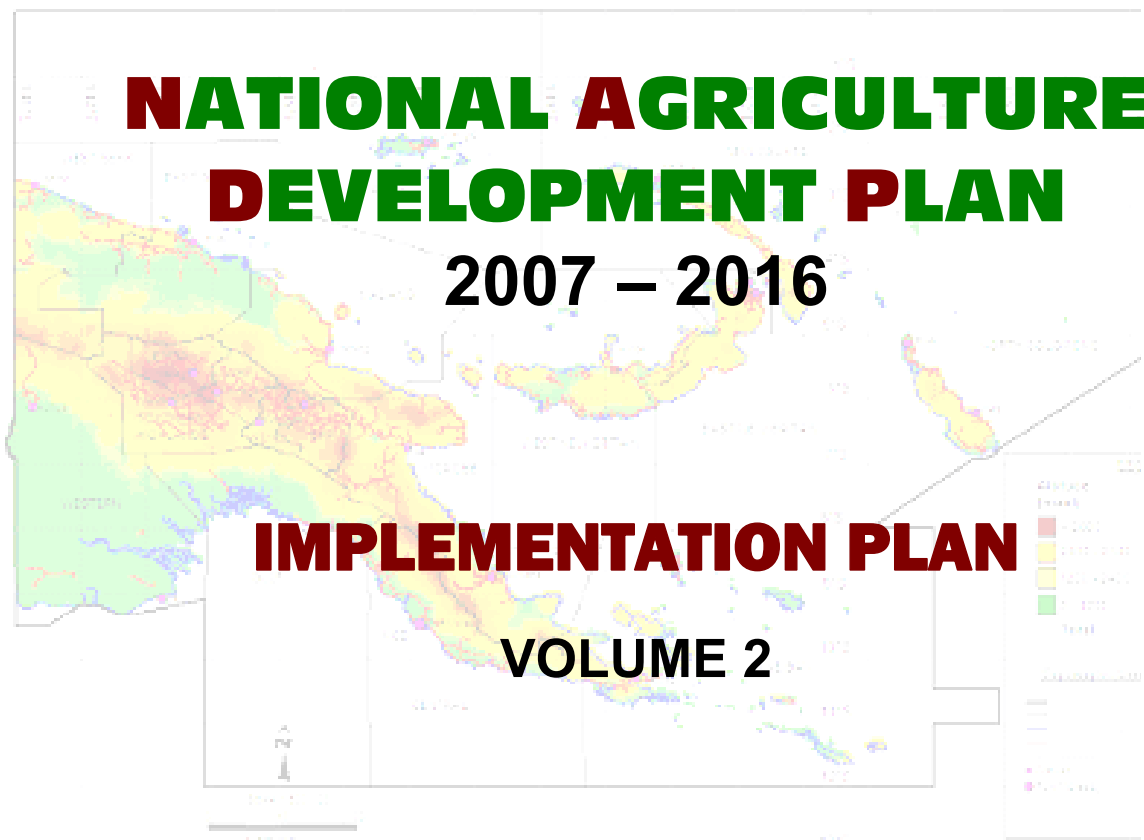




Independent State of Papua New Guinea
Ministry of Agriculture and Livestock



GROWING THE ECONOMY THROUGH AGRICULTURE

TABLE OF CONTENTS

Contents	Pages
Table of Contents	i
List of Tables	ii
List of Figures	ii
List of Charts	ii
List of Annexes	ii
List of Appendices	iii
List of Suitability Maps	iv
Acronyms	v
Executive Summary	vii
1. Introduction	1
2. Formulation of NADP Implementation Plan	1
3. Development Implementation of NADP on Provinces and Districts	2
4. Agriculture Research, Extension, Information and Training	2
4.1 Agriculture Research	2
4.2 Agriculture Extension	8
4.3 Agriculture Information and Statistics	10
4.4 Human Resources Development and Training	14
5. Food and Horticultural Development	17
5.1 Rice and Grain Crops Development	17
5.2 Domestic Wheat Development	20
5.3 Horticultural Crops	22
6. Tree and Industrial Crops	25
6.1 Oil Palm Development Program	25
6.2 Coffee Development Program	28
6.3 Cocoa Development Program	31
6.4 Coconut Development Program	34
6.5 Rubber Development Program	37
7. Livestock, Apiculture and Aquaculture Development Program	40
8. Spice and Minor Crops	44
9. Gender, Social, HIV/AIDS	47
10. Regulatory and Technical Services	50
10.1 Agriculture Quarantine	50
10.2 Land Use Planning and Development	54
10.3 Codex and Food Safety Development	58
11. NADP Management	61
12. The NADP Implementation Budget Estimates	65
12.1 The NADP Budget Summary	65
12.2 Projected Productions and Revenue 2006 to 2017	65
CONCLUSION	76

LIST OF TABLES

Table 1.	List of Crops and Livestock that are adapted to different agro-ecological environments in PNG.	4
Table 2.	Summary of the NADP budget estimates, 2007 to 2016 (K '000)	67
Table 3.	Projected Revenue from Food Crops in 10 years.	66
Table 4.	Oil palm industry projections, 2006 to 2010.	72
Table 5.	PNG cocoa production, 1995 to 2006.	73
Table 6.	Cocoa projections, 2006 to 2016.	74
Table 7.	Coconut projections 2007 to 2016.	75
Table 8.	Summary of projected tree crop export revenue, 2007 to 2016 (Kina million).	77
Table 9.	Summary of projected income from other sectors, 2007 to 2016 (Kina Million).	77
Table 10.	Budget request and projected revenue (Kina Million).	78

LIST OF FIGURES

Figure 1.	NADP Linkages with main stakeholders and coordination mechanism.	63
-----------	--	----

LIST OF CHARTS

Chart 1.	Wheat Projections, 2006 to 2016.	68
Chart 2.	Rice Projections, 2006 to 2016.	68
Chart 3.	Beef Projections, 2006 to 2016.	69
Chart 4.	Inland Fish Projections, 2006 to 2016.	69
Chart 5.	Honey projections, 2006 to 2016.	70
Chart 6.	Spice crops projection, 2006 to 2016.	70
Chart 6b.	Cardamom projections	71
Chart 6c.	Chilli projections	71
Chart 7.	Oil palm industry projected exports value, 2006 to 2016.	72
Chart 8.	Coffee projections for the period 2006 to 2016.	73
Chart 9.	PNG Cocoa Projections 2006 to 2016.	74
Chart 10.	PNG coconut projections, 2006 to 2016.	75
Chart 11.	Rubber projections, 2006 to 2016.	76

ANNEXES

Annex 1.	Provincial / District profiles Drawn from the Respective Plans	79
Annex 2.	Oil Palm Profile by Districts for the first 5 years	82
Annex 3.	Coffee Profile by Districts fro the first 5 years	85
Annex 4.	Cocoa Profile by Districts for the first 5 years	90
Annex 5.	Coconut Profile by Districts for the first 5 years	93

APPENDICES

Appendix 1: Agriculture Research Implementation Framework	96
Appendix 2: Agriculture Research Implementation Schedule	99
Appendix 3: Agriculture Research Total Budget	102
Appendix 4: National Agriculture Research Institute Budget	105
Appendix 5: Coffee Research Institution Budget	107
Appendix 6: Fresh Produce Development Agency Budget	109
Appendix 7: PNG Cocoa Coconut Institute Budget	110
Appendix 8: Oil Palm Research Association Budget	113
Appendix 9: Agricultural Extension Implementation Framework	114
Appendix 10: Agricultural Extension Implementation Schedule	115
Appendix 11: Agricultural Extension Budget	116
Appendix 12: Agricultural Information and Statistic Implementation Framework	118
Appendix 13: Agricultural Information and Statistic Implementation Schedule	121
Appendix 14: Agricultural Information and Statistic Implementation Budget	123
Appendix 15: Human Resource Development and Training Framework	125
Appendix 16: Human Resource Development and Training Schedule	127
Appendix 17: Human Resource Development and Training Budget	129
Appendix 18: Domestic Rice Development Implementation Framework	131
Appendix 19: Domestic Rice Development Implementation Schedule	134
Appendix 20: Domestic Rice Development Implementation Budget	136
Appendix 21: Domestic Wheat Development Implementation Framework	139
Appendix 22: Domestic Wheat Development Implementation Schedule	141
Appendix 23: Domestic Wheat Development Implementation Budget	143
Appendix 24: Food Crops and Horticulture Development Framework	145
Appendix 25: Food Crops and Horticulture Development Schedule	149
Appendix 26: Food Crops and Horticulture Development Budget	150
Appendix 27: Oil Palm Industry Development Implementation Framework	152
Appendix 28: Oil Palm Industry Development Implementation Schedule	156
Appendix 28: Oil Palm Industry Development Budget	158
Appendix 30: Coffee Industry Development Implementation Framework	161
Appendix 31: Coffee Industry Development Implementation Schedule	167
Appendix 32: Coffee Industry Development Budget	172
Appendix 33: Cocoa Industry Development Implementation Framework	177
Appendix 34: Cocoa Industry Development Implementation Schedule	181
Appendix 35: Cocoa Industry Development Budget	184
Appendix 36: Coconut Industry Development Implementation Framework	187
Appendix 37: Coconut Industry Development Implementation Schedule	190
Appendix 38: Coconut Industry Development Budget	191
Appendix 39: Rubber Development Implementation Framework	192
Appendix 40: Rubber Development Implementation Schedule	195
Appendix 41: Rubber Development Budget	197
Appendix 42: Livestock Development Implementation Framework	199
Appendix 43: Livestock Development Implementation Schedule	202
Appendix 44: Livestock Development Implementation Budget	204
Appendix 45: Aquaculture Development Implementation Framework	206
Appendix 46: Aquaculture Development Implementation Schedule	208
Appendix 47: Aquaculture Development Implementation Budget	209
Appendix 48: Apiculture Development Implementation Framework	210
Appendix 49: Apiculture Development Implementation Schedule	212
Appendix 50: Apiculture Development Implementation Budget	214

Appendix 51: Spices and Minor Crops Development Implementation Framework	216
Appendix 52: Spices and Minor Crops Development Implementation Schedule	219
Appendix 53: Spices and Minor Crops Development Budget	221
Appendix 54: Gender, Social and HIV/AIDS Implementation Framework	223
Appendix 55: Gender, Social and HIV/AIDS Implementation Schedule	227
Appendix 56: Gender, Social and HIV/AIDS Budget	230
Appendix 57: Agriculture Quarantine and Inspection Development Framework	233
Appendix 58: Agriculture Quarantine and Inspection Development Schedule	237
Appendix 59: Agriculture Quarantine and Inspection Development Budget	242
Appendix 60: Land Planning and Management Implementation Framework	246
Appendix 61: Land Planning and Management Implementation Schedule	250
Appendix 62: Land Planning and Management Budget	251
Appendix 63: Codex and Food Safety Implementation Framework	252
Appendix 64: Codex and Food Safety Implementation Schedule	255
Appendix 65: Codex and Food Safety Budget	256
Appendix 66: NADP Management Implementation Framework	257
Appendix 67: NADP Management Implementation Schedule	258
Appendix 68: NADP Management Implementation Budget	259

LIST OF SUITABILITY MAPS OF MAJOR CROPS IN PAPUA NEW GUINEA

Map 1: Suitability for upland rice in Papua New Guinea	261
Map 2: Suitability for upland rice in Papua New Guinea	262
Map 3: Suitability for Potato in Papua New Guinea	263
Map 4: Suitability for Pineapple in Papua New Guinea	264
Map 5: Suitability for Cashew in Papua New Guinea	265
Map 6: Suitability for Mango in Papua New Guinea	266
Map 7: Suitability for Citrus in Papua New Guinea	267
Map 8: Suitability for Oil Palm in Papua New Guinea	268
Map 9a: Suitability for Arabia Coffee in Papua New Guinea	269
Map 9b: Suitability for Robusta Coffee in Papua New Guinea	270
Map 10: Suitability for Cocoa in Papua New Guinea	271
Map 11: Suitability for Coconut in Papua New Guinea	272
Map 12: Suitability for Rubber in Papua New Guinea	273
Map 13: Suitability for Pepper in Papua New Guinea	274
Map 14: Suitability for Chilli in Papua New Guinea	275
Map 15: Suitability for upland rice in Papua New Guinea	276
Map 16: Suitability for Pyrethrum in Papua New Guinea	277
Map 17: Suitability for vanilla in Papua New Guinea	278
Map 18: Suitability for pasture in Papua New Guinea	279

ACRONYMS

ACIAR	Australia Centre of International Agriculture Research
ADB	Asian Development Bank
AIGF	Agriculture Innovation Grant Facility
ASOCON	Asia Soil Conservation on Network
AusAID	Australian Aid
CBO	Community Based Organization
CCI	Cocoa and Coconut Institute
CCRI	Cocoa and Coconut Research Institute
CEDAW	Convention on the Elimination of all forms of Discrimination Against Women
CIC	Coffee Industry Corporation
CIF	Cost Insurance and Freight
CIS	Correctional Institutional Services
CKPO	Crude Kernel Palm Oil
CLTC	Christian Leadership Training Centre
CPO	Crude Palm Oil
CRI	Coffee Research Institute
DDAL	District Division of Agriculture and Livestock
DNPM	Department of National Planning and Monitoring
DoE	Department of Education
DoF	Department of Finance
DoH	Department of Health
DoT	Department of Treasury
DPI	Division of Primary Industry
DTI	Department of Trade and Industry
EHP	Eastern Highlands Province
ENBP	East New Britain Province
ESP	East Sepik Province
FAO	Food and Agriculture Organization
FPDA	Fresh Produce Development Authority
GDP	Growth Domestic Product
GIS	Geographical Information Systems
GNP	Growth National Product
HBA	Highlands Beekeepers Association
ICCC	Independent Consumer and Competition Commission
ICT	Information & Communication Technologies
IPA	Investment Promotion Authority
IRC	Internal Revenue Commission
ISRIC	Institute of Soil Reference and Information Centre
JICA	Japan International Cooperation Agency
KIK	Kokonas Industri Koporesen
LDC	Livestock Development Corporation
LLG	Local Level Government
MCEDP	Minor Crops Export and Diversification Program
MDG	Millennium Development Goals
MTDS	Medium Term Development Strategy
NAC	National Agriculture Council
NADP	National Agriculture Development Plan
NADPS	NADP Secretariat
NADP TAC	NADP Technical Advisory Committee

NADS	National Agriculture Development Strategy
NAEN	National Agriculture Extension Network
NAIS	National Agriculture Information Systems
NAQIA	National Agriculture Quarantine and Inspection Authority
NARI	National Agriculture Research Institute
NARS	National Agriculture Research Systems
NATC	National Agriculture Training Council
NDAL	National Department of Agriculture and Livestock
NFA	National Fisheries Authority
NGO	Non Government Organization
NIP	New Ireland Province
NSIT	National Institute of Standards and Industrial Technology
NSP	North Solomons Province
NZAID	New Zealand Aid
OHE	Office of Higher Education
OISCA	Organization for Industrial, Spiritual and Cultural Advancement
OPIC	Oil Palm Industry Corporation
OPRA	Oil Palm Research Association
ORD	Office of Rural Development
PAU	Pacific Adventist University
PDAL	Provincial Division of Agriculture and Livestock
PNG	Papua New Guinea
PNGCCI	Papua New Guinea Cocoa and Coconut Institute
POPA	Palm Oil Producers Association
PROC	Peoples Republic of China
QAS	Question & Answers
RDB	Rural Development Bank
ROC	Republic of Taiwan
SAC	Sepik Agricultural College
SIB	Spice Industry Board
SPC	South Pacific Commission
SPS	Sanitary & Phytosanitary Measures
SSSPP	Smallholder Support Services Pilot Project
UNDP	United Nations Development Plan
USDA	United State Dept. of Agriculture Soil Taxonomy Society
UoT	University of Technology
UoV	University of Vudal
WTO	World Trade Organization
WIAD	Women in Agriculture Development
WIADU	Women in Agriculture Development Unit
WNBP	West New Britain Province
WSP	West Sepik Province

EXECUTIVE SUMMARY

In September 2001, the National Executive Council (NEC) directed the National Department of Agriculture and Livestock (NDAL) to develop a medium term National Agriculture Development Plan (NADP). Accordingly, NDAL, having consulted all stakeholders and the wider community within the agriculture sector, formulated the plan with technical and financial assistance from the GoPNG and the Food and Agriculture Organization (FAO) of the United Nations under the Technical Cooperation Program (TCP No. 3003A).

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 includes; 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 and improved nutritional status, livelihood of rural households.

(3) Tree and industrial crops development;

The tree and industrial crops sector aims 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, promote access to credit and markets and encourage 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, generate 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 nutritious food to Papua New Guineans.

This would entail rehabilitation of breeding centers; introduction of improved breeds, promotion of small and large livestock, and draught and pack animals for cultivation and transport. Out comes include; revitalized livestock industry, increased domestic livestock production, create employment and generate income, improved protein supplement, enhanced nutritional status, and contribute to import replacement.

(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, so as to improve the status of women through economic development, and also to 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 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, 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.

Most of this plan will be implemented in the districts and likely to be affected by factors that are external to the sector. Hence, NADP will form part of the Medium Term Development Strategy (MTDS) 2005 – 2010 which forms the overall national strategic framework for economic and social development.

The estimated total budget required for the implementation of NADP for the period 2007 – 2016 is K1, 199 million. 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 (revenue) to input (budget) is highly positive and 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 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.

1. INTRODUCTION

Agriculture has been the economic backbone of Papua New Guinea (PNG) for a long time, and will continue to be for many years to come, by providing food, income and employment to the vast majority of the rural population. Increased revenue from the mineral and energy sector in recent years have not significantly contributed to the improvement of the standard of living of the rural communities.

Over the last decade, agriculture sector growth was averaging only around 1% while the population growth was averaging 2.7%. The slow growth of the sector has adversely affected most of the rural families that depend exclusively on agriculture for their livelihood. With the exception of oil palm, agriculture industries were either stagnant or have had a negative growth. However, the situation has improved marginally over the last two years, primarily due to higher prices for the agricultural commodities in the world market.

Absence of a National Agriculture Development Plan (NADP), fragmented nature of the sector and inconsistent and/or low allocation of public funds has been identified as the major factors contributing to the poor performance of the sector. To rectify this, the National Department of Agriculture and Livestock (NDAL), in line with the Government's policy direction, and having consulted all the stakeholders within the sector and the wider community, formulated the NADP volume 1 with technical and financial assistance from the Food and Agriculture Organization (FAO) of the United Nations (Technical Cooperation/Developing Country Program No. 3003A). The NADP volume 1 highlighted among others, the general and specific issues affecting each of the sub-sectors and suggests a number of strategic interventions and approaches to address them to achieve an enhanced and sustainable growth of the agriculture sector.

2. FORMULATION OF NADP IMPLEMENTATION PLAN

Any agricultural development plan without an operational framework will be incomplete and of no practical value. Therefore, the National Agriculture Development (Implementation) Plan 2007–2016 (NADP Vol. 2) was developed. It consists of a Narrative Summary, Implementation Framework, Implementation Schedule, and Budget Schedule for each of the key priority areas that have been identified in NADP volume 1. The key priority areas are:

- (1) Agriculture research, extension, information and training;
- (2) Food and horticultural crops development;
- (3) Tree and industrial crops development;
- (4) Livestock, apiculture and aquaculture development;
- (5) Spice and minor crops development;
- (6) Gender, social and HIV/AIDS related issues;
- (7) Regulatory and technical services; and
- (8) NADP management and coordination.

A draft plan of volume 2 was prepared by NDAL and presented to the Commodity Boards, Research Organizations, Universities, Provinces, Donor Agencies, other Line Departments, Non-governmental Organizations, Private sector, and other relevant agencies and institutions at a formal workshop, and individually to other agencies, and their views and comments were

included as appropriate in the draft plan. Most of the planned activities will be implemented in the provinces and districts.

3. DEVELOPMENT IMPLICATIONS OF NADP ON PROVINCES AND DISTRICTS

The bulk of the population resides in the villages and towns in the districts, and depends on agriculture, forestry and fisheries for their livelihood. As most agricultural activities occur in the rural districts, a revitalized agriculture sector will create additional income-earning opportunities for the people living in the districts to improve their living standards. This would eventually contribute towards reducing unemployment, poverty, law and order and urban drift in the provinces.

The NADP calls on the Government to empower the rural population through the development of economically sustainable programs in agriculture. PNG has a large number of crop and livestock species that are well adapted to the different agro-ecological conditions in the country (Table 1) that can be successfully utilized to produce food and wealth. The sub-sector agencies have expressed their support to promote agriculture in the respective districts (Annexes 2, 3, 4 and 5) to realize the goals that have been set for each of the sub-sector and thus, contributing to the overall development of the agriculture sector in PNG and the national economy. The attached land suitability maps will serve as guide for the specific location and types of farms and plantation in the respective districts/provinces (Maps 1 – 21).

4. AGRICULTURE RESEARCH, EXTENSION, INFORMATION AND TRAINING

4.1 AGRICULTURE RESEARCH

4.1.1 Background

Role of Research

Agriculture Research plays a crucial role and serves as a catalytic factor in agriculture development through technical innovations. It must be viewed as a long-term investment with socio-economic benefits accruing to smallholder families.

In PNG, agriculture research is currently aimed at increasing productivity and production of staple food crops, cash crops, livestock, and efficient use and management of resources. Research plays a critical role in generating new information and technology most needed by various stakeholders in the agriculture sector including; farmers, extension personnel, decision makers, planners and scientists. Research recognises that farmers are not only the primary clients but also as an important resource of traditional knowledge.

Objectives 1 to 6 are directly related to agriculture research programmes that are conducted at various institutions, focusing on enhancing and sustaining high crop yields and livestock productivity through improved husbandry practices, using improved crop varieties and livestock breeds and sound management of soil and water resources. Impact assessments are necessary to verify the degree of success of adoption by farmers of the technologies released.

Institutional Strengthening

The Government recognises that the people will continue to drive the economy through meaningful participation in agriculture development activities. Rural farmers need to be equipped with various technical and practical skills to successfully invest and manage the new agriculture enterprises for income generation. It is therefore important that Papua New Guinean scientists and technicians are trained to undertake appropriate research to develop new agricultural technologies for adoption by smallholder farmers in the districts. The agriculture research scientists and technicians will continue to collaborate with provincial and district agriculture officers to disseminate appropriate technologies to the farmers for improving the productivity and sustainable use of resources.

Competent professional staffs are also required to provide administrative and financial services in the research institutions and other national agencies. The research organisations need to develop and maintain management systems and standards to foster good working environments.

All research institutes and other government agencies have essential infrastructure and facilities. These facilities should be maintained and where necessary upgraded or replaced to ensure that they remain in good condition to carry out the research programs.

Adequate funding must be continued over the medium term to research institutions and government agencies to support their institutional strengthening programs.

4.1.2 Goal

To promote innovative agriculture development through improved agriculture technologies, information and knowledge by undertaking applied and adaptive agricultural research and transfer the developed technologies to the agriculture stakeholders.

4.1.3 Objectives and Strategies

Objective 1: To develop effective delivery systems of research outcomes and information to farming communities and conduct impact assessment studies.

Strategies

- Determine research priorities and develop research program plans.
- Identify and assess constraints to production and marketing.
- Conduct evaluation of existing and improved technologies.
- Impact assessment of improved agriculture technologies on rural communities.
- Assess technology transfer and adoption in rural communities.
- Monitor and review current research activities undertaken by the different research institutions.

Objective 2: To improve and sustain productivity and production of agricultural crops.

Strategies

- Determine research priorities and develop research program plans.
- Assess crop varieties for various agro-ecological systems.
- Develop effective management systems for controlling crop pest and diseases.

Table 1: List of Crops and Livestock that are adapted to different agro-ecological environments in PNG

Type of Crop/ Livestock	Altitude Range (m.a.s.l.)	Provinces
Sweet potato	0 – 1,500	All provinces
Banana	0 – 1,200	Central, Morobe, East New Britain, Madang
Cassava	0 – 1,000	All provinces
Taro	0 – 1,500	Madang, East Sepik, Western, West New Britain, New Ireland
Sago	0 – 600	All 14 coastal provinces
Yam	0 – 1,200	All provinces
Rice, Maize and Other cereals	0 – 1,200	Central, Morobe, East New Britain, Bougainville, New Ireland, Madang, East Sepik, Eastern, Chimbu, Western Highlands
Wheat	> 1,600	Eastern, Chimbu, Western, Enga
Coconut	0 – 600	All 14 coastal provinces
Cocoa	0 – 600	East New Britain, Bougainville, New Ireland, West New Britain, Manus, Madang, Morobe, East Sepik, West Sepik, Oro, Milne Bay, Central, Gulf
Coffee	0 – 1,800	Western Highlands, Eastern Highlands, Morobe, Simbu, East Sepik, Enga, Southern Highlands.
Oil palm	0 – 300	West New Britain, New Ireland, Milne Bay, Oro, Sandaun
Rubber	0 – 600	Western, Central, Gulf, Oro, East Sepik, West Sepik, Sandaun, Manus, New Ireland
Vanilla	0 - 600	East Sepik, Central, Morobe, Manus, Sandaun, New Ireland, Madang, East and West New Britain
Cardamom	0 – 1,700	East New Britain, Simbu, Oro, Morobe
Chili	0 – 1,500	Western Highlands, Enga, Southern Highlands
Black pepper	0 – 1,200	East New Britain
Ginger	0 – 1,500	Eastern Highlands, Simbu, Madang, Oro, Morobe, East New Britain, West New Britain
Turmeric	0 – 1,500	Central, West New Britain, East New Britain, Oro, Morobe, Madang, Eastern Highlands, Simbu, East Sepik
Pyrethrum	> 1,500	Western Highlands, Enga
Floriculture	0 – 2,000	All provinces
Noni	0 – 600	East New Britain, Bougainville, New Ireland, West New Britain, Manus, Madang, Morobe, East Sepik, West Sepik, Oro, Milne Bay, Central, Gulf
Large ruminants (cattle)	0 – 2,000	Eastern Highlands, Southern Highlands, East Sepik, Sandaun, Morobe, Madang, New Ireland, East New Britain, West New Britain, Bougainville, Central, Milne Bay, Gulf, Oro, Western
Small ruminants (sheep and goats)	0 – 2,000	Eastern Highlands, Southern Highlands, East Sepik, Sandaun, Morobe, Madang, New Ireland, East New Britain, West New Britain, Bougainville, Central, Milne Bay, Gulf, Oro, Western

Source: NADP Volume 1.

m.a.s.l. - metres above sea level

- Evaluate crop varieties resistant to pests and diseases.
- Evaluate crop varieties resistant to harsh environmental conditions.
- Introduction, adaptation and evaluation of new crops and crop varieties.
- Determine financial returns on commercialisation of indigenous crops.

Objective 3: To improve the genetic potential of crops in PNG

Strategies

- Improving productivity of crops through genetic improvement.
- Improve planting material and production practices.

Objective 4: To conserve, manage, utilize and sustain natural resources, including genetic diversity

Strategies

- Management of soils fertility and soils moisture.
- Developing suitable agriculture technologies for atolls.
- Improving/sustaining crop production under extreme conditions.
- Conserving, managing and utilizing crop and animal genetic resources.

Objective 5: To improve livestock productivity and production at the farm level

Strategies:

- Developing improved animal feeding systems.
- Improving productivity of small meat animals.
- Develop suitable livestock management practices for smallholders.

Objective 6: To increase and sustain crop production through sustainable plant protection

Strategies

- Develop affordable management and control methods for crop pest and diseases.
- Develop biological control methods for exotic plant pests and diseases.
- Develop appropriate biology and loss assessment technics of pests and diseases.

Objective 7: To develop appropriate post harvest technologies for agricultural crops

Strategies

- Product quality improvement and monitoring programmes.
- Preserving and processing of agricultural crop by-products.
- Research on value added products (bio-fuel, coir fibre, charcoal, animal feed, medical product, food products).

Objective 8: To identify and establish market research to improve farmer income from domestic and international markets

Strategies

- Conduct supply and demand analysis for various commodities.
- Access market information for smallholder farmers.
- Undertake market chain analysis.

- Undertake studies on international market advantage on PNG crops.
- Develop a model farm budget for smallholders.
- Establishment of organic certification body to develop PNG organic certification protocols and system.

Objective 9: To strengthen institutional capacity of research institutions and infrastructure and facilities

Strategies

- Establish inventory and databases for institutional assets.
- Develop sound administrative and financial management systems.
- Promote good work ethics and governance.
- Identify and match training needs for farmers and institute staff.
- Establish career development plans and programs for institution staff.
- Human resource development through formal, workplace and cadetship programs.
- Develop, replace and maintain infrastructure, facilities, and equipments.
- Establish a national agriculture training coordination committee.
- Institutional strengthening for existing agriculture colleges at Mount Hagen and Sepik.

Objective 10: To strengthen collaboration amongst research institutions, provincial extension officers, commodity boards, other stakeholders

Strategies

- Establish a National Agriculture Research Systems (NARS) group Council
- Conduct peer reviews at each research institutions.
- Develop and strengthen coordination and networking among the key stakeholders.
- Establish research boundaries based on priorities among the stakeholders.

4.1.4 Activities/Schedules:

Each of the above strategies is related to appropriate identified activities that are aimed to achieve the overall objective of the program spread over ten years (2007-2016) as per the attached implementation schedule and budget (Appendices 1 – 8).

4.1.5 Locations

The executing agencies of agriculture research are strategically located in the main agro-ecological zones throughout the country. There are four agro-ecological zones in the country, namely: dry lowlands, wet lowlands (including mainland and islands), mainland highlands and high-altitude highlands. The priority setting of research projects and activities are determined and guided by the policy guidelines and mandates established by the government.

Coffee research under Coffee Research Institute (CRI) is situated in Aiyura, Eastern Highlands Province, serving the coffee growers, bulk of them from the highlands and also serving coffee growers in the lowlands. The tree crops research on oil palm, cocoa and coconut is conducted in the lowland areas and are concentrated in the Southern, Mamose and New Guinea Islands regions of the country. Oil Palm Research Association (OPRA) station is located in Kimbe, West New Britain Province (WNBP); Cocoa and Coconut Institute (CCI) is based at Tavilo for cocoa research programs while coconut research programs are located at

Murnas in Madang; and NARI has research stations located at Kerevat in East New Britain Province (ENBP), Bubia in Morobe Province, Aiyura in Eastern Highlands Province, Tambul in Western Highland Province and Laloki in Central Province.

4.1.6 Partners / Agencies

The following partners and agencies play crucial roles in addressing research and technical services: National Agricultural Research Institute (NARI), Coffee Research Institute (CRI), Oil Palm Research Association (OPRA), Cocoa and Coconut Research Institute (CCRI), Livestock development Corporation (LDC), National Department of Agriculture and Livestock (NDAL), PNG University of technology (Unitech), University Of Vudal, University of PNG, Fresh Produce Development Agencies (FPDA), Provincial Divisions of Agriculture & Livestock (PDAL), Department of National Planing and Monitoring (DNPM), Department of Treasury, Non Government Organisations (NGOs), and National Agriculture Quarantine and Inspection Authority(NAQIA).

4.1.7 Budget

Planning Period 2007 - 2016

The total budget for ten years (2007 – 2016) for research in the sector is K148 million and the break-up is:

Programs	Kina (Million)
1. Oil Palm Research	8.32
2. Cocoa and Coconut Research	49.36
3. Basic Research on Fresh Produce	12.78
4. Coffee Research	19.82
5. Food Crops and Livestock Research	57.72
TOTAL	148.00

4.1.8 Expected Outcomes

- (1) Increased income for smallholder farmers in rural communities.
- (2) Increased formal employment and self-employment opportunities, especially for women and youths in the districts.
- (3) Increased earnings or savings of foreign exchange through export and import replacements resulting in increased national economy growth at a target of 5% per annum.
- (4) Improved nutrition and food security through access to high quality foods and food products, leading to a range of health benefits including the combat of health threatening diseases.
- (5) Increased opportunities for people living in areas less endowed with natural resources, remote, marginalised, environmentally fragile or so far neglected in rural development strategies.

- (6) Capacity of smallholders to manage agricultural and natural resources in rural communities improved.

4.2 AGRICULTURE EXTENSION

4.2.1 Background

Under the provincial government reform the provincial agriculture extension function was decentralized to the provinces. This arrangement has not delivered the anticipated results in promoting the growth of agriculture based industries and active participation of farmers in agriculture development in the provinces. The performance of provincial agriculture extension has been affected by the following major factors:

- Inadequate funding by National Government;
- Ineffective delivery systems in the provinces due to non-existence or poor transport infrastructure and facilities;
- Poor planning and coordination of limited resources and poor linkages to national programmes and available donor support;
- Insufficient technical capacity; and
- Lack of market information and access.

Based on the experience of the provinces, it is believed that the existing agriculture extension delivery system can be improved and sustained if it can be strengthened by the provision of adequate funding and other essential resources under the NADP. A pilot project on extension delivery systems [refer to SSSPP and FPDA reports] demonstrated that productivity at the smallholder level improved significantly when extension support services were made available to them. Therefore, if sufficient funding support is given to the provinces with well planned extension projects, they will be able to respond and deliver effective extension services on a regular basis, to help resurrect the interest of the farmers. This development will promote, strengthen and consolidate agriculture as the basis for rural development and economic growth.

4.2.2 Goal

To promote sustainable agriculture development, through the application of improved agricultural technologies, transfer of information, knowledge and skills to farmers.

4.2.3 Objectives and Strategies

Objective 1: To establish effective agriculture extension delivery systems in the provinces.

Strategies

- Review existing agriculture extension systems in each province and propose innovative ways of improving the current extension organisational structure.
- Establish effective co-ordination and management systems for agriculture support services in the provinces and districts.
- Review the technical capacity of existing provincial extension officers and upgrade their skills through appropriate training programs.
- Improve collaboration and communication linkages of provinces with NDAL, commodity boards, research institutions and other stakeholders.

- Establish provincial resource centres to act as technology and skills transfer centres for farmers.
- Undertake an inventory of transport infrastructure in each district and incorporate in provincial agricultural plans.

Objective 2: To facilitate national agriculture survey in the districts.

Strategies

- Work with NDAL to develop appropriate agriculture survey forms / formats to be used in 2008.
- Conduct awareness program on the national agriculture survey in the Wards for each district in 2007.
- Identify the resource requirements for conducting the national agriculture survey in each district per province and submit reports to NDAL.

Objective 3: To facilitate the establishment of agriculture marketing network in the provinces.

Strategies

- Identify the needs of farming communities and develop appropriate smallholder agriculture enterprises for income generation.
- Identify model smallholder farmers to act as facilitators for farmers training programs in the Districts and Wards.
- Assess the existing marketing facilities and identify best options of establishing viable market outlets for smallholder farmers.
- Assess the options to establish smallholder marketing cooperatives in the districts.
- Identify suitable funding sources to fund the smallholder marketing cooperatives.

4.2.4 Activities/Schedules:

Each of the above strategies is related to appropriate identified activities that are aimed to achieve the overall objective of the program in ten years (2007-2016) as per the attached implementation schedule and budget (Appendices 9 –11).

4.2.5 Locations

Agriculture extension and training programs are currently undertaken in the 19 provinces and 89 districts in the country. Provincial governments and district administrations will take the lead in addressing the extension problems in the districts and work with agriculture sector stakeholders to improve the existing extension system.

4.2.6 Partners / Agencies

Provincial Division of Agriculture & Livestock, District Division of Agriculture & Livestock, Local Level Governments (DDAL), Community Based Organisations (CBOs), Non Government Organisations, Donors; FAO, ADB, JICA, AusAID, ROC [Taiwan], PROC, Commodity Industries, Local Collaborators; NADL, NARI, NAQIA, FPDA, Universities, Department of National Planning and Monitoring, Office of Rural Development (ORD).

4.2.7 Budget Requirements

Planning Period 2007 – 2016

The budget required for revitalising the provincial extension services in PNG over the next ten years (2007 – 2016) is K58 million and the break up is provided below:

Programs	Kina (Million)
1. Outsourcing extension	29.90
2. Improve capacity of provincial extension officers	7.70
3. Improve collaboration and communication with stakeholders	9.00
4. Establish provincial resource centres	12.20
5. Coordination and management of agriculture support services	3.80
Total	58.00

4.2.8 Expected Outcomes

- (1) Nineteen provincial resource centres developed and established.
- (2) At least 25 % of provincial agriculture staff trained to upgrade their technical skills.
- (3) At least 50 % increase in farmer contact from present level.
- (4) At least 50% improvement in networking with smallholder farmers.
- (5) Skills of farmers in various agriculture enterprises improved by at least 60% in each district.
- (6) Farmer contact by extension officers increased by 50% in 2016.
- (7) Increased income earning opportunities for rural families through the development of agriculture enterprises.
- (8) Rural communities appreciate food security and poverty alleviation issues and agree to address these two issues in the village communities.
- (9) Reduction in social problems and urban drift as income generation activities increase in the districts.
- (10) Increased internal revenue for provincial government from agriculture projects.
- (11) Innovative agriculture extension and market services provided to smallholder farmers
- (12) Innovative extension services leads to 10 – 20 % increase in the production of coffee, cocoa and coconut commodities.

4.3. AGRICULTURE INFORMATION AND STATISTICS

4.3.1. Background

Agriculture is the back bone of Papua New Guinea and 82% of citizen over 10 years old and above living in private dwelling are employed in agriculture [National Statistics Office [NSO] 2000 Census report]. Over the years since independence, the agriculture sector's contribution

to GDP has declined from a high of 36% in 1977 to 23.9% in 1999, and rose marginally to 26% in 2004 /2005.

One of the factors that contributed to the decline in agricultural productivity and production is the lack of knowledge, which is a consequence of unavailability and/or lack of information to the majority of the rural and agricultural community in PNG. This shortage of information on up to date or current agricultural packages has been made even more profound as a result of; reduction in extension staff and poor quality of the extension delivery system. These have resulted in reduced agricultural productivity and output.

Planners, managers, researchers and policy makers should have access to up-to-date and reliable information to make well-informed decisions. Agriculturists and extension specialists in the field need to be updated on new technologies, innovations and knowledge so that they, in turn, can transfer them on to the farmers. Farmers also need reliable and up to date information on farming activities, marketing information, trade and consumer preferences to make appropriate decisions on which agriculture activities or enterprises they should invest in for income generation.

Unfortunately, the existing agriculture information system is fragmented and outdated. The NDAL agriculture library located in Port Moresby needs to be rehabilitated. The data and information on agriculture profile of provinces and districts, currently located in the Land Use Section of NDAL, needs to be updated and made user friendly. NDAL conducted the last national agriculture survey in 1963 due to manpower shortage in the provinces and lack of adequate funding.

NDAL and the Sector Agencies realise that information, and therefore knowledge, is an essential key in agriculture development. A dynamic agriculture information system must be established to address the sector needs:

Adequate funding is solicited to *support agricultural publication, information and mass communication systems* in the country. This includes; the production of Farming Notes, Rural Development Series Handbook, Technical Bulletins, Newsletters, the Harvest and PNG Journal of Agriculture, Forestry and Fisheries, provision of library services to the agricultural communities. New areas are to contribute to the National Information and Communication Technologies (NICT) network, design / host and provide web- services to Sector Agencies, to promote the establishment of National Agricultural Information Systems (NAIS) that links sector agencies library data – bases and to establish the Question and Answer network (QAS) that links all sector agencies and farmers nationwide, and to conduct the much delayed National Agricultural Census that is overdue since the 1963 Census.

4.3.2. Goal

To provide appropriate, relevant and timely information to the agricultural sector for increased productivity and production of the agricultural industries and for a better livelihood of the population.

4.3.3. Objectives and Strategies

Objective1: To coordinate relevant and appropriate agricultural information production and dissemination to the sector.

Strategy

- Revive the National Agricultural Information Network [NAIN] to coordinate and review information.

Objective 2: To produce and disseminate relevant agricultural information for sector use.

Strategies

- Rehabilitate and upgrade NDAL Print shop, machinery and equipment.
- Conduct workshops and seminars to update / produce agricultural information.
- Publish and disseminate agricultural information in print form.
- Produce and provide relevant information in electronic and audio-visual forms.
- Partnership with broadcasting agencies in disseminating agricultural information.

Objective 3: To host sector agricultural web-page for timely and relevant information dissemination nationally / internationally.

Strategies

- Design, host and launch sector agricultural web-page that links all sector agencies.
- Participate effectively in the national ICT network.

Objective 4: To coordinate the establishment and management of District Agricultural Information Centers nation wide.

Strategy

- Establish District agricultural information centers.

Objective 5: To improve on Library related information systems to serve sector needs.

Strategies

- Host an updated library to serve the sector information needs.
- Promote sector agencies partnership in library database updating [NAIS].
- Promote sector agencies collaboration in the QAS [Question and Answer] network.

Objective 6: To develop Human resources in agricultural information development / management.

Strategy

- Develop and improve staff skills in information technologies.

Objective 7: To update the 1963 database on Agricultural information for effective current and future agricultural planning.

Strategy

- Conduct National Agricultural Census.

4.3. 4. Activities and Schedules

The necessary activities are planned to address the objectives and strategies, and to achieve the necessary results in the ten years period (Appendices 12 – 14).

4.3. 5. Locations

The activities would be directed from the NDAL-Headquarters in Port Moresby with the support of Sector Agencies across the country. Thus information dissemination will be national, covering all regions, provinces, districts and Agricultural Sector Agencies.

4.3. 6. Partners

Agricultural Agencies, Universities, Agricultural Scientists, Extension staff and Farm Households in PNG. Others are international and national, Partners such as FAO, ACIAR, ACNARS, AusAID, JICA, DNPM, DoF, DoT, Donors, NGO's, CBO's, the Private Sector and other Government Departments

4.3. 7. Budget

Planning Period 2007 – 2016

The total budget for ten years (2007 – 2016) for agriculture information and statistics is K30.4 million and the break up is;

Components	Kina (Million)
1. National Agricultural Information Networking Activities	0.33
2. Rehabilitation of Printers, machinery and equipment	2.70
3. Production and dissemination in print, electronically and Radio	2.04
4. Sector agricultural web-page & ICT related	0.72
5. District Agricultural Information Centers nation wide	10.60
6. Library , NAIS and QAS networking systems	1.07
7. Human resources and Skills Development	0.51
8. National Agricultural Census	12.43
Total	30.40

4.3. 8. Expected Outcome

- (1) A coordinated National Agricultural Information Network [NAIN] in place.
- (2) NDAL Print shop, machinery and equipment rehabilitated and upgraded to meet sector printing needs.
- (3) Workshops and seminars conducted to update / produce agricultural information.
- (4) Relevant agricultural information produced and disseminated in print, audio-visual and other electronic forms on timely basis.
- (5) Partnership with Broadcasting agencies established for disseminating agricultural information nationally.
- (6) Sector agricultural web-page in operation for timely and relevant information dissemination nationally / internationally.
- (7) Agriculture Sector Participated effectively in the national ICT network.
- (8) The establishment and management of District Agricultural Information Centers nation wide are coordinated.
- (9) Relevant information to District Resource Centers provided regularly and on timely basis.

- (10) Library related information systems improved to serve sector needs.
- (11) Sector agencies partnership in library database updating [NAIS] developed and operational.
- (12) Sector agencies network in the QAS [Question and Answer Systems] developed and operational.
- (13) Sector Human resources developed in agricultural information development /management.
- (14) National agricultural database, statistics /information updated through National Agricultural Census, for better planning in the future.
- (15) Improved awareness and knowledge by the agricultural communities as a result of timely and relevant information production and dissemination.
- (16). Improved awareness in agriculture contributed to increased productivity and production in the country.

4. 4. HUMAN RESOURCES DEVELOPMENT AND TRAINING

4.4.1. Background

“Nations have been developed on borrowed ideas, borrowed money and technology on continuous basis. But no country in the world has progressed and prospered beyond its infancy stage on sustained borrowed human capital. Human resource is one form of capital, and information is another. Those who invest early and heavily on research and development and on building its own institutional capacities and developing its own cadre of skilled human resource capital are leaders in the world”.

The role of agriculture is changing and becoming technically advanced and progressive. We are no longer on our own with subsistence existence but active participants of an emerging global economic community. To be competitive in the global economic community, empowerment of farmers with updated information, and technical and management skills has become a necessity for reducing cost, improving efficiency, and maximizing production and productivity. Farmers need to be creative and competent to meet the new challenges facing the agricultural sector.

Human resource development and training is a long-term investment and is central to sustainable economic development and the well being of any nation. It must therefore be promoted as an integral part of any developmental initiative. Expert advice, donor funding assistance, establishing programs and projects for development are of limited use if the people who directly benefit from such assistance are not adequately trained to take up the challenges.

The training function which has been one of NDAL’s prime responsibilities over the years has become ineffective with the disintegration of agricultural institutions, yet the demands of the sector for effective HRD and training programs remain and continue to increase. HRD and training program in this context imply interventions at various levels that entail agricultural trainers, workers, and the farmers. Whilst it can be said that Agriculture Education and Training has evolved to the satisfaction of many, as judged by transfer of NDAL institutions to the Office of the Higher Education (OHE) over the last decade, a thorough analysis is still required to evaluate the impact of HRD and training interventions at all levels within the sector. It is envisaged that the FER of the sector will identify the constraints and suggest solutions to address any deficiencies.

However, over the years agricultural sector's human resource development has become increasingly fragmented and uncoordinated to the extent that, planning and coordination amongst sub-sectors and various training institutions including NGOs run training institutions are disjointed and lacked coherence. Consequently, investment in training and human resource development was undertaken in almost total isolation of the agricultural sector human resource needs. In the absence of the National Agricultural Sector Human Resource Development and Training Plan, coordination of resource assistance is distorted, resulting in an unpredictable availability for disposal. Therefore, it is suggested that under NADP a National Agriculture Training Council (NATC) be established for planning and coordinating Agriculture Training for the sector. All relevant agencies and private sector partners involved in providing human resource development programs for the agricultural sector will become members of the governing council, and will participate in the development and evaluation of the curriculum that are been taught in all vocational schools, colleges and universities and assess the linkages that need to be in place for accreditations to be effected and implemented at all levels of training.

Institutional Strengthening / Farmer Training Centres

Young people involved in agriculture require adequate training to deal with the complex local agricultural issues. Participation of smallholder farmers in the cash economy underlines the importance of agricultural training to be geared to their specific needs. This requires a new radical thinking on specialized skills based training that should be conducted out-door. Mechanisms and methods for deploying of mobile training units need to be developed to take classroom-based training to the districts and communities to facilitate specific training needs of the district-based extension officers and farmers.

Under this plan a determined strategy is to revitalize the farmer training schools/ centers in each province of the country. Training will target both rural and urban youths in crops and livestock husbandry and management, business management, operation and maintenance of small machines, etc and must be adequately resourced through the training institutions and regional establishments. It is envisaged that this training program will also facilitate and coordinate with the relevant collaborating line agencies such as the National Training Council, to select farmers or youths from the provinces to undergo farmer training or Technical Intern Training programs in overseas under the existing bilateral arrangements, who will upon return after 2-3 years will have secured /saved sufficient funds to start up their own agro-businesses.

Collaborative programs with research and training institutions for both in-country and overseas training, through twinning arrangements, will also be fostered in order to enhance new knowledge, skills and experience of nationals. The cadetship scheme will also be re-introduced to allow for a systematic flow of competent staff to replace outgoing retired or retrenched staff in the provinces and districts. This will be encompassed in the career development programs which will be coordinated under the training plans.

The proposed plan requires substantial budgetary support in renovating old institutional assets including farm building, dormitories, classrooms and other essential infrastructure at HAC / LISTC / SAC /NARI and the Provincial Farmer Training Centers.

4.4.2. Goal

To raise the capacity of the human resources at all levels to boost productivity, profitability and sustainability within the agricultural sector, through Human Resources Development and Training programs at all levels.

4.4.3. Objectives and Strategies

Objective 1: To improve coordination and monitoring of the sector's training programs.

Strategies:

- Establish a National Agricultural Training Council (NATC) to coordinate and monitor sector's training programs.
- Strengthen collaboration and linkages with all training providers, donors and line agencies.

Objective 2: To improve and strengthen human resource development in the agricultural Sector.

Strategy:

- Coordinate and facilitate training programs in collaboration with training providers, donors and line agencies within the provinces, district and/or overseas.

Objective 3 : To improve and renovate institutional infrastructure and facilities.

Strategy:

- Develop, maintain and renovate infrastructures and facilities in existing agricultural colleges, tertiary institution research station and the farmer training centers in all provinces and districts.

4.4.4. Activities /Schedules

Each of the above strategies is related to appropriate identified activities that are aimed to achieve the overall goal of the program spread over ten years (2007-2016) as per the attached implementation schedule and budget (Appendices 15 – 17).

4.4.5. Locations

The training institutions that are managed and administered by the NDAL and the OHE are strategically located in the four main regions, namely Highlands Agricultural College in the Highlands, LISTC in Lae, Sepik Agricultural College (SAC) at Maprik in the East Sepik Province and University of Vudal Oro campus in Popondetta, and the main Vudal campus in the East New Britain Province, University of Technology in Lae and the University of Goroka in the Eastern Highlands.

Farmer training centers are also located in most of the provinces, which have over the years become defunct due to lack of resources. Other church and private run agricultural centers such as the 12-mile Farmer Training Center in Port Moresby, Pacific Adventist University (PAU), Sonoma Adventist College in Rabual, Banz in the Western Highlands, St. Benedicts in Madang and the Evangelical Lutheran College in Lae are other private run organizations that are instrumental in farmer training programs. They will be linked and become partners in the implementation of the sector human resource development programs.

4.4.6. Partners / Agencies

The following partners and agencies play crucial role in addressing human resource development and training for the agricultural sector: NDAL, PDAL, OHE, UoV, UoT, UOG, DWU, Private run organizations: Banz, St. Benedicts, Sonoma, Pacific Adventist University (PAU), Evangelical Lutheran Church, NARI, NAQIA, Donors agencies including – JICA, AUSAID, NZAID, ROC, UNDP and other line agencies : Department of national Planning,

Department of Community Development, Department of labour, National Training Council and other NGO's : Hope world wide, City Mission, Children's Fund, World Vision, Salvation Army, Christian Leadership Training Centre (CLTC) ...etc.

4.4.7. Budget

Planning period 2007 – 2016

The ten years budget for human resource development and training in the sector is K27.835 million and the break-up is:

Programs	Kina (Million)
1. Training management and coordination	0.110
2. Institutional Strengthening and linkages	0.775
3. Capacity Building and Human resource development/ Capital formation	5.150
4. Institutional infrastructure maintenance	21.800
Total	27.835

4.4.8. Expected Outcomes

- (1) National Agricultural Training Council established and operational by 2007.
- (2) Linkages and collaboration strengthened between all agricultural training providers.
- (3) Training plans are developed by 2007 onwards.
- (4) Training information disseminated annually.
- (5) At least 5,000 staff and farmers trained annually.
- (6) At least 30-40% of trainees are women.
- (7) At least 20 staff on bid for overseas training annually.
- (8) Refresher courses conducted annually.
- (9) Training and Trainee database established and updated regularly.
- (10) All existing college and farmer training centers fully renovated and functional.

5. FOOD AND HORTICULTURAL CROPS DEVELOPMENT

5.1 RICE AND WHEAT DEVELOPMENT

5.1.1 Domestic Rice Development

Rice was introduced into PNG almost one hundred years ago and is now cultivated as smallholder crop in almost all Provinces. Major production areas are; Bereina in Central, Maprik in East Sepik Province; Nuku in Sandaun Province; Madang; Finschafen and Markham valley in Morobe Province; Warangoi in East New Britain Province (ENBP); New Ireland and Highlands Provinces

After 100 years, the country still lacks a well established domestic rice industry due to a number of major constraints given below:

- Shortage of trained manpower specializing in rice production which includes scientists, extension officers and farmers.
- Rice farmers have inadequate access to quality rice seeds.
- Rice farmers have limited access to suitable rice processing and other cultivation machinery and tools.
- Rice farmers have inadequate access to rice extension, technical and credit support services.
- Poor road infrastructure hampers farmers' access to rice production technologies, resources, and information and support services.
- Rice farmers do not have access to organized domestic markets.
- Insufficient funding from National Government to support the implementation of rice development programs.
- Poor coordination of rice development programs by implementing agencies.

