264,235</i>
Food & Horticultural Crops Development											
- Domestic Rice	10,900	8,250	5,950	5,000	3,400	3,380	2,980	2,580	2,130	2,030	46,600
- Domestic Wheat	50	430	660	610	620	630	440	230	220	210	4,100
- Horticulture	11,710	10,270	10,320	10,270	8,770	8,780	7,980	7,980	7,800	7,800	91,680
<i>Sub-total</i>	<i>22,660</i>	<i>18,950</i>	<i>16,930</i>	<i>15,880</i>	<i>12,790</i>	<i>12,790</i>	<i>11,400</i>	<i>10,790</i>	<i>10,150</i>	<i>10,040</i>	<i>142,380</i>
Tree and Industrial Crops Development											
- Oil Palm	33,417	23,350	17,350	7,370	9,350	8,350	7,380	7,350	9,350	7,390	130,657
- Coffee	26,935	28,595	13,135	20,895	13,135	22,095	13,135	20,895	13,135	21,595	193,550
- Cocoa	22,365	15,075	14,175	12,575	12,525	8,455	8,405	8,305	8,225	8,225	118,330
- Coconut	17,600	13,900	5,900	5,800	5,800	5,800	5,800	5,800	5,800	5,800	78,000
- Rubber	9,060	11,360	10,760	9,760	8,110	6,910	6,810	6,710	6,710	6,810	83,000
<i>Sub-total</i>	<i>109,377</i>	<i>92,280</i>	<i>61,320</i>	<i>56,400</i>	<i>48,920</i>	<i>51,610</i>	<i>41,530</i>	<i>49,060</i>	<i>43,220</i>	<i>49,820</i>	<i>603,537</i>
Livestock, Aquaculture and Apiculture Development											
- Livestock	7,650	5,370	5,920	5,570	5,420	3,040	2,590	2,490	2,050	1,850	41,950
- Aquaculture	840	1,120	1,130	930	730	330	430	430	430	230	6,600
- Apiculture	230	340	340	360	380	320	310	310	280	280	3,150
<i>Sub-total</i>	<i>8,720</i>	<i>6,830</i>	<i>7,390</i>	<i>6,860</i>	<i>6,530</i>	<i>3,690</i>	<i>3,330</i>	<i>3,230</i>	<i>2,760</i>	<i>2,360</i>	<i>51,700</i>
Spice / Minor Crops Development	4,135	2,935	2,500	1,950	1,950	2,000	1,850	1,860	1,860	1,820	22,860
Gender, Social, HIV/AIDS	3,115	1,665	1,315	1,245	1,305	1,145	1,195	1,155	1,195	1,165	14,500
Regulatory and Technical Services											
- Quarantine	7,911	6,099	6,039	6,089	6,189	6,099	6,089	6,039	6,139	6,029	62,722
- Land Use	430	470	555	590	585	530	470	555	590	585	5,360
- Codex	650	650	650	650	650	650	650	650	650	650	6,500
<i>Sub-total</i>	<i>8,991</i>	<i>7,219</i>	<i>7,244</i>	<i>7,329</i>	<i>7,424</i>	<i>7,279</i>	<i>7,209</i>	<i>7,244</i>	<i>7,379</i>	<i>7,264</i>	<i>74,582</i>
NADP Management	5,500	3,650	3,650	3,650	3,650	1,200	1,100	1,100	850	850	25,200
TOTAL	187,948	160,714	127,219	130,069	108,599	103,409	93,264	98,814	90,604	98,354	1,198,994