Domestic rice production increased from about 500 tons in 1998 to over 20,000 tons in 2005 and projected to increase at rate of 20 to 30% per annum over the next ten years.

Rice has become an important staple food in PNG. Per capita consumption is about 30kg, but in some cities it can be as high as 100 kg. PNG imports most of its rice from Australia to meet the high demand for rice in the country. This demand is expected to increase with the increase in population. Since 1985 annual rice imports fluctuated between 120,000 and 170,000 tonnes annually, except in 1997 when it exceeded over 200,000 tons due to drought and the Aitape tsunami disaster that affected local food production. Import volumes declined from 160,000 tonnes in 1998 to 144, 000 tons in 2002, but thereafter increased progressively to 170,000 tonnes in 2005.

CIF value of imports in recent years has increased from about K80 million in 1995 to over K216 million in 2002. This dramatic increase, despite a decline in import volume, is attributed primarily to the devaluation of Kina. The present total retail market value of imported rice exceeds K300 million per annum.

5.1.2 Goal

To establish a sustainable domestic rice industry to enhance food security, generate income for smallholders and reduce rice imports by increasing annual domestic production from 20,000 to 60,000 by 2016.

5.1.3 Objectives and Strategies

Objective 1: To ensure that rice farmers have access to appropriate resources, technology, skills and support services to empower them to engage in sustainable rice production.

Strategies

- Facilitate rice farmer's access to adequate good quality rice seeds, milling machines and other associated machines, tools and other essential materials.

- Provide suitable training, extension and information support for rice farmers.
- Facilitate establishment of suitable marketing system for rice.
- Facilitate rice farmers to access suitable micro-credit services.
- Facilitate rice farmers to access adequate land resources necessary for sustainable rice cultivation.

Objective 2: To promote rice production in educational and correctional institutions.

Strategies

- Develop appropriate rice production courses to be taught in primary and secondary schools, vocational centres and tertiary institutions and correctional institutions.
- Facilitate access to adequate good quality rice seeds, milling machines and other associated machines, tools and other essential materials by educational institutions.
- Provide suitable training, extension and information support to educational institutions and correctional institutions.
- Assist educational and correctional institutions in marketing their rice.
- Facilitate access to suitable credit services by educational and correctional institutions.
- Facilitate access to adequate land resources necessary for sustainable rice cultivation by educational and correctional institutions.

Objective 3: To promote and assist commercial rice production.

Strategies

- Encourage local and foreign investors to undertake commercial rice cultivation.
- Identify and mobilize lands that are suitable for commercial rice production
- Establish a joint venture mechanism with landowners, investors and government to undertake commercial rice production.
- Facilitate implementation of commercial projects
- Continuously monitor progress.

5.1.4 Activities/Schedules:

Each of the above strategies is related to appropriate identified activities that aim to achieve the overall goal of the program in ten years (2007-2016) as per the attached implementation schedules and budget (Appendices 18 – 20).

5.1.5 Locations

Commercial Rice production will be implemented in selected provinces while smallholder and institutional rice development program will be implemented throughout the country.

5.1.6 Partners/Agencies

The main collaborating agencies are: ROC Taiwan; PRC China; JICA; Trukai; OISCA; UOT; DNPM; NARI; Provincial Administrations; University of Vudal; DNPM; DoE; CIS Private Sector and NGOs.

5.1.7 Budget

Planning period 2007 - 2016

Programmes	Kina (Millions)
1. Smallholder rice development.	16.5
2. Institutional rice development.	14.0
3. Commercial rice development	16.1
Total	46.6

5.1.8 Expected Outcomes

- (1) Farmers have better access to suitable rice production inputs (e.g. quality rice seeds, farm machinery and other essential tools, irrigation technologies) and improved agronomic practices.
- (2) Suitably trained Rice farmers and agricultural extension officers.
- (3) Improved access to road and market infrastructure, credit, technical and extension services.
- (4) Farmers adopt and practice sustainable and environmentally safe cultivation methods in rice production.
- (5) Improved coordination and management of domestic rice development programs.
- (6) Commercial rice production successfully implemented.
- (7) Production increased from 20,000 to 60,000 tons by 2016.

5.2 DOMESTIC WHEAT DEVELOPMENT

5.2.1 Background

There is a high demand for wheat flour in PNG and its consumption is increasing at a faster rate compared to rice. Wheat imports ranges from 104,000 tons in 1990 to 150,000 tonnes in 2005. The per capita consumption is similar to that of the rice at 30 kg.

Current local wheat production in the highlands provinces of Simbu, EHP and Enga is estimated at 100 tons. Due to its high demand, there is a need to encourage local wheat production for household food security in the high altitude areas where rice cannot be grown and to reduce wheat imports.

Major constraints in domestic wheat production include:

- Shortage of trained manpower specialized in wheat production that includes scientists, extension officers and farmers.
- Inadequate supply of good quality wheat seeds available to farmers.
- Farmers have either limited or no access to suitable wheat milling machines and other necessary machinery and tools.

- Farmers have either limited or no access to extension, technical and credit support services.
- Poor road networks in the production area make it difficult for farmers to access wheat production technologies, resources, information and support services.
- Insufficient funding from National Government for domestic wheat promotion.

5.2.2 Goal

To promote domestic wheat production in PNG to enhance household food security, generate income and reduce wheat flour imports.

5.2.3 Objectives and Strategies

Objective 1: To develop smallholder based domestic wheat industry.

Strategies

- Improve wheat farmer's access to adequate supply of quality seed, milling machines and other associated equipment, tools and materials.
- Facilitate access to suitable training programs for wheat farmers in the provinces.
- Ensure wheat farmers have access to appropriate technologies.
- Facilitate establishment of suitable marketing system for domestic wheat.
- Facilitate access to suitable credit services by wheat farmers.
- Facilitate access to adequate land resources for wheat cultivation.
- Provide adequate skilled manpower to implement wheat development programs.

5.2.4 Activities/Schedules

Each of the above strategies is related to appropriate identified activities that are aimed to achieve the overall objective of the program over ten years (2007-2016) as per the attached implementation schedule and budget (Appendices 21 – 23).

5.2.5 Locations

Suitable higher altitude areas in the highlands region.

5.2.6 Partners/Agencies

The main collaborating agencies: PRC; UniTech; NARI; Provincial Administrations; UoV; DNPM; DoE; DoH; NGOs; CBOs.

5.2.7 Budget

Planning period 2007 - 2016

Programme	Kina (Million)
Wheat development activities as specified in the budget schedule	4.1
Total	4.1

5.2.8 Expected Outcomes

- (1) Farmers have better access to suitable wheat production inputs.

- (2) Wheat farmers and agricultural workers have better access to suitable training and information on wheat production technologies and suitable support services.
- (3) Farmers adopt sustainable and environmentally safe wheat cultivation practices under local conditions.
- (4) Improved coordination and management of the implementation of domestic wheat programs.

5.3 HORTICULTURAL CROPS DEVELOPMENT

5.3.1 Background

Horticultural crops include; root crops, vegetables, fruits, nuts, flowers and grains (excluding rice and wheat). The focus of the National Government on horticultural crops is to promote the local industry to serve both domestic and overseas niche markets and also to support household and national food security.

The vegetables industry comprises of traditional staples (e.g. cooking bananas, sweet potato, taro, yams, taro konkong, cassava, aibika, amaranthus, ferns, mushroom, etc) and introduced varieties (e.g. English potato, English cabbage, broccoli, cauliflower, asparagus, carrots, okra, etc). Estimation of current production is rather difficult due to the nature of traditional farming systems which is characterised by intercropping, fragmented production areas, substantial on-farm consumption and inadequate data on the marketed quantities.

The fruit industry in the country includes crops such as mango, pineapple, citrus, rambutan, carambola, durian, pawpaw and eating bananas.

Nut crops include: indigenous okari, galip and karuka (pandanas) and the introduced peanuts and cashew nuts.

Grain crops include: maize, sorghum, soybeans, mungbeans, etc.

The National Government promotes downstream processing in the food and horticulture industry. It is therefore necessary to establish appropriate food standards and regulations to ensure that the processed food products meet the safety standards required for local and overseas markets.

Flowers are a good source of fragrance used in pharmaceutical industry to produce essential oils, perfumes and cosmetics. Flower oil marketing is commercially viable in other developing countries when supported with adequate processing and marketing facilities. Many orchid varieties found in the country are unique. In addition, flowers are used for ornamental decorations at homes and in the hospitality industry.

5.3.2 Goal

To promote a sustainable horticultural industry in PNG, targeting both domestic and overseas markets and to improve household and national food security.

5.3.3 Objectives and Strategies

Objective 1: To increase production of fruits, nuts, staple roots and vegetables.

Strategies

- Prioritise research programs aimed at identifying factors constraining the productivity of vegetables, fruits and nuts.

- Identify the research partners and sites for undertaking the prioritised agronomic research programs for vegetables, fruits and nuts.
- Develop appropriate on farm trials for evaluating the performance of promising vegetables, fruits and nuts for yield levels, disease/pest tolerance and environmental stress.

Objective 2: To develop post harvest handling, processing and preservation technologies for fruits, nuts and vegetables for cottage and commercial industries.

Strategies

- Undertake studies to develop the best post harvest handling techniques for vegetables, fruits and nuts.
- Develop downstream processing and value-adding on vegetables, fruits and nuts.

Objective 3: To develop market access for fruits, nuts, staples and vegetable industry.

Strategies

- Improve market access for semi-subsistence production of vegetables, fruits and nuts.
- Develop commercial market service for vegetables, fruits and nuts for both domestic and export.
- Provide commercial marketing information services to producers of vegetables, fruits and nuts.

Objective 4: To create an enabling environment to assist the development of food and horticulture sub-sector.

Strategies

- Establish organic certification system.
- Promote use of local inputs in commercial food processing where feasible.

Objective 5: To develop the floriculture industry in PNG.

Strategies

- Assessment of opportunities, constraints and potentials of the various types of flowering plants for floriculture industry in PNG.
- Promote floriculture and capacity building for women and youth in rural and peri-urban areas.
- Identify funding sources for reviewing the floriculture industry in 2007.
- Identify domestic and export markets for the cottage floriculture industry.

5.3.4 Activities and Schedule

Each of the above strategies is related to appropriate identified activities that are aimed to achieve the overall objective of the program that is spread over ten years (2007-2016) as per the attached implementation schedule and budget (Appendices 21-23)

5.3.5 Location

The implementation of activities will be located in all provinces as determined by the agro-ecological factors such as altitude, rainfall and soils. Nurseries shall be located in all provinces. Peri-urban agriculture will be promoted in the major cities, where feasible.

Partners / Agencies

National Department of Agriculture and Livestock; Fresh Produce Development Agency; Provincial Department of Agriculture and Livestock; Non Government Organization; University of Technology; University of Vudal; National Agriculture Quarantine Inspection Agency; National Agriculture Research Institute; Investment Promotion Authority; Department of Health; ICCC; NSIT, WIADU and Food Sanitation Council

5.3.6 Budget

Planning period 2007 - 2016

The total ten years budget for horticulture development is K91.680 million for the following programs:

Programs	Kina (Million)
1. Fruit development	7.15
2. Nut development	7.15
3. Staples development	8.05
4. Vegetables development	5.15
5. Improving market access activities	10.75
6. Downstream processing and quality Improvement	33.40
7. Floriculture development activities	9.75
8. Organic Certification Body	7.80
9. Integration of water resources in farming systems	9.50
Total	K91.68

5.3.7 Expected Outcome

- (1) A nationwide survey conducted in 2007 and 2016.
- (2) One nursery established in each province for vegetables, fruits and nuts.
- (3) 10,000 fruit seedling, 5,000 nuts seedlings, 200,000 staple crops planting materials and 100,000 mushroom and asparagus planting materials distributed per year.
- (4) A total of 20,000 farmers trained on food and horticulture production by 2016.
- (5) A total of 19 provincial marketing cooperatives established by 2016.
- (6) About 10,000 fruit farmers, 5,000 nut farmer, 50,000 staple crop farmers and 25,000 asparagus and mushroom farmers have access to credit facility by 2016.
- (7) Peri-urban agriculture promoted in major cities.

- (8) Downstream processing and value-adding procedures established for development of new products and at least two different processed products released each year.
- (9) At least four food technologists trained on food safety standards for the food industry.
- (10) Inventory of food and horticultural crop producers established and updated yearly.
- (11) Increased production as a result of irrigation in dry land farming.
- (12) Increased arable land as a result of improvement of wetlands drainage.

6. TREE AND INDUSTRIAL CROPS

The tree crop and industrial crops sub-sector is the dominant agricultural activity in Papua New Guinea – and comprises of oil palm, coffee, cocoa, coconut, rubber and tea. These crops account for over 92% of the total agricultural export value and engage the bulk of the population in the rural area.

6.1 OIL PALM DEVELOPMENT

6.1.1 Background

Papua New Guinea's oil palm industry began from very humble beginnings since its observation plantings in the 1920s'. The industry comprises of two distinct but adjacent components, the estates and smallholders sub-sectors.

Commercialization oil palm cultivation was started in 1967 with the establishment of three major projects in Hoskins, Biella, and Popondetta and two smaller projects in New Ireland and Milne Bay Provinces. Today, there are about 100,000 hectares comprising of about 44,000 hectares by smallholders and the balance under the estates. Development is continuing in both sub-sectors through new developments and replantings.

The use of high yielding varieties combined with the high performance of private milling companies has turned the oil palm industry into one of the most vibrant and successful industries in the country. A special feature which distinguishes the oil palm industry from other agricultural industries in PNG is its nucleus estate model. The estates directly engage local landowners in oil palm production and provide vital services like health, education, road infrastructure and contribute to the provincial and national economy.

Palm oil production increased from 1998 to 2004, with the total production of 1.66 million tons for the same period. It is now the leading export earner surpassing coffee in 2000. In 2004, export volume rose to 339,000 tons valued at K438.7 million, but decreased to 295,200 tons valued at K339.5 million in 2005. PNG is now contributing over 2% of world export of crude palm oil. Based on the current expansion activities of the milling companies, and the new oil palm development undertaken by Ramu Sugar Ltd both production and export volume will progressively increase over the next ten years.

The oil palm industry comprises of milling companies, independent estates, smallholder farmers (consisting of village oil palm and land settlement scheme growers), Oil Palm Research Association (OPRA) and the PNG Palm Oil Producers' Association (POPA). The Oil Palm Industry Corporation (OPIC) is a statutory organization responsible for the extension and management of smallholder growers.

6.1.2 Goal

To improve productivity and production of the oil palm sub-sector to increase its contribution to export revenue and GDP and to improve the welfare of oil palm communities.

6.1.3 Objectives and Strategies

Objective 1: To strengthen the management of the oil palm industry.

Strategies

- Strengthen management and staff capabilities through formal & skills training program.
- Enhance monitoring and evaluation reviews between inter and intra industry agencies.

Objective 2: To mobilize and empower the smallholders and mini-estate plantations to enhance industry performance.

Strategies

- Rehabilitate old plantations and/or promote new planting.
- Promote farmer and intra-sub cooperatives.
- Facilitate capacity building in the industry.
- Facilitate and provide quality extension advice.
- Provide access to quality planting materials.
- Strengthen market access.
- Improve smallholder access to credit.

Objective 3: To promote integrated nucleus estate development in potential communities.

Strategies

- Identify potential target communities, promote the nucleus estate concept, and initiate studies and projects.
- Provide appropriate training and skills development to smallholder participants.

Objective 4: To promote and facilitate cooperatives and marketing enterprises.

Strategies

- Promote inter-agency private sector collaboration and partnership.
- Facilitate access to funding sources.
- Provide market information and facilitate access to markets.
- Mobilize and create awareness in targets areas.
- Promote intra-sub cooperatives.
- Promote strong linkages and coordination with national and international trading partners and enforce national coordination of cooperatives.

Objective 5: Promote small scale downstream processing for value addition in the industry.

Strategy

- Conduct feasibility studies in relevant aspects of downstream processing and initiate downstream processing where feasible.

6.1.4 Activities and Schedule

Each of the above strategies is related to appropriate identified activities that are aimed to achieve the overall objective of the programme that is spread over ten years (2007-2016) as per the attached implementation schedule and budget (Appendices 27 – 29).

6.1.5 Locations

The development activities are based in the districts of the identified provinces in the country where oil palm is cultivated.

6.1.6 Partners/Agencies

The main partners in the planning, implementation, monitoring and evaluation include: National Department of Agriculture and Livestock; Department of National Planning and Monitoring; Department of Commerce and Industries; Rural Development Bank; Department of Lands and Physical Planning; Department of Environment and Conservation; Department of Prime Minister & National Executive Council; Oil Palm Industry Corporation; Provincial & Local Level Governments; Private Sector Investors and Financiers); Non-Government Organizations, International Donors and Interest Landowner Groups.

6.1.7 Budget Requirements

Planning period 2007 – 2016

The total budget for this sub-sector for ten years (2007 – 2016) consisting of the following main programs:

Programs	Kina (Million)
1. Administration and sub sector Management	5.357
2. Rehabilitation and new plantations	18.950
3. Strengthen market and credit access	69.000
4. Nucleus estate development	13.750
5. Downstream processing activities	3.600
6. Equipment, machinery and vehicles	6.000
7. Access road maintenance	14.000
Total	130.657

6.1.8 Expected Outcome

- (1) Export revenue in the tune of K202.3 million per annum incremental over the course of next ten years of the implementation phase and beyond.
- (2) Contribute about 2-5% of the GDP over the ten-year period.
- (3) Provide income generation means for over 63,000 households with an estimated population of 441,000 people or 8.3% of the national population.
- (4) Provide tax revenue of K60.69 million over the ten-year period.
- (5) Enabled smallholders to increase production capacity, create self-reliance and improve living standards and alleviate poverty.
- (6) Improved skills, technical and management capacity.

- (7) Increased downstream processing and industrialization activities among the smallholders and attract foreign investment in the tune of K6.4 billion over ten year or K200 million incrementally.
- 8) Generate national income through carbon trading at an annual rate of K12 million incrementally over the 25 years of one life-span of oil palm trees.

6.2 COFFEE DEVELOPMENT

6.2.1 Background

The coffee industry has been the number one tree crop sub-sector for many decades, until recently when oil palm took over. It was then the single most important cash crop in terms of foreign exchange earnings compared to other tree cash crops. The industry comprises of two components: the plantation sector and the smallholders.

PNG produces some of the best Arabica (95%) and Robusta (5%) coffee in the world. It is grown in 14 provinces until recently two more provinces took on coffee programs. According to the 2000 National Census, coffee is produced by 397,722 households making up an estimated population of 2.5 million smallholder growers, who now contribute 85% of national output and exports. Plantation coffee production on the other hand has declined to 20% of total production over the last decade. The total aggregate national coffee production is around 1.1 million bags (63,000 to 68,000 tons) in the last decade – earning around K300 millions in foreign exchange annually.

Because of the importance of the industry to the PNG economy, the government has initiated a number of programs to assist coffee farmers confronted with marketing and extension constraints. Under the freight surety scheme facilitated by the PNG Defence Force through the DRIP programme, rural coffee with an estimated value of K40 million was to be air freighted to export points. However, it did not work out well due to difficulties in releasing required funds for the operation. The extension problem was addressed through the adoption of the Smallholder Support Services Pilot Project (SSSPP) extension method since 2004. The Coffee Industry Corporation has been implementing the service provider contract programme to enhance coffee extension, training and skills training of farmers and extension officers at certain locations.

6.2.2 Goal

To increase annual production from 1.1 million bags to 1.5 million bags within the next 5 – 10 years contributing to the export revenue and to improve the welfare of the coffee communities.

6.2.3 Objectives and Strategies

Objective 1: To strengthen the management system of the industry.

Strategies

- Establish the coordinating body that guides the tree Crop sector including coffee.
- Enhance management & staff capacities through formal & skills training programs.
- Promote peer reviews and inter & intra industry cooperation and collaborations.

Objective 2: To mobilizing and empower the industry, smallholders & plantations to enhance industry performance.

Strategies

- Rehabilitate abandoned estates & smallholder projects and promote new plantings.
- Promote Farmer Cooperatives.
- Encourage & increase farmer's participation.
- Facilitate capacity building across the industry.
- Facilitate & provide quality extension services.
- Provide access to quality planting materials.
- Re-introduce pulper subsidy.
- Strengthen market access.
- Improve Credit Access.
- Provide Freight Surety.

Objective 3: To promote integrated nucleus enterprise development in potential communities.

Strategies

- Identify potential target areas & promote the Nucleus concept.
- Provide appropriate training and skills development to participants.
- Promote inter-agency/ private sector collaboration and participation.
- Facilitate access to funding source.
- Facilitate access to market.

Objective 4: To promote and facilitate cooperatives and marketing enterprises.

Strategies

- Mobilize & create awareness in target areas.
- Promote intra-agency sub-cooperatives.
- Promote strong linkage and coordination with national and international trading partners.
- Enforce national coordination of cooperatives.
- Provide access to market information.
- Provide relevant training to cooperative managers & local exporters.

Objective 5: To promote downstream processing, for value addition in the industry.

Strategies

- Encourage stakeholders to downstream processing.
- Improve quality control capabilities.

Objective 6: To promote monitoring and evaluation of the industry's policies, strategies and plans.

Strategies

- Improve monitoring and evaluation.

Objective 7: To improve access to credit.

Strategies

- Government / Donors Provide adequate funding.
- RDB and Micro-Banks to improve credit access.

Objective 8: To safe guard the coffee industry from economic pests and diseases.

Strategies

- Develop Emergency Response Plans.
- Provide effective surveillance and recommendation packages for economic coffee pest control & management

6.2.4 Activities and Schedule

Each of the above strategies is related to appropriate identified activities that are aimed to achieve the overall objective of the program, to increase production from 1.1 million bags to 1.5 million bags over ten years (2007-2016) as per the attached implementation schedule and budget (Appendices 30 – 32).

6.2.5 Locations

There are 16 provinces involved in coffee production. Most production is centred in Western Highlands, Eastern Highlands, Morobe and Simbu. Other major producers include Southern Highlands, Enga and East Sepik.

6.3.6 Partners / Agencies

The partners and agencies include the CIC, NDAL, PDAL, Private Sector, Smallholders, NGOs and other stakeholders.

6.3.7 BudgetPlanning Period 2007 - 2016

The coffee industry will require a total of K200.75 million over next ten years to ensure that the sustainability of the industry is maintained in the long term.

6.3.8 Expected Outcomes

- (1) Coffee production increased from the current level of 1.1 million bags to 1.5 million bags per year in the next 5 – 10 years with foreign export earning increasing from K350 to K450 million per year at the current price level
- (2) The anticipated increase in production of coffee both in plantations and smallholders will contribute to enhance household income, improve the livelihood of families and create more economic activity in the rural areas.

Programs	Kina (Million)
1. Plantation rehabilitation	22.50
2. Promotion of Farmer Cooperatives	4.90
3. Extension	21.90
4. Establishment of Nurseries	26.50
5. Freight Surety	23.80
6. Pulper subsidy program	3.30
7. Emergency response unit	5.30
8. Strengthen market and credit access	33.35
9. Downstream processing	44.75
10. Administration and Capacity building	10.30
11. Monitoring and evaluation	4.15
Total	200.75

6.3 COCOA DEVELOPMENT

6.3.1 Background

Cocoa ranks third after oil palm and coffee in terms of its contribution to agricultural export earnings. A total of 151,000 rural households depend on cocoa as a source of living and the industry provide direct employment for 6,000 people with another 10,000 benefit from indirect employment.

Cocoa production has come along way since ordinary Papua New Guineans were permitted to grow cocoa in the early 1950s. Production has increased from 500 tonnes in the early 1950s to the current level. Production expansion occurred in the 1980s following the release of the SG1 cocoa hybrid varieties but the increase was halted by the low cocoa prices which prevailed from the early 1980s to the 1990s, the Bougainville crisis in 1989 and the Rabaul volcanic eruptions in 1994.

Despite these Papua New Guinea cocoa production has achieved substantial growth over the last six years averaging 43,047 tons and peaking at 49,526 tons in 2005, compared to an average of 32,496 tons over the six year period between 1994 and 1999.

East New Britain is the leading producer accounting for 41% of the total production in 2003. Bougainville is the second leading producer accounting for 28% followed by Madang, East Sepik, and Morobe with 11%, 8% and 3% respectively. The gross revenue to the East New Britain Province in 2003 was over K100 million.

Export revenue from cocoa increased dramatically due to the depreciation of the Kina and a general rise in cocoa prices in world market. Since 2002, annual exports exceeded K200 million due to high cocoa prices as a result of the civil war in Coite d'Voire, the major producer of cocoa. Cocoa export value reached K257 million in 2002 and peaked at K259 million in 2003.

Smallholder producers account for over 80% of cocoa production. The plantation accounts for 20% but their production is on the decline due to high management cost, land disputes and mismanagement. Unlike the plantation sector, the smallholder mode of production is low input – low output that mainly uses family labour. Current average smallholder productivity is estimated at 300-400 kg per hectare compared to over 1000 kg per hectare for the plantation sector.

The constraints facing cocoa production in PNG are; high transport costs, poor and under-funded extension, training and research, land disputes, limited access to credit and law and order problem.

6.3.2 Goal

To increase annual cocoa production to 100,000 tons in 10 years to improve the welfare of the cocoa farmers and their families and to contribute to the National Government's export driven economic development strategy.

6.3.3 Objectives and Strategies

Objective 1: To strengthen management and coordination in the cocoa industry.

Strategies:

- Strengthen management information system in the industry.
- Review legislative framework and institutional set-up.

Objective 2: To improve and strengthen human resource capacity in the cocoa industry.

Strategy.

- Enhance management capacities of technical staff and farmers to increase industry productivity.

Objective 3: To mobilize and empower the industry smallholders and plantation to enhance production.

Strategies

- Improve accessibility to high quality planting material.
- Improve productivity of run-down plantations.
- Mobilize smallholder growers under cooperative marketing system.
- Improve access to credit by smallholders.
- Promote integrated nucleus enterprise development estate model.

Objective 4: To improve and maintain PNG cocoa quality and appropriate post-harvest practices.

Strategies

- Review cocoa quality standards and control mechanisms.
- Maintain a robust and effective system of regulating and monitoring quality.
- Promote appropriate post-harvest practices and conduct training to smallholder farmers.

- Ensure the high standards in fermenteries are maintained to produce quality cocoa.
- Provide quality assurance for PNG cocoa.
- Seek organic certification of certain areas and growers.

Objective 5: To promote downstream processing for value addition and employment generation in the industry.

Strategies

- Determine the potential for and economic and financial viability of downstream processing.
- Determine the potential for downstream processing (including small scale).

Objective 6: Increase the demand for PNG cocoa through specific market studies and promotional campaign.

Strategies

- Determine the potential markets for PNG cocoa products.
- Promote the consumption PNG cocoa in international markets.

Objective 7: Strengthen and promote research and development based on industry needs.

Strategies

- Safeguard industry from pest and diseases.
- Improve agronomic and husbandry management practices.

Objective 8: To maintain competitiveness in the domestic market & improve market access.

Strategies

- Maintain competitiveness by providing market intelligence.
- Reduce market uncertainty by undertaking socio-economic and cost of production studies.
- Improve market access by subsidizing transport costs.

6.3.4 Activities and Schedule

Each of the above strategies is related to appropriate identified activities that are aimed to achieve the overall objective of the program that is spread over ten years (2007-2016) as per the attached implementation schedule and budget (Appendices 33 – 35).

6.3.5 Locations

Cocoa is grown and produced in all coastal provinces of the country. It is envisaged that the proposed cocoa development plan of activities will be undertaken in 16 provinces of the country; namely, ENB, NSP, NIP, Manus, WNB, Morobe, Manus, Madang, Oro, Milne Bay, Central, Gulf, Western, ESP, WSP, Jimmy Valley in Western Highlands and Karamui in Chimbu province.

6.3.6 Partners/Agencies

Co-operating partners and/or agencies expected to participate in this program are: 16 Provincial Governments, District and LLG Administration, NGOs and private investors, DPI, PNGCCI, Cocoa Board, National DAL, KIK, NARI, NAQIA and cocoa farmers.

6.3.7 Budget

Planning period 2007 - 2016

The total budget expected to drive the cocoa program in the country over the next ten years is estimated at K118.33 million.

Programs	Kina (Million)
1. Administration and Capacity building	11.05
2. Rehabilitation and expansion	26.28
3. Downstream processing	6.95
4. Strengthen markets and credit access	2.30
5. Establishment of cooperatives	2.50
6. Infrastructure development	57.50
7. Monitoring and evaluation	4.25
8. Carbon trade research	7.50
Total	118.33

6.3.8 Expected Outcome

- (1) Annual production increased to 100,000 tons in 10 years.
- (2) Annual export earnings increased to over K400 million by 2016 at the current price level.

6.4 COCONUT DEVELOPMENT

6.4.1 Background

The coconut industry is the oldest agricultural industry in PNG. The total area under coconut cultivation is estimated at 260,000 ha; 40% large plantations, and 60% smallholder and village plantings. The industry provides employment for 309,417 households (2000 National Population Census), representing 57% of total households in the coconut growing regions and 31% of total households, involving over 2 million people. The rural households now account for over 80% of PNG total copra production.

Coconut is the fourth most important agricultural export commodity of PNG. Average export earnings from coconut products have fluctuated over the last two decades, from K38 million (1981 - 1990), to K77 million (1991 - 2000) and then declined to K53.5 million (2001 - 2003). The highest export earning was achieved in 1999 at K162 million, which was equivalent to 14% of the total export earning in 1999 from agricultural products. PNG copra production levels are influenced by the world copra price fluctuations and competition from other vegetable oils on the world market.

Apart from the exported coconut products, it is estimated that an additional 316 million nuts (equivalent to 52,300 tons of copra) worth about K131 million annually, are consumed

domestically in daily diets. The importance of coconut as a food source has also spread to the highlands of PNG, where it has become an integral part of daily food trade. Coconut is also gaining importance as home-made fuel. It is sold at K2/litre, compared to K3.20/litre for diesel, and two shipping companies in Rabaul have largely replaced diesel with coconut for their ships (PNG Post-Courier, August 14, 2006, p. 1).

The coconut industry is composed of the following entities: Kokonas Indastri Koporesen – the regulation agency; Smallholders (10 ha or less coconut planting); Plantations (more than 10 ha); Traders or middlemen – buyers of dry coconuts or coconut products from smallholders or small scale agribusinesses; exporters; processors; farmers associations; Cocoa Coconut Institute of PNG – research, development and extension on coconut; provincial and district administrations: New Guinea Islands, Momase and Southern regions.

6.4.2 Goals

1. To alleviate poverty and raise the living standards of coconut communities by increasing coconut production from 100,844 tonnes to 150, 000 tonnes copra equivalent in the next 5 – 10 years.
2. Ensure environmental sustainability in coconut production and processing systems.

6.4.3 Objectives and Strategies

Objective 1: To provide national leadership to revive the coconut industry in PNG.

Strategies

- Lead the development of coconut-based farming systems in the districts.
- Facilitate the development of coconut replanting programs in the provinces.
- Coordinate and facilitate the redevelopment of abandoned coconut plantations in the provinces.
- Link coconut development projects to clean development mechanism policy.
- Coordinate peer reviews and inter/intra institutional co-operations and collaborations.

Objective 2: To mobilize and empower the stakeholders, investors, smallholders, plantations to enhance production of high value coconut products for niche markets.

Strategies

- Promote the establishment of farmer co-operatives in districts.
- Establishment of market networks in the districts.
- Facilitate capacity building across the industry.
- Facilitate and provide quality extension services.

Objective 3: To promote downstream processing for value addition in the industry.

Strategies

- Conduct feasibility studies in relevant aspects of downstream processing and develop appropriate coconut downstream processing technologies.
- Promote small scale downstream processing enterprises in the districts.

6.4.4 Activities and Schedule

Each of the above strategies is related to appropriate identified activities that are aimed to achieve the overall objective of the program that is spread over ten years (2007-2016) as per the attached implementation schedule and budget (Appendices 36 – 38).

6.4.5 Locations:

Coconuts are grown in the provinces shown below:

Southern Region	MOMASE	New Guinea Islands
Western Province	Morobe Province	Manus Province
Gulf Province	Madang Province	New Ireland Province
Central Province	East Sepik Province	East New Britain Province
Milne Bay Province	Sandaun Province	West new Britain Province
Oro Province		Bougainville Province

The 43 coconut growing districts are presented in Annex 5.

6.4.6 Partners / Agencies

The major partners and agencies in the coconut development plan are Kokonas Industri Koporesen, Cocoa Coconut Institute, Provincial Governments, National Government, PNG University of Technology, donor agencies, NGOs and farmers.

6.4.7 Budget Requirements

Planning Period 2007 – 2016

The annual Coconut budget for the ten years period 2007 – 2016 is K78 million as summarized below.

Programs	Kina (Million)
1. Administration and capacity building.	7.20
2 .Rehabilitation and expansion	36.90
3 Downstream processing	12.10
4. Strengthen markets and credits	5.00
5. Cooperatives	5.30
6. Extension	6.20
7. Carbon trade development	5.30
TOTAL	78.00

6.4.8 Expected outcomes

The expected outcomes for objective 1:

- (1) Seed funding provided to CCI for transferring coconut based farming systems in developing 665 hectares per district per year starting in 2007.
- (2) Funding obtained from the stakeholders for replanting and expansion programs in rehabilitating 337 hectares per district per year for the next ten years.

- (3) Affordable seeds provided to the farmers (by distributing 85,914 seeds per district per year starting 2007).
- (4) Investors or stakeholders identified to develop and invest in the abandoned coconut plantations by rehabilitating 658 ha per province per year.
- (5) Nucleus estates enterprises established as a means to rehabilitate run down plantations.
- (6) Coconut planting areas increased to act as carbon sinks.
- (7) Promoted and encouraged coconut bio-fuel to reduce air pollution.
- (8) Institutionalized both internal and national workshops with two workshops per year.

The expected outcomes for objective 2:

- (1) Awareness conducted within the communities on farmer co-operatives by forming 8 farmer co-operatives per year starting in 2007.
- (2) Facilitated the formation of the farmer co-operatives.
- (3) Facilitated provision of information on market access in establishing 8 market outlets per year.
- (4) Identified capacity needs in the industry and organized regular training and workshops by training 1,000 farmers from each district per year.
- (5) Determined extension needs and package information accordingly in developing acceptable extension packages by 2007.

The expected outcomes for objective 3:

- (1) Conducted two market and/or two feasibility studies in 2007 and 2016.
- (2) Small scale downstream processing technologies developed.
- (3) Formulated and established quality standards in 2007.
- (4) Provided 41 district training and awareness campaigns on quality standards for the production of coconut products beginning in 2007.
- (5) Facilitated the development of at least one small scale downstream processing enterprise per district per year.
- (6) Encouraged the participation of the private sector in the downstream processing enterprises in the districts.

The overall desired outcomes for the industry include:

- (1) Increased income and improved standard of living for the people in the coconut producing communities.
- (2) Reduced imports of coconut related products into PNG.
- (3) Productivity of land under coconuts significantly increased through the adoption of coconut based farming systems in the districts.

6.5 RUBBER DEVELOPMENT

6.5.1 Background

Rubber has been cultivated in the country for over 100 years, but its contribution to GDP remains marginal. Although over 40,000 ha were planted in the past only 18,230 ha still exists with 6,000 ha in production. Rubber provides income for more than 5,000 smallholder

rubber growers and direct or indirect employment for 20,000 people. The smallholder sector contributes 50% of the total natural rubber output.

Natural rubber can be a major foreign exchange earner. From 2000 to 2003, average annual rubber export averaged 4,140 tons, earning an annual income of K7.15 million at US1.30 per kg, at par with other rubber producing countries. Exports from 1996 indicated increasing volume and value but decreased in the following year by 34% and 44% respectively. Volume remained more or less at the same level from 1997 to 2002 while value fluctuated until 1999, and thereafter increased from 1.3 to 44% until 2005.

In line with the Export Driven Economic Recovery strategy of the Government, the NADP facilitates the development of competitive export products, private sector participation and market for export commodities such as rubber. Accordingly, the NDAL will co-operate and collaborate with relevant National Agencies, Provincial and Local Level Governments, NGOs, CBOs' and the customary landowners in the implementation of the National Strategy for the rubber industry sub sector.

6.5.2 Goal

To develop and expand the rubber industry to increase the export revenue and improve the welfare of the communities involved in rubber production.

6.5.3 Objectives and Strategies

Objective 1: To strengthen management and technical capacity in the industry.

Strategies

- Redefine the role of Rubber Industry Board.
- Enhance management and staff capacity through formal skills training programs.
- Enhance management and expenditure reviews between inter and intra industry corporations & collaborations.

Objective 2: To mobilize and empower the industry stakeholders (smallholders and plantations) for enhancing the performance of the industry.

Strategies

- Promote farmer cooperatives.
- Encourage and increase farmer participation.
- Facilitate capacity building across the industry.
- Facilitate and provide quality extension services.
- Provide access to quality planting materials.
- Strengthen market access.
- Improve access to credit.

Objective 3: To promote integrated nucleus enterprise development in potential and willing communities.

Strategies

- Identify potential target areas and promote the concept.
- Conduct detailed feasibility studies with relevant stakeholders.
- Facilitate community and landowner mobilization and organizations.

- Provide appropriate training and skills.
- Promote inter agency participation and collaboration.
- Promote partnership with the private sector.
- Facilitate access to funding source.
- Facilitate access to Market.

6.5.4 Activities and Schedule

Each of the above strategies is related to appropriate identified activities that are aimed to achieve the overall objective of the program that is spread over ten years (2007-2016) as per the attached implementation schedule and budget (Appendices 39 – 41)

6.5.5 Locations

Rubber is currently produced in eight of the fourteen lowland provinces: Western, Gulf, Central, Oro, East Sepik, Saundaun, Manus and New Ireland.

It is envisioned that rubber planting will be extended to all lowland provinces such as Morobe, Milne Bay, Madang, West and East New Britain and Bougainville.

6.5.6 Partners / Agencies

Co-operating partners and agencies expected to participate in this program are: fourteen coastal and maritime provincial governments, provincial divisions of agriculture and livestock, private sector, NARI, NAQIA, IPA, IRC and DCI.

6.5.7 Budget

Planning Period 2007 - 2016

A total of K83 million is required to rehabilitate the existing rubber plantings and expand into new areas suitable for rubber production by smallholders and private sector stakeholders.

Programs	Kina(Million)
1. Administration and capacity building	1.50
2. Rehabilitation and expansion	27.00
3. Extension and mobilization	5.50
4. Cooperatives	1.70
5. Infrastructure and capital formation	27.60
6. Downstream processing	14.20
7. Monitoring and evaluation	3.50
8. Carbon trade development	2.00
TOTAL	83.00

6.5.8 Expected Outcomes

- (1) Rubber production increased to 29,000 tons by 2016.
- (2) Export revenue increased to at least K 63million per year at the current price levels
- (3) If the proposed carbon trading program is introduced, expected revenue to exceed K93 million per annum.

7. LIVESTOCK, APICULTURE & AQUACULTURE DEVELOPMENT

7.1 Background

Livestock

The livestock industry in PNG contributes 13% to the total domestic food production. Meat consumption is increasing at 5% per annum, as indicated by the increasing cost of importing livestock products exceeding K140 million per annum. Consumption trends have also changed with more imports of low priced mutton off cuts and canned trimmings which substitute for quality meat.

The livestock sector has been neglected for the past 20 years, resulting in the general decline of the sector. Under the NADP, it is proposed to revitalize the sector to enable it to contribute to the socio-economic development of the country by reducing imports of meat and meat products, improving the nutritional status and income generation of the rural communities. Under the proposed plan cattle, pigs, sheep, goats, poultry and draught animals will be promoted.

Aquaculture Development

The common carp (*Cyprinus carpio*) and tilapia (*Tilapia mossambicus*) were introduced in the 1950s, for production at the subsistence level. Further development of the aquaculture industry has been hampered due to following constraints:

- Insufficient supply of fingerlings to the farmers.
- Lack of technical knowledge and skilled human resource in the sub-sector.
- Lack of Government directives and support.
- Lack of quarantine checks on the translocation of exotic species for aquaculture.

There is a need to develop aquaculture for food security and income generation.

Apiculture Development

In the 1980s about 40 tons of honey was exported annually to European markets, bringing an export revenue of about K20 million. The industry involves beekeeping and honey production using European honeybee by village beekeepers in the Highlands region. The industry was managed by the Highlands Honey Producers Ltd (HHP). The industry collapsed due to poor management of HHP and the inability of the Provincial and Local Level Governments to provide the necessary funding and support services to the honey producers to ensure sustainability.

Because of its economic potential to generate export and domestic revenue the industry needs to be revived and supported. Adequate funding by the government is required to strengthen extension services; training of farmers; production of quality queen bees; production of beekeeping supplies; transport and marketing of honey and creating of new domestic and export markets through Highlands Beekeepers Association.

7.2 Goal

To revitalize and expand the livestock, aquaculture and apiculture industries to improve the welfare and livelihood of the rural communities and to contribute to the general economy of the country.

7.3 Objectives and Strategies

Objective 1: To strengthen the management and coordination capacity within the sector.

Strategies

- Reorganize the current administrative structure in the sector.
- Improve human resource capacity of LDC

Objective 2: To improve livestock production, processing and marketing.

Strategies

- Rehabilitate/establish livestock breeding and distribution centres in partnership with private sector.
- Genetic improvement and diversification of livestock breeds.
- Promotion of draught and pack animals.
- Reorganize and strengthen livestock research and development to meet new challenges.
- Improve extension service to smallholder in the provinces.
- Improve and strengthen livestock marketing system.
- Improve animal health and disease control.
- Improve slaughtering and processing facilities in selected provinces.

Objective 3: To develop a viable and sustainable apiculture industry, especially in the Highlands of PNG.

Strategies

- Reorganize and Strengthen the Highlands Beekeepers Association (HBA).
- Enhance availability of queen bees to beekeepers.
- Provide training in beekeeping and related activities.
- Strengthen honey processing and marketing system.
- Address cross cutting issues relating to the Apiculture Industry
- Extension support services to beekeepers.
- Identify and establish export market.

Objective 4: To developed a sustainable aquaculture industry in PNG.

Strategies

- Strengthen collaboration between stakeholders.
- Review and update research information.
- Develop and promote cheaper feeds using locally available feed ingredients.
- Establish ten (10) hatcheries for production and distribution of fingerlings.
- Provide training to technicians and farmers.
- Provide extension support services.

7.4 Activities and Schedules

The major emphasis for the development of the livestock industry shall be the promotion of cattle, pigs, goats, sheep and poultry. The traditional cattle ranching provinces such as

Morobe, Madang and Central will be targeted. Large scale cattle ranches will be established in collaboration with the private sector. The existing ones will be further developed to ensure a 50% increase in beef production by 2011. Commercial pig production will be promoted through distribution of improved breeds, provision of credit and strengthening of marketing facilities. Draught animal development will be undertaken to assist and promote transportation of agricultural produce and in farm work. Dairy goats and egg production will also be promoted at the subsistence level to improve household food security and nutrition.

Each of the above strategies is related to appropriate identified activities that are aimed to achieve the overall objective of the program that is spread over ten years (2007-2016) as per the attached implementation schedule and budget (Appendices 42 – 50).

7.5 Locations

The table below indicates the animal sub-sector and provinces with sub-sector activities and potential of such sub-sector activities.

Livestock Sub-sector	Province
Cattle:	Morobe, Madang, Oro, New Ireland, East Sepik, West New Britain, Milne Bay and Central.
Pigs:	Morobe, Madang, Central, Eastern Highlands, Western Highlands, East and West New Britain.
Poultry:	Central, Morobe, Simbu, Madang, East New Britain with Smallholder poultry throughout the country.
Draught Animals:	Madang, Simbu, Western Highlands, East New Britain and Morobe.
Other species:	Selected provinces.
Aquaculture:	Eastern Highlands, Simbu, Madang, Morobe, Western Highlands, Central, Western and Oro Province.
Apiculture:	Eastern Highlands, Simbu Western Highlands and Morobe.

7.6 Partners/ Agencies

LDC, NDAL, Provincial DAL, District/ LLG's, NARI, University of Technology, University of Goroka, Vudal University, NFA, DCI, NAQIA, NGO's, farmer organization, CBO's, Donors, RDB and Commercial Banks, Private sector partners (Trukai Industries, Markham Farm, Ramu Beef) and Other line agencies.

7.7 Budget Requirements

Planning Period 2007 – 2016

Programs	Kina (millions)
Livestock Development	41.95
Aquaculture Development	6.60
Apiculture Development	3.15
TOTAL	51.70

7.8 Expected Outcomes

For objective 1:

- (1) New LDC established by 2007.
- (2) The management of LDC improved significantly resulting in the effective coordination of the livestock industry.

For objective 2:

- (1) Seven breeding centres established in selected provinces (in collaboration with the private sector).
- (3) Appropriate genetic material of selected livestock species imported.
- (4) Draught animal programme implemented by 2009.
- (5) Dairy goats for enhancing nutrition are accepted by rural communities.
- (6) Village poultry for egg production is well established.
- (7) Small farmers acquire skills in utilizing locally available feeds.
- (8) Appropriate feeding strategies developed to enhance cattle productivity.
- (9) Livestock training promoted and taught at the tertiary level.
- (10) Specialized training given to service providers.
- (11) Farmer training strengthened.
- (12) Nucleus enterprise production and marketing system promoted.
- (13) LDC abattoirs are rehabilitated in Lae and Port Moresby.
- (14) Livestock farmers have access to credit facilities.

For objective 3:

- (1) Constraints affecting apiculture industry are identified and addressed.
- (2) Revitalized HBA is fully operational by 2008.
- (3) Reliable supply of queen bees by 2007.
- (4) Stratified training plans are developed and executed for improving the skills of beekeepers.
- (5) Honey processing centres are established in the districts.
- (6) An effective marketing plan developed and implemented by 2008.
- (7) Innovative extension services help to improve the production output of beekeepers.
- (8) Increased exports of honey to 40 tonnes by 2016.

For objective 4:

- (1) Steering committee for coordinating the development of the aquaculture industry established by 2007.
- (2) Research report prepared by 2007.
- (3) Local feed developed and promoted by 2009.
- (4) Ten hatcheries established by 2009.
- (5) Training materials developed by 2009.

- (6) Conducted regular training for aquaculture farmers.
- (7) Farmers have access to extension services.

8. SPICE AND MINOR CROPS DEVELOPMENT

8.1 Background

The spice industry has the potential of generating about K100 million export earnings per annum. The Spice Industry Board (SIB) was established by Parliament in 1989. After the cessation of the Minor Crops Export and Diversification Program (MCEDP) in the 1990s the National Government did not provide sufficient funds for its effective operation. The MCEDP promoted spices development throughout PNG, but the program did not continue when it was transferred to the provinces under the Provincial Government Reforms, due mainly to the lack of technical capacity in the provinces and districts.

In 2003, the government made some funds available to SIB under a National Spice Development Program. This program was also terminated prematurely in 2005 despite NDAL's assistance to SIB for institutional and capacity building.

Current annual production is around 100 tons of vanilla, 50 tons of cardamom and 20 tons of chilli. Other spices have not yet reached production levels to be considered for assistance. The vanilla boom in 2002 – 2003, encouraged vanilla production nationwide. It is estimated that there are about 11, 000 households involved in vanilla production. Cardamom and chilli productions are mainly concentrated in the Highlands and the Momase regions.

The major issues in spices development have been highlighted during a national spice development consultative workshop in August 2004. Lack of effective management and coordination in the industry and lack of field based development programs for enhancing production at the farm level were identified as the main constraints. The proposed development projects are intended to address these two main issues.

8.2 Goal

To promote and develop spice and minor crops as alternative export cash crop commodities for improving the welfare of rural families and to contribute to the national economy.

8.3 Objectives and Strategies

Objective 1: To improve management and coordination of the spice industry sub-sector.

Strategies

- Provide institutional strengthening and capacity building to SIB.
- Establish levy and license collection and monitoring system.
- Provide effective and efficient management of SIB.

Objective 2: To promote and assist sustainable production of spice and minor crops.

Strategies

- Ascertain the current status and future potentials of the industry by undertaking a national survey in 2007.
- Develop and promote new technologies to support the industry.

- Promote group / cooperative / nucleus estate farming concepts as appropriate.

Objective 3: Formulate and implement strategies to improve production, productivity and quality of spice and minor crops.

Strategies:

- Develop a research and development program for spice and minor crops.
- Promote human resource development within the sub-sector.
- Rehabilitate old plantations and expand into new plantings.
- Provide support for downstream processing projects.

Objective 4: Improve marketing opportunities and post harvest handling of produce.

Strategies

- Establish a marketing network as an incentive to encourage smallholders to continue to produce the spice crops.
- Ensure that smallholders comply with quality standards in order for PNG to attract premium prices for their produce.
- Encourage smallholders to be reliable and consistent with their produce supply.
- Promote domestic and international trade.

8.4 Activities and Schedules

Each of the above strategies is related to appropriate identified activities that are aimed to achieve the overall objective of the program that is spread over ten years (2007-2016) as per the attached implementation schedule and budget (Appendices 51 – 53).

8.5 Locations

Except for the institutional strengthening and capacity building programs, all other activities will to be carried out in the districts in collaboration with the district development programs. In general, vanilla development will be implemented throughout the country while cardamom and chilli development will be carried out in the Highlands and Momase regions.

8.6 Partners/Agencies

The following are the major development partners: National Department of Agriculture and Livestock, Provincial Division of Agriculture & Livestock, Department of National Planning and Monitoring, Department of Commerce and Trade, Spice Industries Council, National Agriculture Quarantine and Inspection Authority, National Agriculture and Research Institute, Non Government Organizations/Community Based Organizations, Private Sector and Industry Participants and International Donors.

8.7 Budget

Planning Period: 2007 – 2016

The Total budget requirement for the ten-year period is K22.86 million.

Programs	Kina (Million)
1. Administration and capacity building	8.05
2. Rehabilitation and expansion	2.05
3. Strengthen markets & credits access	2.98
4. Cooperatives	2.37
5. Downstream processing	1.25
6. Monitoring and inspection	3.86
7. Research and development	1.75
8. Infrastructure and capital formation	0.55
TOTAL	22.86

8.8 Expected Outcomes

For Objective 1:

- (1) Fully functional and operational SIB.
- (2) Quarterly and annually reports.
- (3) Financial and management reports submitted regularly from 2007.

For objective 2:

- (1) Survey completed by 2007
- (2) A well structured training system in place by 2008.
- (3) Establish at least 10 facilities at different locations to demonstrate and transfer new technologies by 2009.

For objective 3:

- (1) A rehabilitation and expansion program in place by 2007.
- (2) At least 1 project in each region by 2009;
- (3) A national research program for spices and minor crops in place by 2008
- (4) Established number of farmer groups/ cooperatives/ nucleus farms
- (5) Trained farmers and provincial extension officers in the district;
- (6) By 2008 rehabilitation of 19 plantation, farms and expansion of projects;
- (7) Five downstream processing centres established by 2008.and
- (8) Four regional R& D programmes conducted and achieved
- (8) A well structured training system in place by 2008.

For objective 4:

- (1) Marketing network established by 2008
- (2). Inspection and certification process for quality assurance in place by 2007.

9. GENDER, SOCIAL AND HIV/AIDS

9.1 Background

In Papua New Guinea women play a very important role in agriculture and contribute between 50-70% of agricultural labour such as clearing, planting, weeding, harvesting, transporting, stocking and marketing. They produce about 80% of the food grown. Cash income received by women from agriculture is mostly spent to nourish the family and on health and education. Despite all these, women in PNG are disadvantaged in almost all aspects of life. Increased poverty among women in rural areas can be attributed to their limited access to and control over productive resources such as land, water, labour, and other basic services including access to extension, training, information, credits, market facilities and their limited participation in decision making processes.

Other contributing factors include gender disparities that still exist in most developing countries and PNG is no exception. These disparities are pinned down by the weight of tradition, often with the complicity of women, and of history, religion, culture, violence as well as the dreaded killer disease HIV/AIDS that has the potential to deplete the labour force if not contained or minimized at this early stage. Unless these obstacles are seriously considered and measures taken to address them the status of women will continue to be lagging and they will be marginalised both as contributors and beneficiaries in the economic activities within the agricultural sector.

One of the ways by which some of these obstacles can be addressed is through integration of gender in agricultural development programs, basically referred to as gender mainstreaming. For effective gender mainstreaming, it is imperative that Papua New Guinea women are involved in the development of policies, design and management of programs at all stages and levels of decision making to ensure that appropriate actions are taken to address issues of inequality and to make implementation central to the empowerment process. Mechanisms of participation need to be invested in building women's capacity to become actively engaged in decision making processes at the household, community and government levels. In agriculture it is important to understand that paying attention to Gender Equality will increase agricultural production and lead to sustainable development.

The plan outlined compliment some of the International and National conventions and Policies which include the Beijing Platform for Action (1995), Commonwealth Plan of Action 2005-2015, Convention on the Elimination of all forms of discrimination Against Women (CEDAW), Millennium Development Goals (MDG's), National Constitution, National Goals and Directive principles, National Women's policy, Medium Term Development Strategy (MTDS) Food Security Policy, National Agriculture Development Strategy (NADS), National Strategy Plan on HIV/AIDS (2006-2010), that call on all Government institutions to take a pro-active role in ensuring that gender, social and HIV/AIDS are mainstreaming in all development programs.

The aim of this plan is therefore to formulate clear goals, objectives and appropriate strategies to improve the welfare of women in all aspects of agricultural development over the ten-year period (2007-2016) with an estimated total budget of K14.5 million to be funded under the development budget appropriation.

9.2 Goals

1. To promote equal participation of women in all aspects of agriculture and livestock development so as to improve the status of women through economic development.
2. To ensure that gender, social issues and HIV/AIDS are mainstreamed in all agriculture development programs.

9.3 Objectives and Strategies

Objective 1: To increase proportion of women to participate in planning and decision making in all levels of government and other decision making bodies within the agriculture sector.

Strategies:

- Establish WIAD offices in all provinces and districts and nominate women representatives on all commodity boards.
- Coordinate and facilitate women groups and associations.
- Coordinate and facilitate women's groups to form associations and link to cooperatives.
- Improve and strengthen women's networking.

Objective 2: To promote and increase participation of women and youth in agricultural development and to enhance capacity building in all provinces and districts.

Strategies:

- Organize training and capacity building to improve technical and managerial skills in agriculture
- Encourage and support women and youth in self employment and small cottage industries in the agricultural sector
- Support and strengthen linkages in the dissemination of information.
- Create gender database useful for identifying target groups for extension services and major impact projects.

Objective 3: To encourage and empower the people to participate and integrate HIV/AIDS awareness programs within the agricultural sector in response to the epidemic in PNG

Strategies:

- A HIV/AIDS work place policy for the agricultural sector developed and implemented.
- Create awareness on the adverse effects of HIV/AIDS and the socio- economic factors in agriculture.
- Establish and strengthen partnership and technical cooperation with relevant national and international donor agencies.

9.4 Activities and Schedules

Each of the above strategies is related to appropriate identified activities that are aimed to achieve the overall objective of the program that is spread over ten years (2007-2016) as per the attached implementation schedule and budget (Appendices 54 -56)

9.5 Locations

Women in Agriculture Development will be closely linked to the provincial and district extension activities. It is anticipated that in the next ten years WIAD program will be developed for each province and district to create awareness about the negative impact of gender inequality and HIV/AIDS on the agriculture sector in the long term.

9.6 Partners /Agencies

The WIAD programs will be developed in close consultation with the following partners and agencies: Provincial DAL, Districts / LLG's, NCW / NGO's, Commodity Industries, NARI, FPDA, Universities, SBDC, Donors – UNAIDS/ Global Fund, National Aids Council / Provincial AIDS Council, Aus Aid, DCE, DoE and other line agencies.

9.7 Budget Requirements

Planning Period 2007 - 2016

Total Budget Estimates for 2007 – 2016 is K14.5 million.

9.8 Expected Outcomes

For objective 1:

- (1) 20 WIAD desks established and fully funded by 2008.
- (2) Women representatives on all agriculture commodity boards by 2008.
- (3) At least 80% of workforce is gender sensitized by 2016.
- (4) Women groups/associations formed in all provinces by 2016.
- (5) Networks improved and strengthened annually in provinces.
- (6) A 10 year strategic plan for Women in Agriculture is developed by 2008.

For objective 2:

- (1) A 30-50% increased number of women and youth trained in various agriculture skills and technology in the provinces.
- (2) At least 30-40% of women and youth trained in various skills by agricultural agencies and commodities annually.
- (3) A 30% increased number of women and youth engaged in different varieties of employment and cottage industries.
- (4) At least 30% of SAC loans guaranteed for women entrepreneurs
- (5) Information produced and disseminated on timely basis.
- (6) Database established by 2008 and updated annually.

For objective 3:

- (1) Work place HIV/AIDS Policy in place by 2008
- (2) Awareness training conducted annually throughout the workplace and extension services within the provinces and districts
- (3) Strengthen Technical cooperation and collaboration established by 2008 on wards.

- (4) Greater awareness on HIV/AIDS and its potential impact on agricultural development and food security.
- (5) Greater dialogue and collaboration established with relevant stakeholders and technical partners in the implementation of the HIV/AIDS programs within the provinces/districts/ commodity industries and the national department.

10. REGULATORY AND TECHNICAL SERVICES

10.1 AGRICULTURE QUARANTINE

10.1.1 Background

The national quarantine functions are managed by the National Agriculture Quarantine and Inspection Authority (NAQIA), a Papua New Guinea Government statutory authority, established by an Act of Parliament in 1997. NAQIA has a dual mandated responsibility under the Act [1997] to:

- Preserve and protect the animals, plants and fish from exotic pests, diseases and weeds in the interest of national, social and economic development.
- Facilitate international trade through export and import risk analysis, and quality assurance systems thereby contributing to the Government's objective of export driven economic recovery policy.

Growing international trade, greater mobility and climate change make PNG's borders increasingly more vulnerable to new pests and diseases, many of which have the potential to seriously damage our natural resources, threaten our economy or undermine our way of life.

Although, PNG is currently relatively free of the major pest and diseases; it faces major challenges to the sustainability of our agriculture and resource base in particular with the emerging issues relating to zoonosis, and other animal and plant pests and diseases.

The most recent out break of the late potato blight in the highlands and cocoa pod borer in Keravat, East New Britain province and Aitape in Sandaun province are classic cases of such devastations that can affect the socio-economic activities in the potato and cocoa growing regions.

One of the most feared disease globally and spreading very fast is Avian Influenza or Bird Flue. PNG has to be prepared to prevent the invasion such a disease affecting both birds and humans.

Other plant and animal pests and diseases which can also have devastating effects and are present on the other side of PNG include: New Castle disease of chickens; swine fever or hog cholera of pigs; coffee berry borer of coffee; coconut spear rot of coconuts and banana blood disease of bananas.

The emerging threats of pests and diseases are inevitable. We must therefore ensure that our bio-security monitoring systems are working and effective and resources are readily made available for both protection and counter responses of incursions.

The inspection and certification of exports of our agricultural commodities to assure and ensure that quality is maintained and that these exports conform to the importing country's quarantine protocols and international conventions on food safety and sanitary and

phytosanitary standards as part of the Government's "Export Driven Economic Development" Strategy.

In PNG, where there are 9 international ports of entry, the cost of maintaining an effective and efficient quarantine and inspection service is high. International shipping and air routes follow where economic activity is concentrated, thus the Authority is required at these ports to minimise bio-security threats to PNG and assist in facilitating trade activities.

Unfortunately, for the last three years no funds were allocated to NAQIA for development programs and provisions for salaries and allowances have been inadequate.

Given the limited resources the Authority has managed to conduct its inspections and made minor improvements and repairs to its assets funded from its internal revenue while surveys, surveillance and public awareness campaigns on pests and diseases have been conducted with assistance from donor agencies such as ACIAR, NAQS and SPC.

This arrangement is not only unsatisfactory but also not sustainable in the long-term. Therefore, the Government should make available adequate resources to NAQIA to rehabilitate and improve its infrastructure, replace/retool the inspection facilities, including the laboratory and veterinary equipments.

10.1.2 Goals

1. To conserve, protect and sustain the animals, plants and fish in PNG including natural resources, agriculture produce from exotic pests, diseases and weeds in the interest of national, social and economic development.
2. To ensure that PNG's international export/import trade activities comply with international quarantine protocols including sanitary and phytosanitary standards of IPPC, OIE and food safety regulations of FAO.

10.1.3 Objectives and Strategies

Objective (1): Prevent and minimize the risk of entry and spread of exotic pests, diseases and weeds, although the entry of disease-free animal and plant material is essential to improve agricultural, pastoral, fishery and forestry development in the country.

Strategies

- Monitor, inspect, regulate, and control all imports of animals, fish and plants, and their parts and products.
- Undertake all necessary actions to prevent arrival and spread of pests, diseases, contaminations, weeds and other adverse changes pertaining to animals, fish and plants, and their parts and products.
- Develop import conditions for all agricultural product imports through Import/Pest Risk analysis.
- Monitor, and inspect all fish, frozen and processed food material imported into Papua New Guinea to ensure that relevant standards are complied with.
- Undertake and maintain inspection and quarantine surveillance relating to pests, diseases, weeds and any other symptoms.

- Provide quarantine and inspection information and services to individuals, agencies and organizations within the country and overseas in respect of animals, fish and plants.

Objective (2): Improve collaboration with other countries on animal and plant health and quarantine matters to protect domestic industries and ensure high quality of products, for domestic and overseas markets

Strategies

- Liaise with other countries and international agencies and organizations in developing policies, strategies and agreements relating to quarantine, quality inspection matters in respect of animals, fish and plants.
- Monitor, inspect and control all exports of animals, fish and plants and their parts and products to ensure that they are free from pests, diseases, weeds and any other symptoms and undertake all necessary actions to provide quality assurance to meet the import requirements of the importing countries.
- Issue permits, phytosanitary certificates and endorsements relating to imports and exports of animals, fish and plants and their parts and products to ensure protection and quality assurances.
- Regulate the movements of animals, fish and plants from one part of the country to another to control and prevent the spread of pests, diseases weeds and any other adverse introductions, adaptation and evaluation of new crops and crop varieties.
- Undertake and maintain inspection and quarantine surveillance relating to pests, diseases, weeds and any other symptoms.

Objective (3): Maintain high quality product of agricultural exports in order to ensure products meet the required standards for overseas markets

Strategy

- Undertake and maintain inspection and quarantine surveillance relating to pests, diseases, weeds and any other symptoms.

Objective (4): Maintain high quality standards for food imports for the health and safety of Papua New Guineans.

Strategies

- Issue permits, certificates and endorsements relating to imports and exports of animals, fish and plants and their parts and products to ensure protection and quality assurances.
- Provide quarantine and inspection information and services to individuals, agencies and organizations within the country and overseas in respect of animals, fish and plants.
- Monitor, and inspect all fish, frozen and processed food material imported into Papua New Guinea to ensure that relevant are complied with.

Objective (5): Protect and promote sustainable agricultural development by reviewing, developing and instituting appropriate legislation on agricultural quarantine, import and export quality assurance, and environmental aspects of safe agriculture and livestock industries.

Strategies

- Provide quarantine and inspection information and services to individuals, agencies and organizations within the country and overseas in respect of animals, fish and plants.
- Provide animal health extension services.
- Undertake and maintain inspection and quarantine surveillance relating to pests, diseases, weeds and any other symptoms.
- Regulate the movements of animals, fish and plants from one part of the country to another to control and prevent the spread of pests, diseases weeds and any other adverse symptoms.

Objective (6): Strengthening institutional capacity including man power levels, human resource development and quarantine infrastructure and facilities.

Strategies

- Establish inventory and information databases for serious pests and diseases in PNG.
- Develop sound corporate and financial management systems.
- Promote good work ethics and governance.
- Establish staff career development plans and programmes.
- Increase technical manpower strength.
- Human resource development through formal, workplace and cadetship training.
- Develop, replace and maintain infrastructure, facilities and equipment throughout the country.
- Upgrade current diagnostic laboratory facilities.
- Set up border facilities at Wutung and Daru.
- Restore quarantine facilities in Buka and Buin.

10.1.4 Activities/Schedules

Each of the above strategies is related to appropriate identified activities that are aim to achieve the overall objective of the program that is spread over ten years (2007-2016) as per the implementation schedule and budget attached (Appendices 57 -59).

10.1.5 Location

NAQIA's operations are nationwide covering eight international seaports (Port Moresby, Alotau, Lae, Madang, Wewak, Kimbe, Rabaul and Kieta), three international airports (Port Moresby, Lae and Mount Hagen) and one international post office located in Port Moresby.

10.1.6 Partners/Agencies

Co-operating partners and/or agencies expected to participate in this program are: all commodity exporting companies, all stakeholders importing food and other plants and animal products into PNG, all commodity boards, research institutions, line government agencies, all provincial governments for ensuring bio-security threats to PNG are minimised, NGOs and private investors.

10.1.7 Budget

Planning Period: 2007 – 2016

Programs	Kina (Million)
1. Prevention and minimizing the entry and spread of exotic pests, diseases and weeds.	10.378
2. Improve collaboration with other countries on animal and plant health quarantine measures to protect domestic industries.	4.50
3. Maintain high quality product of agricultural exports to ensure products meet the required standards for overseas markets.	1.90
4. Maintain high quality standards for food imports for the health and safety of Papua New Guineans.	4.50
5. Protect and promote sustainable agricultural development by reviewing, developing and instituting appropriate legislation on agricultural quarantine, import and export quality assurance.	3.20
6. Strengthening institutional capacity including man power levels, human resource development and quarantine facilities.	38.244
TOTAL	62.722

10.1.8 Expected Outcomes

- (1) Pest and disease free status maintained in PNG.
- (2) Facilitated the increase in volume of export and import trade.
- (3) Exports of high quality agriculture commodities and increased export income.
- (4) Foster increase in trade while maintaining adequate bio-security surveillance systems for ensuring quality imports to and exports from PNG and minimizing risk of invasion of new pests and diseases.
- (5) General public becomes aware of the significance of quarantine issues and assists NAQIA in ensuring a pest and disease free PNG on long-term basis.
- (6) Appropriate inventory and database systems are established for improving the quality of pest and disease surveillance in PNG on a long-term basis
- (7) Required technical manpower is recruited to enable NAQIA to undertake its functions effectively.

10.2 LAND USE PLANNING AND DEVELOPMENT

10.2.1 Background

PNG is endowed with an extremely wide range of natural land and water resources, which have a large influence on the type of agricultural activities or enterprises undertaken for subsistence, semi-commercial and commercial purposes. The land resources include: fertile lowland valleys to alluvial plains and mangrove swamps in hot humid and dry coastal regions to mountainous interior landscape in the highlands with high altitude climatic conditions. The country also has many river systems which support many forms of agricultural activities.

Agriculture is the predominant activity by which the bulk of the rural population utilises the land and water resources to meet their food security and socio-economic needs. Subsistence agriculture is still a sustainable production system in most parts of PNG, but the output from this system has remained low. One of the major reasons is the poor farming techniques that are being used to produce food and other cash crops. Subsistence agriculture is also under pressure from population increase in the rural areas as the demand for food and other cash crops increases per unit land. Continued intensive use of the land for agriculture can cause land degradation that leads to soil fertility decline. Moreover, farmers are also being forced to cultivate marginal land areas which are vulnerable to degradation, if no proper land use planning techniques are applied to cultivate these areas.

It is therefore necessary for more land to be cultivated in order to increase production, subsequently transforming subsistence activities of the farmers into semi commercial and commercial form of land use. It will be necessary to mobilise land by identifying suitable land areas for agricultural development purposes through proper land use surveys and documenting land use capability that reflect the needs of various clients including the farmers and projects developers. One of the crucial services that NDAL provides to the provinces, districts, and LLGs is land evaluation and land use planning. And the need to integrate database containing natural resources information, infrastructure and population distribution is obvious.

10.2.2 Goal

To provide all government agencies and private enterprises that requires basic land resource information necessary for planning sustainable agriculture development projects for increasing the overall productivity of the agriculture sector.

10.2.3 Objectives and Strategies

Objective 1: Increase capacity and availability of land resource information for planing at various levels of survey intensities to suit client needs.

Strategies

- To increase land resource (soils, water, climate, geomorphology) surveys.
- Improve availability and quality of land resource (soils, water, climate and geomorphology) information.

Objective 2: Develop sustainable land resource plans for national and district levels.

Strategies

- Enhance land use planning capacity.
- Increase planning activities.

Objective 3: Enhance geographical presentation of land resources and maps.

Strategies

- Increase mapping and cartographic capability.
- Increase mapping product output and quality.

Objective 4: Improve land resource inventory and database management

Strategy

- Maintenance of current database and GIS systems

Objective 5: Increase collaboration with national, regional, international organizations to enhance capacity and product quality and develop sound land use and conservation policies.

Strategies

- Establish strong linkage with land resource survey bodies.
- Develop relevant policy guidelines on sustainable land uses.

10.2.4 Activities and Schedules

Each of the activities (see implementation framework) are related to the above strategies aimed at achieving the overall objective over the 10 years. One off activities such as client need assessments and reviews are to be conducted in specific years. Detail surveys or project-oriented land use surveys takes at least three months to complete, hence only a limited number (4 or 5) can be completed annually, whereas numerous sites inspection can be conducted depending on demand (Appendices 60 – 62)

10.2.5 Locations

The landuse surveys will be undertaken throughout PNG based on the requests from clients. The GIS systems such as PNGRIS and PNGLES, from which broad-based land capability assessment are identified, provide a nationwide coverage of land resources, such as soils, climate, geology, landforms, vegetation, population and some socio-economic data.

10.2.6 Partners/Agencies

Whilst the land use section of NDAL is the only government agency responsible for land use survey and planning, the other partners who can contribute or be part of the overall land use planning process are listed as follows.

National Agencies

Provincial and District Administrations; University of Technology; University of PNG; Department of Environment and Conservation; Department of National Planning and Monitoring; Department of Lands and Physical Planning; National Forest Services; National Agriculture Research Institute (NARI); CIC; Cocoa Board; KIK; CCI; OPIC.

International organizations

FAO; Asia Soil Conservation Network (ASOCON); Institute of Soil Reference and Information Centre (ISRIC); United State Department of Agriculture (USDA) Soil Taxonomy Society; Vetivar Technology Network; SPC - Land Resource Division

10.2.7 Budget

The budget required over the ten years period (2007-2016) to implement the following:

Programs	Kina (Millions)
1. Increase land resource surveys	1.25
2. Improve availability and quality of land resource	0.50
3. Enhance land use planning capacity	0.87
4. Increase planning activities	0.50
5. Increase mapping and cartography	0.50
6. Improve mapping productivity and quality	0.50
7. GIS and database management	0.26
8. Establish linkages and membership affiliation	1.10
9. Develop good land use practices	0.50
Total	5.98

10.2.8 Expected Outcomes

- (1) Land Use Planning Committee established for reviewing the functions of the Land Use Section for improving its technical advisory support to its clients.
- (2) Technical capacity of Land Use Section staff is greatly improved and quality reports are produced by the Section.
- (3) Increased availability of land resource information through conducting land resource surveys at specific sites in provinces for facilitating the planning processes at the district and LLG levels.
- (4) Acquisition of new modern survey equipments to improve the quality of data collected.
- (5) Workshops and meetings conducted to increase awareness on sustainable land use management for agriculture development purposes.
- (6) Production of quality land capability maps for districts improves planning at provincial, district and LLG levels.
- (7) Strengthening collaboration with relevant international bodies to enhance capacity and to increase outputs
- (8) Manual on innovative management of land resources published for assisting planners designing agricultural development projects at the district levels.

10.3 CODEX AND FOOD SAFETY MANAGEMENT

10.3.1 Background

The Codex Alimentarius provides the basis to address all food safety issues affecting the world population within the context of globalisation. It is an international framework in which national actions can be undertaken to ensure food safety for consumers while promoting and facilitating fairness in international trade.

Food Safety as a Consumer Concern

One of the fundamental rights of the consumers is the right to health and safety and this is enshrined in the PNG National Constitution and in various other Acts. Consumers worldwide are now demanding that the foods they eat are not only safe but are also nutritionally stable and manufactured using safe technologies. This is because food is the only other thing that they take into themselves apart from water and other fluids.

The rural poor are the most disadvantaged, as they are extremely vulnerable to contaminated and low quality food. Papua New Guinea suffers from many inadequacies in food safety including having weak food safety legislation, lack of appropriate food regulations and food standards, under-funded infrastructure, and poor surveillance and monitoring capability.

Food Safety as a Public Health Concern

Food safety is a major public health issue and governments all over the world are taking proactive measures to protect their constituents from contaminated and low quality food. A healthy population is a crucial factor in fostering economic development in any country. Food borne diseases also cause human suffering, economic loss to communities and industries, and incur costs to health care systems. Poor health reduces the productivity of the community and workforce through absenteeism from schools and workplace, increased expenditures on medical care, costs incurred by investigating and controlling disease outbreaks, and through legal and other expenses. The economy of PNG is not able to meet such high health related costs on a long term basis. It is estimated that about 2 – 3% of the health problems are related to food borne diseases that often lead to long term ill health, which is far more damaging to human health and the economy than the initial disease itself.

The state of PNG's health report of 1998 identified an increase in the number of non-communicable diseases among Papua New Guineans. The incidences of non-communicable diseases (e.g. heart diseases, diabetes, cancer, gout and alcoholism) are higher in urban centres than in the rural areas in PNG. These diseases are contracted as a result of living in excess, and suffered by a fraction of the population that live in the urban areas. There is no reason for the State to spend much needed health resources on people who are already well off at the expense of the rural majority.

This is an emerging threat that will demand more resources to be made available to the health sector compared to agriculture and other sectors in the country. This will have the effect of denying the rural sector of much needed medical services as resources are diverted to address these issues.

Food Safety as a Trade Concern

Food is also an important trading commodity and the world food trade is estimated to be valued at around 500 billion US Dollars.

Papua New Guinea depends heavily on agriculture for its food security; export earnings and its long-term survival.

A vibrant and strong national food safety control program is therefore needed to protect consumers' health and promote fair trade, which will improve Papua New Guinea's tourism potential, enhance market access for PNG made food products, improve health, productivity and well being of the people and promote sustainable development.

World Trade Organizations (WTO) Requirements

As trade in food commodities expand internationally, food safety standards can no longer be considered only as a domestic issue. Trading partners increasingly require harmonization with international food standards.

The Uruguay Round of multilateral trade negotiations, through the Agreement on the Application of Sanitary and Phytosanitary Measures (SPS) and the Agreement on Technical Barriers to Trade (TBT), encouraged international harmonization of food standards, and cite Codex Standards, guidelines and recommendations as the preferred international measures for facilitating international food trade. As such, Codex Standards have become the benchmarks against which national food measures and regulations are evaluated within the legal parameters of the Uruguay Round Agreements.

PNG is a member of the World Trade Organization (WTO) and therefore it is bounded by the rules of the WTO. New WTO rules require that the National Governments must develop modern food control and safety standard programs which would ensure consumer protection, facilitate international trade and promote economic growth.

10.3.2 Goals

1. To ensure consumer health and safety is protected from contaminated processed food.
2. To facilitate international trade by eliminating trade barriers through the compliance of PNG food industry to international food standards and adoption of accepted code of practices in producing processed food for export markets.

10.3.3 Objectives and Strategies

Objective 1: Strengthen the national Codex management and coordination system.

Strategies:

- Institutional strengthening and training.
- Strengthen partnership and collaboration with regional and international organizations.

Objective 2: Enhance Codex and food safety activities.

Strategies:

- Conduct extension and awareness programs in the provinces.
- Conduct strategic research and assessments.

Objective 3: Ensure fair trade practice is maintained by manufacturers, processors and importers.

Strategies:

- Develop food standards and food policies in compliance with Codex requirements.
- Conduct awareness seminars on Codex requirements for the stakeholders.

10.3.4 Activities and Schedules

Each of the activities (see implementation framework) relates to the above strategies and are aimed at achieving the three objectives over the next ten years (Appendices 63 – 65).

The strengthening of the capacity of the Codex secretariat in NDAL is a prerequisite to achieving the objectives proposed above. It is also necessary to recruit a Project Manager with appropriate qualifications and experience in Food Standards and other related trade policies. Collaboration with international agencies can be realised by Government's commitment to provide budgetary support to Codex activities and programs in PNG over the next 10 years.

10.3.5 Locations

The risk assessment and surveys are to be conducted throughout PNG or from samples of food and products from selected processors and traders on a quarterly basis.

10.3.6 Partners/Agencies

Currently Codex is managed by the Science and Technology Branch of NDAL. The Department intends to work closely with the agriculture stakeholders in developing the essential policy mechanisms for regulating the food industry in PNG in the long term. The major collaborating partners and agencies are:

National Agencies:

NAQIA; Unitech; DNPM; NISIT; ICCC; National Fisheries Authority; Department of Health; Food Processors and Manufacturers; Traders; Urban Councils.

International organizations:

FAO; WHO; WTO; South Pacific Commission - Land Resource Division.

10.3.7 Budget Requirements

The budget required over the ten-year period (2007-2016) for the following programs:

Programs	Kina (Million)
1. Institutional strengthening and capacity building	2.20
4. Conduct extension and public awareness	1.00
5. Conduct strategic research and studies	1.30
6. Database management	1.00
7. Develop Food Standards and Relevant Policies	1.00
Total	6.50

10.3.8 Expected Outcomes

- (1) The technical capacity of the Codex secretariat is greatly improved.
- (2) Inclusion of Codex in NDAL organisational structure.
- (3) Management of Codex programs are greatly improved by 2008.
- (4) FAO, WHO and WTO collaborate readily with PNG due to improved counter funding support by the National Government.
- (5) Regular chemical and microbial risk assessments are conducted to ascertain safety of food on locally and imported processed food for consumer safety.
- (6) Increased awareness and knowledge on food safety.

11 NADP MANAGEMENT

11.1 Background

NADP will be managed by NDAL through the mechanisms that have been stipulated in the plan and approved the National Government. The NADP Secretariat will be established within NDAL to coordinate the implementation, monitoring and evaluation of the NADP. NADP needs concerted efforts from all stakeholders in order to achieve coherence and unified direction for agriculture development. Coordination of agricultural programs through NADP ensures that resources are used effectively and strategically.

11.2 Goal

To ensure that the NADP is implemented successfully to stimulate sustainable economic growth through agriculture development.

11.2 Objectives and Strategies

Objective:

To establish and manage an effective and efficient coordination system with the full participation of all stakeholders to realise the overall goals and objectives of NADP.

Strategies

- Reorganise and strengthen the Policy and Planning Division of NDAL that will provide appropriate policy advice to NADP management to consider.
- Build capacity at the national, regional and provincial levels to ensure effective coordination, monitoring and evaluation, and systematic and timely data collection.
- Participatory approach, through regular consultations and dialogues with all NADP stakeholders, to build ownership of the activities and foster cooperation

11.3 Coordination Mechanism

The coordination mechanism has the following three operational components:

- National Agriculture Council (NAC)
- NADP Secretariat (NADPS)
- NADP Technical Advisory Committee (NADP TAC)

The coordination structure showing the NADP linkages and mechanism for coordination are shown in figure 1.

11.3.1 Economic Sector Ministerial Council (ESMC)

The ESMC oversees the overall implementation of the NADP, to ensure that it is consistent with the overall medium term resource, development and legislative frameworks of the Government.

11.3.2 National Agriculture Council (NAC)

The NAC sets national direction and policies for the agriculture sector under NADP to ensure that only one body is responsible for policies, monitoring and evaluation, and allocation of resources. It assures the sustained relevance and responsiveness of programs to critical issues in agriculture. It brings into focus the plans, programs and policy initiatives, and development strategies and guidelines for a more efficient and effective management of the agriculture sector. Members of NAC consist of all the provincial agriculture council chairmen and head of national agricultural agencies. One or two members will come from the private sector and non-government organizations. NAC has been inactive since 2000 and needs to be activated with more focus in providing policy directions and political support for the implantation of NADP.

11.3.3 NADP Secretariat (NADPS)

The NADP Secretariat will be located within the Policy and Planning division of NDAL and will be headed by the Deputy Secretary Policy and Planning. The secretariat will coordinate the preparation of the work plans of the development projects from various sub-sectors of agriculture under the NADP 2007 – 2016.

NADP Secretariat will coordinate and facilitate in consultation with all stakeholders, identifying prioritised programs, technical appraisal of programs and projects, reviewing of programs implementations, monitoring and evaluation of NADP activities. The secretariat will also manage the information and knowledge generated from NADP programs and activities, including database, package them into suitable form and disseminate to target clients. One of the main activities under the NADP Secretariat is to coordinate the reporting system with well define guidelines, procedures and formats and frequency of reporting.

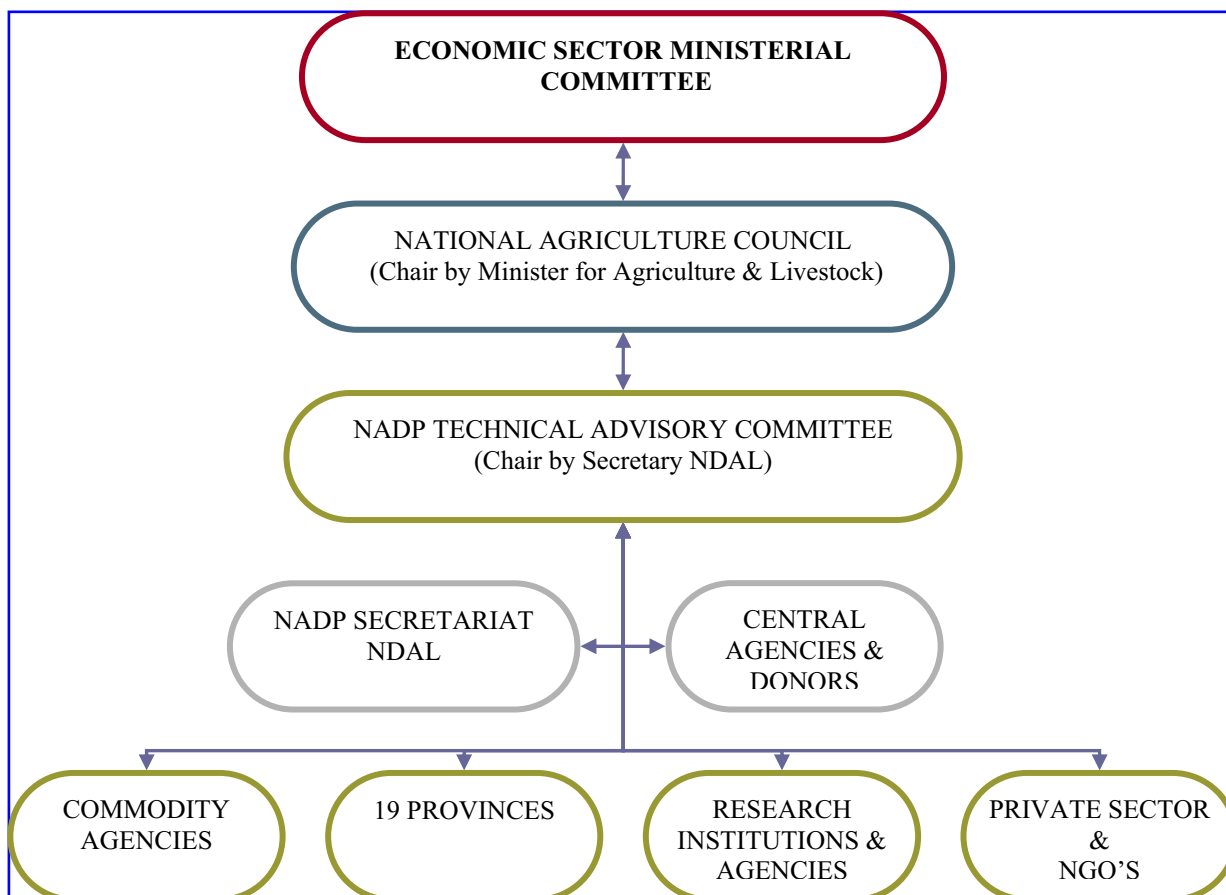
NADP Secretariat will utilize the NDAL regional office to coordinate its activities when dealing with the Province and District Administrations, the private sector, NGOs and CBOs.

11.3.4 NADP Technical Advisory Committee (NADP TAC)

The NADP TAC will consist of representatives of commodity boards, agricultural research institutions and agencies, provinces, private sector and NGOs. NADP TAC studies and deliberates the justification and soundness of the programs/projects, based on a set of criteria for selection and recommends to NAC for endorsement. The criteria for selection would

include: economic viability, impacts on environment, social importance, immediate need and staff capacity to implement programs/projects.

Figure 1: NADP Linkages with main stakeholders and coordination mechanism.



11.3.5 Functional and Expenditure Review (FER) of NDAL

The Department of Agriculture & Livestock would undertake FER to define its functional roles and responsibilities, considering the requirements for the department to provide an effective Secretariat to the NADP. The outcome of FER should lead to appropriate restructuring of the Department and cater for retrenchment exercises for redundant staff.

11.3.6 Capacity Building

NADP secretariat and NADP coordinators from provinces, commodity boards, and research institutions/agencies will need to administratively and technically competent to effectively coordinate NADP. Human resource capacity development starting with the NADP secretariat staff could be designed in-house or short term courses. Long term training and cadet training scheme would form part of NADP human resource development. The main training area includes: Project management; Preparation of Project Proposal; Project Monitoring and Evaluation; Impact assessment; Database development and management; File management; Supervisory course; Time management; Communication skills and Personality development.

11.3.7 Monitoring and Evaluation

Monitoring of the NADP begins at the submission of budget requirements by agencies or entities for funding under the NADP. All budget submissions must be submitted to the Secretariat for compilation into a sectoral submission to National Planning and Finance and Treasury.

The budget submissions must be accompanied with a work plan for the implementation of the activities for which funds are being requested. The work plans and the budget submission will be the main reference point that the Secretariat will use to monitor implementation of the activities.

The NADP proposes a three tier process of coordination, monitoring and evaluation and data collection. These are the National level where the Secretariat will coordinate, monitor and evaluate the overall performance of the sector as a whole, the Regional level where the coordination, monitoring and evaluation of provincial, commodity boards', research institutions', NGOs' and the private sectors' performance will take place and the Provincial level which will be responsible for the coordination, monitoring and evaluation of district and LLG performance.

From the onset, it must be stressed that capacity will need to be boosted at all reporting levels. A key "initial" activity of the Secretariat with guidance from the Technical Advisory Committee will be to ensure that there is capacity at all levels to produce the necessary reports on time. As such training will need to be given to all officers tasked with reporting on activities under the NDAP. All recipients of resources under the NADP must have the capacity to produce reports to the Secretariat on a quarterly basis or as required by the Technical Advisory Committee. Reporting will be a vital part of the implementation of the programs under the NADP in that it will ensure resources are allocated as planned.

The NADP will facilitate the reporting process by establishing contact points with the various stakeholders at various levels in the sector.

The National Secretariat will develop links with the Provinces, the Private sector and NGOs, through NDAL Regional offices. The Provinces have to develop linkages with their Districts. Ideally, the reports will originate from the Districts, then to the Provinces, the Regions and finally to the National Secretariat. Somewhere along the line other stakeholders like commodity boards, NGOs and the private sector will need to have their input in the compilation of the sectoral report.

Assuming that reports will need to be submitted quarterly, reports from the Regions, Provinces, Commodity Boards, the Private Sector and NGOs will need to be submitted at the end of the second month of every quarter. This will give the National Secretariat sufficient time to compile quarterly reports for presentation to the Department of National Planning and Monitoring.

Annual Targets and Indicators

Annual targets and indicators will be derived from the annual work plans submitted each year with the budget forms to the Secretariat. The main indicators will be the allocation and usage of funds as planned and budgeted based on the respective activities.

11.4 Formation of Farmer Cooperatives

Mobilization of farm households voluntarily with their lands will be one of the key strategies in expanding agriculture in PNG.

Formation of Farmer Cooperatives for production, processing and marketing of produce is one of the ways to stimulate farmers' interest

The NADP Management will, in partnership with the National Cooperative Unit in the Department of Trade and Industry, industry boards and companies, provinces and NGOs, facilitate in developing and empowering farmer cooperatives in the industry. Some limited financial support under NADP would be necessary in developing the cooperative system and imparting management skills to the Managers of the Cooperatives.

11.5 Expected Outcome

NADP management established, with clear roles and responsibility and capacity to effectively and efficiently coordinate the implementation of the NADP.

11.6 Partners/Agencies

The partners in the NADP will include: NDAL, DNPM, Department of Finance, Provincial and District administrations, Commodity boards, Research Institutions and Agencies, Private Sector, NGO's and Donors Agencies.

11.7 Budget (2007 – 2016)

Programs	Kina (Million)
1. Establish a NAC management system	6.55
2. Strengthening policy analysis & planning	2.65
3. Coordinate, monitor and evaluate NADP	7.00
4. Capacity building	3.00
5. Support to Cooperative formation	6.00
Total	25.20

12 BUDGET ESTIMATES AND PROJECTIONS

12.1 NADP IMPLEMENTATION BUDGET ESTIMATES

A summary of the estimated budget for the implementation of different components over ten years (2007 – 2016) is presented in Table 2. The 2007 budget estimates include the supplementary allocation of K40 million to the sector.

12.2. PROJECTED PRODUCTIONS AND INCOME, 2007 TO 2016

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; as discussed below;

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 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.3: 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.

Table 2: 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	2,650	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

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

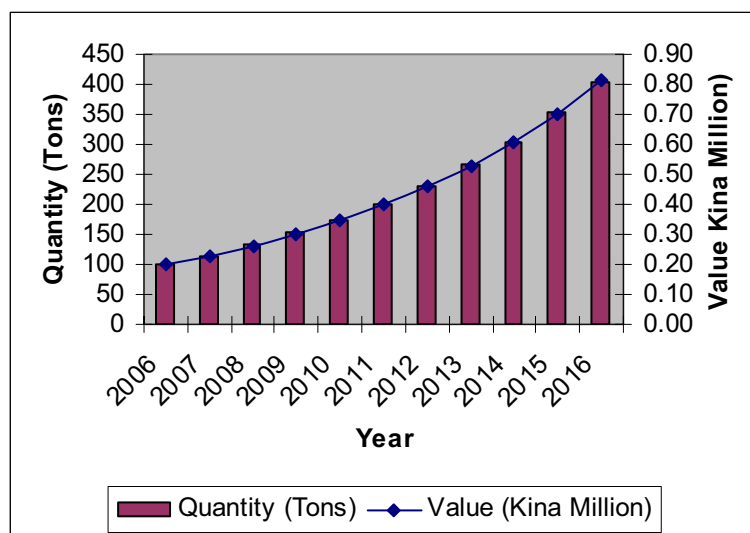
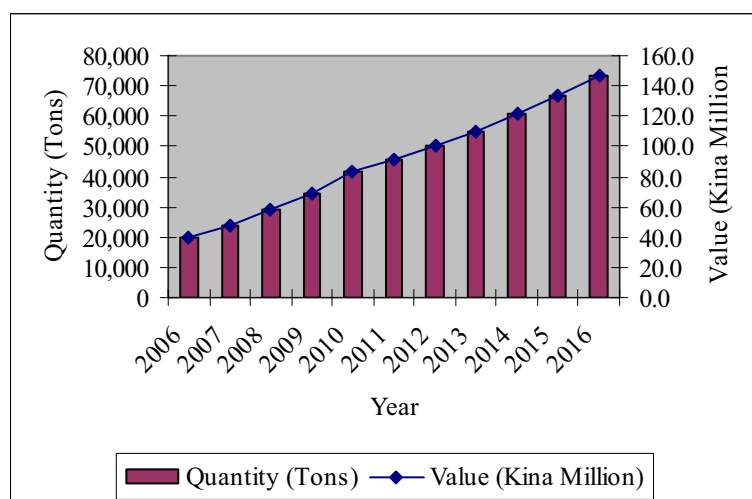


Chart 2: Rice Projections, 2006 to 2016

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

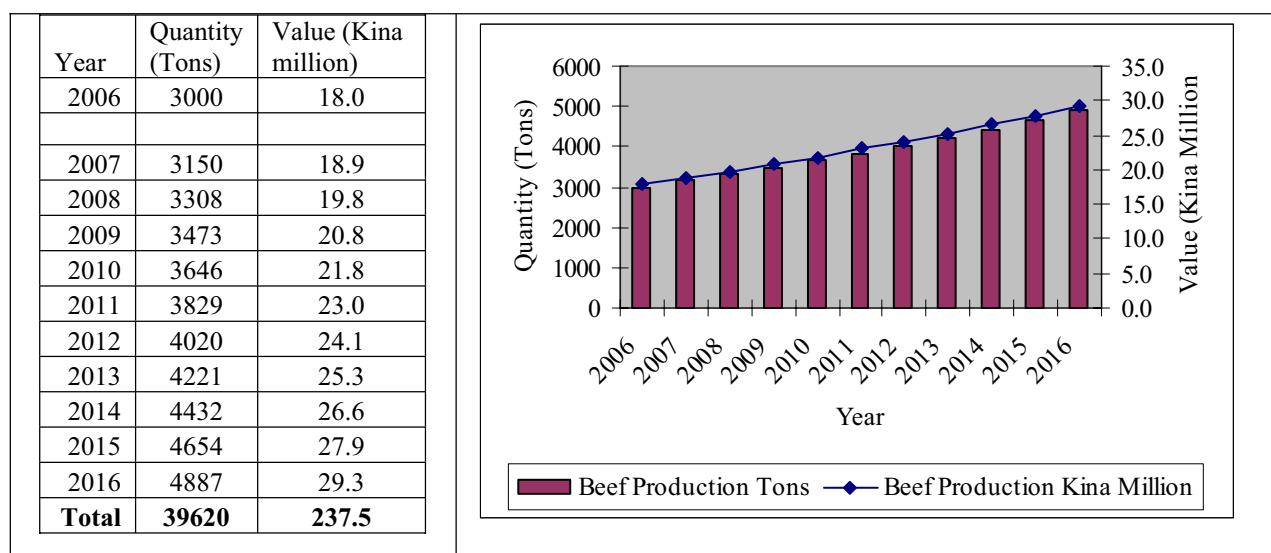


Chart 4: Inland Fish Projections, 2006 to 2011

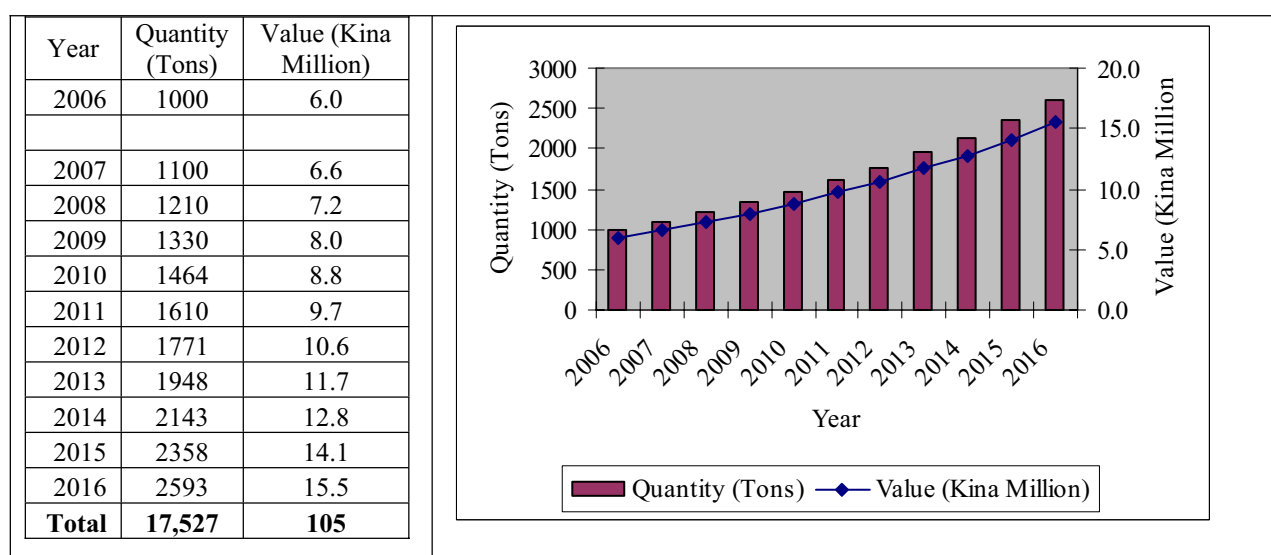
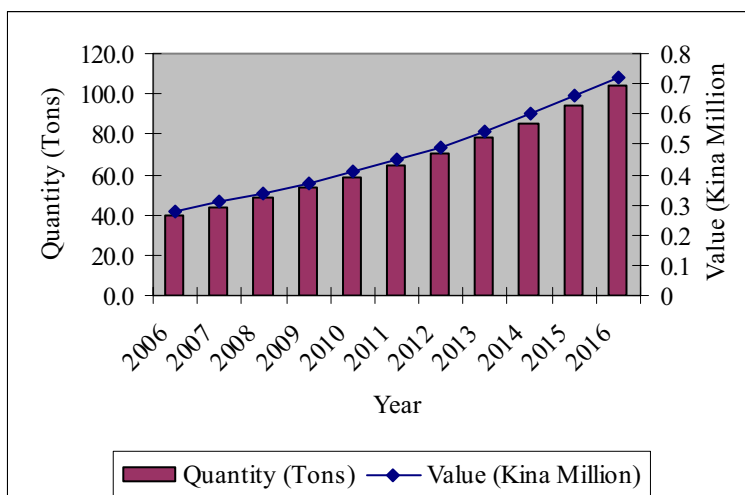


Chart 5: Honey projections, 2006 to 2016

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



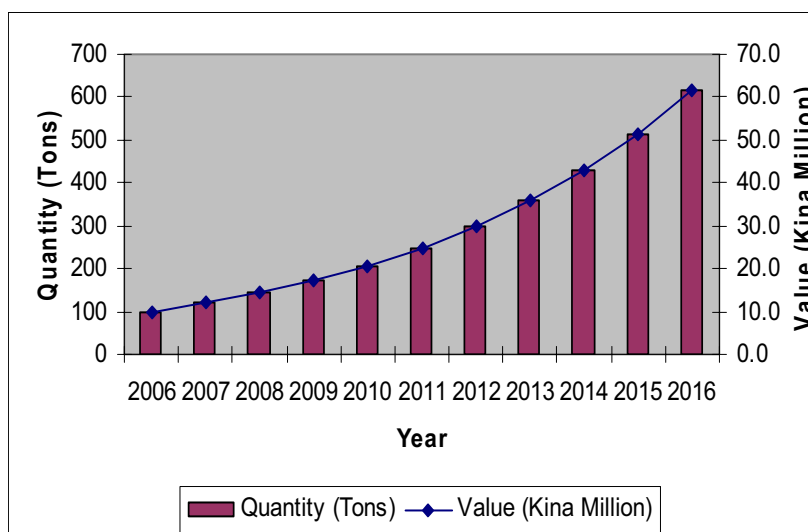
Annual honey production will improve from 40 tons in 2006 to 103.7 tons by 2016 [Chart 5], for the cumulative value of K4.89 million.

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

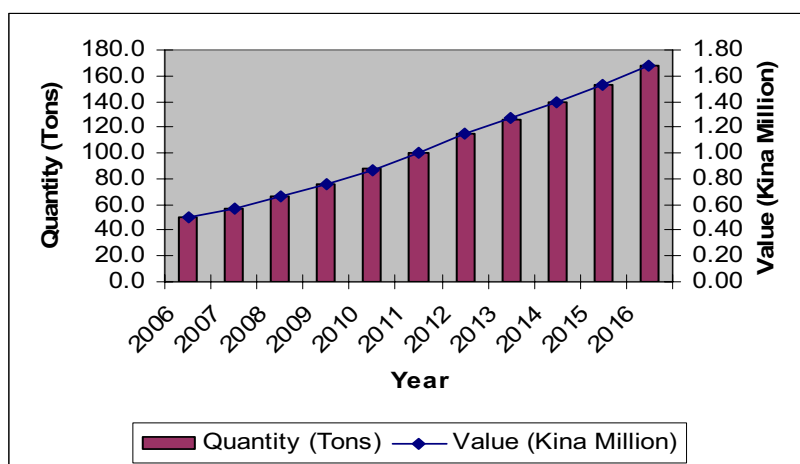
Chart 6a. Vanilla Projections		
	Quantity (Tons)	Value (Kina million)
2006	100	10.0
2007	120	12.0
2008	144	14.4
2009	173	17.3
2010	207	20.7
2011	249	24.9
2012	298	29.8
2013	358	35.8
2014	430	43.0
2015	515	51.5
2016	618	61.8
Total	3,112	311.2



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

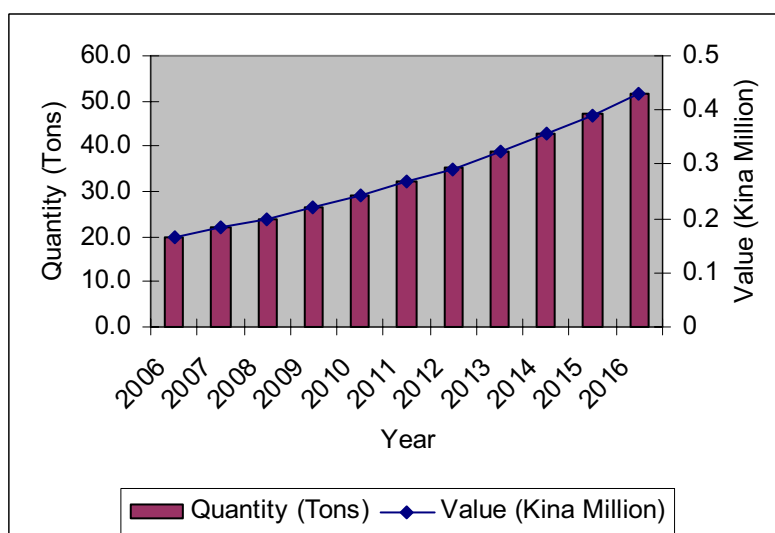


Based on 15% per year increase and priced at K10,000 / ton

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. New investments are estimated at K102.5 million in 2006, K122.2 million in 2007, K78.4 million in 2008, K89.1 million in 2009 and K52.5 million in 2010 (Table 4).

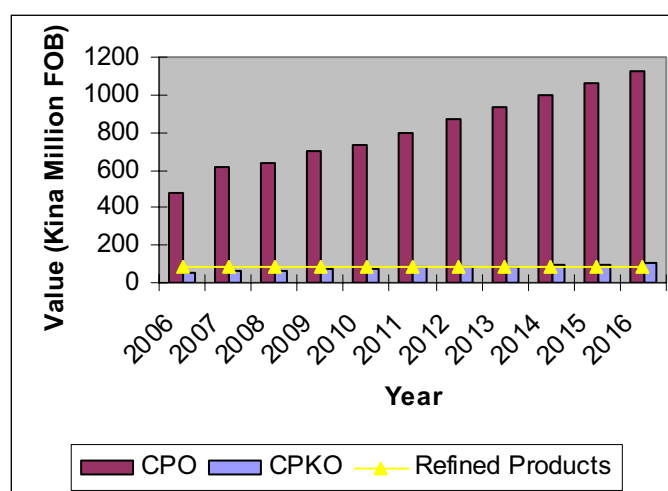
Table 4: Oil palm industry projections, 2006 to 2010

	2006	2007	2008	2009	2010
Plantations					
Hectares (matured)	28,160	29,660	31,160	32,660	34,660
- Rehabilitation	1,633	2,935	2,512	2,530	3,951
- New Planting	6,095	5,300	6,700	3,272	2,600
Smallholders					
- Hectares (Mature)	19,474	20,918	21,918	23,418	24,918
- Replanting	3,000	3,250	3,089	3,130	2,543
- New Planting	2,075	3,325	3,325	3,075	2,875
Total Smallholders	24,549	27,493	28,332	29,623	30,336
FFB Tons					
- Nuclues	1,342,406	1,413,135	1,482,724	1,575,757	1,626,985
- Smallholders	669,947	680,624	709,544	801,372	859,801
- Others	13,176	15,120	15,120	15,120	15,120
OILS (Tons)					
- Crude oil (CPO)	457,492	453,129	506,313	550,542	580,490
- CPKO	35,227	38,170	40,979	45,799	49,378
- Other oil/Products	0	0	0	0	0
- PKE (NBPOL only)	31,645	33,338	34,856	39,084	39,854
New Investments (Kina Million)	102,5	122,2	78,4	89,1	52,5
Employment					
- Permanent	11,874	12,270	12,705	13,013	13,306
- Casual	860	920	984	1,032	1,086
Total	12,734	13,190	13,689	14,045	14,392

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

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.

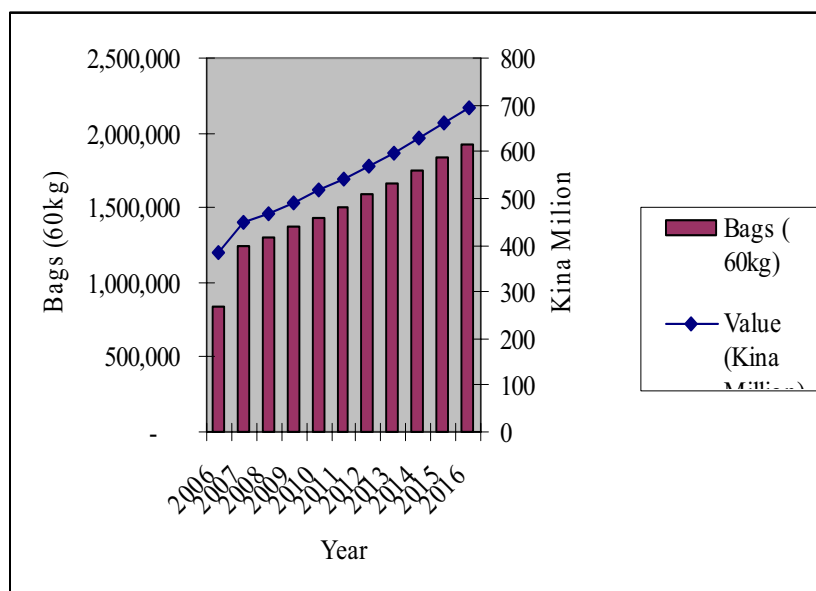
For the period 2007 to 2016 a total production of 15.6 million bags will be produced, giving export value of K5,616 million [Chart 8]

Cocoa

The average cocoa production for the period 1995 to 2006 was 39,000 tons [Table 5]. In 2005 the production increase was 22.6% higher than the average, and in 2006, the production increase was 28.7% higher than the average

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



Projecting on a modest increase of 5% per annum over 2006 base year, Cocoa production will reach 113,623 tons by 2016 [Table 6 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 5: PNG cocoa production, 1995 to 2006

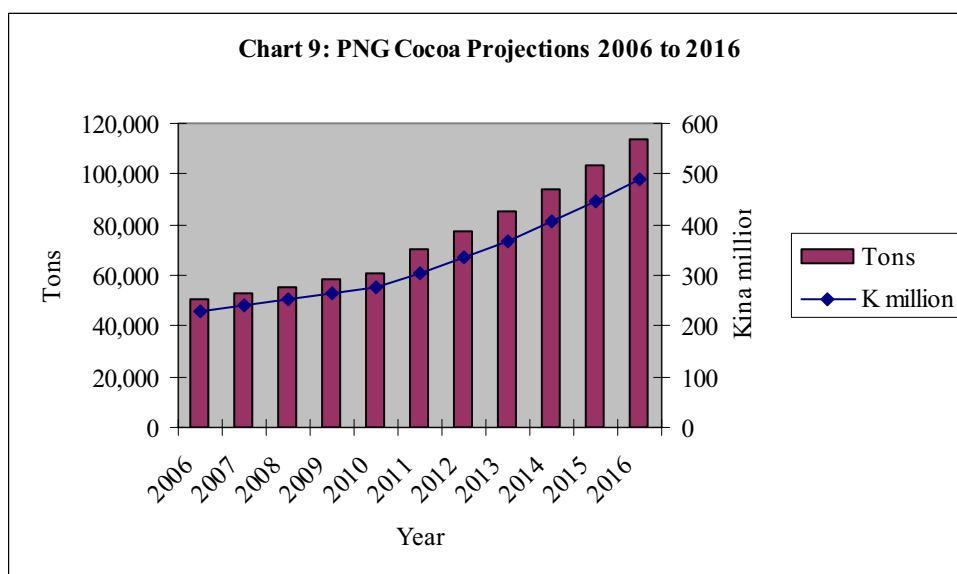
Crop Season	Year	Tons	Kina (Million)
1994/95	1995	29,176	44
1995/96	1996	36,548	61
1996/97	1997	30,357	54
1997/98	1998	29,542	89
1998/99	1999	35,271	99
1999/00	2000	46,822	105
2000/01	2001	39,749	111
2001/02	2002	38,352	203
2002/03	2003	42,660	299
2003/04	2004	38,854	209
2004/05	2005	47,813	222
2005/06	2006	50,253	228
	Total	465,397	1724
	Average 12yr	39,000	123.1

Data Source Cocoa Board Chairman; *The National*, Nov.6, 2006

Table 6: 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;

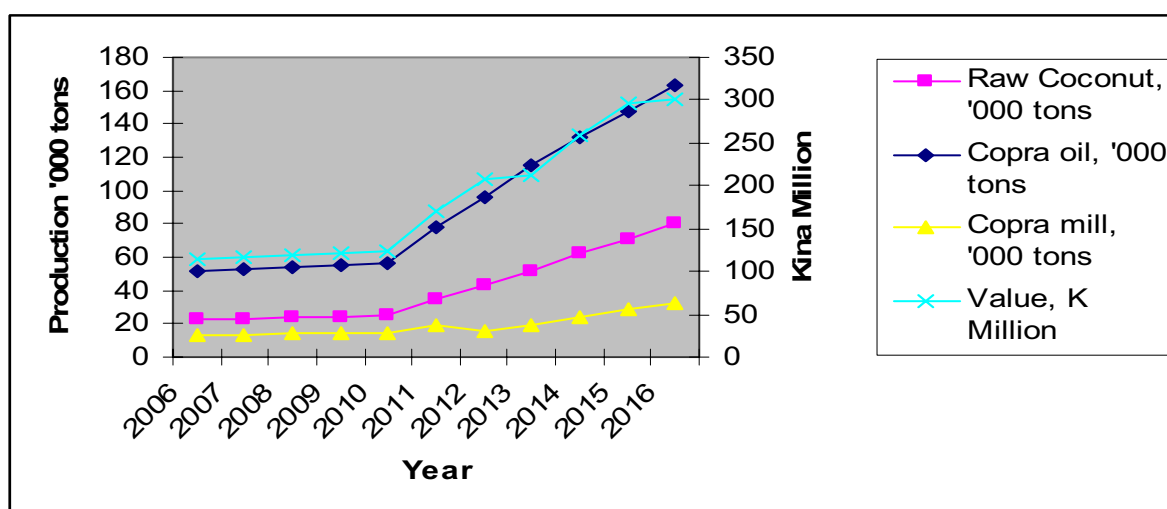
An estimated 115,160 hectares, including existing senile coconuts, will be replanted with coconuts over the 10 year period starting in 2007. At the same period an estimated new area of 136,445 hectares will also be planted with coconuts.

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 7: 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



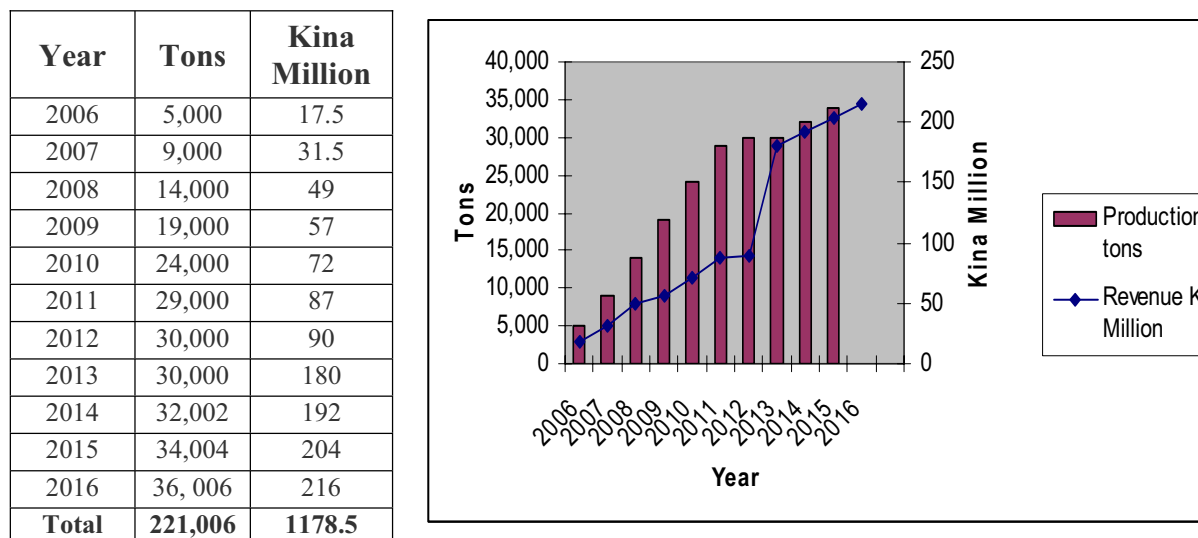
Increased production from replanted coconuts and those planted in new areas will be realized after 2011 when these coconuts come into full production. The projected copra yields from smallholders after 2011 is estimated to increase from the current 0.7 tons/ha to 1.0 ton/ha per annum from these new coconuts. 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 7 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



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 outweigh 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 8). Wheat, rice, livestock and spices will generate K1,638.4 million over the period 2007 to 2016 (Table 9)

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.

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

Table 8: 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

Table 9: 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

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 10).

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, we therefore urge the Government to support this Plan and fund it as requested.

Table 10: 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 +	

Annex 1. Provincial / District Agricultural profiles drawn from the Respective Plans

Province	Districts	Cocoa	Coffee	Oil Palm	Coconut	Rubber	Spices	Cattle	Small lives-tock	Aqua- culture	Apiculture	Rice	Horti culture	Minor Crops
1 Western Province														
	South Fly				X	X	X					X	X	X
	Middle Fly					X	X	X				X	X	X
	North Fly					X	X					X	X	X
2 Gulf														
	Kikori	X	X		X	X		X	X		X	X	X	X
	Kerema	X	X		X	X	X			X		X		
3 Central				X	X	X	X	X	X	X	X	X	X	X
	Goilala		X						X			X	X	X
	Kairuku					X	X	X	X			X	X	X
	Hiri	X	X	X	X	X		X	X			X	X	X
	Rigo	X			X	X		X	X			X	X	X
	Abau	X			X	X		X	X			X	X	X
4 Milne Bay														
	Alotau	X			X			X	X			X	X	
	Esa'ala	X	X		X		X		X			X	X	
	Samarai Murua	X			X		X		X			X	X	X
5 Oro														
	Ijivitari	X	X	X		X	X	X	X			X	X	
	Sohe	X	X	X		X	X	X	X				X	
6 Morobe														
	Huon	X					X				X	X		
	Markham	X					X	X				X	X	
	Finchafen	X	X				X		X			X	X	
	Siasi	X								X		X	X	
	Menyamyia	X					X				X	X	X	
	Kabum	X					X		X			X	X	
	Wau/Bulolo		X				X					X	X	
	Lae	X					X					X	X	
7 Madang														
	Rai coast	X	X		X		X	X	X			X	X	X
	Bogia	X	X	X	X		X	X	X			X	X	X
	Sumkar	X	X		X		X	X	X			X	X	X
	Madang	X	X		X		X	X	X			X	X	X
	Usino Bundi	X	X	X	X		X	X	X			X	X	X
	Middle Ramu	X	X		X		X	X	X			X	X	X
8 E/Sepik														
	Maprik	X	X		X		X	X	X	X		X	X	X

Province	Districts	Cocoa	Coffee	Oil Palm	Coconut	Rubber	Spices	Cattle	Small lives-tock	Aqua-culture	Apiculture	Rice	Horticulture	Minor Crops
	Ambunti/Drekirkir	X	X		X		X		X	X		X	X	X
	Wewak	X	X		X		X		X	X		X	X	X
	Yangoru Sausia	X	X		X		X							
	Angoram	X	X		X		X		X			X	X	X
9 Sandaun														
	Aitape/ Lumi	X	X		X		X		X	X		X	X	
	Vanimo Green	X	X						X	X		X	X	
	Nuku	X	X				X	X	X	X		X	X	
	Teleformin		X					X	X	X		X		
10 Southern Highlands														
	Mendi		X				X		X	X		X	X	X
	Koroba Kopiago		X				X		X	X		X	X	
	Tari Pori		X				X		X	X		X	X	
	Nipa Kutubu		X				X		X	X		X	X	
	Yalibu Pangia		X				X		X	X		X	X	X
	Komomagarima		X				X		X	X		X	X	X
	Erave Kagua		X				X		X	X		X	X	
	Imbongu		X				X		X	X		X	X	X
11 Enga			X				X	X	X	X	X	X	X	X
	Pogera		X				X							X
	Kandep													X
	Laiagam		X				X	X						X
	Wabag		X											X
	Kompam		X				X							X
	Wapenamanda		X					X	X					X
12 Western Highlands														
	Hagen Central		X						X				X	X
	Mulbaiyer	X	X		X		X						X	X
	Tambul Nebilia		X				X						X	
	Anglimp S. Wagi		X				X		X	X	X	X	X	X
	Dei	X	X		X		X		X	X	X	X	X	X
	Jimi	X	X		X		X		X	X	X	X	X	X
13 Simbu														
	Gembol		X				X	X	X	X		X	X	
	Kerowagi		X				X	X	X	X		X	X	
	Kundiawa		X				X	X	X	X		X	X	
	Gumine		X				X	X	X	X		X	X	
	Sina Sina Yong		X				X	X	X	X		X	X	
	Karamui		X				X	X	X	X		X	X	
	Chuave		X				X	X	X	X		X	X	
14 Eastern Highlands														
	Goroka								X	X	X	X	X	X
	Kainantu		X				X	X	X	X	X	X	X	X

Province	Districts	Cocoa	Coffee	Oil Palm	Coconut	Rubber	Spices	Cattle	Small lives-tock	Aqua- culture	Apicultur e	Rice	Horti culture	Minor Crops
	Okapa		X				X	X	X	X	X	X	X	X
	Hanganofi		X				X	X	X	X	X	X	X	X
	Asaro		X				X	X	X	X	X	X	X	X
	Lufa		X				X	X	X	X	X	X	X	X
	Ungai Bena		X				X	X	X	X	X	X	X	X
	Oburawanenara	X	X	X	X		X	X	X	X	X	X	X	X
	Daulo		X				X	X	X	X	X	X	X	X
15	Manus													
	Manus	X		X	X				X			X	X	
	New Ireland													
16	Kavieng	X	X	X	X	X	X	X	X			X		
	Namatanai	X	X	X	X	X	X	X	X			X		
17	East New Britain													
	Rabaul	X	X		X		X		X	X			X	X
	Kokopo	X	X		X		X	X	X	X			X	X
	Gazelle	X	X	X	X		X		X	X			X	X
	Pomio	X	X	X	X	X	X	X	X	X	X	X	X	X
18	West New Britain													
	Talasea	X					X	X	X			X	X	
	Kendrian	X					X					X	X	
19	Bougainville (ARB)													
	Buka	X			X	X	X	X	X			X	X	X
	Selau/Suir	X			X	X	X	X	X			X	X	X
	Tinputz	X			X	X	X	X	X			X	X	X
	Nissan	X			X			X				X	X	X
	Atolls				X								X	
	Buin	X		X			X	X	X			X	X	X
	Siwai	X		X	X	X		X	X			X	X	X
	Bana	X			X	X	X	X	X				X	X
	Torokina	X		X	X	X	X	X	X			X	X	X
	Kieta	X			X	X	X	X	X			X	X	X
	Wakunai	X			X	X		X	X				X	X

Annex 2: Oil Palm Profile by Districts for the first 5 years

	Province/ District	No. Farmers / farms	Prod/2005 ('000MT)	Projected Prod. 2011('000MT)	Rehab ('000ha)	New Planting ('000ha)	Seed Distribution ('000MT)	No. Cooperative	Quality of Road	Market Access	No. of Buyers / Exporters	Indicated / Budget (K'000)
1	Western											
	North Fly											
	South Fly											
	Middle Fly	2,500	25	50	NIL	5	128	1	Good	Road	1	2.8
2	Gulf											
	Baimuru	2,500	25	50	Nil	5	128	1	good	road	1	2.8
	Malalaua	2,500	25	50	Nil	5	128	1	good	road	1	2.8
	Kikori	2,500	25	50	Nil	5	128	1	good	road	1	2.8
	Kerema											
	Kaintiba											
3	Central											
	Goilala											
	Kairuku	2,500	25	50	Nil	5	128	1	good	road	1	2.8
	Hiri											
	Rigo											
	Abau	2,500	25	50	Nil	5	128	1	good	road	1	2.8
4	Milne Bay											
	Alotau	614	28	89	0.3	0.6	1100	Nil	good	average	1	3.8
	Es'ala											
5	Oro											
	Popondetta											
	Ijivitari	3,000	86	170	1	5	2100	Nil	poor	road	1	9.5
	Kokoda	3,000	86	170	1	5	2100	Nil	poor	road	1	9.5
	Afore											

	Province/ District	No. Farmers / farms	Prod/ 2005 ('000MT)	Projected Prod. 2011('000MT)	Rehab ('000ha)	New Planting ('000ha)	Seed Distribution ('000MT)	No. Cooperative	Quality of Road	Market Access	No. of Buyers / Exporters	Indicated / Budget (K'000)
6	Morobe											
	Huon											
	Markham	2,500	25	50	Nil	5	128	1	good	road	1	2.8
	Finchhafen											
	Siasi											
	Menyamya											
	Kabum											
	Wau/Bulolo											
	Lae											
	Nawae	2,500	25	50	Nil	5	128	1	good	road	1	2.8
7	Madang											
	Rai coast											
	Bogia	2,500	25	50	Nil	5	128	1	good	road	1	2.8
	Sumkar											
	Madang											
	Usino Bundi											
	Middle Ramu	2,500	25	50	Nil	5	128	1	good	road	1	2.8
	East Sepik											
	Maprik											
	Ambunti/Dreikikia	2,500	25	50	Nil	5	128	1	good	road	1	2.8
9	Wewak											
	Yangoru Sausia											
	Angoram	2,500	25	50	Nil	5	128	1	good	road	1	2.8
	Sandaun											
	Aitape/ Lumi	2,500	25	50	Nil	5	128	1	good	road	1	2.8
	Vanimo Green											

	Province/ District	No. Farmers / farms	Prod/ 2005 ('000MT)	Projected Prod. 2011('000MT)	Rehab ('000ha)	New Planting ('000ha)	Seed Distribution ('000MT)	No. Cooperative	Quality of Road	Market Access	No. of Buyers / Exporters	Indicated / Budget (K'000)
13	Simbu											
	Kundiawa	2,500	25	50	Nil	5	128	1	good	road	1	2.8
14	Eastern Highlands											
15	Manus											
	Manus	2,500	25	50			128	1	good	road	1	2.8
16	New Ireland											
	Kavieng	1,091	30	148	Nil	5	400	Nil	poor	road	1	2.2
	Namatanai											
17	East New Britain											
	Rabual											
	Kokopo											
	Gazelle	2,500	25	50			128	1	good	road	1	2.8
	Pomio	2,5	25	50			128	1	good	road	1	2.8
18	West New Britain											
	Talasea	6,744	306	1350	1	5	768	1	poor	road	1	18.5
	Kendrian											
	Bialla	2,764	160,545	803	2	3	602	1	poor	road	1	16.5
19	Bougainville											
	South Boug.	2,500	25,000	50	Nil	5	128	1	good	road	1	2.8
	Central Boug											
	North Boug.	2,500	25,000	50	Nil	5	128	1	good	road	1	2.8
		64713	211531	3730	5.5	108.1	9630	21			26	116

Annex 3: Coffee Profile by Districts for the first 5 years

	Province/ District	No. Farmers / farms	Prod/ 2005 (’000MT)	Projected Prod. 2011(’000M T)	Rehab (’000ha)	New Planting (’000ha)	Seed Distribution (’000MT)	No. Cooperative	Quality of Road	Market Access	No. of Buyers / Exporters	Indicated / Budget (K’000)
1	Western											
	North Fly											
	South Fly											
	Middle Fly											
	Gulf											
2	Kikori											
	Kerema	3045	44	200	10	20	100,000	4	poor	air	GPG	1,000
3	Central											
	Goilala											
	Kairuku											
	Hiri											
	Rigo											
4	Abau											
	Milne Bay											
	Alotau	200	51	201,240	50	50		5	poor	sea/ air/ road	MBPG	800
	Esa'ala	100	2	100,620	20	20		3	average	sea		300
	Samarai Murua	50	1	16,770	10	10		4	poor	sea		200
5	Kiriwina	50	1	16,770	10	10		2	poor	sea		200
	Oro											
	Sohe	4,208	400	1,500	200	50	150,000	2	poor	road/ air	2	600
	Ijivitari	990	230	500	50	20	60,000	2	poor	road/ air	3	240
	Morobe											
6	Huon	11,905	300	600	300	600	300	1	poor	foot/ sea		500
	Markham	4,937	60	120	60	120	60	1	average	road		500

	Province/ District	No. Farmers / farms	Prod/ 2005 (’000MT)	Projected Prod. 2011(’000M T)	Rehab (’000ha)	New Planting (’000ha)	Seed Distribution (’000MT)	No. Cooperative	Quality of Road	Market Access	No. of Buyers / Exporters	Indicated / Budget (K’000)
	Finschhafen	27,172	600	1,200	600	1,200	600	4	poor	road/ air/ sea	3	1,000
	Tewae/ Siasi	4,333	60	120	60	120	60	1	poor	air/ sea		500
	Menyamya	41,128	600	1,200	600	1,200	600	4	poor	road	3	1,000
	Kabum	25,130	600	1,200	600	1,200	600	5	poor	air/ sea	4	1,000
	Wau/Bulolo	23,170	150	300	150	300	150	3	good	road	1	1,000
	Lae	0	0	0	0	0	0	0	v.good		3	
	Nawaeb	17,530	600	1,200	600	1,200	600	3	poor	road/ air	2	500
7	Madang											
	Rai coast											
	Bogia											
	Sumkar											
	Madang											
	Usino Bundi											
	Middle Ramu											
8	East Sepik											
	Maprik											
	Ambunti/Dreikik ia											
	Wewak											
	Yangoru Sausia											
	Angoram											
9	Sandaun											
	Aitape/ Lumi											
	Vanimo Green											
	Nuku											
	Teleformin											
	Southern Highlands											
10	Mendi	2,000	3	10	60	10		3	good	road		30
	Koroba Kopiago	4,000	4	20	20	10		4	poor	road		40

	Province/ District	No. Farmers / farms	Prod/ 2005 ('000MT)	Projected Prod. 2011('000M T)	Rehab ('000ha)	New Planting ('000ha)	Seed Distribution ('000MT)	No. Cooperative	Quality of Road	Market Access	No. of Buyers / Exporters	Indicated / Budget (K'000)
	Tari Pori	1,000	2	5	5			3	poor	road		34
	Nipa Kutubu	3,000	5	15	15	5		5	average	road		65
	Yalibu Pangia	6,000	10	40	40	20		3	good	road		34
	Komomagarima	1,000	5	10	10			2	poor	road		23
	Erave Kagua	5,000	15	25	50			4	poor	road		31
11	Enga											
	Pogera	1,000	2	5	0.1	2	40		good	road		50
	Kandep								poor	road		
	Laiagam	200	0.5	1		0.5	5		good	road		5
	Wabag	2,000	10	20	1	1.5	5		good	road	3	70
	Kompiam	5,000	25	35	2	4	20		poor	road	5	100
	Wapenamanda	7,000	35	50	2	5	10		good	road	7	150
	Western Highlands											
12	Hagen Central											
	Mulbaiyer											
	Tambul Nebilia											
	Anglip South Wagi											
	Dei											
	Jimi											
	Simbu											
13	Gembol	17,000			34	30	20	1	poor	road	nil	100
	Kerowagi	41,000			80	80	40	4	average	road	3	150
	Kundiawa	39,000			78	80	40	1	good	road	10	150
	Gumine	24,000			48	48	20	3	good	road	3	125
	Sina Sina Yong	27,000			54	54	20	3	average	road	1	125
	Karamui	21,000			42	42	20	3	nil	air	1	200
	Chuave	25,000	7800	12,000	50	50	20	3	average	road	4	1000
14	Eastern Highlands											

	Province/ District	No. Farmers / farms	Prod/ 2005 (’000MT)	Projected Prod. 2011(’000M T)	Rehab (’000ha)	New Planting (’000ha)	Seed Distribution (’000MT)	No. Cooperative	Quality of Road	Market Access	No. of Buyers / Exporters	Indicated / Budget (K’000)
	Goroka	18,000	2,503	5,000	3,600	400	0.5	10	good	road	6	2,000
	Kainantu	20,000	3,000	6,000	4,285	3,000	3.5	10	fair	road	2	2,000
	Okapa	18,000	2,503	5,000	3,600	3,000	3.5	10	fair	road	1	3,000
	Hanganofi	12,000	1,925	2,500	2,750	400	0.5	10	good	road	nil	1,000
	Daulo	20,000	3,000	4,000	4,285	400	0.5	10	good	road	nil	2,000
	Lufa	12,000	1,925	2,500	2,750	500	0.6	10	good	road/ air	1	1,000
	Ungai Bena	12,000	1,925	2,500	2,750	500	0.6	10	good	road	nil	2,000
	Oburawanenara	4,000	250	500	370	1,000	1.8	5	fair/ poor	road/ air	nil	1,000
15	Manus											
	Manus											
16	New Ireland											
	Kavieng	300	2	20	100	200	100	nil	poor	road/ sea		2,000
	Namatani	300	2	20	100	200	100	nil	poor	road/ sea		2,000
17	East New Britain											
	Rabual											
	Kokopo											
	Gazelle											
	Pomio											
	West New Britain											
18	Talasea											
	Kendrian											
	Bialla											
19	Bougainville											
	South Bougainville											
	Buin	500			100	20			poor	road	nil	1,500
	Siwai	500			100	20			poor	road	nil	1,500
	Bana	200			80	10			poor	road	nil	900
	Torokina	100			100	20			poor	sea	nil	1,500

Province/ District	No. Farmers / farms	Prod/ 2005 (’000MT)	Projected Prod. 2011(’000M T)	Rehab (’000ha)	New Planting (’000ha)	Seed Distribution (’000MT)	No. Cooperative	Quality of Road	Market Access	No. of Buyers / Exporters	Indicated / Budget (K’000)
<i>Central Bougainville</i>											1500
Kieta	500			100	20			poor	road	nil	1,500
Wakunai	500			100	20			poor	road	nil	1,500
<i>North Bougainville</i>											
Buka											
Selau Suir											
Tinputz	100			100	20			poor	road		1,500
Kunua	100			100	20			poor	road		1,500
Nissan											
Atolls											
	514,248	28,651	383,816	29,281	16,302	313,442	161				42,722

Annex 4: Cocoa Profile by Districts for the first 5 years

	Province/ District	No. Farmers / farms	Prod/ 2005 ('000MT)	Projected Prod. 2011('000MT)	Rehab ('000ha)	New Planting ('000ha)	Seed Distribution ('000MT)	No. Cooperative	Quality of Road	Market Access	No. of Buyers / Exporters	Indicated / Budget (K'000)
1	Western											500
	North Fly	20	0	0		150	103	1	Poor	River/Sea		
	South Fly	30	0	0		150	103	1	Poor	River/Sea		
	Middle Fly	33	0	0		200	137	1	Poor	River/Sea		
2	Gulf											
	Baimuru	100	0	0		100	69	1	Average	Sea		500
	Malalaua	50	0	0		100	69	1	Average	Sea		
	Kikori	118	0	0		100	69	1	Average	Sea		
	Kerema	50	0	0		100	69	1	Good	Road/Sea		
	Kaintiba	20	0	0		100	69	1	Poor	Road		
3	Central											750
	Goilala	20	0	100	0	100	69	1	Poor	Road		
	Kairuku	100	0	250	150	250	275	1	Average	Road		
	Hiri	100	0	150	150	250	275	1	Average	Road		
	Rigo	100	0	250	150	250	275	1	Poor	Road		
	Abau	170	0	250	150	250	275	1	Poor	Road/Sea		
4	Milne Bay											500
	Alotau	500		300	2	826	569	1	Average	Sea		
	Esa'ala	1,300	3	200	2	500	345	1	Average	Sea		
	Samarai Murua	470		400	3	500	690	1	Average	Sea		
	Kiriwina/GoodEnough	200		100		500	344		Average	Sea		
5	Oro											750
	Popondetta	500	30	500	50	1,500	1,066	1	Average	Road	1	
	Ijivitari	500	50	500	50	1,500	1,066	1	Poor	Road		
	Kokoda	1,136	50	1,500	200	3,000	2,200	1	Poor	Road		
	Afore	1,000	47	500	147	1,129	877	1	Poor	Road		
6	Morobe											1,000
	Huon	700	400	200	700	500	825	1	Average	Road/Sea		

	Province/ District	No. Farmers / farms	Prod/ 2005 ('000MT)	Projected Prod. 2011('000MT)	Rehab ('000ha)	New Planting ('000ha)	Seed Distribution ('000MT)	No. Cooperative	Quality of Road	Market Access	No. of Buyers / Exporters	Indicated / Budget (K'000)
	Markham	1,500	500	600	1,000	700	1,169	1	Good	Road		
	Finchafen	600	50	100	200	200	275	1	Average	Sea		
	Siasi	732	70	200	300	300	413	1	Average	Sea		
	Menyamya	50	20	100	200	200	275	1	Poor	Road		
	Kabum	50	41	100	300	79	261	1	Poor	Road		
	Wau/Bulolo	100	70	300	100	100	138	1	Good	Road		
	Lae	50		400	84	50	168	1	Good	Road/Sea	1	
7	Madang											2,000
	Rai coast	1,000	800	1,500	2,000	1,700	2,544	1	Average	Road/Sea		
	Bogia	5,000	800	1,000	2,300	1,700	2,750	1	Good	Road/Sea		
	Sumkar	10,000	1,000	1,500	1,500	1,000	1,718	1	Good	Road/Sea		
	Madang	2,000	177	1,000	1,000	1,000	1,375	1	Good	Road/Sea	3	
	Usino Bundi	1,090	100	500	1,000	1,000	1,375	1	Poor	Road		
	Middle Ramu	5,000	1,000	1,500	2,000	1,494	2,400	1	Poor	Road/Sea		
8	East Sepik											2,000
	Maprik	5,333	176	1,500	2,000	1,500	2,406	1	Good	Road		
	Ambunti/Dreikikia	5,000	200	1,000	1,500	5,000	4,468	1	Good	Road/Sea		
	Wewak	10,000	1,000	3,000	3,293	4,000	5,014	1	Good	Road/Sea	5	
	Yangoru Sausia	4,000	100	500	500	1,500	1,375	1	Good	Road		
	Angoram	10,000	2,000	4,000	1,500	3,000	3,094	1	Average	Road/Sea	1	
	Wosera/Gawi	5,000	200	1,000	500	3,515	2,760	1	Good	Road/Sea		
9	Sandaun											1,000
	Aitape/ Lumi	4,000	200	1,000	700	3,000	2,544	1	Average	Road/Sea		
	Vanimo Green	3,000	200	1,000	500	2,350	1,959	1	Poor	Road/Sea	1	
	Nuku	7,000	200	1,000	500	2,350	1,959	1	Good	Road		
	Telefomin	451	156	1,000	211	500	2888	1	Poor	Road		
10	Southern Highlands											
11	Enga											
12	Western Highlands											250
	Jimi	0	0	500	0	1,000	688		Poor	Road		

	Province/ District	No. Farmers / farms	Prod/ 2005 ('000MT)	Projected Prod. 2011('000MT)	Rehab ('000ha)	New Planting ('000ha)	Seed Distribution ('000MT)	No. Cooperative	Quality of Road	Market Access	No. of Buyers / Exporters	Indicated / Budget (K'000)
13	Simbu											250
	Karamui	0	0	500	0	1,000	688		Poor	Road		
14	Eastern Highlands											
15	Manus											750
	Manus		3	3,000	7	6993	4,813		Average	Sea	1	
16	New Ireland											1,000
	Kavieng	3,364	384	1,500	1,000	2,000	2,063		Good	Road/Sea	1	
	Namatanai	5,000	600	1,500	1,439	2,997	3,050		Average	Road/Sea		
17	East New Britain											2,000
	Rabual	1,673	2,626	3,000	2,129	1,691	2,626		Good	Road/Sea	3	
	Kokopo	7,000	3,000	7,000	10,000	5,000	10,313		Good	Road/Sea	5	
	Gazelle	10,000	10,000	15,000	25,000	10,000	2,407		Good	Road/Sea	1	
	Pomio	5,000	5,000	5,000	15,000	7,000	1,513		Average	Road/Sea		
18	West New Britain											1,000
	Talasea	2,000	300	3,000	1,000	8,000	6,188		Poor	Road/Sea		
	Kendrian	2,500	200	2,000	500	3,000	2,406		Poor	Road/Sea		
	Bialla	1,865	198	1,000	263	2,392	1,825		Average	Road/Sea	2	
19	Bougainville											2,000
	South Bougainville	7,000	4,500	9,000	8,000	10,000	12,375		Average	Road/Sea	2	
	Central Bougainville	9,217	5,000	10,000	10,000	30,000	27,500		Average	Road/Sea	2	
	North Bougainville	7,000	1,139	9,000	888	3,887	3,283		Average	Road/Sea	2	
												16,250

Annex 5: Coconut Profile by Districts for the first 5 years

	Province/ District	No. Farmers / farms	Prod/ 2005 ('000MT)	Projected Prod. 2011('000MT)	Rehab ('000ha)	New Planting ('000ha)	Seed Distribution ('000MT)	No. Cooperative	Quality of Road	Market Access	No. of Buyers/ Exporters	Indicated / Budget (K'000)
1	Western											
	North Fly		0	0	0	0	0	0	-	-	-	-
	South Fly	83	0	5	75	4,414	314	0	Poor	Road/River	0	300
	Middle Fly		0	5	300	17,656	1,257	0	Poor	Road/River	0	300
2	Gulf											
	Kerema/Malalaua	59	0	10	400	2,010	169	0	Poor	Road	0	300
	Kikori/Baimuru		0	10	200	990	83	0	-	Sea		300
3	Central											
	Abau	98	0	20	1,142	200	94	0	Average	Road/Sea	0	300
	Kairuku/Hiri		0		800	200	70	0	-	-	0	300
	Rigo		0		100	100	14	0	-	-	0	300
	Goilala		0		0	0	0	0	-	-	-	-
4	Milne Bay											
	Alotau	100	518	2,000	1,427	507	135	0	Good	Road/Sea	6	300
	Es'ala		324	1,250	1,427	507	135	0	-	Road/Sea	0	300
	Samarai Murua		389	1,500	1,427	507	135	0	-	Sea	0	300
	Kiriwina/Goodenough		194	750	1,427	507	135	0	-	Sea	0	300
5	Oro											
	Sohe	102	0	5	63	250	22	0	Average	Road	0	300
	Ijivitari		0	10	187	750	66	0	Poor	Road/sea	0	300

	Province/ District	No. Farmers / farms	Prod/ 2005 ('000MT)	Projected Prod. 2011('000MT)	Rehab ('000ha)	New Planting ('000ha)	Seed Distribution ('000MT)	No. Cooperative	Quality of Road	Market Access	No. of Buyers / Exporters	Indicated / Budget (K'000)
6	Morobe											
	Huon	198	59	71	616	2,550	222	0	Average	Road	5	300
	Markham		75	90	205	850	74	0	Good	Road	0	300
	Finchhafen		226	271	616	2,550	222	0	Good	Sea	0	300
	Siassi		226	271	616	2,550	222	0	Poor	Road/Sea	0	300
7	Madang											
	Rai coast (10%)	213	1,994	2,393	2,366	3,200	390	0	?	Road	11	300
	Bogia (30%)		5,981	7,178	7,097	9,600	1,169	1	Good	Road	0	300
	Sumkar (50%)		9,969	11,963	11,828	16,000	1,948	0	Good	Road/sea	0	300
	Madang (10%)		1,994	2,393	2,366	3,200	390	0	Good	Road	0	300
8	East Sepik											
	Maprik	268	17	20	82	405	34	1	Good	Road	4	300
	Ambunti/Drekikir		17	20	82	405	34	1	Good	Road/River	0	300
	Wewak		531	637	2,610	12,960	1,090	1	Good	Road/Sea	0	300
	Yangoru Sausia		33	40	163	810	68	1	Good	Road	0	300
	Angoram		66	80	326	1,620	136	1	Good	Road/River	0	300
9	Sandaun											
	Aitape/ Lumi	133	0	10	84	12,000	846	0	Average	Road/Sea	0	300
	Vanimo Green		0	5	56	8,235	580	0	Average	Road/River	0	300
	Nuku		0	3	30	4,412	311	0	Average	Road	0	300
10	Manus											
	Manus	33	170	204	1,400	3,000	308	0	Average	Road/Sea	4	300
11	New Ireland											
	Kavieng	83	6,245	7,494	7,831	1,750	671	0	Average	Road/Sea	6	300
	Namatani		6,245	7,494	7,831	1,750	671	0	Average	Road/Sea		300

	Province/ District	No. Farmers / farms	Prod/ 2005 ('000MT)	Projected Prod. 2011('000MT)	Rehab ('000ha)	New Planting ('000ha)	Seed Distribution ('000MT)	No. Cooperative	Quality of Road	Market Access	No. of Buyers / Exporters	Indicated / Budget (K'000)
12	East New Britain											
	Rabaul	138	6,941	8,330	3,401	500	273	0	Good	Road/sea	8	300
	Kokopo		23,138	27,766	13,606	2,000	1,092	0	Good	Road/sea		300
	Gazelle		13,883	16,659	10,204	1,500	819	0	Good	Road/sea		300
	Pomio		2,314	2,777	3,401	500	273	0	Poor	Road/sea		300
13	West New Britain											
	Talasea	113	5,536	6,643	11,420	3,850	1,068	0	Good	Road/Sea	9	300
	Kandrian/Glouster		2,372	2,847	4,894	1,650	458	0		Sea		300
14	Bougainville											
	North Bougainville	120	7,113	8,535	8,793	7,000	1,106	0	Good	Road/Sea	14	300
	Central		2,032	2,439	2,512	2,000	316	0	Average	Road		300
	South		1,016	1,219	1,750	1,000	193	0	Poor	Road/Sea		300
		1,741	99,618	123,414	115,160	136,445	17,613	6			67	12,300

APPENDIX 1: AGRICULTURE RESEARCH IMPLEMENTATION FRAMEWORK

GOAL: To promote innovative agricultural development, through improved agricultural technologies, information and knowledge, by undertaking applied and adaptive agricultural research and technology transfer and adaptation.

Objectives	Strategies/Activities	Measurable Indicators	Responsible Organizations	
1. Effective delivery of research outcome and information, adoption, adaptation, impact assessment and research priority setting	1.1 Identify and assess constraints to production and marketing needs	Major commodity production & marketing constraints identified	NARI, CCI, OPRA, CIC, DNPRD, PDPI, NGOs, UNIs	
	1.2 Conduct evaluation of existing and improved technologies	No. of evaluation done on existing & improved technologies	Farmers, CBOs, NARI, research organizations	
	1.3 Assessment of impact of improved agriculture technologies, including impact on health	No. of impact assessment done on technologies being adopted	Research organizations	
	1.4 Technology transfer & adoption	Register of technology transfer & adopted	Research organizations	
	1.5 Research priority setting and programme planning	Each commodity set out clear research priority programmes		
	1.6 Monitor & Review Technology Activities	Number of technology assessed for impact	Research organizations	
	2. Improve and sustain crop productivity and production (includes rice and grain, tree crops, spices, emerging crops)	2.1 Conduct research priority setting	Research priority established for each institutions	NARI, CCI, OPRA, CIC, DNPRD, PDPI
		2.2 Assess crops varieties for various agro-ecosystems	Number of crops release for farmers	NARI, Commodity Org.,
		2.3 Manage crop pests and diseases	Reduced impact of pest & disease	NARI, Commodity org.
		2.4 Evaluate crop varieties resistant to diseases	Release of resistant crop varieties	NARI, Commodity org.
		2.5 Improving productivity of crops including those under extreme conditions	Technologies adopted for extreme condition	NARI, Commodity org.
		2.6 introduction, adaptation and evaluation of new crops and crop	Number of new crop released for adoption	NARI, Commodity org.
		2.7 Domestication and commercialization of indigenous crops	Number of indigenous crops develop for commercial production	NGOs, Uni,
		2.8 Evaluation and commercialization of spices	Potential species developed for commercial production	NARI, PDAL
		2.9 Improve planting materials and production practices	Availability of planting materials for farmers	NARI, Commodity org.
		2.10 Economics and innovative systems studies	Economic & innovative system promoted	NARI
3. Improve the genetic potential of crops	3.1 Improving productivity of crops through genetic improvement	Impact of genetic improvement on production	NARI, Commodity org.	
	4. Conserve, utilise, manage and sustain natural resources, including genetic diversity	4.1 Management of soil fertility and soil moisture	Appropriate & sustainable land soil & water	NARI, Commodity Org., DAL
4.2 Developing suitable agric. technologies for atoll		Appropriate & sustainable atoll farming system adopted	NARI	

Objectives	Strategies/Activities	Measurable Indicators	Responsible Organizations
5. Improve production and productivity of livestock, including aquaculture	4.3 Improving/sustaining crop production under extreme conditions	Increased production under extreme conditions	NARI, Commodity org.
	4.4 Conserving, utilising and managing crop and animal genetic resources	Crop & animal genetic resources conserved for future use	NARI, Commodity org.
	5.1 Conduct research priority setting	Livestock & aquaculture research priority setting established	NARI, CCI, OPRA, CIC, DNP/M, PDPI, NGOs, UNIs
	5.2 Improving animal feeding systems,	Number of appropriate feeding system adopted	NARI, UNIs, PDAL
6. Increase and sustain crop productivity through sustainable plant protection measures	5.3 Improving productivity of animals	Improvement in the animal productivity	NARI, UNIs, PDAL
	5.4 Assess and develop species and management practices	Appropriate management system adapted	NARI, PDAL
	6.1 Management and control of pests and diseases of crops	Impact of pest & disease on crop production	NARI, Commodity org.
	6.2 Biological control of exotic pests and diseases	Success of biological control of exotic pest & disease established	NARI, Commodity org. NAGIA
7. Develop techniques and technologies, skills and information in post harvest activities	7.1. Product, quality improvement and monitoring programmes	Post harvest technologies adapted	All research organizations, Unitech
	7.2 Preserving and processing of crops	Appropriate technologies adapted	NARI, Commodity org.
	7.3 Research on value-added products e.g. biofuel, coir fiber, charcoal, animal feed, medicinal products, food products	Potential value-added product developed	CCI,
8. Market research to improve farmer income from domestic and international markets	8.1 Supply and demand analysis	Access to market information	All research organizations
	8.2. Market information programmes	Availability of market information	All research organizations
	8.3 Undertake market chain analysis	Number of analysis documented	All research organizations
	8.4 Undertake studies on international market advantage of PNG crops	Availability of market information	All research organizations
	8.5 Farm/model budget for enterprises	Farm/model budget for a number of farm enterprises established.	All research organizations
9. Improve Extension and access to information including biological, analytical, market and GIS information	8.6 Establishment of organic certification body	Organic certification body established	NDAL, NARI
	9.1 Establish an National Agriculture Extension Network (NAEN)	NAES established & functional	PDAL, Commodities, NGOs, Farmer, Research, Universities, Donors
	9.2 Appraise and review current extension systems in PNG	Extension system strengthened in the provinces	---
	9.3 Promote & Strengthen Research Extension & Farmer linkages	Level of Research, Extension & farmer linkage	---
	9.4 Establish and promote competitive Agric. Extension Grant Facility (AEGF)	AEGF concept promoted through ARDSF	---
	9.5 Promote adequate resource support to extension providers/agencies	Impact of extension providers	---
	9.6 Establish Agricultural Resource Centres	Number of resource centres established	---
9.7 Establish / promote user-friendly		---	

Objectives	Strategies/Activities	Measurable Indicators	Responsible Organizations
10. Strengthening institutional capacity including human resource development and infrastructure and facilities	9.8 Conduct National Agriculture Survey	Nat. Agriculture survey documented	--- same ---
	9.9 Publication, Information and mass communication	Access to agriculture technical & extension information	--- same ---
	9.10 NAIS, QAS and Library and Information services	Access to NAIS, QAS & agriculture information in provinces & districts	--- same ---
	9.11 Providing GIS services	Accessibility to GIS services	--- same ---
	9.12 Improving and managing analytical and diagnostic services	Level of national analytical & diagnostic services	--- same ---
	10.1 Establish Inventory and Databases	Level of Inventory & databases developed	PDAL, Commodities, NTC, DOE, HES&T, NGOs, CBOS
	10.2 Develop Sound Corporate management systems	Level of good corporate management system established	--- same ---
	10.3 Establish sound financial management systems	Reduce level of financial mismanagement	--- same ---
	10.4 Promote good work ethic and governance	Level of good governance	--- same ---
	10.5 Identify Training needs for farmers and institution staff	TNA completed	--- same ---
	10.6 Establish Career Development plans and programmes	Establishment of	--- same ---
	10.7 Human resource development through formal, workplace and cadetship training (includes gender training)	Cadetship training established	--- same ---
10.8 Develop, replace and maintain, infrastructure, facilities and	Major infrastructure, facilities & equipment maintained	--- same ---	
11. Strengthen collaboration amongst research institutions, extension, industries and other stakeholders	11.1 Form a NARS group council	NARS council established	NARI, CCI, OPRA, CIC, DNP/M, PDPI, DOF/T, NGOS
	11.2 Peer Review	Appropriate peer review system established	Donors, CBOs
	11.3 Develop/ strengthen coordination & networking	Level of networking established	
	11.4 Establish research boundaries based on priorities	Level of resource allocation based on research priorities	

APPENDIX 2: AGRICULTURE RESEARCH IMPLEMENTATION SCHEDULE

GOAL: To promote innovative agricultural development, through improved agricultural technologies, information and knowledge, by undertaking applied and adaptive agricultural

Objectives	Strategies/Activities	Implementation Schedule																				
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016											
1. Effective delivery of research outcome and information, adoption, adaptation, impact assessment and research priority setting	1.1 Identify and assess constraints to production and marketing needs																					
	1.2 Conduct evaluation of existing and improved technologies																					
	1.3 Assessment of impact of improved agriculture technologies, including impact on health																					
	1.4 Technology transfer & adoption																					
	1.5 Research priority setting and programme planning																					
	1.6 Monitor & Review Technology Activities																					
	2. Improve and sustain crop productivity and production (includes rice and grain, tree crops, spices, emerging crops)	2.1 Conduct research priority setting																				
		2.2 Assess crops varieties for various agro-ecosystems																				
		2.3 Manage crop pests and diseases																				
		2.4 Evaluate crop varieties resistant to diseases																				
2.5 Improving productivity of crops including those under extreme conditions																						
3. Improve the genetic potential of crops	2.6 introduction, adaptation and evaluation of new crops and crop varieties																					
	2.7 Domestication and commercialization of indigenous crops																					
	2.8 Evaluation and commercialization of spices																					
	2.9 Improve planting materials and production practices																					
	2.10 Economics and innovative systems studies																					
	3.1 Improving productivity of crops through genetic improvement																					
	4. Conserve, utilise, manage and sustain natural resources, including genetic diversity	4.1 Management of soil fertility and soil moisture																				
		4.2 Developing suitable agric. technologies for atoll																				
		4.3 Improving/sustaining crop production under extreme conditions																				
		4.4 Conserving, utilising and managing crop and animal genetic resources																				

Objectives	Strategies/Activities	Implementation Schedule																				
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016											
	9.9 Publication, Information and mass communication																					
	9.10 NAIS, QAS and Library and Information services																					
	9.11 Providing GIS services																					
	9.12 Improving and managing analytical and diagnostic services																					
10. Strengthening institutional capacity including human resource development and infrastructure and facilities	10.1 Establish Inventory and Databases																					
	10.2 Develop Sound Corporate management systems																					
	10.3 Establish sound financial management systems																					
	10.4 Promote good work ethic and governance																					
	10.5 Identify Training needs for farmers and institution staff																					
	10.6 Establish Career Development plans and programmes																					
	10.7 Human resource development through formal, workplace and cadetship training (includes gender training)																					
	10.8 Develop, replace and maintain, infrastructure, facilities and equipment																					
11. Strengthen collaboration amongst research institutions, extension, industries and other stakeholders	11.1 Form a NARS group council																					
	11.2 Peer Review																					
	11.3 Develop / strengthen coordination & networking																					
	11.4 Establish research boundaries based on priorities																					

APPENDIX 3: AGRICULTURE RESEARCH TOTAL BUDGET

GOAL: To promote innovative agricultural development, through improved agricultural technologies, information and knowledge, by undertaking applied and adaptive agricultural research and technology transfer and adaptation.

Objectives	Strategies/A activities	Budget in thousand kina										Source of funding		
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016		Total	
1. Effective delivery of research outcome and information, adoption, adaptation, impact assessment and research priority setting	1.1 Identify and assess constraints to production and marketing needs	360	360	360	400	400	410	450	450	450	470	4,110	GoPNG, Donors	
	1.2 Conduct evaluation of existing and improved technologies	200	200	200	230	230	230	260	260	260	270	2,340	--- same ---	
	1.3 Assessment of impact of improved agriculture technologies, including impact on health	260	260	260	290	290	290	320	320	320	330	2,940	--- same ---	
	1.4 Technology transfer & adoption	300	300	300	340	340	340	380	380	380	400	3,460	--- same ---	
	1.5 Research priority setting and programmes planning	100	100	100	110	110	110	120	120	120	120	1,110	--- same ---	
	1.6 Monitor & Review Technology Activities	160	160	160	180	180	190	210	210	210	220	1,880	--- same ---	
	Subtotal	1,380	1,380	1,380	1,550	1,550	1,570	1,740	1,740	1,740	1,810	15,840		
	2. Improve and sustain crop productivity and production (includes rice and grain, tree crops, spices, emerging crops)	2.1 Conduct research priority setting	150	150	150	170	170	170	190	190	190	210	1,740	--- same ---
		2.2 Assess crops varieties for various agro-ecosystems	400	400	400	430	430	430	460	460	460	490	4,360	--- same ---
		2.3 Manage crop pests and diseases	250	250	250	270	270	270	290	290	290	310	2,740	--- same ---
2.4 Evaluate crop varieties resistant to diseases		250	250	250	270	270	270	290	290	290	310	2,740	--- same ---	
2.5 Improving productivity of crops including those under extreme conditions		300	310	320	340	340	340	360	360	360	380	3,410	--- same ---	
2.6 Introduction, adaptation and evaluation of new crops and crop varieties		200	200	200	220	220	220	240	240	240	260	2,240	--- same ---	
2.7 Domestication and commercialisation of indigenous crops		100	100	100	110	110	110	120	120	120	130	1,120	--- same ---	
2.8 Evaluation and commercialisation of spices		100	100	100	110	110	110	120	120	120	130	1,120	--- same ---	
2.9 Improve planting materials and production practices		250	250	250	270	270	270	290	290	290	310	2,740	--- same ---	
Subtotal		2,000	2,010	2,020	2,190	2,190	2,190	2,360	2,360	2,360	2,530	22,210		

Objectives	Strategies/Activities	Budget in thousand kina											Source of funding		
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total			
3. Improve the genetic potential of crops	3.1 Improving productivity of crops through genetic improvement	1,200	1,200	1,300	1,510	1,610	1,610	1,820	1,820	1,820	2,030	15,920	---	same	---
	Subtotal	1,200	1,200	1,300	1,510	1,610	1,610	1,820	1,820	1,820	2,030	15,920			
4. Conserve, utilise, manage and sustain natural resources, including genetic diversity	4.1 Management of soil fertility and soil moisture	370	370	380	410	410	420	450	450	450	480	4,190	---	same	---
	4.2 Developing suitable agric. technologies for atoll	100	100	100	110	110	110	120	120	120	130	1,120	---	same	---
	4.3 Improving/sustaining crop production under extreme conditions	100	100	100	110	110	110	120	120	120	130	1,120	---	same	---
	4.4 Conserving, utilising and managing crop and animal genetic resources	250	250	250	280	280	280	310	310	310	330	2,850	---	same	---
	Subtotal	820	820	830	910	910	920	1,000	1,000	1,000	1,070	9,280			
5. Improve production and productivity of livestock, including aquaculture	5.1 Conduct research priority setting	100	100	100	110	110	110	120	120	120	120	1,110	---	same	---
	5.2 Improving animal feeding systems,	100	100	100	110	110	110	120	120	120	130	1,120	---	same	---
	5.3 Improving productivity of animals	100	100	100	110	110	110	120	120	120	130	1,120	---	same	---
	5.4 Assess and develop species and management practices	100	100	100	110	110	110	120	120	120	130	1,120	---	same	---
	Subtotal	400	400	400	440	440	440	480	480	480	510	4,470			
6. Increase and sustain crop productivity through sustainable plant protection measures	6.1 Management and control of pests and diseases of crops	400	410	420	490	490	490	540	540	540	570	4,890	---	same	---
	6.2 Biological control of exotic pests and diseases	1,250	760	770	590	590	490	510	510	510	530	6,510	---	same	---
	6.3 Biology and loss assessment studies of pests	50	50	50	50	50	50	50	50	50	50	500	---	same	---
	Subtotal	1,700	1,220	1,240	1,130	1,130	1,030	1,100	1,100	1,100	1,150	11,900			
7. Develop techniques and technologies, skills and information in post harvest activities	7.1. Product, quality improvement and monitoring programmes	150	150	160	170	170	180	190	190	200	210	1,770	---	same	---
	7.2 Preserving and processing of crops	250	350	350	460	460	560	570	570	670	780	5,120	---	same	---
	7.3 Research on value-added products e.g. biofuel, coir fiber, charcoal, animal feed, medicinal products, food	150	150	150	160	160	160	170	170	170	180	1,620	---	same	---
	Subtotal	550	650	660	790	790	900	930	1,030	1,040	1,170	8,510			
8. Market research to improve farmer income from domestic and international markets	8.1 Supply and demand analysis	350	350	350	370	370	370	390	390	390	400	3,730	---	same	---
	8.2. Market information programmes	150	150	150	160	160	160	170	170	170	300	1,740	---	same	---
	8.3 Undertake market chain analysis	150	150	150	170	170	170	190	190	190	200	1,730	---	same	---
	8.4 Undertake studies on international market advantage of PNG crops	150	150	150	170	170	170	190	190	190	200	1,730	---	same	---

Objectives	Strategies/Activities	Budget in thousand kina											Total	Source of funding		
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2016				
	8.5 Farm/model budget for enterprises	150	150	150	170	170	170	190	190	190	170	190	190	200	1,730	--- same ---
	8.6 Establishment of organic certification body	210	210	210	240	240	240	270	270	270	240	270	270	290	2,450	--- same ---
	Subtotal	1,160	1,160	1,160	1,280	1,280	1,280	1,400	1,400	1,400	1,280	1,400	1,400	1,590	13,110	
9. Improve Extension and access to information including biological, analytical, market and GIS information	9.1 Establish an National Agriculture Extension Network (NAEN)														0	--- same ---
	9.2 Appraise and review current extension systems in PNG	50	50	50	60	60	60	70	70	70	60	70	70	70	610	--- same ---
	9.3 Promote & Strengthen Research Extension & Farmer linkages	230	230	230	260	260	260	290	290	290	260	290	290	300	2,640	--- same ---
	9.4 Establish and promote competitive Agric. Extension Grant Facility (AEGF)	50	50	50	60	60	60	70	70	70	60	70	70	70	610	--- same ---
	9.5 Promote adequate resource support to extension providers/agencies	110	110	110	130	130	130	150	150	150	130	150	150	190	1,360	--- same ---
	9.6 Establish Agricultural Resource Centres	1,000	1,000	800	800	600	600	200	100	100	600	200	100	100	5,300	--- same ---
	9.7 Establish / promote user-friendly														0	--- same ---
	9.8 Conduct National Agriculture Survey														0	--- same ---
	9.9 Publication, Information and mass communication	150	150	150	170	170	170	190	190	190	170	190	190	200	1,730	--- same ---
	9.10 NAIS, QAS and Library and Information services	160	160	170	190	190	210	230	230	240	210	230	240	260	2,040	--- same ---
	9.11 Providing GIS services	110	110	110	130	130	130	150	150	150	130	150	150	170	1,340	--- same ---
	9.12 Improving and managing analytical and diagnostic services	100	100	100	120	120	120	140	140	140	120	140	140	150	1,230	--- same ---
	Subtotal	1,960	1,960	1,770	1,920	1,720	1,740	1,490	1,390	1,400	1,740	1,490	1,390	1,510	16,860	
10. Strengthening institutional capacity including human resource development and infrastructure and facilities	10.1 Establish Inventory and Databases	300	300	300	200	200	200	100	100	100	200	100	100	100	1,800	--- same ---
	10.2 Develop Sound Corporate management systems	800	800	600	500										2,700	--- same ---
	10.3 Establish sound financial management systems	200	150	100											450	--- same ---
	10.4 Promote good work ethic and governance	100	100	100	100	100	100	100	100	100	100	100	100	100	1,000	--- same ---
	10.5 Identify Training needs for farmers and institution staff	100	100	100	110	110	110	120	120	120	110	120	120	120	1,110	--- same ---
	10.6 Establish Career Development plans and programmes	30	30	30	30	30	40	40	40	40	30	40	40	30	330	--- same ---

Objectives	Strategies/Activities	Budget in thousand kina										Source of funding	
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016		Total
	10.7 Human resource development through formal, workplace and cadetship training (includes gender training)	200	300	300	320	330	340	340	360	360	370	3,220	--- same ---
	10.8 Develop, replace and maintain, infrastructure, facilities and equipment	2,300	2,300	2,000	1,800	1,700	1,400	1,200	900	700	600	14,900	--- same ---
	10.9 National Agriculture Training Coordination Committee												--- same ---
	10.10 Institutional Strengthening for existing colleges e.g. LISTC, HATI												--- same ---
	Subtotal	4,030	4,080	3,530	3,060	2,470	2,090	1,900	1,620	1,410	1,320	25,510	
11. Strengthen collaboration amongst research institutions, extension, industries and other stakeholders	11.1 Form a NARS group council	100	100	100	100	100	100	100	100	100	100	1,000	--- same ---
	11.2 Peer Review	100	100	100	100	100	100	100	100	100	100	1,000	--- same ---
	11.3 Develop/ strengthen coordination & networking	120	130	130	130	140	140	140	150	150	160	1,390	--- same ---
	11.4 Establish research boundaries based on priorities	100	100	100	100	100	100	100	100	100	100	1,000	--- same ---
	Subtotal	420	430	430	430	440	440	440	440	450	450	460	4,390
	ANNUAL TOTAL	15,620	15,310	14,720	15,210	14,530	14,210	14,660	14,390	14,200	15,150	148,000	

APPENDIX 4: NATIONAL AGRICULTURE RESEARCH INSTITUTE BUDGET

GOAL: To promote innovative agricultural development, through improved agricultural technologies, information and knowledge, by undertaking applied and adaptive agricultural research and technology transfer and adaptation.

Objectives	Strategies/Activities	Budget estimate in thousand kina											Source of Funding		
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total			
1. Effective delivery of research outcome and information, adoption, adaptation, impact assessment and research priority setting	1.1 Identify and assess constraints to production and marketing needs	100	100	100	110	110	110	120	120	120	120	1110	1110	1110	GoPNG, Donors
	1.2 Conduct evaluation of existing and improved technologies	50	50	50	60	60	60	70	70	70	70	610	610	610	GoPNG, Donors
	1.3 Assessment of impact of improved agriculture technologies, including impact on health	100	100	100	110	110	110	120	120	120	120	1110	1110	1110	GoPNG, Donors
	1.4 Technology transfer & adoption	100	100	100	110	110	110	120	120	120	120	1110	1110	1110	GoPNG, Donors
	1.5 Research priority setting and programme planning	100	100	100	110	110	110	120	120	120	120	1110	1110	1110	GoPNG, Donors
	1.6 Monitor & Review Technology Activities											0	0	0	GoPNG, Donors
	Subtotal	450	450	450	500	500	500	550	550	550	550	5050	5050	5050	GoPNG, Donors
2. Improve and sustain crop productivity and production (includes rice and grain, tree crops, spices, emerging crops)	2.1 Conduct research priority setting	100	100	100	110	110	110	120	120	120	120	1120	1120	1120	GoPNG, Donors
	2.2 Assess crops varieties for various agro-ecosystems	100	100	100	110	110	110	120	120	120	120	1120	1120	1120	GoPNG, Donors
	2.3 Manage crop pests and diseases	100	100	100	110	110	110	120	120	120	120	1120	1120	1120	GoPNG, Donors
	2.4 Evaluate crop varieties resistant to diseases	100	100	100	110	110	110	120	120	120	120	1120	1120	1120	GoPNG, Donors
	2.5 Improving productivity of crops including those under extreme conditions	100	100	100	110	110	110	120	120	120	120	1120	1120	1120	GoPNG, Donors
	2.6 Introduction, adaptation and evaluation of new crops and crop varieties	100	100	100	110	110	110	120	120	120	120	1120	1120	1120	GoPNG, Donors
3. Improve the genetic potential of crops	2.7 Domestication and commercialization of indigenous crops	100	100	100	110	110	110	120	120	120	120	1120	1120	1120	GoPNG, Donors
	2.8 Evaluation and commercialization of spices	100	100	100	110	110	110	120	120	120	120	1120	1120	1120	GoPNG, Donors
	2.9 Improve planting materials and production practices	100	100	100	110	110	110	120	120	120	120	1120	1120	1120	GoPNG, Donors
	3.1 Improving productivity of crops through genetic improvement	800	800	800	880	880	880	960	960	960	960	8960	8960	8960	GoPNG, Donors
	Subtotal	300	300	300	400	400	400	500	500	500	500	4200	4200	4200	GoPNG, Donors
	3.2 Improving productivity of crops through genetic improvement	300	300	300	400	400	400	500	500	500	500	4200	4200	4200	GoPNG, Donors
4. Conserve, utilise, manage and sustain natural resources, including genetic diversity	4.1 Management of soil fertility and soil moisture	100	100	100	110	110	110	120	120	120	120	1120	1120	1120	GoPNG, Donors
	4.2 Developing suitable agric. technologies for atoll	100	100	100	110	110	110	120	120	120	120	1120	1120	1120	GoPNG, Donors
	4.3 Improving/sustaining crop production under extreme conditions	100	100	100	110	110	110	120	120	120	120	1120	1120	1120	GoPNG, Donors
	4.4 Conserving, utilising and managing crop and animal genetic resources	100	100	100	110	110	110	120	120	120	120	1120	1120	1120	GoPNG, Donors
	Subtotal	400	400	400	440	440	440	480	480	480	480	4470	4470	4470	GoPNG, Donors

Objectives	Strategies/Activities	Budget estimate in thousand kina											Total	Source of Funding
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016			
5. Improve production and productivity of livestock, including aquaculture	5.1 Conduct research priority setting	100	100	100	110	110	110	120	120	120	130	1120	GoPNG, Donors	
	5.2 Improving animal feeding systems,	100	100	100	110	110	110	120	120	120	130	1120	GoPNG, Donors	
	5.3 Improving productivity of animals	100	100	100	110	110	110	120	120	120	130	1120	GoPNG, Donors	
	5.4 Assess and develop species and management practices	100	100	100	110	110	110	120	120	120	130	1120	GoPNG, Donors	
	Subtotal	300	300	300	330	330	330	360	360	360	390	3360	GoPNG, Donors	
6. Increase and sustain crop productivity through sustainable plant protection measures	6.1 Management and control of pests and diseases of crops	150	150	150	200	200	200	230	230	240	1980	GoPNG, Donors		
	6.2 Biological control of exotic pests and diseases	100	100	100	110	110	110	120	120	130	1120	GoPNG, Donors		
	6.3 Biology and loss assessment studies of pests	50	50	50	50	50	50	50	50	50	500	GoPNG, Donors		
	Subtotal	300	300	300	360	360	360	400	400	400	420	3600	GoPNG, Donors	
	7. Develop techniques and technologies, skills and information in post harvest activities	7.1. Product, quality improvement and monitoring programmes										0	GoPNG, Donors	
	7.2 Preserving and processing of crops	200	300	300	400	400	500	500	600	700	4500	GoPNG, Donors		
	7.3 Research on value-added products e.g. biofuel, coir fiber, charcoal, animal feed, medicinal products, food products										0	GoPNG, Donors		
	Subtotal	200	300	300	400	400	500	500	600	700	4500	GoPNG, Donors		
8. Market research to improve farmer income from domestic and international markets	8.1 Supply and demand analysis	100	100	100	110	110	110	120	120	120	1110	GoPNG, Donors		
	8.2. Market Information programmes										120	GoPNG, Donors		
	8.3 Undertake market chain analysis	100	100	100	110	110	110	120	120	120	1110	GoPNG, Donors		
	8.4 Undertake studies on international market advantage of PNG crops	100	100	100	110	110	110	120	120	120	1110	GoPNG, Donors		
	Subtotal	100	100	100	110	110	110	120	120	120	1110	GoPNG, Donors		
9. Improve extension and access to information including biological, analytical, market & GIS information	9.1 Promote & Strengthen Research Extension & Farmer linkages	100	100	100	110	110	110	120	120	120	1120	GoPNG, Donors		
	9.2 Establish Agricultural Resource Centres	1000	1000	800	800	600	600	200	100	100	5300	GoPNG, Donors		
	9.3 Publication, Information and mass communication	100	100	100	110	110	110	120	120	130	1120	GoPNG, Donors		
	9.4 NAIS, QAS and library and information services	80	80	80	90	90	90	100	100	100	920	GoPNG, Donors		
	Subtotal	80	80	80	90	90	90	100	100	100	920	GoPNG, Donors		
10. Strengthening institutional capacity including human resource development & infrastructure & facilities	10.1 Human resource development through formal, workplace and cadetship training (includes gender training)	100	200	200	220	220	230	230	240	240	2130	GoPNG, Donors		
	10.2 Develop, replace and maintain, infrastructure, facilities and equipment	1000	800	700	700	600	500	500	400	400	5900	GoPNG, Donors		
	Subtotal	1100	1000	900	920	820	730	730	640	640	8030	GoPNG, Donors		
	TOTAL	5760	5760	5460	6030	5730	5740	5770	5680	5680	6110	57720		

APPENDIX 5: COFFEE RESEARCH INSTITUTE BUDGET

GOAL: To promote innovative agricultural development, through improved agricultural technologies, information and knowledge, by undertaking applied and adaptive agricultural research and technology transfer and adaptation.

Objectives	Strategies/Activities	Responsible Organisations	Budget estimate in thousand kina										Source of Funding				
			2007	2008	2009	2010	2011	2012	2013	2014	2015	2016		Total			
1. Effective delivery of research outcome and information, adoption, adaptation, impact assessment and research priority setting	1.1 Identify and assess constraints to production and marketing needs	NARI, CCI, OPRA, CIC, DNPRD, PDPPI, NGOs, UNIs	20	20	20	30	30	30	30	30	40	40	40	40	50	320	GoPNG, Donors
	1.2 Conduct evaluation of existing and improved technologies	Farmers, CHOs, NARI, research organizations	50	50	50	60	60	60	60	60	70	70	70	70	80	620	GoPNG, Donors
	1.3 Assessment of impact of improved agriculture technologies, including impact on health	Research organizations	60	60	60	70	70	70	70	70	80	80	80	80	90	720	GoPNG, Donors
	1.4 Technology transfer & adoption	Research organizations	50	50	50	60	60	60	60	60	70	70	70	70	80	620	
	1.5 Research priority setting and programme planning															0	
	1.6 Monitor & Review Technology Activities	Research organizations	30	30	30	40	40	40	40	40	50	50	50	50	60	420	GoPNG, Donors
2. Improve and sustain crop productivity and production (includes rice and grain, tree crops, spices, emerging crops)	Subtotal		210	210	210	260	260	260	260	310	310	310	310	360	2,700		
	2.1 Conduct research priority setting	NDAL, NARI, CCI, OPRA, CIC, DNPRD, PDPPI	50	50	50	60	60	60	60	70	70	70	70	80	620	GoPNG, Donors	
3. Improve the genetic potential of crops	Subtotal		50	50	50	60	60	60	60	70	70	70	70	80	620		
	3.1 Improving productivity of crops through genetic improvement	NARI, Commodity org.	500	500	500	600	600	600	600	700	700	700	700	800	6,200	GoPNG, Donors	
4. Conserve, utilise, manage and sustain natural resources, including	Subtotal		500	500	500	600	600	600	600	700	700	700	700	800	6,200		
	4.1 Management of soil fertility and soil moisture	NARI, Commodity Org.	100	100	100	110	110	110	110	120	120	120	120	130	1,120	GoPNG, Donors	
6. Increase and sustain crop productivity through sustainable plant protection measures	4.2 Conserving, utilising and managing crop and animal genetic resources	NARI, Commodity org.	50	50	50	60	60	60	60	70	70	70	70	80	620	GoPNG, Donors	
	Subtotal		150	150	150	170	170	170	170	190	190	190	190	210	1,740		
7. Develop techniques and technologies, skills and information in post harvest activities	6.1 Management and control of pests and diseases of crops	NARI, Commodity org.	100	100	100	110	110	110	110	120	120	120	120	130	1,120	GoPNG, Donors	
	6.2 Biological control of exotic pests and diseases	NARI, Commodity org. NAOJA	1,000	500	500	300	300	300	300	200	200	200	200	200	3,600	GoPNG, Donors	
7.1. Product, quality improvement and monitoring programmes	Subtotal		1,100	600	600	410	410	410	410	310	310	310	310	330	4,720		
	7.1. Product, quality improvement and monitoring programmes	All research organizations, Unitech	100	100	110	110	110	110	110	120	120	120	120	130	1,150	GoPNG, Donors	
Subtotal		100	100	110	110	110	110	110	110	120	120	120	120	130	1,150		

Objectives	Strategies/Activities	Responsible Organisations	Budget estimate in thousand kina										Source of Funding			
			2007	2008	2009	2010	2011	2012	2013	2014	2015	2016		Total		
8. Market research to improve farmer income from domestic and international markets	8.1 Establishment of organic certification body	NARI	60	60	60	70	70	70	80	80	80	80	80	90	720	GoPNG, Donors
	Subtotal		60	60	60	70	70	70	80	80	80	80	80	90	720	
9. Improve Extension and access to information including biological, analytical, market and GIS information	9.1 Promote & Strengthen Research Extension & Farmer linkages	PDAL, Commodities, NGOs, Farmers, Research, Universities, Donors	80	80	80	90	90	90	100	100	100	100	100	100	910	GoPNG, Donors
	9.2 NAIS, QAS and Library and Information services		20	20	30	30	30	40	40	40	40	40	40	50	350	GoPNG, Donors
	9.3 Improving and managing analytical and diagnostic services		20	20	20	30	30	30	40	40	40	40	40	50	320	GoPNG, Donors
	Subtotal		120	120	130	150	150	160	180	180	180	180	190	200	1,580	
10. Strengthen collaboration amongst research institutions, extension, industries and other stakeholders	10.1 Develop/ strengthen coordination & networking		20	30	30	30	40	40	40	40	40	50	50	60	390	GoPNG, Donors
	Subtotal		20	30	30	30	40	40	40	40	40	50	50	60	390	
	Total		2,310	1,820	1,840	1,860	1,870	1,790	2,010	2,020	2,040	2,260	2,260	19,820	0	

APPENDIX 6: FRESH PRODUCE DEVELOPMENT AGENCY BUDGET
GOAL: To promote innovative agricultural development, through improved agricultural technologies, information and knowledge, by undertaking applied and adaptive agricultural research and technology transfer and adaptation.

Objectives	Strategies/Activities	Responsible Organisations	Budget estimate in thousand kina										Source of Funding				
			2007	2008	2009	2010	2011	2012	2013	2014	2015	2016		Total			
1. Effective delivery of research outcome and information, adoption, adaptation, impact assessment and research priority setting	1.1 Identify and assess constraints to production and marketing needs	NARI, CCI, OPRA, CIC, DNPRED, PDPI, NGOs, UNIs	100	100	100	110	110	110	110	110	120	120	120	120	130	1,120	GoPNG, Donors
	1.2 Technology transfer & adoption	Research organisations	100	100	100	110	110	110	110	120	120	120	120	120	130	1,120	GoPNG, Donors
	Subtotal			200	200	200	220	220	220	220	240	240	240	240	260	2,240	
2. Improve and sustain crop productivity and production (includes rice and grain, tree crops, spices, emerging crops)	2.2 Assess crops varieties for various agro-ecosystems	NARI, Commodity Org.,	200	200	200	210	210	210	210	210	220	220	220	220	230	2,120	GoPNG, Donors
	Subtotal		200	200	200	210	210	210	210	220	220	220	220	230	2,120		
	7. Develop techniques and technologies, skills and information in post harvest activities	CCI,	100	100	100	100	100	100	100	100	100	100	100	100	100	1,000	GoPNG, Donors
8. Market research to improve farmer income from domestic and international markets	8.1 Supply and demand analysis	All research organisations	200	200	200	200	200	200	200	200	200	200	200	200	2,000	GoPNG, Donors	
	8.2. Market Information programmes	All research organisations	100	100	100	100	100	100	100	100	100	100	100	100	1,000	GoPNG, Donors	
	Subtotal		300	300	300	300	300	300	300	300	300	300	300	300	3,000		
9. Improve Extension and access to information including biological, analytical market and GIS information	9.5 Promote adequate resource support to extension providers/agencies	PDAL, Commodities, NGOs, Farmer, Research, Universities, Donors	100	100	100	110	110	110	110	120	120	120	120	120	1,110	GoPNG, Donors	
	9.9 Publication, Information and mass communication	--- same ---	50	50	50	60	60	60	60	70	70	70	70	70	610	GoPNG, Donors	
	Subtotal		150	150	150	170	170	170	170	190	190	190	190	190	1,720		
10. Strengthening institutional capacity including human resource development and infrastructure and facilities	10.8 Develop, replace and maintain, infrastructure, facilities and equipment	PDAL, Commodities, NTC, DOE, HES&T, NGOs, CBO's	500	500	300	300	300	300	300	300	200	200	200	100	2,700	GoPNG, Donors	
	Subtotal		500	500	300	300	300	300	300	200	200	200	200	100	2,700		
	Total		1,450	1,450	1,250	1,300	1,300	1,250	1,250	1,250	1,250	1,250	1,150	1,180	12,780		

APPENDIX 7: PNG COCOA COCONUT INSTITUTE BUDGET

GOAL NO 1: To promote innovative agricultural development, through improved agricultural technologies, information and knowledge, by undertaking applied and adaptive agricultural research and technology transfer and adaptation.

Objectives	Strategies/Activities	Budget estimate in thousand kina											Source of Funding			
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total				
1. Effective delivery of research outcome and information, adoption, adaptation, impact assessment and research priority setting	1.1 Identify and assess constraints to production and marketing needs	100	100	100	110	110	110	120	120	120	120	120	120	120	1,110	GoPNG, Donors
	1.2 Conduct evaluation of existing and improved technologies	100	100	100	110	110	110	120	120	120	120	120	120	120	1,110	GoPNG, Donors
	1.3 Assessment of impact of improved agriculture technologies, including impact on health	100	100	100	110	110	110	120	120	120	120	120	120	120	1,110	GoPNG, Donors
	1.4 Technology transfer & adoption	50	50	50	60	60	60	70	70	70	70	70	70	70	610	GoPNG, Donors
	1.6 Monitor & Review Technology Activities	100	100	100	110	110	110	120	120	120	120	120	120	120	1,110	GoPNG, Donors
	Subtotal		450	450	450	500	500	500	550	550	550	550	550	550	5,050	
2. Improve and sustain crop productivity and production (includes rice and grain, tree crops, spices, emerging crops)	2.1 Conduct research priority setting	100	100	100	110	110	110	120	120	120	120	120	120	130	1,120	GoPNG, Donors
	2.2 Assess crops varieties for various agro-ecosystems	100	100	100	110	110	110	120	120	120	120	120	120	130	1,120	GoPNG, Donors
	2.3 Manage crop pests and diseases	150	150	150	160	160	160	170	170	170	170	170	170	180	1,620	GoPNG, Donors
	2.4 Evaluate crop varieties resistant to diseases	150	150	150	160	160	160	170	170	170	170	170	170	180	1,620	GoPNG, Donors
	2.4 Improving productivity of crops including those under extreme conditions	150	150	150	160	160	160	170	170	170	170	170	170	180	1,620	GoPNG, Donors
	2.5 introduction, adaptation and evaluation of new crops and crop varieties	100	100	100	110	110	110	120	120	120	120	120	120	130	1,120	GoPNG, Donors
3. Improve the genetic potential of crops	2.6 Improve planting materials and production practices	150	150	150	160	160	160	170	170	170	170	170	170	180	1,620	GoPNG, Donors
	Subtotal	900	900	900	970	970	970	1,040	1,040	1,040	1,040	1,040	1,040	1,110	9,840	
4. Conserve, utilise, manage and sustain natural resources, including genetic diversity	3.1 Improving productivity of crops through genetic improvement	300	300	400	400	500	500	500	500	500	500	500	500	500	4,400	GoPNG, Donors
	Subtotal	300	300	400	400	500	500	500	500	500	500	500	500	500	4,400	
4.1 Management of soil fertility and soil moisture	4.1 Management of soil fertility and soil moisture	150	150	150	160	160	160	170	170	170	170	170	170	180	1,620	
	4.2 Conserving, utilising and managing crop and animal genetic resources	100	100	100	110	110	110	120	120	120	120	120	120	130	1,120	GoPNG, Donors
Subtotal		250	250	250	270	270	270	290	290	290	290	290	290	310	2,740	

Objectives	Strategies/Activities	Budget estimate in thousand kina											Source of Funding		
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total			
5. Improve production and productivity of livestock, including aquaculture	5.1 Conduct research priority setting	100	100	100	110	110	110	120	120	120	120	120	120	1,110	GoPNG, Donors
	Subtotal	100	100	100	110	110	110	120	120	120	120	120	120	1,110	
6. Increase and sustain crop productivity through sustainable plant protection measures	6.1 Management and control of pests and diseases of crops	100	100	100	110	110	110	120	120	120	120	120	130	1,120	GoPNG, Donors
	6.2 Biological control of exotic pests and diseases	100	100	100	110	110	110	120	120	120	120	130	130	1,120	GoPNG, Donors
	Subtotal	200	200	200	220	220	220	240	240	240	240	260	2,240		
7. Develop techniques and technologies, skills and information in post harvest activities	7.1. Product, quality improvement and monitoring programmes	50	50	50	60	60	60	70	70	70	70	80	80	620	GoPNG, Donors
	7.2 Preserving and processing of crops	50	50	50	60	60	60	70	70	70	70	80	80	620	GoPNG, Donors
	7.3 Research on value-added products e.g. biofuel, coir fiber, charcoal, animal feed, medicinal products, food products	50	50	50	60	60	60	70	70	70	70	80	80	620	GoPNG, Donors
	Subtotal	150	150	150	180	180	180	210	210	210	210	240	1,860		
8. Market research to improve farmer income from domestic and international markets	8.1 Supply and demand analysis	50	50	50	60	60	60	70	70	70	70	80	80	620	GoPNG, Donors
	8.2. Market Information programmes	50	50	50	60	60	60	70	70	70	70	80	80	620	GoPNG, Donors
	8.3 Undertake market chain analysis	50	50	50	60	60	60	70	70	70	70	80	80	620	GoPNG, Donors
	8.4 Undertake studies on international market advantage of PNG crops	50	50	50	60	60	60	70	70	70	70	80	80	620	GoPNG, Donors
	8.5 Farm/model budget for enterprises	50	50	50	60	60	60	70	70	70	70	80	80	620	GoPNG, Donors
	8.6 Establishment of organic certification body	50	50	50	60	60	60	70	70	70	70	80	80	620	GoPNG, Donors
	Subtotal	300	300	300	360	360	360	420	420	420	420	480	3,720		
9. Improve Extension and access to information including biological, analytical, market and GIS information	9.1 Appraise and review current extension systems in PNG	50	50	50	60	60	60	70	70	70	70	70	70	610	GoPNG, Donors
	9.2 Promote & Strengthen Research Extension & Farmer linkages	50	50	50	60	60	60	70	70	70	70	70	70	610	GoPNG, Donors
	9.3 Establish and promote competitive Agric. Extension Grant Facility (AEGF)	50	50	50	60	60	60	70	70	70	70	70	70	610	GoPNG, Donors
	9.4 Promote adequate resource support to extension providers/agencies	10	10	10	20	20	20	30	30	30	30	30	30	250	GoPNG, Donors

Objectives	Strategies/Activities	Budget estimate in thousand kina											Source of Funding
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total	
	9.5 NAIS, QAS and Library and Information services	30	30	30	40	40	40	50	50	60	420	GoPNG, Donors	
	9.6 Providing GIS services	30	30	30	40	40	40	50	50	60	420	GoPNG, Donors	
	Subtotal	220	220	220	280	280	280	340	340	400	2,920		
10. Strengthening institutional capacity including human resource development and infrastructure and facilities	10.1 Establish inventory and Databases	300	300	300	200	200	100	100	100	100	1,800	GoPNG, Donors	
	10.2 Develop Sound Corporate management systems	800	800	600	500						2,700	GoPNG, Donors	
	10.3 Establish sound financial management systems	200	150	100							450	GoPNG, Donors	
	10.4 Promote good work ethic and governance	100	100	100	100	100	100	100	100	100	1,000	GoPNG, Donors	
	10.5 Identify Training needs for farmers and institution staff	100	100	100	110	110	110	120	120	120	1,110	GoPNG, Donors	
	10.6 Establish Career Development plans and programmes	30	30	30	30	30	40	40	40	30	330	GoPNG, Donors	
	10.7 Human resource development through formal, workplace and cadetship training (includes gender training)	100	100	100	100	110	110	110	120	120	1,090	GoPNG, Donors	
	10.8 Develop, replace and maintain, infrastructure, facilities and equipment	300	500	500	400	400	300	300	100	100	3,000	GoPNG, Donors	
	Subtotal	1,930	2,080	1,830	1,440	950	760	770	580	570	11,480		
11. Strengthen collaboration amongst research institutions, extension, industries and other stakeholders	11.1 Form a NARS group council	100	100	100	100	100	100	100	100	100	1,000	GoPNG, Donors	
	11.2 Peer Review	100	100	100	100	100	100	100	100	100	1,000	GoPNG, Donors	
	11.3 Develop/ strengthen coordination & networking	100	100	100	100	100	100	100	100	100	1,000	GoPNG, Donors	
	11.4 Establish research boundaries based on priorities	100	100	100	100	100	100	100	100	100	1,000	GoPNG, Donors	
	Subtotal	400	400	400	400	400	400	400	400	400	4,000		
	TOTAL	5,200	5,350	5,200	5,130	4,740	4,550	4,880	4,690	4,680	49,360		

APPENDIX 8: OIL PALM RESEARCH ASSOCIATION (OPRA) BUDGET
GOAL NO 1: To promote innovative agricultural development, through improved agricultural technologies, information and knowledge, by undertaking applied and adaptive agricultural research and technology transfer and adaptation.

Objectives	Strategies/Activities	Responsible Organisations	Budget estimate in thousand kina										Source of Funding			
			2007	2008	2009	2010	2011	2012	2013	2014	2015	2016		Total		
1. Effective delivery of research outcome and information, adoption, adaptation, impact assessment and research priority setting	1.1 Identify and assess constraints to production and marketing needs	NARI, CCI, OPRA, CIC, DNPRD, PDPI, NGOs, UNIs	40	40	40	40	40	40	50	50	50	50	50	50	450	GoPNG, Donors
	1.2 Monitor & Review Technology Activities	Research organizations	30	30	30	30	30	30	40	40	40	40	40	40	350	GoPNG, Donors
2. Improve and sustain crop productivity and production (includes rice and grain, tree crops, spices, emerging crops)	Subtotal		70	70	70	70	70	70	90	90	90	90	90	800		
	2.5 Improving productivity of crops including those under extreme conditions	NARI, Commodity org.	50	60	70	70	70	70	70	70	70	70	70	70	670	GoPNG, Donors
3. Improve the genetic potential of crops	Subtotal		100	100	100	110	110	110	110	110	120	120	120	1,120		
	3.1 Improving productivity of crops through genetic improvement	NARI, Commodity org.	100	100	100	110	110	110	110	110	120	120	120	130	1,120	GoPNG, Donors
4. Conserve, utilise, manage and sustain natural resources, including genetic diversity	Subtotal		20	20	30	30	30	30	30	40	40	40	40	330		
	4.1 Management of soil fertility and soil moisture	NARI, Commodity Org.	20	20	30	30	30	30	30	40	40	40	40	40	330	GoPNG, Donors
6. Increase and sustain crop productivity through sustainable plant protection measures	Subtotal		50	60	70	70	70	70	70	70	70	70	70	670		
	6.1 Management and control of pests and diseases of crops	NARI, Commodity org.	50	60	70	70	70	70	70	70	70	70	70	70	670	GoPNG, Donors
9. Improve Extension and access to information including biological, analytical, market and GIS information	6.2 Biological control of exotic pests and diseases	NARI, Commodity org. NAQIA	50	60	70	70	70	70	70	70	70	70	70	670	GoPNG, Donors	
	Subtotal		100	120	140	140	140	140	140	140	140	140	140	1,340		
10. Strengthening institutional capacity including human resource development and infrastructure and facilities	9.10 NAIS, QAS and Library and Information services		30	30	30	30	30	30	30	40	40	40	40	350	GoPNG, Donors	
	9.12 Improving and managing analytical and diagnostic services		30	30	30	40	40	40	40	50	50	50	50	410	GoPNG, Donors	
	Subtotal		60	60	60	70	70	70	70	80	90	90	90	760		
	10.8 Develop, replace and maintain, infrastructure, facilities and equipment	PDAL, Commodities, NTC, DoE, HES&T, NGO's	500	500	500	400	400	400	400	400	200	200	100	3,300	GoPNG, Donors	
	Subtotal		500	500	500	400	400	400	400	400	200	200	100	3,300		
	Total		900	930	970	890	890	890	930	930	750	750	650	8,320		

APPENDIX 9: AGRICULTURAL EXTENSION IMPLEMENTATION FRAME WORK

GOAL: Increase access by smallholder producers to agriculture support services leading to improved production and thereby improving farmers income and standard of living.

Objectives	Strategies	Targets/	Action to be Taken	Measurable Indicators	Responsible Agency/Collaborators
1. To promote effective agriculture extension delivery systems in the provinces.	1.1 Outsourcing extension	19 x provincial establishments and have outsourcing organizations, private and donor projects, extension system established (SSCF)	1.1.1 Establish Contract extension facilities in the provinces	No. of facilities established	NDAL/PDAL
			1.1.2 Farmer to farmer extension	No. of provinces using farmer using concept.	NDAL, JICA, PROVINCIAL DAL
			1.1.3 Village level extension	Concept promoted in 19 provinces.	FPDA,
			1.1.4 Cooperative extension	Concept promoted in 19 provinces.	NDAL, TRADE & Industry
			1.1.5 Contracting out extension	No. of project (services) contracted	
			1.2.1 Integrated Training Program	No. of people trained & trainings conducted	
			1.2.2 Upgrade provincial officer qualification	No. of graduate & post graduate	NDAL, PDAL, Donors
	1.2 Improve capacity of skills and knowledge provincial extension officers.	100 % of Provincial extension staff trained on new extension system; Staff skills and qualification improved.	1.2.3 Encourage hands on skills training (Oisca)	No. people trained in OISCA.	NDAL, PDAL
			1.2.4 Provincial Exchange Program	No. of provinces taking part.	NDAL DNPMP
			1.2.5 Computer skills	No. of officers trained.	PDAL, Private
			1.2.6 Farmers Provincial shows	No. of provincial shows.	PDAL, NDAL
			1.2.7 Agriculture Seminars	No. of provincial extension seminars conducted.	PDAL, NDAL, NARI, CCRI, CRI
			1.3.1 Establish Provincial Agriculture Advisory & Management Committees	No. of provinces taking part.	PDALs
			1.3.2 One stop shop extension centres	No. of one stop extension centres.	NDAL, DNPMP, PDAL
	1.3 Improve collaboration & communication linkages with corporate agencies, and others stake holders	Linkages with all Corporate organizations, private and donor projects	1.3.3 Provincial trades	No. of provincial trade	PDAL
1.3.4 Computer and internet communication & satellite			No. of provinces assisted	NDAL, PDAL, Donors	
1.3.5 NADDP Liaison officer			No. of staff in provinces	NDAL, PDAL, DNPMP	
1.4.1 Mobilize land			No. of provinces identified land for RC development	PDAL, Lands, LO	
1.4 Establish Provincial & district Resource Centre	As desired and established	1.4.2 Feasibility study	No. studies conducted.	PDAL, NDAL	
		1.4.3 Establish centres	No. of centres established	PDAL, NDAL, DNPMP, Donors	
1.5 Improve Management and Coordination of Agriculture Support Services.	By 2007 onwards	1.5.1 Establish national extension desk in NDAL	Desk established under PATS	NDAL,	
		1.5.2 Annual workplans	No. of workplans	DAL, NDAL DNPMP	
		1.5.3 Annual Budgets	No. of budgets	PDAL, NDAL, DNPMP	
		1.5.4 Monitor, review and evaluation meetings	No. of reviews conducted	NDAL, NDAL, DNPMP	
		1.5.4 Data management systems	No. of data management systems established.		

APPENDIX 10: AGRICULTURAL EXTENSION IMPLEMENTATION SCHEDULE

Strategies/Activities	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Organizations Responsible
1. Outsourcing extension											
1.1 Establish Contract extension facilities in the provinces											NDAL
1.2 Farmer to farmer extension											NDAL,JICA, PDAL
1.3 Village level extension											FPDA,
1.4 Cooperative extension											NDAL, TRADE & Industry
1.5 Contracting out extension											PDAL, NDAL
2. Improve capacity of skills and knowledge provincial extension officers.											
2.1 Integrated Training Program											PDAL, UoV, NDAL
2.2 Upgrade provincial officer qualification											NDAL,PDAL, Donors
2.3 Encourage hands on skills training (Oisca/HAC)											NDAL,PDDAL
2.4 Provincial Exchange Program											NDAL DNPm
2.5 Computer skills											PDAL,Private
2.6 Farmers Provincial shows											PDAL, NDAL
2.7 Agriculture Seminars											PDAL, NDAL, NARI, CCRI, CRI
3 Improve collaboration & communication linkages with corporate agencies, and others stake holders											
3.1 Establish Provincial Agriculture Advisory & Management Committees											PDALs
3.2 One stop shop extension centres											NDAL,DNPm, PDAL
3.3 Provincial trades											PDAL
3.4 Computer and internet communication & satellite											NDAL, PDAL,Donors
3.5 NADP Liaison officer											NDAL, PDAL, DNPm
4. Establish Provincial & district Resource Centre											
4.1 Mobilize land											PDAL, Lands, LO's
4.2 Feasibility study											PDAL, NDAL
4.3 Establish centres											PDAL, NDAL, DNPm, Donors
5 Improve Management and Coordination of Agriculture Support Services.											
5.1 Establish national extension desk in NDAL											NDAL,
5.2 Annual workplans											DAL, NDAL DNPm
5.3 Annual Budgets											PDAL, NDAL, DNPm
5.4 Monitor, review and evaluation meetings											NDAL, NDAL, DNPm
5.5 Data management systems											PDAL, NDAL

APPENDIX 11: AGRICULTURAL EXTENSION BUDGET

Strategies/Activities	Budget Estimate in Thousand Kina											Source of Funding				
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total					
1. Outsourcing extension																
1.1. Establish Contract extension facilities in the provinces	500	800	800	800	800	800	800	800	800	800	800	800	800	800	7,700	GoPNG / Donors
1.2. Farmer to farmer extension	400	500	500	500	500	500	500	500	500	500	500	500	500	500	4,900	GoPNG / Donors
1.3. Village level extension	200	400	400	400	400	400	400	400	400	400	400	400	400	400	3,800	GoPNG / Donors
1.4. Cooperative extension	200	500	500	500	500	500	500	500	500	500	500	500	500	500	4,700	GoPNG / Donors
1.5. Contracting out extension	200	400	400	400	400	400	400	400	400	400	400	400	400	400	3,800	GoPNG / Donors
Sub-total	1,500	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	24,900	
2. Improve capacity of skills and knowledge provincial extension officers.																
2.1. Integrated Training Program	100	200	200	200	200	200	200	200	200	200	200	200	200	200	1,900	GoPNG / Donors
2.2. Upgrade provincial officer qualification	100	200	200	200	200	200	200	200	200	200	200	200	200	200	1,900	GoPNG
2.3. Encourage hands on skills training (Oisca)		100	100	100	100	100	100	100	100	100	100	100	100	100	900	GoPNG / Donors
2.4. Provincial Exchange Program		100	100	100	100	100	100	100	100	100	100	100	100	100	900	GoPNG
2.5. Computer skills	50	100	100	100	50	50	50	50	50	50	50	50	50	50	650	GoPNG
2.6. Farmers Provincial shows	50	100	100	100	100	100	100	100	100	100	100	100	100	100	950	GoPNG
2.7. Agriculture Seminars	50	50	50	50	50	50	50	50	50	50	50	50	50	50	500	GoPNG
Sub-total	350	850	850	850	800	800	800	800	800	800	800	800	800	800	7,700	
3. Improve collaboration & communication linkages with corporate agencies, and others stake holders																
3.1. Establish Provincial Agriculture Advisory & Management Committees	100	200	200	200	200	200	200	200	200	200	200	200	200	200	1,900	GoPNG
3.2. One stop shop extension centres	200	300	300	300	300	300	300	300	300	300	300	300	300	300	2,900	GoPNG / Donors
3.3. Provincial trades	50	50	50	50	50	50	50	50	50	50	50	50	50	50	500	GoPNG
3.4. Computer and internet communication & satellite	300	200	200	200	200	200	200	200	200	200	200	200	200	200	2,100	GoPNG

Strategies/Activities	Budget Estimate in Thousand Kina											Source of Funding
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total	
3.5 NADP Liaison officer	200	200	200	200	200	200	200	200	200	200	2,000	GoPNG
Sub-total	850	950	950	950	950	950	950	950	950	950	9,400	
4 Establish Provincial & district Resource Centre												
4.1 Mobilize land	200	200	200	200	200	200	200	200	200	200	2,000	GoPNG
4.2 Feasibility study	100	100	100	100	100	100	100	100	100	100	1,000	GoPNG
4.3 Establish centres	500	800	900	1,000	1,000	1,000	1,000	1,000	1,000	1,000	9,200	GoPNG / Donors
Sub-total	800	1,100	1,200	1,300	1,300	1,300	1,300	1,300	1,300	1,300	12,200	
5 Improve Management and Coordination of Agriculture Support Services.												
5.1 Establish national extension desk in NDAL												
5.2 Annual workplans												
5.3 Annual Budgets												
5.4 Monitor, review and evaluation meetings	100	200	200	200	200	200	200	200	200	200	1,900	GoPNG
5.5 Data management systems	100	200	200	200	200	200	200	200	200	200	1,900	GoPNG / Donors
Sub-total	200	400	400	400	400	400	400	400	400	400	3,800	
Totals	3,700	5,900	6,000	6,100	6,050	6,050	6,050	6,050	6,050	6,050	58,000	

APPENDIX 12: AGRICULTURAL INFORMATION AND STATISTICS IMPLEMENTATION FRAMEWORK

Goal: To provide appropriate, relevant and timely information to the agricultural sector for increased productivity and production in the agricultural industry and for a better livelihood of the population.

Objective	Strategies	Targets	Activities/ Actions	Outputs	Responsible Agency / Collaborators
1. To coordinate relevant and appropriate agricultural information production and dissemination to the sector	1.1. Revive the National Agricultural Information Network [NAIN] to coordinate and review information	1.1.1. Revived NAIN begins operation in 2007 1.1.2.NAIN meets twice yearly	1.1.1.1. Invite nomination from sector agencies into the NAIN, and inaugurate the NAIN 1.1.2.1. NAIN Meets / reviews	National agricultural information Network revived Meeting reports	NDAL, NARI, CIC, CCI, NAQIA, Ramu Sugar, OPRA, OPIC, DPI's etc
	2.1. rehabilitate and upgrade NDAL Print shop, machinery and equipments	2.1.1. Rehabilitation and upgrading completed in 2007	2.1.1.1. Identify and cost equipment for rehabilitation / upgrading	Print shop in operation	NDAL
2. To produce and disseminate relevant agricultural information for sector use	2.2. Conduct workshops and seminars to update / produce agricultural information	2.2.1. Information needs & catalogue of information producers / experts developed 2.2.2. At least ten revised and new publication yearly	2.2.1.1. Identify sector information needs and partners to participate in information production 2.2.2.1. Conduct workshops / seminars to produce/ update on information	Catalogue of information needs / experts identified Lists of new / revised publication	NDAL, NARI, CIC, CCI, NAQIA, Ramu Sugar, OPRA, OPIC, DPI's etc
	2.3. Publish and disseminate agricultural information in print form	2.3.1 Newsletters/ journals produced timely/ yearly	2.3.1.1. Invite for articles, edit / review and publish newsletters / journals	PNGJAFF, Harvest, NARI News, newsletters and Technical bulletins produced Mailing list of distributed contributions	
	2.4. Produce and provide relevant information in electronic and audio visual forms	2.4.1 .At least twelve electronic / audio-visuals produced on relevant topics yearly	2.4.1.1. Identify sector information needs and partners to participate in electronic information production and produce	Types and lists of electronic and audio visuals produced	NDAL, NARI, CIC, CCI, NAQIA, Ramu Sugar, OPRA, OPIC, DPI's etc
	2.5. Partnership with Broadcasting agencies in disseminating agricultural information	2.5.1. List of information needs and producers updated quarterly	2.5.1.1. Identify sector information needs and producers and develop appropriate scripts	Catalogue of information needs / experts and scripts developed	NDAL, NBC, FM Stations, Sector Agencies, Farmers

Objective	Strategies	Targets	Activities/ Actions	Outputs	Responsible Agency / Collaborators
3. To host sector agricultural web-page for timely and relevant information dissemination nationally / internationally	3.1. Design, host and launch sector agricultural web-page that links all sector agencies	2.5.2. Relevant agricultural topics broadcasted forthrightly	Produce and disseminate information in partnership with broadcasting agencies	List of topics broadcasted	NDAL, NBC, FM Stations, Sector Agencies, Farmers
		3.1.1. IT / Web Specialist contracted or recruited by March 2007	3.1.1.1. Contract out or recruit IT / Web Master to manage the Sector Web page at NDAL	Name of specialist recruited	NDAL, Sector Agencies
4. To coordinate the establishment and management of District Agricultural Information Centers nation wide	3.2. Participate effectively in the national ICT network	3.1.2. Agriculture.org.pg web-page re-design and updated by June 2007	3.1.2.1. Re-design and update agriculture.org.pg NDAL Web-page and co-host sector agencies	Updated web page	NDAL, Sector Agencies
		3.2.1. Sector ICT needs identified and updated yearly	3.2.1.1. Identify sector ICT Needs	List of identified ICT needs	Dept of State Enterprises, NDAL, Sector Agencies
		ICT technologies used by sector agencies	3.2.1.2. Use ICT Technologies to provide web-information to sector agencies and districts	Availability of technologies nationwide	
		4.1.1. At least 5 District Information Centers established yearly	4.1.1.1. Dialogue with MP's to co-fund and establish their District Information centers	District centers established	NDAL, NARI, CIC, CCI, NAQIA, Ramu Sugar, OPRA, OPIC, DPI's, Donors etc
		4.1.2. Information needs identified and updated on quarterly basis	4.1.2.1. Identify information needs for each centre	records on information needs	NDAL, Sector Agencies, Districts, Farmers
		4.1.3. Identified information supplied regularly all year round	4.1.3.1. Coordinate information supply / updating to centers	Catalogues information updates	NDAL, NARI, CIC, CCI, NAQIA, Ramu Sugar, OPRA, OPIC, DPI's, Districts, farmers etc

Objective	Strategies	Targets	Activities/ Actions	Outputs	Responsible Agency / Collaborators
5. To improve on library related information systems to serve sector needs	5.1. Host an updated library to serve sector information needs	5.1.1. Library needs funded and procured	5.1.1.1. Identify library needs and update regularly	List of library needs procured yearly	NDAL, NARI, CIC, CCI, NAQIA, Ramu Sugar, OPRA, OPIC, DPI's etc
	5.2. Promote sector agencies partnership in library database updating [NAIS]	5.2.1. Twice yearly updating of NAIS	5.2.1.1. Old and new partners update NAIS	Updated list and software on NAIS	NDAL, NARI, CIC, CCI, NAQIA, Ramu Sugar, OPRA, OPIC, DPI's etc
	5.3 Promote sector agencies collaboration in the QAS [Question and Answer] networking	5.3.1. Agencies review QAS twice yearly	5.3.1.1. QAS operational all year round	Quarterly summary report on QAS	NDAL, NARI, CIC, CCI, NAQIA, Ramu Sugar, OPRA, OPIC, DPI's etc
6. To develop Human resources in agricultural information development / management	1.6. Develop and improve staff skills in information technologies	1.6.1. Staff skills updated yearly in relevant skills	1.6.1.1. Identify staff needs in information and sponsor domestic / international training to upgrade	List of people trained	NDAL, NARI, CIC, CCI, NAQIA, Ramu Sugar, OPRA, OPIC, DPI's etc
	7. To update the 1963 database on Agricultural information for effective current and future agricultural planning	7.1. Conduct National Agricultural Census	Survey questionnaire designed by Dec 2007	7.1.1.1 Design appropriate agricultural survey questionnaire	Completed questionnaire
Questionnaire pre-tested by March 2008			7.1.1.2. Pilot Test the questionnaire	Pilot Test Report	NDAL, NSO, NARI, DPI's, DPILGS
Survey conducted June - September 2008			7.1.1.3. Conduct census	Survey Data Report	DAL, NSO, NARI, DPI, DPILGS
		Data Analyzed and disseminated by Dec 2008	7.1.1.4. Analyze and disseminate census report	Analyzed Census Report	DAL, NSO, NARI, DPI, DPILGS
		Data and reports stored electronically by Jan 2009	7.1.1.5. Store Census Reports /	Storage Report and software	DAL, NSO, NARI, DPI, DPILGS
		Data updated every 3 years.	7.1.1.6. Update the census information every 3 years	Reports	DAL, NSO, NARI, DPI, DPILGS

APPENDIX 13: AGRICULTURAL INFORMATION AND STATISTIC IMPLEMENTATION SCHEDULE

Strategies / Activities	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Agencies Responsible
1. Revive the National Agricultural Information Network [NAIN] to coordinate and review information											
1.1. Invite nomination from sector agencies into the NAIN, and inaugurate the NAIN											NDAL, NARI, CIC, CCI, NAQIA, Ramu Sugar, OPRA, OPIC, DPI's etc
1.2. NAIN Meets / reviews											NDAL
2. Rehabilitate and upgrade NDAL Print shop, machinery and equipments											
2.1. Identify and cost equipment & machinery for rehabilitation / upgrading and implement											
3. Conduct workshops and seminars to update / produce agricultural information											
3.1. Identify sector information needs and partners to participate in information production											NDAL, NARI, CIC, CCI, NAQIA, Ramu Sugar, OPRA, OPIC, DPI's etc
3.2. Conduct workshops / seminars to produce/ update on information											
4. Publish and disseminate agricultural information in print form											
4.1. Invite for articles, edit / review and publish newsletters / journals											NDAL, NARI, CIC, CCI, NAQIA, Ramu Sugar, OPRA, OPIC, DPI's etc
4.2. Distribute publications											
5. Produce and provide relevant information in electronic and audio-visual forms											
5.1. Identify sector information needs and partners to participate in electronic information production and produce											NDAL, NARI, CIC, CCI, NAQIA, Ramu Sugar, OPRA, OPIC, DPI's etc
6. Partnership with Broadcasting agencies in disseminating agricultural information											
6.1. Identify sector information needs and producers and develop appropriate scripts											
6.2. Produce and disseminate information in partnership with broadcasting agencies											
7. Design, host and launch sector agricultural web-page that links all sector agencies											
7.1. Contract out / recruit IT / Web Master to manage Sector Web page at NDAL all year round											NDAL NDAL
8. Participate effectively in the national ICT network											
8.1. Identify sector ICT Needs											
8.2. Use ICT Technologies to provide web-information to sector agencies and districts											
9. Establish District agricultural information centers											
9.1. Dialogue with MP's to co-fund and establish their District information centers											

Strategies / Activities	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Agencies	Responsible
9.2. .Identify information needs for each centre											NDAL, NARI, CIC, CCI, NAQIA, Ramu Sugar, OPRA, OPIC, DPI's etc	
9.3. Coordinate information supply / updating to centers												
10. Host an updated library to serve sector information needs												
10.1. Identify library needs and update regularly											NDAL, NARI, CIC, CCI, NAQIA, Ramu Sugar, OPRA, OPIC, DPI's etc	
11. Promote sector agencies partnership in library database updating [NAIS]												
11.1. Old and new partners update NAIS											NDAL, NARI, CIC, CCI, NAQIA, Ramu Sugar, OPRA, OPIC, DPI's etc	
12. Promote sector agencies collaboration in the QAS [Question and Answer] networking												
12.1. QAS operational all year round											NDAL, NARI, CIC, CCI, NAQIA, Ramu Sugar, OPRA, OPIC, DPI's etc	
13. Develop and improve staff skills in information technologies												
13.1. Identify staff needs in information and sponsor domestic / international training to upgrade											NDAL, NARI, CIC, CCI, NAQIA, Ramu Sugar, OPRA, OPIC, DPI's etc	
14. Conduct National Agricultural Census												
14.1 Design appropriate agricultural survey questionnaire											NDAL, NSO, NARI, DPI's, DPLIGS	
14.2 Pilot Test the questionnaire											--- same ---	
14.3 Conduct census											--- same ---	
14.4 Analyse and disseminate census report											--- same ---	
14.5 . Store Census Reports /											--- same ---	
14.6 Update the census information every 3 years											--- same ---	

APPENDIX 14: AGRICULTURAL INFORMATION AND STATISTIC BUDGET

Strategies / Activities	Budget Estimate in Thousand Kina										Funding Source		
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016		Total	
1. Revive the National Agricultural Information Network [NAIN] to coordinate and review information													Gov't, /Donors
1.1. Invite nomination from sector agencies into the NAIN, and inaugurate the NAIN	30											30	Gov't, /Donors
1.2. NAIN Annual Meetings / reviews	30	30	30	30	30	30	30	30	30	30	30	300	Gov't, /Donors
2. Rehabilitate and upgrade NDAL Print shop, machinery and equipments													
2.1. Identify and cost equipment and machinery for rehabilitation / upgrading & implement	300	300	300	200	200	300	300	300	300	200	200	2700	Gov't, /Donors
3. . Conduct workshops and seminars to update / produce agricultural information													
3.1. Identify sector information needs and partners to participate in information production	10	10	10	10	10							50	Gov't, /Donors
3.2. Conduct workshops / seminars to produce/ update on information	20	20	20	20	20	20	20	20	20	20	20	200	Gov't, /Donors
4. Publish and disseminate agricultural information in print form													
4.1. Invite for articles, edit / review and publish newsletters / journals	20	20	20	20	20	20	20	20	20	20	20	200	Gov't, /Donors
4.2. Distribute publications	5	5	5	5	5	5	5	5	5	5	5	50	Gov't, /Donors
5. Produce and provide relevant information in electronic and audio-visual forms													
5.1. Identify sector information needs and partners to participate in electronic information production and produce	50	50	50	50	50	50	50	50	50	50	50	500	Gov't, /Donors
6. Partnership with Broadcasting agencies in disseminating agricultural information													
6.1. Identify sector information n+A I6eeds and producers and develop appropriate scripts	70	50	50	50	50	50	50	50	50	50	50	520	Gov't, /Donors
6.2. Produce and disseminate information in partnership with broadcasting agencies	70	50	50	50	50	50	50	50	50	50	50	520	Gov't, /Donors
7. Design, host and launch sector agricultural web-page that links all sector agencies													
7.1. Contract out or recruit IT / Web Master to manage the Sector Web page at NDAL	40	20	20	20	20	20	20	20	20	20	20	220	Gov't, /Donors

Strategies / Activities	Budget Estimate in Thousand Kina											Funding Source				
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total					
8. Participate effectively in the national ICT network																
8.1. Identify sector ICT Needs	20	20	20	20	20	20	20	20	20	20	20	20	20	20	200	Gov't, /Donors
8.2. Use ICT Technologies to provide web-information to sector agencies and districts	30	30	30	30	30	30	30	30	30	30	30	30	30	30	300	Gov't, /Donors
9. Establish District agricultural information centers																
9.1. Dialogue with MP's to co-fund and establish their District Information centers	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	10,000	Gov't, /Donors
9.2. .Identify information needs for each centre	20	20	20	20	20	20	20	20	20	20	20	20	20	20	200	Gov't, /Donors
9.3. Coordinate information supply / updating to centers	40	40	40	40	40	40	40	40	40	40	40	40	40	40	400	Gov't, /Donors
10. Host an updated library to serve sector information needs																
10.1. Identify library needs and update regularly	40	20	20	20	20	20	20	20	20	20	20	20	20	20	220	Gov't, /Donors
11. Promote sector agencies partnership in library database updating [NAIS]																
11.1. Old and new partners update NAIS	60	40	40	40	40	40	40	40	40	40	40	40	40	40	420	Gov't, /Donors
12. Promote sector agencies collaboration in the QAS [Question and Answer] networking																
12.1. QAS operational all year round	70	40	40	40	40	40	40	40	40	40	40	40	40	40	430	Gov't, /Donors
13. Develop and improve staff skills in information technologies																
13.1. Identify staff needs in information and sponsor domestic / international training to upgrade	60	50	50	50	50	50	50	50	50	50	50	50	50	50	510	Gov't, /Donors
14. Conduct National Agricultural Census																
14.1 Design appropriate agricultural survey questionnaire		30													30	Gov't, /Donors, MP's
14.2 Pilot Test the questionnaire			200												200	--- same ---
14.3 Conduct census				10,000											10000	--- same ---
14.4 . Analyse and disseminate census report				100											100	--- same ---
14.5 Store Census Reports /					100										100	--- same ---
14.6 Update the census information every 3 years								1,000						1,000	2,000	--- same ---
Total	2985	2845	3015	12815	2815	805	1805	805	805	805	1705	1705	30400			

APPENDIX 15: HUMAN RESOURCE DEVELOPMENT AND TRAINING FRAMEWORK

Objective / Strategies	Targets	Action to be taken	Measurable	Responsible Agency
Objective 1. To improve coordination and monitoring of the sectors training programs				
1.1 Establish a National Agriculture Training Council (NATC) to coordinate & monitor sectors training programs.	1.1.1 Council established by 2008	1.1.1.1 Identify relevant training providers and agencies.	Number of training providers identified	NDAL, DoE, OUR, OUT, HOG, Industries, NARI, NAQIA NGO's
	1.1.2 At least 10 person(s) to be on council	1.1.1.2 Nominate person(s) into council and provide TOR.	Council formed	
	1.1.3 Two meetings to be held annually.	1.1.1.3 Attend meeting and forward deliberations to relevant bodies for endorsement & implement.	Number of meetings conducted	
1.2 Strengthen collaboration & linkages with all training providers Donors & line agencies.	1.2.1 Linkages & collaborations strengthened by 2007 onwards	1.2.1.1 Identify and link to relevant stakeholders.	Number of agencies identified	NDAL, DOE, OUR, (No Suggestions)/ Industries, Donor agencies, International, Universities, NGO's, DOI, NTC, DTI
	1.2.2 At least 10 countries linked by 2016	1.2.1.2 Seek technical and financial assistance to facilitate programs.	Funds secured	
	1.2.3 At least 10-20 meetings /seminars attended annually by various agencies.	1.2.2.1 Source twinning and internship arrangements with relevant in-country & overseas training partners & link to programs.	Number of training partners linked too.	
Objective 2. To improve and strengthen human resource capacity in the agricultural sector		1.2.3.1 Attend internal and external meetings /seminars and conferences to expose to new HRM practices/ reforms	Number of meetings/seminars attended.	
2.1 Coordinate and facilitate training programs in collaboration with Training providers, donors and line agencies within the provinces/ districts and or overseas.	2.1.1 At least 50-80% of human resources trained by 2016	2.1.1.1 Identify training needs trainees and training providers	Number of Trainees/trainers identified	NDAL, DoE,/ Industries, Donor agencies, Universities, Commodity bodies, NARI /NAQIA, NGO's.

Objective / Strategies	Targets	Action to be taken	Measurable	Responsible Agency
	2.1.2 At least 5,000 staff and farmers trained annually.	2.1.1.2 Secure funding and sponsorship for training	Funds secured	
	2.1.3 Training Plans developed by 2007 onwards	2.1.3.1 Conduct / facilitate training through formal informal or internship programs to staff, Ext officers & farmers. 2.1.4.1 Develop career dev. cadetship & training plans for staff within the national/provincial and district set-ups.	Number of training / internship programs linked too and conducted	
	2.1.4 At least 30-40% women sponsored annually.	2.1.5.1 Provide scholarship incentives for female students to colleges/universities	Number of plans produced and executed	
	2.1.5. 100 Training information disseminated annually	2.1.6.1 Disseminate training information to all institutions provinces and district offices	Number of females on sponsorship	
	2.1.6 At least 20 staff on bid annually	2.1.7.1 Coordinate and facilitate training bids both in country and overseas.	Number of information disseminated	
	2.1.7 Refresher /Exit induction courses conducted annually.	2.1.7.2 Conduct induction and refresher /exit courses for old & new staff, in-house or external.	Number of staff on bids	
	2.1.8 Various awareness programs conducted annually.	2.1.8.1 Facilitate and coordinate awareness programs on various development issues with relevant stakeholders to staff and farmers -in house /external	Number of courses conducted.	NDAL, DoE, / Industries, Donor agencies, Universities, Commodity bodies, NARI /NAQIA, NGO's.
	2.1.9 Database established by 2008 and updated annually.	2.1.9.1 Create Training human resource database for planning purposes.	Number of awareness programs conducted.	
			Database records	
	Objective 3. To improve and renovate institutional infrastructure and facilities.			
3.1 Develop, maintain and renovate infrastructures and facilities in existing agricultural colleges & farmer training centres within the provinces and districts.	3.1.1 All existing colleges and farmer training centres fully renovated and functional by 2016	3.1.1.1 Conduct a inventory on all existing college and training centres assets including HAC/ LISTC/ SAC	Inventory report	NDAL, PDAL, OUT, OUR, HOG, Donors, Industries
		3.1.1.2 Develop submission and source funding	Funds secured	
		3.1.1.3 Procure equipments vehicles/furniture's/building materials.	Goods procured Number of buildings renovated	
		3.1.1.4 Renovate / replace buildings/ equipments and other infrastructures	Equipments replaced/maintained	

APPENDIX 16 : HUMAN RESOURCE MANAGEMENT AND TRAINING SCHEDULE

Strategies / Activities	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Agencies responsible
1. Establish a NATC to coordinate & monitor sectors training programs.											NDAL/DOE/OUR, (No Suggestions)/ Industries, NARI, NAQIA NGO's
1.1 Identify relevant training providers and agencies.											
1.2 Nominate person(s) into council and provide TOR.											
1.3 Attend meeting and forward deliberations to relevant bodies for endorsement & implement.											
2. Strengthen collaboration & linkages with all training providers Donors & line agencies.											NDAL/ DOE/ OUR, OUT/ HOG/ Industries, Donor agencies/ International, Universities, NGO's, DOLL/ NTC/ DTI
2.1 Identify and link to relevant stakeholders.											
2.2 Seek technical and financial assistance to facilitate programs.											
2.3 Source twinning and internship arrangements with relevant in-country & overseas training partners & link to programs.											
2.4 Attend internal and external meetings /seminars and conferences to expose to new HRM practices/ reforms											
3. Coordinate and facilitate training programs in collaboration with Training providers, donors and line agencies within the provinces/ districts and or overseas.											NDAL/ DOE/ OUR, OUT/ HOG/ Industries, Donor agencies/ International, Universities, NGO's, DOLL/ NTC/ DTI
3.1 Identify training needs trainees and training providers											
3.2 Secure funding and sponsorship for training											
3.4 Conduct / facilitate training through formal informal or internship programs to staff, Ext officers & farmers.											
3.5 Develop career dev. cadetship & training plans for staff within the national/ provincial and district set-ups.											
3.6 Provide scholarship incentives for female students to colleges/universities											
3.7 Disseminate training information to all institutions provinces and district offices											
3.8 Coordinate and facilitate training bids both in country and overseas.											NDAL/ DOE/ OUR, OUT/ HOG/ Industries, Donor agencies/ International, Universities, NGO's, DOLL/ NTC/ DTI
3.9 Conduct induction and refresher /exit courses for old & new staff, in-house or external.											
3.10 Facilitate and coordinate awareness programs on various development issues with relevant stakeholders to staff and farmers -in house /external											
3.11 Create Training human resource database for planning purposes.											

Strategies / Activities	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Agencies responsible
4. Develop, maintain and renovate infrastructures and facilities in existing agricultural colleges & farmer training centres within the provinces and districts											NDAL/DOE/OUR; (NO SUGGESTIONS)/ Industries, Donor, NGO's
4.1 Conduct a inventory on all existing college and training centres assets											
4.2 Develop submission and source funding											
4.3 Procure equipments vehicles and furniture /building materials.											
4.4 Renovate / replace buildings/equipments and other infrastructures											

APPENDIX 17: HUMAN RESOURCE MANAGEMENT AND TRAINING BUDGET SCHEDULE

Strategies / Activities	Budget Estimate in Thousand Kina											Total	Funding Source			
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016						
1. Establish a NATC to coordinate & monitor sectors training programs.																
1.1 Identify relevant training providers and agencies.	5	5	5	5	5	5	5	5	5	5	5	5	5	5	50	GoPNG, Donors
1.2 Nominate person(s) into council and provide TOR.	10														10	GoPNG, Donors
1.3 Attend meeting and forward deliberations to relevant bodies for endorsement & implement.	5	5	5	5	5	5	5	5	5	5	5	5	5	5	50	GoPNG, Donors
2. Strengthen collaboration & linkages with all training providers Donors & line agencies.																
2.1 Identify and link to relevant stakeholders.	5		5	5	5	5	5	5	5	5	5	5	5	5	25	GoPNG, Donors
2.3 Seek technical and financial assistance to facilitate programs.	25	25	25	25	25	25	25	25	25	25	25	25	25	25	250	GoPNG, Donors
2.4 Source twinning and internship arrangements with relevant in-country & overseas training partners & link to programs.	25	25	25	25	25	25	25	25	25	25	25	25	25	25	250	GoPNG, Donors
2.5 Attend internal and external meetings /seminars and conferences to expose to new HRM practices/ reforms	25	25	25	25	25	25	25	25	25	25	25	25	25	25	250	GoPNG, Donors
3. Coordinate and facilitate training programs in collaboration with Training providers, donors and line agencies within the provinces/ districts and or overseas.																
3.1 Identify training needs trainees and training providers	5	5	5	5	5	5	5	5	5	5	5	5	5	5	50	GoPNG, Donors
3.2 Secure funding and sponsorship for training	50	50	50	50	50	50	50	50	50	50	50	50	50	50	500	GoPNG, Donors
3.4 Conduct / facilitate training through formal informal or internship programs to staff, Ext officers & farmers.	250	250	250	250	250	250	250	250	250	250	250	250	250	250	2500	GoPNG, Donors
3.5 Develop career dev. cadetship & training plans for staff within the national/ provincial and district set-ups.	10	10	10	10	10	10	10	10	10	10	10	10	10	10	100	GoPNG, Donors
3.6 Provide scholarship incentives for female students to colleges/universities	25	25	25	25	25	25	25	25	25	25	25	25	25	25	250	GoPNG, Donors
3.7 Disseminate training information to all institutions provinces and district offices	10	10	10	10	10	10	10	10	10	10	10	10	10	10	100	GoPNG, Donors
3.8 Coordinate and facilitate training bids both in country and overseas.	5	5	5	5	5	5	5	5	5	5	5	5	5	5	50	GoPNG, Donors
3.9 Conduct induction and refresher /exit courses for old & new staff, in-house or external.	100	100	100	100	100	100	100	100	100	100	100	100	100	100	1000	GoPNG, Donors
3.10 Facilitate and coordinate awareness programs on various development issues with relevant stakeholders to staff and farmers -in house /external	50	50	50	50	50	50	50	50	50	50	50	50	50	50	500	GoPNG, Donors
3.11 Create Training human resource database for planning purposes.	10	10	10	10	10	10	10	10	10	10	10	10	10	10	100	GoPNG, Donors

Strategies / Activities	Budget Estimate in Thousand Kina										Funding Source		
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016		Total	
4. Develop, maintain and renovate infrastructures and facilities in existing agricultural colleges & farmer training centres within the provinces and districts.													
4.1 Conduct a inventory on all existing college and training centres assets	25	25	25	25	25	25	25	25	25	25	25	250	GoPNG, Donors
4.2 Develop submission and source funding	5	5	5	5	5	5	5	5	5	5	5	50	GoPNG, Donors
4.3 Procure equipments vehicles and furniture /building materials.	500	500	500	500	500	500	500	500	500	500	5000	5000	GoPNG, Donors
4.4 Renovate / replace buildings/equipments and other infrastructures	2000	2000	2000	1500	1500	2000	2000	2000	1000	1000	16500	16500	GoPNG, Donors
Annual Total	3145	3130	3135	2630	2635	2630	3130	3135	2135	2130	27835		

APPENDIX 18: DOMESTIC RICE DEVELOPMENT IMPLEMENTATION FRAMEWORK

Goal: To establish a sustainable domestic rice industry to enhance food security, generate income and reduce rice imports and increase production from 20,000 to 60,000 tons by 2011.

Objective / Strategies	Targets	Actions to be taken	Measurable outputs	Responsible Agency
1. To strengthen and expand smallholder rice production throughout the country where feasible				
1.1. Facilitate rice farmer's access to adequate good quality rice seeds, milling machines, tools and other materials.	1.1.1. Rice farmers have access to seeds, milling machines, tools and other materials on a continuous basis.	1.1.1.1. Establish Rice Resource Centres in the provinces to support rice promotion. 1.1.1.2. Assist the private sector to invest in supply of materials and services to rice farmers.	Number of Rice Resource Centres established Number of private companies involved	NDAL/ PDAL/ DA/ private sector/ farmer groups
1.2. Provide suitable training, extension and information support for rice farmers	1.2.1. Rice farmers are trained and provided extension and information as required.	1.2.1.1. Train farmers and extension personnel and service providers. 1.2.1.2. Assist service providers, provinces and districts to provide a well coordinated extension and information service on a sustainable basis.	Number of farmers, extension personnel and service providers trained. Number of farmers assisted.	
1.3. Facilitate suitable marketing system for rice.	1.3.1. Locally produced rice is marketed.	1.3.1.1. Institute appropriate policy environment for marketing of local rice. 1.3.1.2. Wherever necessary provide appropriate infrastructure to facilitate rice marketing. 1.3.1.3. Encourage and assist private sector to participate in the marketing of local rice.	Appropriate policy in place Required infrastructure established. Degree of private sector participation.	
1.4. Facilitate rice farmers to access suitable micro-credit services.	1.4.1. Micro-credit scheme established to serve rice farmers.	1.4.1.1. Establish a micro-credit scheme for production, processing and marketing of rice. 1.4.1.2. Ensure successful operation of the scheme	Effective operation of the micro-credit scheme & number of farmers benefited.	

Objective / Strategies	Targets	Actions to be taken	Measurable outputs	Responsible Agency
1.5. Facilitate rice farmers to access adequate land resources necessary for sustainable rice cultivation	1.5.1. Suitable land resources are available for sustainable rice production.	1.5.1.1. Conduct awareness campaign to mobilize land for rice	Number of hectares available for rice cultivation in each province.	
2. To promote rice production in educational and correctional institutions				
2.1. Develop rice production courses to be taught in primary, secondary, vocational, tertiary and correctional institutions	2.1.1. Respective courses developed and tested	2.1.1.1. Establish a team of experts to prepare the materials to be taught at different institutions. 2.1.1.2. Pre-test them and if required make necessary changes. 2.1.1.3. Include them in the curriculum.	Number of institutions where the courses are taught.	NDAL/ DoE/ CIS/ Universities
2.2. Facilitate institutions to access adequate good quality rice seeds, milling machines, tools and other materials.	2.2.1. Respective inputs are available to participating institutions.	2.2.1.1. Establish a coordinating committee representing the different institutions.	Number of institutions cultivating rice	
2.3. Provide suitable training, extension and information support to educational and correctional institutions.	2.3.1. At least one member of staff received specialized training in rice production and processing	2.3.1.1. Identify at least one staff member from each of the participating institution. 2.3.1.2. Identified staff given the specialized training. 2.3.1.3. Monitor production at these institutions	Volume of rice produced Number of staff trained	
2.4. Assist educational and correctional institution to market their excess rice.	2.4.1. Ensure self-sufficiency in rice of the participating institution	2.4.1.1. Establish a marketing network with private traders to market the excess rice.	Volume of rice sold.	
2.5. Facilitate access to suitable credit services by educational and correctional institution	2.5.1. Institutions have access to credit if required	2.5.1.1. Establish an appropriate mechanism for the institution to access to suitable credit, if required.	Number of institutions participating in the scheme.	
2.6. Facilitate access to land for rice cultivation	2.6.1. Institutions have access to adequate land.	2.6.1.1. Conduct a landuse study to identify suitable lands available to each institution.	Extent of land available to the respective institution.	
3. To promote and assist commercial rice production				

Objective / Strategies	Targets	Actions to be taken	Measurable outputs	Responsible Agency
3.1. Encourage local and foreign investors to undertake commercial rice production	3.1.1. Investors identified by 2007.	3.1.1.1. Invite potential investors for expression of interest. 3.1.1.2. Identify potential investors and complete formalities as required.	Number of investors identified	NDAL/ Land owners/ investors/ IPA/ other line agencies
3.2. Identify and mobilize lands that are suitable for rice production	3.2.1. Land identified and mobilized by 2007.	3.2.1.1. Conduct landuse surveys to identify lands in target provinces 3.2.1.2. Negotiate with land owners to release land for rice development	Number of hectares available for rice cultivation.	
3.3. Establish a joint venture mechanism with the land owners, investors and the government to undertake the project	3.3.1. Joint venture mechanism established and approved by the parties by 2007.	3.3.1.1. Conduct feasibility studies. 3.3.1.2. Draw operational plans of the joint venture	Feasibility reports Operational plans in place	
3.4. Implement the project	3.4.1. Project implemented from 2007	3.4.1.1. Develop project plan. 3.4.1.2. Establish irrigation facilities. 3.4.1.3. Commence implementation of the plan.	Project plan Irrigation facilities established Physical implementation	NDAL/Land owners/ investors/ IPA/ other line agencies
3.5. Continuously Monitor the progress	3.5.1. progress monitored from 2008	3.5.1.1. Conduct progress monitoring	Progress reports	

APPENDIX 19: Domestic Rice Development Implementation Schedule

Strategies/Activities	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
1.1 Facilitate rice farmer's access to adequate good quality rice seeds, milling machines, tools and other materials.										
1.1.1 Establish Rice Resource Centres in the provinces to support rice promotion.										
1.1.2 Assist the private sector to invest in supply of materials and services to rice farmers.										
1.2. Provide suitable training, extension and information support for rice farmers										
1.2.1. Train farmers and extension personnel and service providers.										
1.2.2. Assist service providers, provinces and districts to provide a well coordinated extension and information service on a sustainable basis.										
1.3. Facilitate suitable marketing system for rice.										
1.3.1. Institute appropriate policy environment for marketing of local rice.										
1.3.2. Wherever necessary provide appropriate infrastructure to facilitate rice marketing.										
1.3.3. Encourage and assist private sector to participate in the marketing of local rice.										
1.4. Facilitate rice farmers to access suitable micro-credit services.										
1.4.1. Establish a micro-credit scheme for production, processing and marketing of rice.										
1.4.2. Ensure successful operation of the scheme										
1.5. Facilitate rice farmers to access adequate land resources necessary for sustainable rice cultivation										
1.5.1. Conduct awareness campaign to mobilize land for rice										
2.1. Develop rice production courses to be taught in primary, secondary, vocational, tertiary and correctional institutions										
2.1.1. Establish a team of experts to prepare the materials to be taught at different institutions.										
2.1.2. Pre-test them and if required make necessary changes.										
2.1.3. Include them in the curriculum.										
2.2. Facilitate institutions to access adequate good quality rice seeds, milling machines, tools and other materials.										
2.2.1. Establish a coordinating committee representing the different institutions.										
2.2.2. Secure and allocate adequate funds to implement the programme.										
2.3. Provide suitable training, extension and information support to educational and correctional institutions.										
2.3.1. Identify at least one staff member from each of the participating institution.										

Strategies/Activities	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
2.3.2. Identified staff given the specialized training.										
2.3.3. Monitor production at these institutions										
2.4. Assist educational and correctional institution to market their excess rice.										
2.4.1. Establish a marketing network with private traders to market the excess rice.										
2.5. Facilitate access to suitable credit services by educational and correctional institution										
2.5.1. Establish an appropriate mechanism for the institution to access to suitable credit, if required.										
2.6. Facilitate access to land for rice cultivation										
2.6.1. Conduct a landuse study to identify suitable lands available to each institution.										
3.1. Encourage local and foreign investors to undertake commercial rice production										
3.1.1. Invite potential investors for expression of interest.										
3.1.2. Identify potential investors and complete formalities as required.										
3.2. Identify and mobilize lands that are suitable for rice production										
3.2.1. Conduct landuse surveys to identify lands in target provinces										
3.2.2. Negotiate with land owners to release land for rice development										
3.3. Establish a joint venture mechanism with the land owners, investors and the government to undertake the project										
3.3.1. Conduct feasibility studies.										
3.3.2. Draw operational plans of the joint venture										
3.4. Implement the project										
3.4.1. Develop project plan.										
3.4.2. Establish irrigation facilities.										
3.4.3. Implementation of the plan.										
3.5. Monitor the progress										
3.5.1. Monitor progress of the projects										

APPENDIX 20: Domestic Rice Development Budget Schedule

Strategies/Activities	Budget Estimate in Thousand kina										Funding source	Agency Responsible					
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016			Total				
1.1 Facilitate rice farmer's access to adequate good quality rice seeds, milling machines, tools and other materials.																GoPNG/ Donors/Private sector	NDAL /PDAL / Donors / Private sector
1.1.1 Establish Rice Resource Centres in the provinces to support rice promotion.	500	500	500	500											2,000		
1.1.2 Assist the private sector to invest in supply of materials and services to rice farmers.	200	200	200	200	200	200	200	200	200	200	200	200	200	200	2,000		
1.2. Provide suitable training, extension and information support for rice farmers																	
1.2.1. Train farmers and extension personnel and service providers.	200	200	200	200	200	200	200	200	200	200	200	200	200	200	2,000		NDAL /PDAL / Donors / Private sector
1.2.2. Assist service providers, provinces and districts to provide a well coordinated extension and information service on a sustainable basis.	100	100	100	100	100	100	100	100	100	100	100	100	100	100	1,000		
1.3. Facilitate suitable marketing system for rice.																	
1.3.1. Institute appropriate policy environment for marketing of local rice.	100	100													200		NDAL /PDAL / Donors / Private sector
1.3.2. Wherever necessary provide appropriate infrastructure to facilitate rice marketing.		100	50	50	50	50	50	50	50	50	50	50	50	50	500		
1.3.3. Encourage and assist private sector to participate in the marketing of local rice.			50	50	50	30	30	30	30	30	30	30	30	30	300		
1.4. Facilitate rice farmers to access suitable micro-credit services.																	
1.4.1. Establish a micro-credit scheme for production, processing and marketing of rice.	500	500	500	500	500	500	500	500	500	500	500	500	500	500	4,500		NDAL /PDAL / Donors / Private sector
1.4.2. Ensure successful operation of the scheme	50	50	50	50	50	50	50	50	50	50	50	50	50	50	500		
1.5. Facilitate rice farmers to access adequate land resources necessary for sustainable rice cultivation																	
1.5.1. Conduct awareness campaign to mobilize land for rice	50	50	50	50	50	50	50	50	50	50	50	50	50	50	500		NDAL /PDAL / Donors / Private sector

Strategies/Activities	Budget Estimate in Thousand kina										Funding source	Agency Responsible					
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016			Total				
2.6. Facilitate access to land for rice cultivation																	
2.6.1. Conduct a landuse study to identify suitable lands available to each institution.	100	100	100	100	100	100	100	100	100	100	100	100	100	1,000	GoPNG	NDAL/PDAL/ DoE/CIS	
3.1. Encourage local and foreign investors to undertake commercial rice production																	
3.1.1. Invite potential investors for expression of interest.																	
3.1.2. Identify potential investors and complete formalities as required.	500	500												1,000		NDAL/PDAL/ private sector	
3.2. Identify and mobilize lands that are suitable for rice production																	
3.2.1. Conduct landuse surveys to identify lands in target provinces	700	500												1,200		NDAL/PDAL/ private sector	
3.2.2. Negotiate with land owners to release land for rice development																	
3.3. Establish a joint venture mechanism with the land owners, investors and the government to undertake the project																	
3.3.1. Conduct feasibility studies.	400	200	200	200	100	100	100	100	100	100	100	100	100	1,300		NDAL/PDAL/ private sector	
3.3.2. Draw operational plans of the joint venture																	
3.4. Implement the project																	
3.4.1. Develop project plan.	200													200		NDAL/PDAL/ private sector	
3.4.2. Establish irrigation facilities.	2,000	2,000	1,000											5,000			
3.4.3. Implementation of the plan.	3,600	1,000	1,000	1,000	1,000	1,000	500	200	100	100	100	100	100	9,400			
3.5. Monitor the progress																	
3.5.1. Monitor progress of the projects		50	50	100	100	100	150	150	150	150	150	150	150	1,000		NDAL/PDAL/ private sector	
TOTAL	10,900	8,250	5,950	5,000	3,400	3,380	2,980	2,580	2,130	2,030	1,000	46,600					

APPENDIX 21: DOMESTIC WHEAT DEVELOPMENT IMPLEMENTATION FRAMEWORK

Goal: To promote domestic wheat production to enhance household food security, generate income and reduce wheat flour import.

Objectives / Strategies	Targets	Actions to be taken	Measurable outputs	Responsible Agency
Objective: To develop smallholder based domestic wheat production in the highlands of PNG.				
1. Improve wheat farmers access to adequate supply of quality seed	1.1. Rice farmers have access to quality seeds at all time.	1.1.1. Conduct a survey to determine the seed requirements of farmers in the target areas. 1.1.2. Based on the survey establish seed multiplication and distribution centres and produce seeds for distribution	Survey reports Volume of seed distributed annually.	NDAL/ NARI/ PDAL/ DA/ RDB /Private sector/ farmer groups
2. Facilitate wheat farmers access to appropriate milling machines and other associated equipments, tools and materials.	2.1. Wheat farmers have access to milling facilities their tools and materials as required.	2.1.1. Establish milling facilities in collaboration with private sector to cater for farmers needs	Number of facilities available to farmers to mill their wheat.	--- same ---
3. Facilitate wheat farmers to have access to suitable training in cultivation and processing	3.1. Farmers trained in cultivation and processing in wheat.	3.1.2. Assist service providers, provinces and districts to provide farmer training.	Number of farmers trained annually.	--- same ---
4. Ensure wheat farmers have access to suitable technologies, wheat varieties, irrigation technologies and post harvest techniques.	4.1. Appropriate technologies are made available continuously.	4.1.1. Conduct research into production and processing of wheat in the highland provinces to screen varieties, develop cultivation methods, soil management, post harvest techniques, etc 4.1.2. Establish demonstration farms, conduct field demonstration to farmers.	Appropriate technologies developed and tested for dissemination. Farmers are conversant in appropriate technologies.	--- same --- --- same ---
5. Facilitate suitable marketing system for wheat.	5.1. Locally produced wheat flour is marketed	5.1.1. Provide appropriate infrastructure for marketing locally produced wheat flour. 5.1.2. Encourage and assist private sector to participate in the marketing of local wheat flour.	Volume of flour marketed. Degree of private sector participation.	--- same --- --- same ---

Objectives / Strategies	Targets	Actions to be taken	Measurable outputs	Responsible Agency
6. Facilitate wheat farmers to access suitable micro-credit services.	6.1. Micro-credit scheme established to serve wheat farmers.	6.1.1. Establish a micro-credit scheme for production, processing and marketing of wheat. 6.1.2. Ensure successful operation of the scheme	Effective operation of the micro-credit scheme & number of farmers	--- same ---
7. Facilitate rice farmers to access adequate land resources necessary for sustainable rice cultivation.	7.1. Suitable land resources are available for sustainable wheat production.	7.1.1. Conduct awareness campaign to mobilize land for wheat production.	Number of hectares available for rice cultivation in each province.	--- same ---
8. Provide skilled manpower to implement wheat development programme.	8.1. Suitable trained manpower developed by 2009	8.1.1. Identify suitable candidates and provide appropriate training in wheat cultivation and processing.	Number of trained personnel available	--- same ---

APPENDIX 22: DOMESTIC WHEAT DEVELOPMENT IMPLEMENTATION SCHEDULE

Strategies/Activities	Year										Responsible Agency				
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016					
1. Improve wheat farmers access to adequate supply of quality seed.															NDAL/PDAL / NARI
1.1. Conduct a survey to determine the seed requirements of farmers in the target areas.															
1.2. Based on the survey establish seed multiplication and distribution centres and produce seeds for distribution.															
2. Facilitate wheat farmers access to appropriate milling machines and other associated equipments, tools and materials.															NDAL / PDAL / Private sector
2.1. Establish milling facilities in collaboration with private sector to cater for farmers needs.															NDAL / PDAL / NARI
3. Facilitate wheat farmers to have access to suitable training in cultivation and processing.															
3.1. Assist service providers, provinces and districts to provide farmer training.															
4. Ensure wheat farmers have access to suitable technologies, wheat varieties, irrigation technologies and post harvest techniques															NARI / PDAL
4.1 Conduct research into all aspects of production and processing of wheat in the highlands.															
4.2. Establish demonstration farms, conduct field demonstration to farmers.															
5. Facilitate suitable marketing system for wheat.															
5.1. Provide appropriate infrastructure for marketing of locally produced wheat flour.															Private sector / PDAL
5.2. Encourage and assist private sector in the marketing of local wheat flour.															
6. Facilitate wheat farmers to access suitable micro-credit services.															
6.1. Establish a micro-credit scheme for production, processing and marketing of wheat.															RDB /PDAL / NDAL
6.2. Ensure successful operation of the scheme.															

Strategies/Activities	Year										Responsible Agency	
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016		
7. Facilitate rice farmers to access adequate land resources necessary for sustainable wheat cultivation.												
7.1. Conduct awareness campaign to mobilize land for wheat production.												PDAL
8. Provide skilled manpower to implement wheat development programme.												
8.1. Identify suitable candidates and provide appropriate training in wheat cultivation and processing.												NARI / PDAL

APPENDIX 23: DOMESTIC WHEAT DEVELOPMENT BUDGET SCHEDULE

Strategies/Activities	Estimate Budget in Thousand Kina										Funding source	Responsible Agency /		
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016			Total	
1. Improve wheat farmers access to adequate supply of quality seed.													GoPNG / Donors	NDAL/PDAL / NARI
1.1. Conduct a survey to determine the seed requirements of farmers in the target areas.	30										30		--- same ---	
1.2. Based on the survey establish seed multiplication and distribution centres and produce seeds for distribution.		100	100	50	50	50	40	30	30	500			--- same ---	
2. Facilitate wheat farmers access to appropriate milling machines and other associated equipments, tools and materials.														NDAL / PDAL / Private sector
2.1. Establish milling facilities in collaboration with private sector to cater for farmers needs.		20	20	20	20	20	20	20	20	180			--- same ---	
3. Facilitate wheat farmers to have access to suitable training in cultivation and processing.													--- same ---	NDAL / PDAL / NARI
3.1. Assist service providers, provinces and districts to provide farmer training.	20	20	20	20	20	30	30	30	30	250			--- same ---	
4. Ensure wheat farmers have access to suitable technologies, wheat varieties and post harvest techniques													--- same ---	NARI / PDAL
4.1. Conduct research into all aspects of production and processing of wheat in the highlands.		30	30	30	30	30	30	30	30	260			--- same ---	
4.2. Establish demonstration farms, conduct field demonstration to farmers.		10	10	10	10	10	10	10	10	90			--- same ---	
5. Facilitate suitable marketing system for wheat.													GoPNG/ Donors	Private sector / PDAL

Strategies/Activities	Estimate Budget in Thousand Kina											Funding source	Responsible Agency /
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total		
	5.1. Provide appropriate infrastructure for marketing locally produced wheat flour.			200	200	200	200	200					
5.2. Encourage and assist private sector to participate in the marketing of local wheat flour.			10	10	10	10	20	20	20	20	120	--- same ---	
6. Facilitate wheat farmers to access suitable micro-credit services.												--- same ---	RDB/PDAL / NDAL
6.1. Micro-credit for production, processing and marketing of wheat		200	200	200	200	200					1,000	--- same ---	
6.2. Ensure successful operation.		10	10	10	20	20	20	20	20	20	150	--- same ---	
7. Facilitate rice farmers to access adequate land resources necessary for sustainable wheat cultivation.												--- same ---	PDAL
7.1 Conduct awareness campaign to mobilize land for wheat production.			20	20	20	20	20	20	20	20	160	--- same ---	
8. Provide skilled manpower to implement wheat development programme.												--- same ---	NARI / PDAL
8.1. Identify suitable candidates and provide appropriate training in wheat cultivation and processing.		40	40	40	40	40	40	40	40	40	360	--- same ---	
TOTAL	50	430	660	610	620	630	440	230	220	210	4,100		

APPENDIX 24: FOOD CROPS AND HORTICULTURE DEVELOPMENT IMPLEMENTATION FRAMEWORK

Goal: To promote food and horticulture crops into an sustainable commercial status for PNG.

Objective / Strategies	Actions to be taken	Measurable outputs	Responsible Agency/ Collaborators
Objective 1. Increased production of fruits, nuts, staple crops and vegetables			
1.1 Increase production of fruits for household consumption and marketing (mango, rambutan, carambola, durian, ton)	1.1.1 Assess existing production 1.1.2 Establish nurseries and seed multiplication 1.1.3 Distribute seedlings 1.1.4 Farmer and trainer training 1.1.5 Encourage formation of grower cooperatives 1.1.6 Assist access to credit facilities	one survey each in 2007 and 2011 1 nursery facility in each province 10,000 seedlings per year 4 trainings per year, with total of 25 by 2011 1 provincial cooperative each 2000 farmers per year to access credit and 10,000 by 2011	NDAL, FPDA, NARI, PDAL, NGOs,
1.2 Increase production of nuts for household consumption and marketing (cashew, galip, macadamia, marita, karuka, betel nut)	1.2.1 Assess existing production 1.2.2 Establish nurseries and seed multiplication 1.2.3 Distribute seedlings 1.2.4 Farmer training 1.2.5 Encourage formation of grower cooperatives 1.2.6 Assist access to credit facilities	one survey each in 2007 and 2011 1 nursery facility in each province 5000 seedlings per year 4 trainings per year, with total of 25 by 2011 1 provincial cooperative each 1000 farmers per year to access credit and 5,000 by 2011	NDAL, FPDA, NARI, PDAL,
1.3 Increase production of staples for household consumption and marketing (taro, yam, banana, cassava)	1.3.1 Assess existing production 1.3.2 Establish nurseries and seed multiplication 1.3.3 Distribute seedlings 1.3.4 Farmer training for new production technologies 1.3.5 Encourage formation of grower cooperatives	one survey each in 2007 and 2011 1 nursery facility in each province 200,000 planting materials per year 4 trainings per year, with total of 25 by 2011 1 provincial cooperative each	NDAL, FPDA, NARI, PDAL, NGOs,

Objective / Strategies	Actions to be taken	Measurable outputs	Responsible Agency/ Collaborators
	1.3.6 Assist access to credit facilities	10000 farmers per year to access credit and 50,000 by 2011	
1.4 Increase production of vegetables (mushroom and asparagus) for household consumption and marketing	1.4.1 Assess existing production	one survey each in 2007 and 2011	FPDA, PDAL, NGOs, NARI
	1.4.2 Establish nurseries and seed multiplication	1 nursery facility in each province	
	1.4.3 Distribute seedlings	100,000 planting materials per year	
	1.4.4 Farmer training	4 trainings per year, with total of 25 by 2011	
	1.4.5 Encourage formation of grower cooperatives	1 provincial cooperative each	
	1.4.6 Assist access to credit facilities	5000 farmers per year to access credit and 25,000 by 2011	
2.1 Downstream processing and value-adding on fruits	2.1.1 Conduct feasibility study	1 survey only in 2007	NDAL, FPDA, NARI, PDAL, NGOs, UNITECH
	2.1.2 Long term research development	procedures/techniques established for developing new products	
	2.1.3 Develop new products	2 differentiated products for each year	
	2.1.4 Training and information dissemination	4 trainings per year, with total of 25 by 2011 and 10,000 information materials distributed	
	2.1.5 Product testing	test 2 products per year	
Objective 2. Develop food processing and preservation of fruits, nuts, staples and vegetables for commercial and cottage industries			
	2.2 Downstream processing and value-adding on nuts		
	2.2.1 Conduct feasibility study	1 survey only in 2007	NDAL, FPDA, NARI, PDAL, NGOs, UNITECH
	2.2.2 Long term research development	procedures/techniques established for developing new products	
	2.2.3 Develop new products	2 differentiated products for each year	
	2.2.4 Training and information dissemination	4 trainings per year, with total of 25 by 2011 and 10,000 information materials distributed	
	2.2.5 Product testing	test 2 products per year	
2.3 Downstream processing and value-adding on staples	2.3.1 Conduct feasibility study	1 survey only in 2007	NDAL, FPDA, NARI, PDAL, NGOs, UNITECH
	2.3.2 Long term research development	procedures/techniques established for developing new products	

Objective / Strategies	Actions to be taken	Measurable outputs	Responsible Agency/ Collaborators
2.4 Downstream processing and value-adding on vegetables (mushroom and asparagus)	2.3.3 Develop new products	2 differentiated products for each year	
	2.3.4 Training and information dissemination	4 trainings per year, with total of 25 by 2011 and 10,000 information materials distributed	
	2.3.5 Product testing	test 2 products per year	
	2.4.1 Conduct feasibility study	1 survey only in 2007	NDAL, FPDA, NARI, PDAL, NGOs, UNITECH
	2.4.2 Long term research development	procedures/techniques established for developing new products	
3. Develop market access for fruits, nuts, staples and vegetables	2.4.3 Develop new products	2 differentiated products for each year	
	2.4.4 Training and information dissemination	4 trainings per year, with total of 25 by 2011 and 10,000 information materials distributed	
	2.4.5 Product testing	test 2 products per year	
	3.1.1 Identify/arrange markets	Markets identified	NDAL, FPDA, NAQIA, NARI, PDAL, NGOs, UNITECH
	3.2.1 Establish consolidation depots	1 marketing centre established in Hagen, Goroka, Kainantu, Lac, POM by 2011	NDAL, FPDA, NAQIA, NARI, PDAL, NGOs, UNITECH
3.1 Improve market access for semi-subsistence fruits, nuts, staples and vegetables (mushroom and asparagus)	3.2.2 Assist/establish marketing cooperatives	5 each year	
	3.2.3 Improve market chain linkages	effective marketing system established	
	3.2.4 Facilitate transportation (subsidy)	10,000 tonnes of agricultural produce transported from remote areas	
	3.3.1 Demand and supply analysis	Information on demand and supply	NDAL, FPDA, NAQIA, NARI, PDAL, NGOs, UNITECH
	3.3.2 Market surveys	1 survey per quarter per year	
3.3 Provide commercial marketing information services for fruits, nuts, staples and vegetables (mushroom and asparagus)	3.3.3 Establish a market information system (storage, access, dissemination)	1 established in resource centres in each district	
	4. Floriculture		
	4.1. Assessment of opportunities, constraints and types of flowers in the industry	1 survey	NDAL, FPDA, NAQIA, NARI, PDAL, NGOs, UNITECH
4.2. Promoting floriculture and capacity building of women and youth	4.2.1 Conduct awareness and training	4 trainings a year per region	NDAL, FPDA, NAQIA, NARI, PDAL, NGOs, UNITECH

Objective / Strategies	Actions to be taken	Measurable outputs	Responsible Agency/ Collaborators
4.3. Increase production	4.3.1 Establish regional nurseries and distribute cuttings	1 nursery in each region and 30,000 cuttings distributed per year	
4.4. Marketing - both domestic and export	4.4.1 Identify markets	Markets identified	
5. To create an enabling policy environment to assist the development in the foods and horticulture sector			
5.1 Establish food Certification Body	5.1.1 Strengthen capacity of Codex unit	4 staff trained	NDAL, NAQIA, DEPT. HEALTH, ICC, NSIT
	5.1.2 Register food producers, suppliers and processors	1000 per year	NDAL, NAQIA, DEPT. HEALTH, ICC
	5.1.3 Promote organic farming	organic produce certified	NDAL, FPDA, NARI, PDAL, NGOs,
	5.1.4 Develop criteria and indicators for certification (including chain of custody)	Criteria and indicators established	NDAL, FPDA, NARI, PDAL, NAQIA, NSIT
	5.1.5 Develop food standards for indigenous food products	Food standards established	NDAL, FPDA, NARI, PDAL, NAQIA, NSIT
5.2 Promote use of local inputs in commercial food processing	5.2.1 Establish policy guidelines for use of local inputs as ingredients in food processing	Policy guidelines established	NDAL, FPDA, NARI, PDAL, NAQIA, NSIT
6. To promote the integration of management of water resource to increase production and productivity			
6.1 Utilise irrigation and water management technology in dry land food and horticulture farming systems	6.1.1 irrigation technology to be tested and applied in food and horticulture	identified the best irrigation technology in each framing systems and locations	NDAL, FPDA, NARI,
	6.1.2 assessment of water resource constraints	areas of water limitation to crop production identified	NDAL, FPDA, NARI
	6.1.3 adaptation of irrigation	use of irrigation in farming systems	FPDA, PDAL, NGOs, NARI
6.2 Improve drainage and wetland management	6.2.1 Survey and identify wetlands with development potential	Assessment conducted in 2007, 2008	NDAL, FPDA Land Developers, Dept. of Works, engineers, international agencies
	6.2.2 construct water removal and drainage improvement programmes	wetlands improved for agriculture development	NDAL, FPDA, Land developers, Dept of Works, International agencies

APPENDIX 25: FOOD CROPS AND HORTICULTURE DEVELOPMENT IMPLEMENTATION SCHEDULE FRAMEWORK

Strategies/ Activities	Year										Responsible Agency/ Collaborators	
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016		
1.1 Increase production of fruits for household consumption and marketing (mango, rambutan, carambola, durian, ton)												NDAL, FPDA, NARI, PDAL, NGOs, UNITECH, NAQIA
1.2 Increase production of nuts for household consumption and marketing (cashew, galip, macadamia, marita, karuka, betel nut)												
1.3 Increase production of staples for household consumption and marketing (taro, yam, banana, cassava)												
1.4 Increase production of vegetables (mushroom and asparagus) for household consumption and marketing												
2.1 Downstream processing and value-adding on fruits												
2.2 Downstream processing and value-adding on nuts												
2.3 Downstream processing and value-adding on staples												
2.4 Downstream processing and value-adding on vegetables (mushroom and asparagus)												
3.1 Improve market access for semi-subsistence fruits, nuts, staples and vegetables (mushroom and asparagus)												
3.2 Develop commercial market service for fruits, nuts, staples and vegetables (mushroom and asparagus) - both domestic and export												
3.3 Provide commercial marketing information services for fruits, nuts, staples and vegetables (mushroom and asparagus)												
4.1. Assessment of opportunities, constraints and types of flowers in the industry												
4.2. Promoting floriculture and capacity building of women and youth												
4.3. Increase production												
4.4. Marketing - both domestic and export												
5.1 Establish Food Certification Body												
5.2 Promote use of local inputs in commercial food processing												
6.1 Utilise irrigation and water management in dry land food and horticulture farming systems												
6.2 Improve drainage and wetland management												

APPENDIX 26: FOOD CROPS AND HORTICULTURE DEVELOPMENT IMPLEMENTATION BUDGET

Strategies/ Activities	Budget Estimate in Thousand Kina										Total	Funding Source
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016		
1.1 Increase production of fruits for household consumption and marketing (mango, rambutan, carambola, durian, ton)	1150	1000	1000	1000	500	500	500	500	500	500	7,150	GoPNG, Donors, Private sector
1.2 Increase production of nuts for household consumption and marketing (cashew, galip, macadamia, marita, karuka, betel nut)	1150	1000	1000	1000	500	500	500	500	500	500	7,150	
1.3 Increase production of staples for household consumption and marketing (taro, yam, banana, cassava)	850	800	800	800	800	800	800	800	800	800	8,050	
1.4 Increase production of vegetables (mushroom and asparagus) for household consumption and marketing	650	500	500	500	500	500	500	500	500	500	5,150	
2.1 Downstream processing and value-adding on fruits	1,000	1,000	1,000	1,000	750	750	500	500	500	500	7,500	GoPNG, Donors, Private sector
2.2 Downstream processing and value-adding on nuts	1,000	1,000	1,000	1,000	750	750	500	500	500	500	7,500	
2.3 Downstream processing and value-adding on staples	1,000	1,000	1,000	1,000	1,000	700	700	700	500	500	8,400	
2.4 Downstream processing and value-adding on vegetables (mushroom and asparagus)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	10,000	
3.1 Improve market access for semi-subsistence fruits, nuts, staples and vegetables (mushroom and asparagus)	300	300	300	300	300	300	300	300	300	300	3,000	GoPNG, Donors, Private sector
3.2 Develop commercial market service for fruits, nuts, staples and vegetables (mushroom and asparagus) - both domestic and export	750	400	400	400	400	400	500	500	500	500	4,750	
3.3 Provide commercial marketing information services for fruits, nuts, staples and vegetables (mushroom and asparagus)	300	300	300	300	300	300	300	300	300	300	3,000	

Strategies/ Activities	Budget Estimate in Thousand Kina										Funding Source			
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016		Total		
4.1. Assessment of opportunities, constraints and types of flowers in the industry	700												700	
4.2. Promoting floriculture and capacity building of women and youth	250	200	200	200	200	200	200	200	200	200	200	200	2,050	GoPNG, Donors, Private sector
4.3. Increase production	400	400	400	400	400	400	400	400	400	400	400	400	4,000	
4.4. Marketing - both domestic and export	300	300	300	300	300	300	300	300	300	300	300	300	3,000	
5.1 Establish Organic Certification Body	40	50	50	50	50	60	60	60	80	80	80	80	580	
5.2 Promote use of local inputs in commercial food processing	20	20	20	20	20	20	20	20	20	20	20	20	200	
6.1 Utilise irrigation and water management in dry land food and horticulture farming systems	450	500	550	500	500	500	500	500	500	500	500	500	5,000	
6.2 Improve drainage and wetland management	400	500	500	500	500	500	400	400	400	400	400	400	4,500	
Total	11,710	10,270	10,320	10,270	8,770	8,780	7,980	7,980	7,800	7,800	7,800	7,800	91,680	

APPENDIX 29: OIL PALM INDUSTRY DEVELOPMENT BUDGET SCHEDULE

Goal: To improve production and productivity of the oil palm subsector to contribute to increase GDP and the welfare of the communities

Project /Strategies/Activities	Budget Estimate in Thousand Kina										Funding Source	Agency Responsible		
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016			Total	
1.1 Appoint a candidate to be on the apex body	17			20			30				40	107	GoPNG	DAL, Private sector, DNPM,
1.1.1. Identify & nominate a rep on the apex body														
1.2. Enhance management and staff capabilities through formal & skills training programs														
1.2.1. Identify Training needs	50	50	50	50	50	50	50	50	50	50	50	500	GoPNG	OPIC
1.2.2. Institute internal training as needed	25	25	25	25	25	25	25	25	25	25	25	250	GoPNG	OPIC
1.2.3 Sponsor formal training as necessary	50	50	50	50	50	50	50	50	50	50	50	500	GoPNG	OPIC
1.3. Promote peer reviews & inter & intra industry collaborations														
1.3.1. Institutionalise internal workshops	50	50	50	50	50	50	50	50	50	50	50	500	GoPNG	OPIC
1.3.2 Institutionalise national workshops/ field days	50	50	50	50	50	50	50	50	50	50	50	500	GoPNG	OPIC
1.4 Provide adequate funding														
1.4.1 Identify sector needs and provide detail annual work plan	50	50	50	50	50	50	50	50	50	50	50	500	GoPNG	OPIC, Prov. R&D institutions
1.5 Redefine role of OPIC														
1.5.1. Conduct legislation and Administration review	1,000					1,000						2,000	GoPNG	
1.5.2 Provide quality assurance	50	50	50	50	50	50	50	50	50	50	50	500	GoPNG	
2.1 Rehabilitate plantations and or promote new plantings														
2.1.1 Identify plantations that need rehabilitation and dialogue with land owners	500	50	50	50	50	50	50	50	50	50	50	950	GoPNG	OPIC, DTI, RDB, DAL, DNPM
2.1.2 Provide advice on planting seed for new farms and farmers to participate	500	500	500	500	500	500	500	500	500	500	500	5,000	GoPNG	
2.2. Promote Farmer Cooperatives														
2.2.1 Dialogue with communities to establish farmer cooperatives and its benefits	150	150	150	150	150	150	150	150	150	150	150	1,500	GoPNG	OPIC, DAL, DTI
2.2.2 Encourage and increase farmer's participation	50	50	50	50	50	50	50	50	50	50	50	500	GoPNG	

Project /Strategies/Activities	Budget Estimate in Thousand Kina											Funding Source	Agency Responsible
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total		
2.2.3 Provide advice to old and new farmers	50	50	50	50	50	50	50	50	50	50	500	GoPNG	OPIC, DAL, DNPM
2.3 Facilitate capacity building in the industry													
2.3.1 Identify capacity needs in the industry and organise regular training/workshops	50	50	50	50	50	50	50	50	50	50	500	GoPNG	
2.4. Facilitate and provide quality extension advice													
2.4.1 Identify extension needs and provide tested packages	500	500	500	500	500	500	500	500	500	500	5,000	GoPNG	OPIC, Prov. Private sector
2.5 Provide access to quality planting materials													
2.5.1 Set up seed multiplication nurseries in production areas and provide seeds to farmers	500	500	500	500	500	500	500	500	500	500	5,000	GoPNG	OPIC, Prov. Private sector
2.6 Strengthen markets access													
2.6.1 Improve road infrastructure and cartage services	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	20,000	GoPNG	
2.6.2 Oil Palm Mill - Pacific Agro, Oil Palm, Sohe District	11,000										11,000	GoPNG	
2.6.3 Oil Palm mill -Merameng		10,000									10,000	GoPNG	OPIC, Prov. Private sector
2.6.4 Matawat Oil Palm Project	10,000										10,000	GoPNG	
2.6.5 Arove Oil Palm Project		6,000									6,000	GoPNG	OPIC, Prov. Private sector
2.6.6 Abau Oil Palm Project	1,000		10,000								11,000	GoPNG	
2.7 Improve credit access													
2.7.1 Dialogue with credit companies to provide necessary and affordable credits	100	100	100	100	100	100	100	100	100	100	1,000	GoPNG	
3.1. Identify potential target communities, promote the nucleus estate concept, initiate studies and projects													
3.1.1 Conduct desk top studies and initiate dialogue with communities	25	25	25	25	25	25	25	25	25	25	250	GoPNG	
3.1.2 Identify ownership of land and identify willing partners & farmers	100	100	100	100	100	100	100	100	100	100	1,000	GoPNG	

Project /Strategies/Activities	Budget Estimate in Thousand Kina											Funding Source	Agency Responsible
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total		
3.1.3 Conduct ground proof desktop and associated studies	50	50	50	50	50	50	50	50	50	50	500	GoPNG	OPIC, Prov. Private sector
3.1.4 Conduct detail feasibility studies with relevant stakeholders on sites and map out their lands	650	650	650	650	650	650	650	650	650	650	6,500	GoPNG	
3.1.5 Facilitate community landowner mobilization and registration	50	50	50	50	50	50	50	50	50	50	500	GoPNG	
3.1.6 Initiate the nucleus estate program involving farmer's private sector partners	500	500	500	500	500	500	500	500	500	500	5,000	GoPNG	
4.1 Conduct feasibility studies in relevant aspects of down stream processing & initiate downstream processing where feasible													
4.1.1 Conduct or contract out small scale downstream processing	50	50	50	50	50	50	50	50	50	50	500	GoPNG	
4.1.2. Share results of feasibility studies and invite the private sector to participate in downstream processing	100	100	100	100	100	100	100	100	100	100	1,000	GoPNG	OPIC, Prov. Private sector
4.1.3. Promote industry/ private sector partnership in down/stream processing	50	50	50	50	50	50	50	50	50	50	500	GoPNG	
4.1.4 Conduct feasibility studies in relevant downstream processing in the industry Matawat/Meranmeng Oil Palm, Abau Oil Palm	100	100	100	100	100	100	100	100	100	100	1,000	GoPNG	
4.1.5 Matawat/Meranmeng Oil Palm	600												
5. Purchase new vehicles & equipment	2,000				2,000						6,000	GoPNG	OPIC, Prov. Private sector
6. Establish & Maintain roads	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	14,000		
Grand Total	33,417	23,350	17,350	7,370	9,350	8,350	7,380	7,350	9,350	7,390	130,657		

APPENDIX 27 : OIL PALM INDUSTRY DEVELOPMENT FRAMEWORK

Goal: To improve production and productivity of the oil palm subsector to contribute to increase GDP and the welfare of the community

Strategies	Targets	Actions to be taken	Measurable output	Responsible Agency
Objective 1. To strengthen management of the oil palm industry				
1.1 Appoint a candidate to be on the apex body	A representative on the board by 2007	1.1.1 Identify & nominate a rep on the apex body	Number of reps' on the board	DAL/DNPM/DoF/NGOs/ Industries
1.2 Enhance management and staff capabilities through formal & skills training programs	200 farmers trained/year 20% staff trained per annum	1.1.2 Identify Training needs 1.1.3 Institute internal training as needed	Number of training needs identified Number staff trained	DAL/Provinces & NGOs / Industries
		1.1.4 Sponsor formal training as necessary	Numbers trained & sponsored	
1.3 Enhance M&E reviews between inter & intra industry agencies	At least 10 workshops and 2 field days conducted annually.	1.3.5 Institutionalise internal workshops	Number of workshops institutionalized	OPIC/DAL/Provinces/Private sector
1.4 Provide adequate funding	Plans submit every budget cycle annually	1.3.2 Institutionalise national workshops/field days 1.4.6 Identify sector needs & provide detail annual workplan with budget estimates to Gov't and Donors	Number of workshops & field days conducted Funds secured	DAL/DNPM/OPIC
1.5 Redefine role of OPIC	Review to completed by 2007	1.5.7 Conduct Legislative & Admin review	Legislative & Policy guidelines developed	DAL/DNPM/OPIC/ NEC/Provinces
Objective 2. To mobilize and empower the industry/ stallholders plantations to enhance industry performance				
2.1 Rehabilitate plantations and or promote new plantings	At least 5 plantations rehabilitated annually	2.1.1 Identify plantations that need rehabilitation and dialogue with land owners	Numbers / Ha of plantations rehabilitated	DAL/DLPP/RDB/ Land owners

Strategies	Targets	Actions to be taken	Measurable output	Responsible Agency
	Distribute 128 million seeds for new plantings. Annually, 4 quality control	2.1.2 Provide advise on planting seed for new farms & farmers 2.1.3 Provide quality assurance control	Quantity of seeds supplied & number of farmers advised ISO Standards & policy guidelines established	
2.2 Promote Farmer Cooperatives	At least 2 cooperatives established Annually	2.1.4 Dialogue with communities to establish farmer cooperatives & its benefits	Numbers of cooperatives formed	NGOs/CBOs/OPGA/ Private sector
2.3 Encourage and increase farmers participation	200 farmers advised annually	2.1.5 Provide advice to old & new farmers	Number of farmers advised	OPGA/OPIC/Estates
2.4 Facilitate capacity building in the industry	At least 60% of staff and farmers trained annually	2.1.6 Identify capacity needs in the industry and organise regular training/workshops	Number of training and extension services provided	OPIC/DAL/LLGs
2.5 Facilitate and provide quality extension advice	10 extensions packaged tested annually	2.5 Identify extension needs & provide tested packages	Number of extension packages developed and disseminated	OPIC/OPGA/OPRA/ Estates, Private sector
2.6 Provide access to quality planting materials	89 District nurseries established by 2011	2.6. Set up seed multiplication nurseries in production areas & provide seeds to farmers 2.7.1. Improve road infrastructure and cartage services	Quantities of seeds provided Increased throughput of factory	OPIC/Estates/OPGA / OPRA /Companies
2.7 Strengthen market access	All road infrastructure, and cartage services improve by 2011 Company Credit facilities established by 2007 onwards	2.7.2 Dialogue with credit companies to provide necessary and affordable credits	Numbers of farmers have accessed credit & National Govt allocation of funds	RDB/DAL/OPIC

Strategies	Targets	Actions to be taken	Measurable output	Responsible Agency
Objective 3. To promote integrated nucleus enterprise development in potential communities				
3.1 Identify potential target communities, promote the nucleus estate concept, initiate studies & projects	Desktop study completed by 2007	3.1.1 Conduct desk top studies and initiate dialogue with communities	Number of desktop studies initiated & dialogues established	DAL/OPIC/Private/ sector, Provinces /DL&PP
	ILG boundary surveys and lease documents complete by 2007	3.1.2. Identify ownership of lands & identify willing partners & farmers	Number of titles & farmers identified	
	Studies done by 2007	3.1.3Conduct ground proof desktop and associated studies	Number of surveys conducted & reports produced	
		3.1.4 Conduct detail feasibility studies with relevant stakeholders on sites and map out their lands	Number of studies conducted	
	All land registrations completed by 2008	3.1.5 Facilitate community land owner & land mobilization & registration	Number of hectares mobilized & registered	
	At least 2 estate dev by 2008.	3.1.6 Initiate the nucleus estate program involving farmers/ private sector partners established	Number of nucleus estates established	
Objective 4. To promote and facilitate cooperatives & marketing enterprise				
4.1 Mobile & create awareness in target areas	Awareness conducted annually	4.1.1 Dialogue with communities	Number of dialogues	DAL/ DTI/ OPIC, IPA
4.2. Promote intra-agency sub cooperatives	2007 onward	4.2.2 Form cooperatives with executives	Number of cooperative formed	

Strategies	Targets	Actions to be taken	Measurable output	Responsible Agency
4.3 Promote strong linkages & coordination with national & international trading partners	2007 onward	4.3.3 Create and enforce marketing coordination team & information team	Number of coordination teams established	
4.4. Enforce national coordination of cooperatives	2007 onward	4.4.4 Dialogue and partnership with DTI for training of cooperative managers	Number of training coordinated	
4.5 Provide access to market information	2007 onward	4.5.5 Create and enforce marketing coordination & information team	Number of marketing units established	
Objective 5. To promote downstream processing for value addition in the industry				
5.1. Conduct feasibility studies in relevant aspects of downstream processing and initiate downstream processing where feasible	Two contracts awarded annually to private comp.	5.1.1 Conduct or contract out small scale downstream processing	Number of partnership or agreements developed	Estates/OPIC/DAL, OPGR
		5.1.2 Share results of feasibility studies & invite the private sector participation	Number of feasibility studies conducted	
		5.1.3 Promote industry & private sector partnership in downstream processing	Number of downstream processing conducted	

APPENDIX 28 :OIL PALM INDUSTRY DEVELOPMENT IMPLEMENTATION SCHEDULE

Goal: To improve production and productivity of the oil palm subsector to contribute to increase GDP and the welfare of the communities

Project /Strategies/Activities	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Agency Responsible
1. Appoint a candidate to be on the apex body											DAL, Private sector, DNPm, OPIC, NGO
1.1. Identify & nominate a rep to the apex body											DAL, DNPm, DoF, Treasury
2. Enhance management and staff capabilities through formal & skills training programs											OPIC
2.1. Identify Training needs											OPIC
2.2. Institute internal training as needed											OPIC
2.3 Sponsor formal training as necessary											OPIC
3. Promote peer reviews & inter & intra industry collaborations											DTI, DAL, OPIC
3.1. Institutionalise internal workshops											
3.2 Institutionalise national workshops/ field days											
4. Provide adequate funding											
4.1 Identify sector needs and provide detail annual workplan with budget estimates to Gov't and Donors											OPIC, Prov. R & D institutions
5. Redefine role of OPIC											
5.1. Conduct legislation and administration review											
5.2 Provide quality assurance and control											
6. Rehabilitate plantations and or promote new plantings											OPIC, DTI, RDB, DAL, DNPm
6.1 Identify plantations that need rehabilitation and dialogue with land owners											
6.2 Provide advice on planting seed for new farms and farmers to participate											
7. Promote Farmer Cooperatives											OPIC, DAL, DTI
7.1 Dialogue with communities to establish farmer cooperatives and its benefits											
7.2 Encourage and increase farmers participation											
7.3 Provide advice to old and new farmers											
8. Facilitate capacity building in the industry											OPIC, DAL, DNPm
8.1 Identify capacity needs in the industry and organise regular training/workshops											
9. Facilitate and provide quality extension advice											OPIC, Prov. Private

Project /Strategies/Activities	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Agency Responsible
9.1 Identify extension needs and provide tested packages											
10. Provide access to quality planting materials											OPIC, Prov. Private sector
10.1 Set up seed multiplication nurseries in production areas and provide seeds to farmers											
11. Strengthen markets access											OPIC, Prov. Private sector
11.1 Improve road infrastructure and cartage services											
11.2 Mill development in Oro											
12. Improve credit access											OPIC, Prov. Private sector
12.1 Dialogue with credit companies to provide necessary and affordable credits											
13. Identify potential target communities, promote the nucleus estate concept, initiate studies and projects											OPIC, Prov. Private sector
13.1 Conduct desk top studies and initiate dialogue with communities											
13.2 Identify ownership of land and identify willing partners & farmers											
13.3 Conduct ground proof desktop and associated studies											
13.4 Conduct detail feasibility studies with relevant stakeholders on sites and map out their lands											
13.5 Facilitate community land owner and mobilization and registration											
13.6 Initiate the nucleus estate program involving farmer's private sector partners											
14.1 Conduct feasibility studies in relevant aspects of down stream processing & initiate downstream processing where feasible											OPIC, Prov. Private sector
14.1 Conduct feasibility study (Abau)											
14.2 Conduct or contract out small scale downstream processing											
14.3. Share results of feasibility studies and invite the private sector to participate in downstream processing											
14.4. Promote industry/ private sector partnership in down/stream processing											
14.5 Conduct feasibility studies in relevant downstream processing in the industry /Merameng											
15. To establish capital formation for new development											OPIC, Prov. Private sector
15.1 To purchase new vehicles, computers and office equipment											
16. To construct new roads and infrastructures											
16.1 Construct new road infrastructure											OPIC, Prov. Private

APPENDIX 30: COFFEE INDUSTRY DEVELOPMENT FRAMEWORK

GOAL: To increase production from 1.1 million bags to 1.5 million bags within the next 5-10 years to contribute to increase GDP and the welfare of the communities

Objectives / Strategies	Actions to be taken	Targets	Measurable Indicators	Responsible Agency / Collaborators
Objective 1. To strengthen management of the industry				
1.1 Contribute to the formation of a coordinating & oversight body to review & monitor the coffee subsector	1.1 Identify, nominate & set up body & provide TOR	1 body by	A body set up and TOR provided	CIC
1.2 Enhance management & staff capacities through formal & informal training programs	1.2.1. Identify training needs through TNA 1.2.2. Conduct skills training.	2 per year	No. of training needs identified	CIC
1.3 Promote peer reviews and inter & intra industry cooperation's & collaborations	1.2.3. Arrange formal training as necessary 1.3.1. Institutionalize internal workshops.	2 per year 3 officers/yr	No. of skills training conducted No. of trainings organized	CIC In country/ Overseas
1.4 Provide adequate funding	1.3.2. Institutionalize national workshops/ field days. 1.4.1. Identify sector needs & provide detail annual work plan with budget estimates submitted to the government and donors	2 per yr yearly	No. of workshops/ field days institutionalized No. of needs identified, annual; no. work plans develop & no. budget prepared & submitted for funding	CIC & prov/ districts CIC
Objective 2. To mobilize and empower the industry, smallholder & plantations to enhance industry performance				
2.1. Rehabilitate abandoned estates & smallholder projects and promote new plantings.	2.1.1. Identify estates & smallholders and encourage them to rehabilitate their projects 2.1.2. Identify potential growth areas for new developments. 2.1.3. Provide extension and planting materials for new or expanding projects.	2 projects /prov. /yr 5 provinces 2/district/yr	no. project rehabilitated no. new developments identified No. of extension visits conducted; No. of planting materials provided.	All coffee growing provinces Oro, Central, ENB, M. Bay, NIP
2.2. Promote Farmer Cooperatives	2.2.1. Mobilize farmers according to area of interest such as growers and/ or marketing 2.3.1. Identify farmer needs and provide advice to collaborate & work in partnership.		No. of Grower and/ or Marketing cooperatives formed. No. of farmer needs identified & % of farmers working in partnership.	All coffee growing provinces /districts All coffee growing provinces /districts

Objectives / Strategies	Actions to be taken	Targets	Measurable Indicators	Responsible Agency / Collaborators
	2.3.2. Establish Central processing mills at strategic locations. 2.3.3. Promote & encourage educated people to participate in coffee production.		No. of incentives provided.	selected provinces /districts
2.4. Facilitate capacity building across the industry	2.4.1. Identify capacity needs of the industry organize & conduct relevant training.	2 project per	No. of capacity needs identified & No. of trainings conducted.	All provinces /districts
2.5. Facilitate & provide quality research & extension services.	2.5.1. Strengthen contract extension method (SSSPP approach) 2.5.2 Strengthen demand-led research 2.5.3 Disseminate quality information in simple appropriate language for easier farmer adoption.	prov per year	All coffee growing provinces adopt method % of information simplified and disseminated.	All provinces/ dist
				All provinces/ dist
2.6. Provide access to quality planting materials.	2.6.1. Identify strategic locations and develop central nurseries. Discuss with Institutions & NGOs to establish nurseries. 2.6.2. Develop seed multiplication plots at research stations. 2.6.3. Strengthen tissue culture/ mass propagation capacity 2.6.4. Sell quality planting materials at affordable price.		No. of nurseries established No. of seed multiplication plots established.	Selected provinces Selected provinces
				Aiyura
2.7. Strengthen market access	2.7.1. Maintain quality coffee supply to niche markets. 2.7.2. Train farmers to produce quality coffee to meet market requirements. 2.7.3. Identify other potential niche markets with better prices for quality PNG coffee. 2.7.4. Aggressively promote PNG coffee in overseas market 2.7.5. Provide market information to farmers. 2.7.6. Identify & certify organic coffee areas	2 per district per year	No. of planting materials sold. % supply to niche markets No. of farmers trained in quality control; No. of niche markets identified. No. of farmer needs identified & % of farmers working in partnership. % farmers receiving info. No. of areas certified	All provinces All growers & exporters All coffee farmers Overseas Japan, S.Korea, China All farmers All potential areas

Objectives / Strategies	Actions to be taken	Targets	Measurable Indicators	Responsible Agency / Collaborators
2.8. Improve Credit Access	2.7.7. Establish Marketing Unit in CIC			CIC
	2.8.1. Assess performance of existing Credit Schemes such as SACs, Coffee Credit Guarantee scheme (CCGS) and Micro-credit and review lending policies for easy access by farmers.		No. of reviews conducted	SACs (RDB, DAL)
2.9. Provide Freight Surety	2.8.2 Reinstate CCGS with new capital		CCGS operational	CIC
	2.8.3 Provide seed capital for Coffee Growers Savings & Loans Society		no. farmers using CGSLS	CIC, Farmers
Objective 3. To promote integrated nucleus enterprise development in potentials & willing communities	2.9.1 Organise farmer groups to mobilize			
	2.9.2 Identify freighters & move coffee to market place			
3.1. Identify potential target areas & promote the nuclear enterprise concept	3.1.1. Initiate dialogue with communities and conduct a desk top study.		No. of dialogues and studies completed; No. of farmers mobilized	All provinces
	3.1.2. Identify and mobilize landowners and willing farmers.		no. farmers mobilized	All coffee growing areas
3.2. Provide appropriate training and skills development to participants.	3.1.3 Conduct full feasibility study with relevant stakeholders and map out project site.	1 per year	no. studies completed	selected provinces /districts
	3.1.4. Identify appropriate investor for JV partnership and development.		no. JV partnership established	Selected projects
3.3. Promote inter-agency/ private sector collaboration and participation	3.1.5. Initiate the nucleus program.		no. nucleus program initiated	All provinces
	3.2.1. Identify relevant training needs.	yearly	No. training needs identified	Project area
3.4. Facilitate access to funding source.	3.2.2. Develop and organise training materials	5 pamphlets	no. training material developed	Project area
	3.2.3 Conduct training	with 5,000	no. training conducted	Project area
	3.3.1. Identify stakeholders & potential collaborating agencies and establish dialogue.	copies	No. stakeholders identified and dialogue established.	CIC /Funding agencies
	3.4.1. Identify possible funding sources such as gov't, donors, private investors and banks.		No. of funding sources identified	CIC/NDAL

Objectives / Strategies	Actions to be taken	Targets	Measurable Indicators	Responsible Agency / Collaborators
	3.4.2. Establish dialogue and develop framework for funding.		No. of dialogues held and framework developed.	CIC/NDAL/Farmers group
3.5. Facilitate access to market.	3.5.1. Identify marketing agents		No. of market agents identified	PNG & Overseas
	3.5.2. Link farmers and farmer groups to deal direct with the marketing agent both in country and overseas.		No. of market linkages initiated.	CIC/NDAL/Farmers group
Objective 4. To promote and facilitate cooperatives & marketing enterprises.		1 per district		
4.1. Mobilize & create awareness in target areas.	4.1.1. Dialogue with target communities.		No. of dialogues conducted	All coffee growing districts
4.2. Promote intra-agency sub- cooperatives	4.2.1. Form cooperatives		No. of cooperatives formed.	All coffee growing districts
4.3. Promote strong linkage and coordination with national and international trading partners.	4.3.1. Review current trading arrangements & improve and strengthen linkages and coordination both national & international in-line with global market changes.	1 per station	No. of reviews conducted.	PNG & Overseas
4.4. Enforce national coordination of cooperatives.	4.4.1. Collaborate with Department of Commerce and Industry in enforcing coordination of cooperatives.		No. of meetings conducted.	All coffee growing districts
4.5. Provide access to market information.	4.5.1. Conduct market research	1 at Ayiura	no. studies completed	Overseas markets
	4.5.2. Identify marketing agents both national & International and establish dialogue.	100,000	No. of marketing agents identified	Overseas markets
	4.5.3. Collaborate with all stakeholders in the marketing business to exchange information.	seedlings/ yr	No. of investment areas identified.	PNG & Overseas
4.6. Provide relevant training to cooperative managers & local exporters.	4.6.1. Identify training needs		No. training needs identified	CIC / Farmers groups
	4.6.2. Collaborate with Dept. of Commerce & industry & IPA to conduct relevant training.		No. trainings conducted.	CIC / DCI / IPA
Objective 5. To promote downstream processing & value addition in the industry	5.1.1 Identify investment areas in downstream processing.		No. of farmers trained in quality	CIC / Exporters / Farmers
5.1. Encourage stakeholders to downstream products.	5.1.2 Conduct feasibility studies	All farmers	No. of studies conducted.	CIC / NDAL
	5.1.3. Develop investment proposals		No. of proposals developed	CIC / Farmers

Objectives / Strategies	Actions to be taken	Targets	Measurable Indicators	Responsible Agency / Collaborators
	5.1.4. Initiate dialogue with funding sources and/or investors to downstream products. 5.1.5 Facilitate promotion by private sector	2 markets/yr	No. of dialogues initiated. no. private involvement	CIC / NDAL / Farmers CIC / Private / Farmers
5.2. Improve quality control capabilities	5.2.1. Strengthen CIC quality control & inspection activities. 5.2.2. Strengthen quality control at export level including Chemical Analysis Laboratory 5.3.1 Purchase pulpers in bulk 5.3.2 Sell pulpers at lower price to farmers	Asian market All farmers districts	Level of quality control Budget submission done No. of pulpers bought by CIC No. of pulpers sold to farmers % of capacity improved	CIC / NDAL CIC CIC / Farmers CIC / PDAL
5.3. Re-introduce pulpers subsidy scheme	6.1.1. Improve capacity at industry, national and provincial levels.	per district		
Objective 6. To monitor & evaluate the industry's policies, strategies & plans	6.1.2. Establish coordination unit. 6.1.3. Conduct nationwide coffee census		No. of units established. Census conducted.	CIC / PDAL CIC / NDAL / PDAL
	6.1.4. Introduce a crop forecasting program 6.1.5 Develop Management Information System		Forecasting program established MIS developed	CIC CIC
Objective 7. To Improve access to credits				
7.1. Government / Donors Provide adequate funding	7.1.1. Identify sector needs and Provide detail annual work plan with budget estimates to government 7.1.2. Identify sector needs and Provide detail annual work plan with budget estimates to donors, multilateral and bi-lateral partners		Sector needs identified & work plan; developed & budget submitted to government Work plan & budgets submitted to funding agencies	CIC / NDAL / PDAL Private
7.2. Provide credit facilities	7.2.1. Dialogue with Credit Companies to provide necessary/ affordable credit 7.2.2. Establish Coffee Growers and Producers Savings & Loan Society to meet the credit and finance requirements of coffee growers	All districts	Dialogue established & credit provided Savings & Loans established	CIC / Credit institutions CIC / farmers

Objectives / Strategies	Actions to be taken	Targets	Measurable Indicators	Responsible Agency / Collaborators
Objective 8. To safeguard the coffee industry from economic pests 8.1. Develop Emergency Response Plan 8.2. Provide effective surveillance and recommendation packages for economic coffee pest control & management	8.1.1. Provide adequate funding for ERP		ERP developed	CIC / NDAL
	8.2.1. Upgrade NAQIA diagnostic laboratory	All districts	Laboratory upgraded.	CIC / NDAL / PDAL / NAQIA
	8.2.2. Create multi-sector team for eradication of coffee pest/ disease		No. training provided	CIC / NDAL / PDAL / NAQIA
	8.2.3. Train extension officers to carry out surveillance, sampling & monitoring.		No. of officers trained	CIC / NDAL / PDAL / NAQIA
	8.2.4. Conduct awareness campaigns, regular surveillance patrols	All districts	No. awareness conducted	CIC / NDAL / PDAL / NAQIA
8.2.5. Send samples overseas for identification of pathogens.		No. of samples sent overseas	CIC / NAQIA	

APPENDIX 31 : COFFEE INDUSTRY DEVELOPMENT IMPLEMENTATION SCHEDULE

GOAL: To increase production from 1.1 million bags to 1.5 million bags within the next 5-10 years to contribute to increase GDP and the welfare of the communities

Strategies/Projects/Activities	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Agencies Responsible
1. Form a coordinating and oversight body to review & monitor body to review & monitor the coffee subsector											CIC, NDAL
1.1 Identify, nominate & set up body to review & monitor up body & provide them TOR											
1.2 Enhance management & staff capacity through formal & skills training programs.											CIC, NDAL
1.2.1. Identify training needs through TNA											
1.2.2. Conduct skills training.											
1.2.3. Arrange formal training as necessary											
1.3. Promote peer reviews and inter & intra industry cooperation's and collaborations											
1.3.1. Institutionalise internal workshops.											CIC
1.3.2. Institutionalise national workshops/ field days.											
1.4. Provide adequate funding											
1.4.1. Identify sector needs & provide detail annual work plan with budget estimates submitted to the government and donors											CIC, NDP, DoF&T
2.1 Rehabilitate abandoned estates & smallholder projects and promote new plantings.											
2.1.1 Identify estates & smallholders and encourage them to rehabilitate their projects											CIC, Prov.
2.1.2 Identify potential growth areas for new developments.											
2.1.3 Provide extension and planting materials for new or expanding projects.											
2.2 Promote Farmer Cooperatives											
2.2.1 Mobilize farmers according to area of interest such as growers and/ or marketing											CIC, DCI, NDAL
2.3 Encourage & increase farmer's participation											

Strategies/Projects/Activities	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Agencies Responsible
2.3.1 Identify farmer needs and provide advice to collaborate & work in partnership.											CIC, Prov. NDAL
2.3.2 Establish Central processing mills at strategic locations.											
2.3.3 Promote & encourage educated people to participate in coffee production.											
2.4 Facilitate capacity building across the industry											
2.4.1 Identify capacity needs of the industry organise & conduct relevant training.											CIC, DAL
2.5 Facilitate & provide quality extension services.											
2.5.1 Strengthen SSSPP extension method & conduct extension											CIC, Prov. NDAL
2.5.2 Strengthen demand-led research											
2.5.3 Disseminate quality information in simple appropriate language for easier farmer adoption.											
2.6 Provide access to quality planting materials.											
2.6.1 Identify strategic locations and develop central nurseries. Discuss with Institutions & NGOs to establish nurseries.											CIC, Prov.
2.6.2 Develop & maintain seed multiplication plots at research stations.											
2.6.3 Strengthen tissue culture/ mass propagation capacity.											
2.6.4 Sell quality planting materials at affordable price.											
2.7 Strengthen market access											
2.7.1 Maintain quality coffee supply to niche markets.											CIC, DoF&T, NDAL
2.7.2 Train farmers to produce quality coffee to meet market requirements.											
2.7.3 Identify other potential niche markets with better prices for quality PNG coffee.											
2.7.4 Aggressively promote PNG coffee in overseas market (Asian Market)											
2.7.5 Provide market information to farmers.											
2.7.6 Identify & certify organic coffee areas											
2.7.7 Establish Marketing Unit in CIC											

Strategies/Projects/Activities	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Agencies Responsible
2.8 Improve success to credit											
2.8.1 Assess performance of existing Credit Schemes such as SACs, Coffee Credit Guarantee Scheme (CCGS) and Micro-credit and review lending policies for easy access by farmers											CIC, NDAL, RDB
2.8.2 Reinstate CCGS with new capital											
2.8.3 Provide seed capital for Coffee Growers Savings & Loans Society											
2.9 Provide Freight Surety											
2.9.1 Organise farmer groups to mobilize coffee											
2.9.2 Identify freighters & move coffee to market place											
3.1 Identify potential target areas & promote the nucleus enterprise concept											
3.1.1 Initiate dialogue with communities and conduct a desk top study.											CIC, Prov. NDAL
3.1.2 Identify and mobilize landowners and willing farmers.											
3.1.3 Conduct full feasibility study with relevant stakeholders and map out project site.											
3.1.4 Identify appropriate investor for JV partnership and development.											
3.1.5 Initiate the nucleus program.											
3.2 Provide appropriate training and skills development to participants.											
3.2.1 Identify relevant training needs.											CIC, Investor
3.2.2 Develop and organise training materials											
3.2.3 Conduct training											
3.3 Promote inter-agency/ private sector collaboration and participation											
3.3.1 Identify stakeholders & potential collaborating agencies and establish dialogue.											CIC, NDAL
3.4.1 Identify possible funding sources such as gov't, donors, private investors and banks.											CIC, NDAL, RDB
3.4.2 Establish dialogue and develop framework for funding.											
3.5 Facilitate access to market.											
3.5.1 Identify marketing agents											

Strategies/Projects/Activities	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Agencies Responsible
3.5.2 Link farmers and farmer groups to deal direct with the marketing agent both in country & overseas											
4.1 Mobilize & create awareness in target areas.											
4.1.1 Dialogue with target communities.											CIC, NDAL
4.2 Promote intra-agency sub-cooperatives											CIC, NDAL, DCI
4.2.1 Form cooperatives											
4.3 Promote strong linkage and coordination with national and international trading partners.											
4.3.1 Review current trading arrangements & improve and strengthen linkages and coordination both national & international in-line with global market changes.											CIC, NDAL, DF&T
4.4 Enforce national coordination of cooperatives.											
4.4.1 Collaborate with Department of Commerce and Industry in enforcing coordination of cooperatives.											CIC, DCI
4.5 Provide access to market information.											
4.5.1 Conduct market research											CIC, NDAL
4.5.2 Identify marketing agents both national & International and establish dialogue.											
4.5.3 Collaborate with all stakeholders in the marketing business to exchange information.											
4.6 Provide relevant training to cooperative managers.											
4.6.1 Identify training needs											CIC, DCI
4.6.2 Collaborate with Dept. of Commerce & industry & IPA to conduct relevant training.											
5.1 Encourage stakeholders to downstream products.											
5.1.1 Identify investment areas in downstream processing											CIC, DCI, Private
5.1.2 Conduct feasibility studies											
5.1.3 Develop investment proposals											
5.1.4 Initiate dialogue with funding sources and/ or investment partners to downstream products.											
5.1.5 Facilitate promotion by private sector											

Strategies/Projects/Activities	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Agencies Responsible
5.2 Improve quality control capabilities											
5.2.1 Strengthen CIC quality control & inspection activities.											CIC, NDAL, Prov., DCI
5.2.2 Strengthen quality control at export level including Chemical Analysis Laboratory											
5.3 Re-introduce pulper subsidy											
5.3.1 Purchase pulpers in bulk											CIC
5.3.2 Sell pulpers at lower price to farmers											
6.1 Improve monitoring and evaluation.											
6.1.1 Improve capacity at industry, national and provincial levels.											CIC, NDAL
6.1.2 Establish coordination unit.											
6.1.3 Conduct coffee census											
6.1.4 Introduce a crop forecasting program											
6.1.5 Develop Management Information System											
7.1 Government / Donors Provide adequate funding											
7.1.1 Identify sector needs and provide detail annual work plan with budget estimates to government											CIC, NDAL
7.1.2 Identify sector needs and provide detail annual work plan with budget estimates to donors,											
8.1 Develop Emergency Response Plan											
8.1.1 Provide adequate funding for ERP											CIC, NAQIA
8.2 Provide effective surveillance and recommendation packages for economic coffee pest control &											
8.2.1 Upgrade NAQIA diagnostic laboratory											
8.2.2. Create multi-sector team for eradication of coffee pest/ disease											
8.2.3 Train extension officers to carry out surveillance, sampling & monitoring.											CIC, NAQIA
8.2.4. Conduct awareness campaigns, regular surveillance patrols											
8.2.5 Send samples overseas for identification of pathogens.											

APPENDIX 32 : COFFEE INDUSTRY DEVELOPMENT BUDGET SCHEDULE

GOAL: To increase production from 1.1 million bags to 1.5 million bags within the next 5-10 years to contribute to increase GDP and the welfare of the communities

Strategies/Projects/Activities	Budget Estimate in Thousand Kina										Funding Source										
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016		Total									
1. Form a coordinating and oversight body to review & monitor body to review & monitor the coffee subsector																					
1.1 Identify, nominate & set up body to review & monitor up body & provide them TOR	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	50	CIC, GoPNG, CIF, Donors
1.2 Enhance management & staff capacity through for capacities through formal & skills training programs.																					
1.2.1. Identify training needs through TNA	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	100	-- same --
1.2.2. Conduct skills training.	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	1,250	-- same --
1.2.3. Arrange formal training as necessary	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	1,250	-- same --
1.3. Promote peer reviews and inter & intra industry cooperation's and collaborations																					
1.3.1. Institutionalise internal workshops.	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	250	-- same --
1.3.2. Institutionalise national workshops/ field days.	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	500	-- same --
1.4. Provide adequate funding																					
1.4.1. Identify sector needs & provide detail annual work plan with budget estimates submitted to the government and donors	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	500	-- same --
2.1 Rehabilitate abandoned estates & smallholder projects and promote new plantings.	2,000																				
2.1.1 Identify estates & smallholders and encourage them to rehabilitate their projects	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	5,000	-- same --
2.1.2 Identify potential growth areas for new developments.	250		250		250		250		250		250		250		250		250		250	1,250	-- same --
2.1.3 Provide extension and planting materials for new or expanding projects.	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	6,000	-- same --
2.2 Promote Farmer Cooperatives																					
2.2.1 Mobilize farmers according to area of interest such as growers and/ or marketing	800	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	3,500	-- same --
2.3 Encourage & increase farmer's participation																					
2.3.1 Identify farmer needs and provide advice to collaborate & work in partnership.	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	5,000	-- same --

Strategies/Projects/Activities	Budget Estimate in Thousand Kina											Funding Source
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total	
2.3.2 Establish Central processing mills at strategic locations.		8,000		8,000		8,000		8,000		8,000	40,000	CIC, GoPNG, CIF, Donors
2.3.3 Promote & encourage educated people to participate in coffee production.	500	500	500	500	500	500	500	500	500	500	5,000	
2.4 Facilitate capacity building across the industry												-- same --
2.4.1 Identify capacity needs of the industry organise & conduct relevant training.	200	200	200	200	200	200	200	200	200	200	2,000	-- same --
2.5 Facilitate & provide quality extension services.												-- same --
2.5.1 Strengthen SSSPP extension method & conduct extension	1,250	550	550	550	550	550	550	550	550	550	6,200	-- same --
2.5.2 Strengthen demand-led research	500	500	500	500	500	500	500	500	500	500	5,000	-- same --
2.5.3 Disseminate quality information in simple appropriate language for easier farmer adoption.	50	50	50	50	50	50	50	50	50	50	500	-- same --
2.6 Provide access to quality planting materials.												-- same --
2.6.1 Identify strategic locations and develop central nurseries. Discuss with Institutions & NGOs to establish nurseries.	100	100	100	100	100	100	100	100	100	100	1,000	-- same --
2.6.2 Develop & maintain seed multiplication plots at research stations.	2,500	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	20,500	-- same --
2.6.3 Strengthen tissue culture/ mass propagation capacity.	500	500	500	500	500	500	500	500	500	500	5,000	-- same --
2.6.4 Sell quality planting materials at affordable price.												-- same --
2.7 Strengthen market access												-- same --
2.7.1 Maintain quality coffee supply to niche markets.	100	100	100	100	100	100	100	100	100	100	1,000	-- same --
2.7.2 Train farmers to produce quality coffee to meet market requirements.	300	300	300	300	300	300	300	300	300	300	3,000	-- same --
2.7.3 Identify other potential niche markets with better prices for quality PNG coffee.	150	150	150	150	150	150	150	150	150	150	1,500	-- same --
2.7.4 Aggressively promote PNG coffee in overseas market (Asian Market)	500	500	500	500	500	500	500	500	500	500	5,000	-- same --
2.7.5 Provide market information to farmers.	50	50	50	50	50	50	50	50	50	50	500	-- same --
2.7.6 Identify & certify organic coffee areas	250	250	250	250	250	250	250	250	250	250	2,500	-- same --
2.7.7 Establish Marketing Unit in CIC		200									200	-- same --
2.8 Improve success to credit												-- same --
2.8.1 Assess performance of existing Credit Schemes such as SACs, Coffee Credit Guarantee Scheme (CCGS) and Micro-credit and review lending policies for easy access by farmers	200										200	-- same --

Strategies/Projects/Activities	Budget Estimate in Thousand Kina												Funding Source	
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total			
2.8.2 Reinstate CCGS with new capital	5,000	5,000											10,000	-- same --
2.8.3 Provide seed capital for Coffee Growers Savings & Loans Society	2,500	2,500											5,000	CIC, GoPNG, CIF, Donors
2.9 Provide Freight Surety														
2.9.1 Organise farmer groups to mobilize coffee	200	100	100	100	100	100	100	100	100	100	100	100	1,100	-- same --
2.9.2 Identify freighters & move coffee to market place	2,000	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	15,500	-- same --
3.1 Identify potential target areas & promote the nucleus enterprise concept														-- same --
3.1.1 Initiate dialogue with communities and conduct a desk top study.	50	50	50	50	50	50	50	50	50	50	50	50	500	-- same --
3.1.2 Identify and mobilize landowners and willing farmers.	75	75	75	75	75	75	75	75	75	75	75	75	750	-- same --
3.1.3 Conduct full feasibility study with relevant stakeholders and map out project site.	150	150	150	150	150	150	150	150	150	150	150	150	1,500	-- same --
3.1.4 Identify appropriate investor for JV partnership and development.	50	50	50	50	50	50	50	50	50	50	50	50	500	-- same --
3.1.5 Initiate the nucleus program.	500	500	500	500	500	500	500	500	500	500	500	500	5,000	-- same --
3.2 Provide appropriate training and skills development to participants.														-- same --
3.2.1 Identify relevant training needs.	50	50	50	50	50	50	50	50	50	50	50	50	500	-- same --
3.2.2 Develop and organise training materials	150	150	150	150	150	150	150	150	150	150	150	150	1,500	-- same --
3.2.3 Conduct training	200	200	200	200	200	200	200	200	200	200	200	200	2,000	-- same --
3.3 Promote inter-agency/ private sector collaboration and participation														-- same --
3.3.1 Identify stakeholders & potential collaborating agencies and establish dialogue.	10	10	10	10	10	10	10	10	10	10	10	10	100	-- same --
3.4 Facilitate access to funding source.														-- same --
3.4.1 Identify possible funding sources such as gov't, donors, private investors and banks.	10	10	10	10	10	10	10	10	10	10	10	10	100	-- same --
3.4.2 Establish dialogue and develop framework for funding.	50	50	50	50	50	50	50	50	50	50	50	50	500	-- same --
3.5 Facilitate access to market.														-- same --
3.5.1 Identify marketing agents	10	10	10	10	10	10	10	10	10	10	10	10	100	-- same --
3.5.2 Link farmers and farmer groups to deal direct with the marketing agent both in country & overseas	40	40	40	40	40	40	40	40	40	40	40	40	400	-- same --
4.1 Mobilize & create awareness in target areas.														-- same --

Strategies/Projects/Activities	Budget Estimate in Thousand Kina												Funding Source
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total		
	4.1.1 Dialogue with target communities.	20	20	20	20	20	20	20	20	20	20	200	
4.2 Promote intra-agency sub-cooperatives													
4.2.1 Form cooperatives	50	50	50	50	50	50	50	50	50	50	500	-- same --	
4.3 Promote strong linkage and coordination with national and international trading partners.													
4.3.1 Review current trading arrangements & improve and strengthen linkages and coordination both national & international in-line with global market changes.	200	200	200	200	200	200	200	200	200	200	2,000	CIC, GoPNG, CIF, Donors	
4.4 Enforce national coordination of cooperatives.													
4.4.1 Collaborate with Department of Commerce and Industry in enforcing coordination of cooperatives.	20	20	20	20	20	20	20	20	20	20	200	-- same --	
4.5 Provide access to market information.													
4.5.1 Conduct market research	100	100	100	100	100	100	100	100	100	100	1,000	-- same --	
4.5.2 Identify marketing agents both national & International and establish dialogue.	20	20	20	20	20	20	20	20	20	20	200	-- same --	
4.5.3 Collaborate with all stakeholders in the marketing business to exchange information.	15	15	15	15	15	15	15	15	15	15	150	-- same --	
4.6 Provide relevant training to cooperative managers.													
4.6.1 Identify training needs	20	20	20	20	20	20	20	20	20	20	200	-- same --	
4.6.2 Collaborate with Dept. of Commerce & industry & IPA to conduct relevant training.	50	50	50	50	50	50	50	50	50	50	500	-- same --	
5.1 Encourage stakeholders to downstream products.													
5.1.1 Identify investment areas in downstream processing	50	50	50	50	50	50	50	50	50	50	500	-- same --	
5.1.2 Conduct feasibility studies	100	100	100	100	100	100	100	100	100	100	1,000	-- same --	
5.1.3 Develop investment proposals	75	75	75	75	75	75	75	75	75	75	750	-- same --	
5.1.4 Initiate dialogue with funding sources and/ or investment partners to downstream products.	25	25	25	25	25	25	25	25	25	25	250	-- same --	
5.1.5 Facilitate promotion by private sector	50	50	50	50	50	50	50	50	50	50	500	-- same --	
5.2 Improve quality control capabilities													
5.2.1 Strengthen CIC quality control & inspection activities.	75	75	75	75	75	75	75	75	75	75	750	-- same --	
5.2.2 Strengthen quality control at export level including Chemical Analysis Laboratory	100	100	100	100	100	100	100	100	100	100	1,000	-- same --	
5.3 Re-introduce pulpers subsidy													
5.3.1 Purchase pulpers in bulk	600	300	300	300	300	300	300	300	300	300	3,300	-- same --	
5.3.2 Sell pulpers at lower price to farmers												-- same --	

Strategies/Projects/Activities	Budget Estimate in Thousand Kina											Funding Source					
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total						
6.1 Improve monitoring and evaluation.																	
6.1.1 Improve capacity at industry, national and provincial levels.	100	100	100	100	100	100	100	100	100	100	100	100	100	100	1,000		-- same --
6.1.2 Establish coordination unit.	50	50	50	50	50	50	50	50	50	50	50	50	50	50	500		-- same --
6.1.3 Conduct coffee census	600					500									500		-- same --
6.1.4 Introduce a crop forecasting program	100					200									200		-- same --
6.1.5 Develop Management Information System	100	50	50	50	50	50	50	50	50	50	50	50	50	50	550		-- same --
7.1 Government / Donors Provide adequate funding																	
7.1.1 Identify sector needs and provide detail annual work plan with budget estimates to government	10	10	10	10	10	10	10	10	10	10	10	10	10	10	100		CIC, GoPNG, CIF, Donors
7.1.2 Identify sector needs and provide detail annual work plan with budget estimates to donors, multilateral and bi-lateral partners	20	20	20	20	20	20	20	20	20	20	20	20	20	20	200		
8.1 Develop Emergency Response Plan																	
8.1.1 Provide adequate funding for ERP	500					500									1,000		-- same --
8.2 Provide effective surveillance and recommendation packages for economic coffee pest control & management																	-- same --
8.2.1 Upgrade NAQIA diagnostic laboratory	500	100	100	100	100	100	100	100	100	100	100	100	100	100	1,400		-- same --
8.2.2. Create multi-sector team for eradication of coffee pest/ disease monitoring.																	-- same --
8.2.3 Train extension officers to carry out surveillance, sampling & monitoring.		10				10									50		-- same --
8.2.4. Conduct awareness campaigns, regular surveillance patrols		150	150	150	150	150	150	150	150	150	150	150	150	150	1,350		-- same --
8.2.5 Send samples overseas for identification of pathogens.	150	150	150	150	150	150	150	150	150	150	150	150	150	150	1,500		-- same --
Total	26,935	28,595	13,135	20,895	13,135	22,095	13,135	20,895	13,135	21,595	13,135	20,895	13,135	21,595	193,550		

APPENDIX 33: COCOA INDUSTRY DEVELOPMENT IMPLEMENTATION FRAMEWORK

GOAL : To increase cocoa production from 40,000 tons to 100,000 tons in 5 to 10 years

Objective / Strategies	Actions to be taken	Measurable outputs	Locations	Responsible Agency /Collaborators
Objective 1. To strengthen coordination and management in the industry				
1.1 Strengthen Management Information System in the industry	1.1.1 Establish industry management information system	MIS, Accounting System, Database, Website created	Cocoa Board offices	
1.2 Review Legislation framework and institutional set-up	1.2.1 Review legislation and institutional set-up	Report produced	Cocoa Board and CCI offices	DAL/DNP&MECocoa Board, CCI, DPI's
	1.2.2 Carry out consultative workshops	Report produced	Kokopo, Buka, Lae, Madang, Wewak	
1.3 National Commodity Management Information System	1.2.1 Consultation process with Government agencies and Industry Stakeholders	New cocoa legislation	Kokopo, Buka, Lae, Madang, Wewak	Cocoa Board/DAL
	1.3.1 To undertake survey of all cocoa growing areas	Remote sensing surveys	All cocoa growing provinces	Cocoa Board/DAL/Commodity Board/Private Sector
Objective 2. To improve and strengthen human resource capacity in the Industry				
2.1. Enhance management capacities of technical staff, farmers, processors, exporters in the industry	2.1.1. Identify Training Needs for the industry	Report on staff/farmer training needs	Cocoa growing districts and LLGs	Cocoa Board, CCI, DPI's
	2.1.2. Develop training modules	Modules developed	Cocoa growing districts and LLGs	Cocoa Board, IPA, Private Service providers
Objective 3. To mobilise and empower the growers, and plantations to enhance production	2.1.3 Carry out training program for farmers	Bi-annual published workshop reports /recommendations	Various	
	2.1.4 Carry out training for technical staff	Training reports	Cocoa growing districts and LLGs	CCI, DPI & Cocoa Board
	2.1.5 Carry out training program for national exporters	Training reports	Kokopo, Buka, Lae, Madang, Wewak	Cocoa Board, IPA, Private Service providers
3.1. Initiate large scale smallholder cocoa cultivation.	3.1.1 Set-up seed and budwood gardens in the provinces.	10 seed and budwood gardens established	Cocoa growing districts and LLGs	Cocoa Board, CCI, DPI's

Objective / Strategies	Actions to be taken	Measurable outputs	Locations	Responsible Agency /Collaborators
3.2. Improve productivity of plantation sector.	3.2.1 Identify and undertake feasibility studies on selected plantations.	3000 Hectares, 2 plantations in Bougainville, 1 plantation in ENB, 1 plantation in Madang, 1 plantation in Morobe	Bougainville, ENB, Madang, Morobe	Cocoa Board, DPI, Farmers
	3.2.2 Acquisition and development of selected plantations	3000 Hectares, 2 plantations in Bougainville, 1 plantation in ENB, 1 plantation in Madang, 1 plantation in Morobe	Bougainville, ENB, Madang, Morobe	Cocoa Board, DPI, Farmers
	3.2.3 Assistance with market access	3000 Hectares, 2 plantations in Bougainville, 1 plantation in ENB, 1 plantation in Madang, 1 plantation in Morobe	Bougainville, ENB, Madang, Morobe	Cocoa Board, DPI, Farmers
3.3 Rehabilitate settlement Schemes	3.3.1 Distribution of cocoa seedlings, Farmer training program		Yawasoro, Sowam in East Sepik	Cocoa Board, DPI, Farmers
3.4 Mobilize farmers under cooperative marketing system	3.4.1 Carry out awareness and registration of cooperatives with Registrar of Cooperatives	28 cooperatives to be formed	Cocoa growing districts and LLGs	Cocoa Board, DTI, CCI, DPI,LLG
	3.4.2 Training of cooperative officers including directors and staff	28 cooperatives to be formed	Cocoa growing districts and LLGs	Cocoa Board, DTI, CCI, DPI,LLG
	3.4.3 Establishment funds for new cooperatives	28 cooperatives to be formed	Cocoa growing districts and LLGs	Cocoa Board, DTI, CCI, DPI,LLG
3.5 Increase productivity by improving access to credit	3.5.1 Seed capital for cocoa lending	Funds provided		
	3.5.2 Support to PNG Cocoa Growers and Producers Savings and Loans Society	Funds provided	Oro, Morobe, West Sepik, ESP, Madang, Manus, NIP, Milne Bay, Central	Cocoa Board, CCI, DPI's
3.6 To promote integrated nucleus enterprise development in potential and willing communities	3.6.1 Identify potential target communities, promote the nucleus estate concept, initiate studies and projects	Maps locating identified sites	16 coastal provinces (including Simbu and WHP)	Cocoa Board, CCI, DPI's
	3.6.2 Identify and acquire land for estate development	Land / tribal titles and names	ENB, NIP, Bougainville, Madang, Central and Gulf	Cocoa Board, DPI, Private Sector, DAL
	3.6.3. Provide appropriate training and skills to participants, partners/farmers	Number of training provided	Various	Cocoa Board, DPI, Private Sector, DAL

Objective / Strategies	Actions to be taken	Measurable outputs	Locations	Responsible Agency /Collaborators
	3.6.4 Facilitate market access for nucleus enterprise			Cocoa Board, DPI, Private Sector, DAL
Objective 4. To promote and maintain cocoa quality and appropriate post-harvest practices				
4.1 To review cocoa quality standards and regulation.	4.1.1 Develop a total quality management system for the industry	Total quality management system established		CB, NAQIA, NISJT
	4.1.2 Seek ISO 9000 compliance for the industry.	ISO compliance certificate	Kokopo, Buka, Lae, Madang, Wewak	CB, Prov Govt
4.2 Maintain a robust and effective system of quality inspection and monitoring.	4.2.1 carry out regular inspection and monitoring of fermenteries and buying depots	No of fermenteris and buying points inspected	Cocoa growing districts and LLGs	Cocoa Board, CCI, DPIs
4.3 To promote appropriate post-harvest practices	4.3.1 Develop training modules for farmers on quality production and post harvest management	Njumber of fermentaries and owners trained	Cocoa growing districts and LLGs	CB, CCI, Prov Govt
4.4 Ensure high standards of fermenteries are maintained	4.3.2 Carry out training for farmers	No farmers trained and training workshops held	Cocoa growing districts and LLGs	CB, CCI, Prov Govt
4.5 Provide quality assurance	4.4.1 Funding for rehabilitation of fermenteries	Funds provided	Cocoa growing districts and LLGs	CB, CCI, Prov Govt
	4.5.1 Identify, survey and acquire CID locations	Four sites for inspection depots identified	Rabaul/Buka/Wewak/Madang	CB, DAL, Prov Govt/Donor
	4.5.2 Contruction of Central Inspection Depots	Four inspection depots established		
4.6 Seek Organic certification	4.6.1 Survey areas and identify farmers to be certified	Certified Areas and groups	All provinces	CB, DAL, Prov Govt/Donor
	4.6.2 Certification of areas and farmers	No of areas and farmers certified		
Objective 5. To promote downstream processing, for value addition in the industry				
5.1. Determine the potential for economic and financial viability of down stream processing.	5.1.1 .Conduct feasibility studies and identify foreign investor.	Reports shared		Cocoa Board, IPA
	5.1.2 Acquisition of land for downstream processing	Land acquired	To be determined	Cocoa Board, IPA, ICDC
	5.1.3 Establish cocoa downstream processing Research Centre	Downstream Processing Research Centre established	Tavilo/Madang	Cocoa Board/ CCI/ NGOs/ Investors

Objective / Strategies	Actions to be taken	Measurable outputs	Locations	Responsible Agency /Collaborators
	5.1.5 Promote Industry /Private sector partnership in down stream processing where feasible	Partnership agreements / reports / products	14 provinces	Cocoa Board/CCI/NGOs/Investors
Objective 6. To increase demand for PNG cocoa through specific market studies and promotion.				
6.1 Determine the potential markets for PNG cocoa products.	6.1.1 Undertake specific country market locations studies	Reports completed	Selected Countries	Cocoa Board / Donors/ Gov't
	6.1.2 Niche market studies on market for organic and fermented cocoa		Selected Countries	Cocoa Board / Donors/ Gov't
6.2 Market promotion	6.2.3 Develop market promotion strategy and attend overseas promotions.	Brouchures and phamplets and trade fares	Russia/China/USA	Cocoa Board/IPA
Objective 7. To promote research & development based on industry needs				
7.1 To safeguard the cocoa industry from economic pests and disease	7.1.1 Research trials on cocoa pathology, entomology and breeding	Reports	Kerevat and Madang	Cocoa Board, CIC, NAQIA, DPI
	7.1.2 Cocoa Pod Borer Awareness, Mitigation and Eradication	Reports	ENB, ESP & WSP	Cocoa Board, CIC, NAQIA, DPI
7.2 Improve agronomic and husbandry management practices	7.2.1 Research trials on Cocoa Breeding and agronomy	Reports	14 coastal province, districts and LLGs	CCI
7.3 Improve export quality attributes	7.2.2 Research trials on breeding and cocoa quality	Reports	Kerevat and Madang	CCI
Objective 8. To promote competition in the industry and improve market acces.				
8.1 To maintain competitiveness by providing market intelligence.	8.1.1 Undertake market intelligence & price infromation & dissemination	Reports	Kerevat, Kokopo and Madang	Cocoa Board
8.2 Socio-economic and cost of production studies	8.2.1 Undertaked socio-economic and cost of production studies	Studies completed	Various	Cocoa Board, Provincial DPLs
8.3 Improve market access by subsidizing transport costs	8.3.1 Feeder Road improvement	Roads constructed, Reports	14 coastal provinces	Cocoa Board, Provincial DPLs
	8.3.2 Sea and river transport subsidy	Purchase of Boats for cocoa coastal communities	5 province	
8.4 Investigate Potential for Carbon Trade				

APPENDIX 34: COCOA INDUSTRY DEVELOPMENT IMPLEMENTATION SCHEDULE

Strategies/Activities	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Agencies Responsible
1.To strengthen coordination and management in the industry											
1.1 Strengthen management information system in the industry											
1.1.1 Establish industry management information system, accounting system, farmer data base, industry website											Cocoa Board/Private Sector/NGO
1.2 Review legislation framework and institutional set-up											
1.2.1 Review legislation and institutional set-up											Cocoa Board/DAL
1.2.2 Carry out consultative workshops											Cocoa Board/DAL
1.2.3 Draft new legislation											
1.3 National Commodity Management Information System											Cocoa Board/ DAL/ Private Sect NGOs
2. Improve and strengthen human resource capacity in the industry											
2.1 Enhance management, staff and farmer's capacities of staff, farmers to increase productivity											Cocoa Board, CCI, DPI's Cocoa Board, CCI, DPI's, NGOs Private sector
2.1.1 Identify training needs for the industry											
2.1.2 Develop modules and formal training for technical & extension staff											
2.1.3 Carry out training program for farmers											
2.1.4 Carry training program for technical staff											
2.1.5 Carry training program for national exporters											
3.1 Initiate large-scale smallholder cocoa cultivation											
3.1.1 Set up seed and budwood gardens in the provinces.											Cocoa Board, CCI, DPI, NGOs, Private sector
3.1.2 Subsidize planting material											Cocoa Board
3.2 Improve productivity of plantation sector											
3.2.1 Identify and undertake feasibility studies on selected plantations											Cocoa Board, CCI, DPI
3.2.2 Acquisition and development of selected plantations											Cocoa Board, CCI, DPI, Private sector, landowners
3.2.3 Assistance with market access											Cocoa Board, CCI, DPI, IPA, SBDC
3.3 Mobilize farmers under cooperative marketing system											Cocoa Board, IPA
3.3.1 Carry out awareness and registration of cooperatives with Registrar of Cooperatives.											Cocoa Board, IPA, DPI, CCI, SBDC
3.3.2 Training of cooperative officers including directors and staff											Cocoa Board, IPA, DPI, CCI, SBDC
3.3.3 Establishment funds for new cooperatives											Cocoa Board, IPA, DPI, CCI,
3.4 Increase productivity by Improving access to credit facilities											

Strategies/Activities	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Agencies Responsible
3.4.1 Seed capital for cocoa lending											Cocoa Board
3.4.2 Support to Cocoa Growers & Producers Savings and Loans Society											
3.5 Promote integrated nucleus enterprise development estates model											
3.5.1 Identify potential target communities, initiate studies and formulate project proposals											Cocoa Board, CCI, NGOs
3.5.2 Identify and acquire land for estate development											Cocoa Board, CCI, NGOs
3.5.3 Provide appropriate training and skills development to nucleus estate participants											Cocoa Board, CCI, NGOs, Private sector
3.5.4 Facilitate market access											Cocoa Board, CCI, IPA
4. To promote and maintain cocoa quality and appropriate post harvest practices for the industry.											
4.1 Review cocoa quality standards and control mechanisms											Cocoa Board, CCI, DPI's
4.1.1 Develop a total quality management system for the industry											Cocoa Board, CCI, DPI's
4.1.2 Seek ISO 9000 compliance for quality system											Cocoa Board, CCI, DPI's
4.2 Maintain a robust and effective system of quality regulation and monitoring											Cocoa Board, CCI, DPI's
4.2.1 Carry out regular inspections of fermenteries and buying depots											
4.3 To promote appropriate post harvest practices and provide training for farmers.											Cocoa Board, CCI, DPI
4.3.1 Develop training modules for farmers on quality production and post-harvest management.											Cocoa Board, DPI, Farmers
4.3.2 Carry out training for farmers											Cocoa Board, DPI, Farmers, NG
4.4 Ensure high standards in fermenteries are maintained .											Private sector
4.4.1 Funding for rehabilitation of fermenteries											
4.5 Provide quality assurance											
4.5.1 Identify, survey and acquire locations											Cocoa Board, CCI, NGOs, DPI
4.5.2 Construction of Central inspection depots											Cocoa Board, CCI, NGOs, DPI
4.6 Seek organic certification for certain areas and farmers											Cocoa Board, CCI, DPI
4.6.1 Survey of areas and farmers to be certified											Cocoa Board, CCI, DPI
4.6.2 Certification of areas and farmers											Cocoa Board, CCI, DPI's
5. Promote downstream processing to increase value and generate employment											
5.1 Determine the potential for economic and financial viability of downstream processing											
5.1.1 Conduct feasibility studies and identify foreign investor											Cocoa Board, CCI
5.1.2 Acquisition of land for downstream processing											Cocoa Board, CCI, DPI's, Private sector

Strategies/Activities	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Agencies Responsible
5.2 Establish Downstream Processing Research Centre											Cocoa Board, CCI, DPI
5.3 Promote small-scale downstream processing											Cocoa Board, CCI, DPI's
6. Increase the demand for PNG cocoa through specific market studies and promotion											
6.1 Determine the potential for PNG cocoa products											Cocoa Board, CCI
6.1.1 Undertake specific country market studies											Cocoa Board, CCI, IPA
6.1.2 Specific overseas market promotion targeting China, Taiwan, Indian markets											
7. Strengthen and promote research and development based on industry needs											
7.1 Safeguard industry from pest and diseases											
7.1.1 Research trials on cocoa pathology, entomology and breeding											Cocoa Board, CCI, DPI's
7.1.2 Cocoa Pod Borer Awareness, Surveillance, Mitigation and Eradication											
7.2 Improve agronomic and husbandry management practices											
7.2.1 Research trials in cocoa breeding and agronomy											
7.3 Improve export quality attributes (including fine flavour)											
8. To maintain competitiveness in the domestic market & improve market access											
8.1 Maintain competitiveness by providing market intelligence											Cocoa Board, CCI, DPI's
8.1.1 Market intelligence											Cocoa Board, CCI, DPI's
8.1.2 Price collection and dissemination											Cocoa Board, CCI, DPI's
8.2 Socio-economic & cost of production studies											Cocoa Board, CCI, DPI's
8.3 Improve market access by subsidizing transport costs											Cocoa Board, CCI, DPI's
8.3.1 Feeder road improvement											Cocoa Board, CCI, DPI's
8.3.2 Sea & river transport subsidy											Cocoa Board, CCI, DPI's
8.4 Investigate potential for carbon trade											Cocoa Board, CCI, DPI's

APPENDIX 35: COCOA INDUSTRY DEVELOPMENT BUDGET

Strategies/Activities	Budget Estimate in Thousand Kina										Funding Source		
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016		Total	
1. To strengthen coordination and management in the industry													
1.1. Strengthen management information system in the industry													
1.1.1 Establish industry management information system, accounting system, farmer data base, industry website, remote sensing	150	100	50	50	50	50	50	50	50	50	650	GoPNG	
1.2 Review legislation framework and institutional set-up													
1.2.1 Review legislation and institutional set-up	50										50	GoPNG	
1.2.2 Carry out consultative workshops	150		50								200	GoPNG	
1.2.3 Draft new legislation		50									50	GoPNG	
1.3 National Commodity Management Information System	300	300	300	300	300	300	300	300	300	300	3,000	GoPNG	
2. Improve and strengthen human resource capacity in the industry													
2.1 Enhance management, staff and farmer's capacities of staff, farmers to increase productivity													
2.1.1 Identify training needs for the industry	100										100	GoPNG	
2.1.2 Develop modules and formal training for technical & extension staff	50	50	50	50	50	50	50	50	50	50	500	GoPNG	
2.1.3 Carry out training program for farmers	1,500	500	500	500	500	500	500	500	500	500	6,000	GoPNG	
2.1.4 Carry training program for technical staff	25	25	25	25	25	25	25	25	25	25	250	GoPNG	
2.1.5 Carry training program for national exporters	25	25	25	25	25	25	25	25	25	25	250	GoPNG	
3. Mobilize and empower cocoa growers and plantations to enhance production.													
3.1 Initiate large-scale smallholder cocoa cultivation													
3.1.1 Set up seed and budwood gardens in the provinces.	125	125	125	125	125	125	125	125	125	125	1,250	GoPNG	
3.1.2 Subsidize planting material	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	15,000	GoPNG	
3.2 Improve productivity of plantation sector													
3.2.1 Identify and undertake feasibility studies on selected plantations	250	250	150								650	GoPNG	
3.2.2 Acquisition and development of selected plantations	1250	1250	1250	1250	1250						6,250	GoPNG	
3.2.3 Provide assistance to nucleus enterprises with market access	250	250	250	250	250						1,250	GoPNG	
3.3 Mobilize farmers under cooperative marketing system													
3.3.1 Carry out awareness and registration of cooperatives with Registrar of Cooperatives.	550	50	50	50	50						750	GoPNG	

Strategies/Activities	Budget Estimate in Thousand Kina											Funding Source	
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total		
3.3.2 Training of cooperative officers including directors and staff	100	100	100	100	100							500	GoPNG
3.3.3 Establishment funds for new cooperatives	250	250	250	250	250							1,250	GoPNG
3.4 Increase productivity by Improving access to credit facilities													
3.4.1 Seed capital for cocoa lending	200	200	200	200	200							1,000	GoPNG
3.4.2 Support to Cocoa Growers & Producers Savings and Loans Society	50	50	50	50	50							250	GoPNG
3.5 Promote integrated nucleus enterprise development estates model													
3.5.1 Identify potential target communities, initiate studies and formulate project proposals	50	50	50	50	50							250	GoPNG
3.5.2. Identify and acquire land for estate development	1250	1,250	1,250	1,250	1,250							6,250	GoPNG
3.5.3 Provide appropriate training and skills development to nucleus estate participants	50	50	50	50	50							250	GoPNG
3.5.4 Facilitate market access	150	150	150	150	150							750	GoPNG
4. To promote and maintain cocoa quality and appropriate post harvest practices for the industry.													
4.1 Review cocoa quality standards and control mechanisms													
4.1.1 Develop a total quality management system for the industry	150	150										300	GoPNG
4.1.2 Seek ISO 9000 compliance for quality system	250	20	20	20	20							330	GoPNG
4.2 Maintain a robust and effective system of quality regulation and monitoring													
4.2.1 Carry out regular inspections of fermenteries and buying depots	100	100	100	100	100	100	100	100	100	100		1,000	
4.3 To promote appropriate post harvest practices and provide training for farmers.													GoPNG
4.3.1 Develop training modules for farmers on quality production and post-harvest management.	50	50	50	50	50							250	GoPNG
4.3.2 Carry out training for farmers	50	50	50	50	50	50	50	50	50	50		500	GoPNG
4.4 Ensure high standards in fermenteries are maintained .													
4.4.1 Funding for rehabilitation of fermenteries	250	250	250	250	250	250	250	250	250	250		2,500	GoPNG
4.5 Provide quality assurance													
4.5.1 Identify, survey and acquire locations	750	250	250									1,250	GoPNG
4.5.2 Construction of Central inspection depots	1000	1000	1000									3,000	
4.6 Seek organic certification for certain areas and farmers												0	GoPNG

Strategies/Activities	Budget Estimate in Thousand Kina											Funding Source		
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total			
4.6.1 Survey of areas and farmers to be certified	100	100	100	100	100							500	GoPNG	
4.6.2 Certification of areas and farmers	50	50	50	50	50							250	GoPNG	
5. Promote downstream processing to increase value and generate employment														
5.1 Determine the potential for economic and financial viability of downstream processing														
5.1.1 Conduct feasibility studies and identify foreign investor	50	50	50	50	50	50						300	GoPNG	
5.1.2 Acquisition of land for downstream processing	250											250	GoPNG	
5.2 Establish Downstream Processing Research Centre	5000	500	50	50	50							5,650	GoPNG	
5.3 Promote small-scale downstream processing	100	100	100	100	100	100	50					750	GoPNG	
6. Increase the demand for PNG cocoa through specific market studies and promotion														
6.1 Determine the potential for PNG cocoa products													0	GoPNG
6.1.1 Undertake specific country market studies	100	100										0		
6.1.2 Specific overseas market promotion targeting China, Taiwan, Indian markets	150	150	150	150	150							750	GoPNG	
7. To maintain competitiveness in the domestic market & improve market access														
7.1 Maintain competitiveness by providing market intelligence														
7.1.1 Market intelligence														
7.1.2 Price collection and dissemination	40	30	30	30	30	30	30	30				250	GoPNG	
7.2 Socio-economic & cost of production studies	50	50	50	50	50	50						350	GoPNG	
7.3 Improve market access by subsidizing transport costs														
7.3.1 Feeder road improvement	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	45,000	GoPNG	
7.3.2 Sea & river transport subsidy	750	750	750	750	750	750	750	750	750	750	750	7,500	GoPNG	
7.4 Investigate Potential for Carbon Trade	250	250	250									750	GoPNG	
GRAND TOTAL	22,365	15,075	14,175	12,575	12,525	8,455	8,405	8,305	8,225	8,225	8,225	118,330		

APPENDIX 36: COCONUT INDUSTRY DEVELOPMENT FRAMEWORK

- Goals :** (1) To alleviate poverty and raise the living standards in coconut communities by increasing coconut production to from 100,844 tonnes 150,000 tonnes in copra equivalent in the next 5 - 10 years.
 (2) To ensure environmental sustainability in coconut production and processing systems.

Objectives / Strategies	Targets	Actions	Measurable outputs	Responsible Agency
Objectives 1.To provide national leadership to the coconut industry stakeholders.				
1.1 Lead the development of coconut based farming systems in the districts.	Develop 665 ha per district per year strating in 2007.	1.1.1 Provide seed funding to CCI for transferring coconut based farming systems to districts.	1.1.1.1 Coconut based farming systems established in districts for smallholders.	KIK/Cocoa Coconut Institute (CCI)/Provincial.
1.2 Facilitate the development of coconut replanting programs in the provinces.	Rehabilitate 337 ha per district per year for 5 years.	1.2.1 Seek funding from the stakeholders for replanting and expansion programs.	1.2.1.1 Sufficient funding identified and sourced from the national government, provincial governments and donor agencies. 1.2.1.2 Smallholders undertake coconut replanting and new expansion in the provinces.	KIK/CCI /GoPNG /Donor Agencies.
1.3 Coordinate and facilitate the redevelopment of the abandoned coconut plantations in the provinces.	Distribute 85, 914 seeds per district per year strating in 2007. Rehabilitate 658 ha per province per year.	1.3.2 Provide affordable seeds to the farmers. 1.3.1 Identify investors or stakeholders to redevelop and invest in the abandoned coconut plantations.	2.2.1.3 Increase in areas planted to coconut palms. 1.3.1.1 Stakeholders or investors identified. 1.3.1.2 Abandoned coconut plantations redeveloped.	KIK/Private Sector/NGOs Private Sector/NGOs
1.4 Link coconut development projects to clean development mechanism policy.	Refer to Activities 1.2.1 to 1.3.1	1.3.2 Establish nucleus estate enterprises as a means to rehabilitate run down plantations. 1.4.1 Increase coconut planting areas to act as carbon sinks. 1.4.2 Promote and encourage coconut bio-fuel to reduce air pollution.	1.3.2.1 Nucleus estate enterprises established in run down plantations. 1.4.1.1 Increase in areas planted to coconut palms. 1.4.1.2 Increase use of bio-fuel as a fossil fuel substitute.	KIK/Private Sector/Plantations Plantations/Smallholders/S takeholders. KIK/Private sector enterprises.

Objectives / Strategies	Targets	Actions	Measurable outputs	Responsible Agency
1.5 Coordinate peer reviews and inter – intra institutional co-operations and collaborations.	Two workshops per year.	1.5.1 Institutionalize both internal and national workshops.	1.5.1 Bi-annual workshop reports/recommendations published.	KIK/CCI/UniTech
Objective 2. Provide appropriate extension support to coconut communities				
2.1 Support coconut producing communities through farmer cooperative for marketing network..	1 farmer cooperative per major growing area	2.1.1 Facilitate the formation of the Farmer Co-operatives. 2.1.2 Facilitate the formation of the Farmer Co-operatives.	No. & level of success in farmers cooperative operation 2.1.2.1 Farmers Co-operatives formed in different communities.	KIK/CCI / PDAL / DAL KIK/Provincial Governments/DTI.
2.2 Establishment of market networks in the Districts.	Establish eight market outlets per year.	2.2.1 Facilitate provision of information on market access.	2.2.1 Many approved purchasing centers established.	
2.3 Facilitate capacity building across the industry.	50,000 farmers trained per year.	2.3.1 Identify capacity needs in the industry and organize regular training and workshops.	2.3.1.1 Number and types of training/workshops conducted.	Stakeholders
2.4 Facilitate and provide quality extension services.	Develop acceptable extension packages by 2007.	2.4.1 Determine extension needs and package information accordingly.	2.4.1.1 Number of extension packages develop and disseminated.	KIK/CCI
Objective 3. To promote downstream processing, for value addition in the industry.				
3.1 Conduct feasibility studies in relevant aspects of downstream processing.	Conduct two feasibility studies in 2007 and 2011.	3.1.1 Conduct market study.	3.1.1.1 Market study report available to stakeholders.	KIK/Private sector enterprises.
3.2 Initiate downstream processing where feasible.		3.2.1 Disseminate new technology to the farmers.	3.2.1.1 Technology used in production. 3.2.1.2 High value coconut products produced. 3.2.1.3 Increase in farmers' income.	KIK/CCI/Provincial Governments. Private sector KIK/CCI/Provincial Governments. Smallholders/KIK/CCI
3.3 Promote small scale downstream processing enterprises in the Districts.	41 district training programs per year.	3.3.1 Train farmers on quality production.	3.3.1.1 Value addition and increase in farmer's income.	

Objectives / Strategies	Targets	Actions	Measurable outputs	Responsible Agency
	At least 1 small scale processing enterprise per district per year starting in 2007	3.3.2 Facilitate the development of small scale downstream processing enterprises.	3.3.2.1 Five new small scale downstream processing enterprises established per year.	Smallholders/KIK/CCI
		3.3.3 Encourage the participation of the private sector in the downstream processing.	3.3.3.1 Numbers of private sector participating in the downstream processing.	KIK/Private sector
		3.3.4 Establish quality standards.	3.3.4.1 Quality inspection manual in place.	KIK/CCI

APPENDIX 37: COCONUT INDUSTRY DEVELOPMENT IMPLEMENTATION SCHEDULE

Activities	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Agency Responsible
Objectives 1.To provide national leadership to the coconut industry stakeholders.											
1.1 Develop coconut based farming systems in the provinces.											KIK/CCI/ Provincial Governments
1.2 Facilitate the planning and development of coconut replanting programs in the provinces.											KIK/CCI/ Provincial Governments
1.3 Coordinate and facilitate the redevelopment of the abandoned coconut plantations in the provinces.											KIK/CCI/ Provincial Governments
1.4 Link coconut development projects to clean development mechanism policy.											KIK/CCI/ Provincial Governments
1.5 Coordinate peer reviews and inter – intra institutional co - operations and collaborations.											KIK/CCI/ Provincial Governments/ UniTech
Objective 2. Provide appropriate extension support to coconut communities											
2.1 Promote farmer co - operations.											KIK/CCI/ Provincial Governments
2.2 Encourage and facilitate increase on production and market networking.											KIK/CCI/ Provincial Governments
2.3 Facilitate capacity building across the industry.											KIK/CCI/ Provincial Governments
2.4 Facilitate and provide quality extension services.											KIK/CCI/ Provincial Governments
Objective 3. To promote downstream processing, for value addition in the industry.											
3.1 Conduct feasibility studies in relevant aspects of downstream processing and initiate downstream enterprises in the districts.											KIK/CCI
3.2 Promote smallscale downstream processing enterprises in the districts.											KIK/CCI/ Provincial Governments

APPENDIX 38: COCONUT INDUSTRY DEVELOPMENT BUDGET

Strategies/Activities	Budget Estimate in Thousand Kina											Funding Source	
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total		
1.1 Develop coconut based farming systems in the provinces. Build river wharves at South Fly, Middle Fly	4,000	500	500	500	500	500	500	500	500	500	500	8,500	GoPNG/Provincial Governments
1.2 Facilitate the planning and development of coconut replanting programs in the provinces. Build sea wharves at Kairuku, Rigo, Abau and at five districts in Morobe	4,000	3,000	500	500	500	500	500	500	500	500	500	11,000	GoPNG/Provincial Governments
1.3 Facilitate the redevelopment of the abandoned coconut plantations in the provinces. Build sea wharves in Sandaun(3 dist); ENB(4 dist), WNB(2 dist).	5,000	6,000	800	800	800	800	800	800	800	800	800	17,400	GoPNG/Provincial Governments/ Private Sector
1.4 Link coconut development projects to clean development mechanism policy.	700	600	500	500	500	500	500	500	500	500	500	5,300	GoPNG/Provincial Governments
1.5 Coordinate peer reviews and inter – intra institutional co - operations and collaborations.	600	600	500	500	500	500	500	500	500	500	500	5,200	Stakeholders
2.1 Promote farmer co - operatives.	600	600	600	500	500	500	500	500	500	500	500	5,300	Stakeholders
2.2 Encourage and facilitate increase on production and market networking.	500	500	500	500	500	500	500	500	500	500	500	5,000	GoPNG/Provincial Governments
2.3 Facilitate capacity building across the industry.	200	200	200	200	200	200	200	200	200	200	200	2,000	Provincial /KIK
2.4 Facilitate and provide quality extension services.	700	700	600	600	600	600	600	600	600	600	600	6,200	GoPNG/Provincial Governments
3.1 Conduct feasibility studies in relevant aspects of downstream processing and initiate downstream processing where feasible.	300	300	300	300	300	300	300	300	300	300	300	3,000	GoPNG/Provincial Governments
3.2 Promote small scale downstream processing enterprises in the districts.	1,000	900	900	900	900	900	900	900	900	900	900	9,100	GoPNG/Provincial Governments
TOTAL	17,600	13,900	5,900	5,800	5,800	5,800	5,800	5,800	5,800	5,800	5,800	78,000	

APPENDIX 42: LIVESTOCK DEVELOPMENT FRAMEWORK

Goal: To develop and promote viable and sustainable livestock industries to enhance nutrition, income generation and import replacement.

Objective / Strategy	Targets	Actions to be taken	Measurable outputs	Responsible Agency/Collaborators
Objective 1. To strengthen the management and coordination capacity within the industry.	1.1. Reorganize the current administrative structure in the sector.	1.1.1.1. Conduct an audit to establish the current status of LDC.	New LDC established by 2008.	NDAL/ LDC
		1.1.1.2. Propose changes to the structure and functions of LDC.		
		1.1.1.3. Prepare NEC submission to establish the new LDC.		
1.2. Secure adequate funds	1.2.1. Annual work plans and budget prepared and submitted.	1.2.1.1. Prepare annual work plans and budget.	Annual work plans and budget submission.	
Objective 2. To improve livestock production, processing and marketing.	2.1. Rehabilitate / establish livestock breeding and distribution centres.	2.1.1. Establish 7 breeding centres in selected provinces (in collaboration with the Private Sector)	Current centres are rehabilitated.	NDAL/ LDC/ NARI/ PDAL
		2.1.1.1. Rehabilitate and restock the current breeding centres.	Number of new breeding centres identified.	NDAL/ LDC/ UoV/ Ramu Sugar /Private sector.
		2.1.1.2 Identify new breeding centres as appropriate with collaborating partners.	Number of model farmers participated.	NDAL/ LDC /PDAL/ LLGs
2.2 Introduce new breeds for genetic improvement and diversification of breeds.	2.2.1 Selected livestock breeds imported.	2.2.1.1 Identify appropriate breeds for importation.	Number of breeds identified.	NARI/ LDC/ NAQIA
		2.2.1.2 Import appropriate genetic materials.	Number of breeds identified.	NARI /LDC/ NAQIA
		2.2.1.3 Evaluation for cross breeding as appropriate.	All imported breeds evaluated.	NARI/ LDC/ Private sector.

Objective / Strategy	Targets	Actions to be taken	Measurable outputs	Responsible Agency/Collaborators
		2.2.1.4 Undertake genetic upgrading.	Number of model farmers participated.	NARI/ LDC/ Private sector
2.3 Promote draught/pack animals in selected provinces	2.3.1 Draught animals program implemented by 2009.	2.3.1.1 Conduct a survey to establish the current status of draught animals in PNG. 2.3.1.2. Reopen the draught animal breeding centres in Madang and ENB. 2.3.1.3. Provide training in use of pack animals.	Survey completed in 2007. Number of farmers trained. Number of farmers trained.	NDAL/NARI/ PDAL PDAL /NDAL PDAL /NDAL
2.4. Strengthen Livestock R & D program	2.4.1. Promote dairy goat production 2.4.2. Village poultry improvement for meat and egg production. 2.4.3 Develop and promote local feed industry.	2.4.1.1. Identification and promotion of suitable dairy goats for village management condition. 2.4.2.1. Undertake selection/breeding program to improve village chicken for egg & meat production. 2.4.3.1. Conduct a survey to establish the type, nature and volume of locally available feed ingredients-industrial by products. 2.4.3.2. Promote use of local ingredients for feed. 2.4.3.3. Promote feed that has local ingredients. 2.4.4.1. Undertake trials to demonstrate improved feeding of cattle, sheep and goat.	Suitable breeds identified and promoted. Farmers have access to improved layer/Australorp birds by 2009. Survey completed in 2008..	NARI/NDAL/ NAQIA/ UoT NARI NARI
	2.4.4. Develop feeding strategies to enhance cattle productivity		Feeds containing local ingredients available in the market. Number of Farmers using local feed. Improved technology available to farmers.	NARI/ Feed Suppliers NARI/NDAL /Feed Suppliers NARI/ UoT /cattle producers.

Objective / Strategy	Targets	Actions to be taken	Measurable outputs	Responsible Agency/Collaborators	
2.5 Strengthen training in livestock at all levels	2.5.1. Create greater opportunities for livestock training at the tertiary level	1.5.1.1. Review & reorient the livestock training at the tertiary level.	Review completed by 2008.	UoT/UoV	
		2.5.1.2. Strengthen industrial training in livestock for tertiary students.	Number of students placed on industrial training.	UoT/ UoV/ Industry	
		2.5.1.3. Para veterinary Service	No. of Prov. And district extension officers on Para veterinary.	DPI, NDAL, LDC, NAQIA	
2.6 Strengthen and streamline livestock marketing systems for greater efficiency and food safety.	2.5.2. Specialized training for service providers.	1.5.2.1. Provide short-term specialized training to service providers / extension personnel.	Number of service providers trained.	NDAL/ UoT/ UoV/ NARI LDC	
		2.5.3. Strengthen farmer training.	Number of farmers trained.	NDAL/ PDAL/ Nucleus enterprises.	
	2.6.1. Promote nucleus enterprise production and marketing system.	2.6.1.1. Establish nucleus enterprise system to market smallholder production	Number of nucleus enterprises operated successfully.	NDAL/ PDAL/ Industry/ LDC	
		2.6.2. Rehabilitate the LDC abattoirs at Lae Goroka, Madang, Wewak and Port	New design completed by 2007	NDAL/LDC	
		2.6.3. Livestock farmers have access to credit facilities.	Facilities upgraded by 2008.	NDAL/LDC	
			2.6.3.1. Develop and operate a credit scheme for livestock farmers.	Number of farmers served.	NDAL/ LDC/ RDB/ PDAL
			2.7.3.2. Ensure the credit scheme operated successfully.	Repayment rate of loans.	LDC/RDB/PDAL
			2.7.3.3 Mobilization of farmer cooperatives		LDC/ RDB/ PDAL, DCI,

APPENDIX 43: LIVESTOCK DEVELOPMENT SCHEDULE

Goal: To develop and promote viable and sustainable livestock industries to enhance

Strategies / Projects / Activities	Year										Agency Responsible	
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016		
1. Reorganize the current Administrative Structure in the sector.												
1.1. Conduct an audit on the current status.												NDAL/ LDC
1.2. Propose changes to structure & functions of LDC												
1.3. Prepare NEC submission												
1.4. Represent the industry in the Apex Body.												
1.5. Secure adequate funding												
2. Rehabilitate / establish breeding centres strategically												
2.1. Rehabilitate and stock current centres.												NDAL/ LDC/ NARI/ PDAL
2.2. New breeding centres established.												NDAL/ LDC/ UoV/ Ramu Sugar /Private sector.
2.3. Model farmers breeding units established.												NDAL/ LDC /PDAL/ LLGs
3. Genetic improvement and breed diversification.												
3.1. Identification of breeds for imports.												NARI/ LDC/NAQIA
3.2. Importation of new genetic materials.												NARI/ LDC/NAQIA
3.3. Breeds evaluation and breeding												NARI/ LDC/ Private sector.
3.4. Genetic improvement program undertaken												NARI/ LDC/ Private sector
4. Promotion of draught and pack animals.												
4.1. Conduct a survey to determine the current status of draught and pack animals.												NDAL/ NARI/ PDAL
4.2. Reopen and operate the breeding centres in Madang and ENB.												PDAL/NDAL
4.3. Training of farmers and animals.												PDAL/NDAL
5. Reorganize and strengthen livestock R & D program to meet the new challenges in the industry.												
5.1. Promotion of dairy goats under village management system.												NARI/ NDAL/ NAQIA/ UoT
5.2. Poultry for village egg production.												NARI
												NARI
												NARI/ Feed Suppliers
												NARI/ NDAL /Feed Suppliers
												NARI/ UoT /cattle producers.

Strategies / Projects / Activities	Year										Agency Responsible	
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016		
5.3. Local feed industry development.												UoT/UoV
5.4. Improvement on cattle nutrition.												UoT/ UoV/ Industry
5.5. Monitoring & Evaluation												DPI, NDAL, LDC, NAQIA
6. Improve Human Resource Development.												NDAL/ UoT/ UoV/ NARI LDC
6.1. Training at tertiary level												NDAL/ PDAL/ Nucleus enterprises.
6.2. Training of service providers												NDAL/ PDAL/ Industry/ LDC
6.3. Farmer training												NDAL/LDC
7. Improve and streamline livestock marketing.												NDAL/LDC
7.1. Promotion of nucleus enterprise system.												NDAL/ LDC/ RDB/ PDAL
7.2. Rehabilitation of LDC Abattoirs.												LDC/RDB/PDAL
7.3. Access to credit facilities												LDC/ RDB/ PDAL, DCI,

APPENDIX 44: LIVESTOCK DEVELOPMENT BUDGET SCHEDULE

Strategies/Activities	Budget Estimate in Thousand Kina										Funding Source		
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016		Total	
1. Reorganize the current administrative structure in the sector.													GoPNG
1.1. Conduct an audit on the current status.	50											50	
1.2. Propose changes to structure & functions													
1.3. NEC endorsement													
1.4. Operation of new LDC	150	500	500	500	500	500	500	500	500	500	4,650		
2. Rehabilitate / establish breeding centres strategically													GoPNG/ Private sector / farmers
2.1. Rehabilitate and stock current centres.	5,000	500	500	500	500	500	500	500	300	250	9,050		
2.2. New breeding centres established.		1,000	1,000	1,000	1,000	500	100				4,600		
2.3. Model farmers breeding units established.			100	100	100	100	100	100			600		
3. Genetic improvement and breed diversification.													GoPNG/ donors/ private sector
3.1. Identification of breeds for imports.													
3.2. Importation of new genetic materials.		500	500								1,000		
3.3. Breeds evaluation and breeding			500	200	200						900		
3.4. Genetic improvement program undertaken				200	200	200	200	200	100		1,100		
4. Promotion of draught and pack animals.													GoPNG/ donors/ private sector
4.1. Conduct a survey to determine the current status of draught and pack animals.	100										100		
4.2. Reopen and operate the breeding centres in Madang and ENB.	200	500	500	500	400	400	400	400	400	400	4,100		
4.3. Training of farmers and animals.	0	50	50	100	100	100	100	100	100	100	800		

Strategies/Activities	Budget Estimate in Thousand Kina										Funding Source		
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016		Total	
5. Reorganize and strengthen livestock R & D program to meet the new challenges in the industry.													GoPNG/ donors
5.1. Promotion of dairy goats under village management system.	100	100	100	200	200	100	100	100	100	100	100	1,200	
5.2. Poultry for village egg production.	100	100	100	100	200	200	200	200	200	200	200	1,600	
5.3. Local feed industry development.	50	200	150	100	100	50	50	50	50	50	50	850	
5.4. Improvement on cattle nutrition.	100	100	100	100	100	100	100	100	100	100	100	850	
5.5. Monitoring & Evaluation		20	20	20	20	20	20	20	20	30	30	200	
6. Improve Human Resource Development.													GoPNG /donors
6.1. Training at tertiary level	50	50	50	50	50	50	50	50	50	50	50	500	
6.2. Training of service providers	100	100	100	100	50	50						500	
6.3. Farmer training	100	100	100	50	50	50	50	50	50	50	50	650	
6.4. Staff capacity building	50	50	50	50	50	20	20	20	20	20	20	350	
7. Improve and streamline livestock marketing.													GoPNG /donors
7.1. Promotion of nucleus enterprise system.	1,000	1,000	1,000	1000	1,000							5,000	
7.2. Rehabilitation of LDC Abattoirs.	500	500	500	200	100							1,800	
7.3. Access to credit facilities				500	500	100	100	100	100	100	100	1,400	
Total	7,650	5,370	5,920	5,570	5,420	3,040	2,590	2,490	2,050	1,850		41,950	

APPENDIX 45: AQUACULTURE DEVELOPMENT FRAMEWORK

Goal : To develop and promote viable and sustainable aquaculture industries and to enhance nutrition, income generation and import replacement.

Objectives / Strategies	Targets	Actions to be taken	Measurable Outputs	Responsible Agency / Collaborators
Objective 1. To establish a sustainable aquaculture industry.				
1. Strengthen collaboration between stakeholders.	1.1. Steering committee established in 2007.	1.1.1. NDAL, NFA, ACIAR, PDAL, NGOs invited to join the management committee.	Effectiveness of implementation of consultations	NDAL/NFA, ACIAR, PDAL, NGOs.
2. Review and update research information for data banking	2.1. Report prepared by 2007	2.1.1. Team to review past research established	Accessibility of aquaculture information for all users	NARI/NDAL/ACIAR
		2.1.2. Identification of research needs		
		2.1.3. Studies undertaken to address problems identified		
3. Develop and promote locally available and cheaper feeds.	3.1. Cheaper feeds developed and promoted.	3.1.1. Studies to undertaken to develop appropriate feeds	Options for local available feed source with cost benefits	NARI/NDAL/ACIAR
		3.1.2. Commercial production of feeds.		
		4.1.1. Identification of sites to establish the hatcheries.		
4. Establish hatcheries for distribution of fingerlings.	4.1 Hatcheries established by 2009.	4.1.1. Identification of sites to establish the hatcheries.	Number of fish fingerlings available for distribution	PDAL/NDAL/Private Sector
		4.1.2. Design and establish hatcheries.		
		4.1.3. Sustain operation of these hatcheries.		
5. Adopt various farming system to enhance fish production	5.1 Farming system like cages, pen and intensive pond culture	5.1.1 Identify suitable area and species for culture	Fish farmers adopted the farming system and utilizing the available resources	PDAL/NDAL/Private Sector
		5.1.2 Design and establish these culture systems		
		5.1.3 Maximize the operation of these culture systems for fish production		
6. Provide training to technicians & fish farmers.	6.1. Training materials developed by 2008 6.2. Training conducted regularly	6.1.1. Provide adequate resources.	Level of knowledge gain by trainees and availability of training materials.	NDAL/PDAL/UOG
		6.1.2. Conduct training as appropriate		
		6.1.3. Make field follow up visits.		

Objectives / Strategies	Targets	Actions to be taken	Measurable Outputs	Responsible Agency / Collaborators
7. Provide extension service to fish farmers	7.1. All farmers have access to extension services	7.1.1. Identify service providers. 7.1.2. Training of service providers 7.1.3. Establish nucleus farm units with outgrowers	Level of extension services quantity receive by farmers	PDAL/ Service providers / nucleus farmers
8. Strengthen and promote inland fish farmers association	8.1. Revitalize Inland Fish Farmers Association fully operational by 2008.	8.1.1. Review the current status of the associations 8.1.2. Effectively Institute appropriate changes to its operations. 8.1.3. Strengthen its Management. 8.1.4. Provide appropriate assistance to ensure sustainability.	Number of fish farmers association established and operational	PDAL, NDAL, Inland Fish Farmers Association

APPENDIX 46: AQUACULTURE DEVELOPMENT IMPLEMENTATION SCHEDULE

Goal : To develop and promote viable and sustainable aquaculture industries and to enhance nutrition, income

Strategies/Activities	Year									
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
1. Strengthen collaboration between stakeholders										
1.1 Establish a steering committee to oversee the implementation of the program.										
1.2 Have regular consultation meetings to monitor progress.										
1.3 Publish progress reports.										
2. Review and update research information										
2.1. A team consisting of key personnel to be established to accomplish this task.										
2.2. Identification of research needs.										
2.3. Studies undertaken to address technical problems identified										
3. Develop and promote cheaper feeds										
3.1. Develop feeds using locally available feed ingredients.										
3.2. Arrange to produce for commercial distribution.										
4. Establish 10 hatcheries to produce & distribute fingerlings										
4.1. Identification of potential sites.										
4.2. Design and establish hatcheries.										
4.3. Sustain operations of hatcheries.										
5. Organise and provide training to technicians, service providers and farmers.										
5.1. Develop training materials as appropriate										
5.2. Training conducted on a regular basis										
5.3. Post training field visits for monitoring										
6. Provide extension services to fish farmers on a sustainable basis.										
6.1. Identify service providers										
6.2. Training of service providers.										
6.3. Establish nucleus farmer units with outgrowers										

APPENDIX 47: AQUACULTURE DEVELOPMENT BUDGET SCHEDULE

Goal : To develop and promote viable and sustainable aquaculture industries and to enhance nutrition, income generation and import replacement.

Strategies/Activities	Budget Estimate in Thousand Kina										Funding Source				
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016		Total			
1. Strengthen collaboration between stakeholders															
1.1. Establish a steering committee to oversee the implementation of the program.	10														10
1.2. Have regular consultation meetings to monitor progress.	10	10	10	10	10	10	10	10	10	10	10	10	10	10	90
1.3. Publish progress reports.															
2. Review and update research information															
2.1. A team consisting of key personnel to be established to accomplish this task.	10														10
2.2. Identification of research needs.	20														20
2.3. Studies undertaken to address technical problems identified.	70	200	300	300	100										970
3. Develop and promote cheaper feeds															
3.1. Develop feeds using locally available feed ingredients.	100	50													150
3.2. Arrange to produce for commercial distribution.		50	100	100	100										350
4. Establish 10 hatcheries to produce and distribute fingerlings															
4.1. Identification of potential sites.	20														20
4.2. Design and establish hatcheries.	150	300	200												650
4.3. Sustain operations of hatcheries.	30	100	100	100	100	200	200	200	200	100	100	1,330			1,330
5. Organise and provide training to technicians, service providers and farmers.															
5.1. Develop training materials as appropriate	30														30
5.2. Training conducted on a regular basis	70	100	100	100	100	100	200	200	200	100	100	1,270			1,270
5.3. Post training field visits for monitoring	20	20	20	20	20	20	20	20	20	20	20	200			200
6. Provide extension services to fish farmers on a sustainable basis.															
6.1. Identify service providers	20														20
6.2. Training of service providers	100	50													150
6.3. Establish nucleus farmer units with outgrowers	180	250	300	300	300							1,330			1,330
Total	840	1,120	1,130	930	730	330	430	430	430	230	230	6,600			6,600

APPENDIX 48 : APICULTURE DEVELOPMENT FRAMEWORK

Goal: To develop and promote viable and sustainable apiculture industries to enhance nutrition, income generation and import replacement.

Objective / Strategy	Targets	Actions to be taken	Measurable outputs	Responsible Agency/ Collaborators
Objective 1. To promote a viable and sustainable apiculture industry, especially in the highlands of PNG.	1. Strengthen the Highlands Beekeepers Association (HBA)	1.1 Revitalized HBA fully operational by 2008.		
		1.1.1 Revitalize HBA fully operational by 2008.	Review completed by 2007.	PDAL/NDAL
		1.1.2. Institute appropriate changes to its operations to make it effective.	Changes effective by 2008.	/Beekeepers
		1.1.3. Strengthen its management	New management in place by 2008	
2. Ensure queen bees are readily available.	2.1. Reliable supply of queen bees by 2008.	1.1.4. Provide appropriate assistance to ensure sustainability.	Number of beekeepers benefits through the association.	
		2.1.1. Identify potential queen bee breeders.	Number of beekeepers identified.	PDAL / NDAL / HBA
		2.1.2. Provide specialized training in queen bee production.	Number of breeders trained.	
		2.1.3. Assist queen bee farmers to ensure viability & sustainability.	Number of breeders continues to serve the industry.	
		2.1.4. Provide access to queen bees to farmers through HBA net work.	Number of queen bees distributed annually.	
3 Training in beekeeping and associated activities.	3.1. Stratified training plan developed and executed.	2.1.5. Pest and Diseases Surveillance and monitoring		
		3.1.1 Stratified (Basic, Advanced and Specialized) training plans formulated.	Number of trainees in each group.	NDAL/PDAL, HBA, NAQIA
		3.1.2 Identify trainees for the respective groups.	Number of trainees in each group.	PDAL/HBA/NDAL/Institution
		3.1.3 Conduct training as scheduled based on needs.	Number of farmers trained by 2008	PDAL/NDAL/HBA/Service Providers.

Objective / Strategy	Targets	Actions to be taken	Measurable outputs	Responsible Agency/ Collaborators
4 Strengthen the marketing system to ensure greater access to markets.	4.1. Review the current honey marketing system and identify possible changes for improvements. 4.2. Establish processing centres in the districts. 4.3. Devise an appropriate mechanism to operate an effective marketing plan (domestic and overseas)	4.1.1. Review completed by 2007	Review Report	NDAL/PDAL
		4.1.2. Processing units established and operated.	Number of units in operation.	PDAL/HBA/Private sector
		4.3.1. Liaise with private agents to strengthen the honey marketing. 4.3.2. Establish an organic certification system. 4.3.3. Ensure sustainable supply to tap overseas market.	Number of private agents involved. Organic certification mechanism in place. Volume of honey exported each year.	PDAL/HBA/Private NDAL / PDAL / NAQIA HBA/PDAL
5. Address cross-cutting issues affecting apiculture development in PNG.	5.1. Conduct a survey to identify the different constraints affecting apiculture industry.	5.1.1. Develop a mechanism to address the issues.	Mechanism in place by 2008.	NDAL/PDAL
		5.1.2. Involve private sector, HBA, service providers to assist different activities.	Number of farmers receiving assistance.	PDAL/HBA/Service providers.
		5.1.3. Establish a credit scheme to enable suppliers to have access, possibly through HBA.	Number of suppliers accessing the loan facilities	NDAL/PDAL/RDB/HBA
6. Improve extension service to beekeepers.	3.6.1. Institute a working arrangement through HBA to provide the service	6.1.1. Identify service providers.	Number of service providers	NDAL/PDAL/HBA/Service providers/farmers
		6.1.2. Establish nucleus farms with out-growers.	Number of nucleus farms.	

APPENDIX 49: APICULTURE DEVELOPMENT IMPLEMENTATION SCHEDULE

Goal: To develop and promote viable and sustainable apiculture industries to enhance nutrition, income generation and import replacement.

Strategies/Activities	Year										Agency Responsible/ Collaborators	
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016		
1. Reorganize & Strengthen HBA												NDAL/ PDAL/HBA
1.1. Review the current status of HBA.												
1.2. Proposed and implement changes to HBA as appropriate.												
1.3. Put in place a effective management system.												
1.4. Provide support for the smooth operation HBA.												
2. Reliable supply of quality queen bees to beekeepers.												NDAL / PDAL / Service Providers
2.1. Identify & register queen bee breeders.												
2.2. Provide training in queen bee production.												
2.3. Provide adequate logistical support through HBA.												
2.4. Distribute queen bees												
2.5. Pest & Disease Surveillance and Monitoring												
3. Provide training beekeeping and related activities												NDAL/PDAL/Priv ate sector
3.1. Formulate basic, advanced and specialized training plans.												
3.2. Identify and select trainees for each training session.												
3.3. Conduct training as scheduled based on needs.												
4. Strengthen honey Processing & marketing system and propose improvement if necessary.												NDAL/PDAL /Private sector
4.1. Review the current marketing system and propose improvements as required.												

Strategies/Activities	Year								Agency Responsible/ Collaborators		
	2007	2008	2009	2010	2011	2012	2013	2014		2015	2016
4.2. Establish honey processing and collection centres.											
4.3. Institute & operate a marketing system to capture domestic and overseas market.											
5. Address cross cutting issues affecting development of apiculture industry.											
5.1. Identify the issues and develop strategies to address them.											NDAL / PDAL /RDB Service Providers / HBA
5.2. Involve the private sector, service providers, HBA to assist to address these issues.											
5.3. Establish and operate a credit scheme to have access to credit.											
5.4. Mentoring of the process to ensure successful operation of the credit scheme.											
6. Provide extension services to beekeepers on a sustainable basis.											
6.1. Identify service providers.											NDAL / PDAL / NGOs / service providers
6.2. Training of service providers.											
6.3. Establish nucleus farmer units with outgrowers.											

APPENDIX 50: APICULTURE DEVELOPMENT BUDGET

Goal: To develop and promote viable and sustainable apiculture industries to enhance nutrition, income generation and import replacement.

Strategies/Activities	Budget Estimate in Thousand Kina										Funding Source					
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016		Total				
1. Reorganize & Strengthen HBA																
1.1. Review the current status of HBA.	20														20	
1.2. Proposed and implement changes to HBA as appropriate.	20														20	
1.3. Put in place a robust management system.		20													20	
1.4. Provide support for the smooth operation HBA.			10	10	10	10	10	10	10	10	10	10	10	10	80	
2. Enhance availability of queen bees to beekeepers.																
2.1. Identify & register queen bee breeders.	20														20	GoPNG / Private Sector
2.2. Provide training in queen bee production.	20	20	20	20	20	20	20	20	20	20	20	20	20	20	160	
2.3. Provide adequate logistical support through HBA.		20	20	20	20	20	20	20	20	20	20	20	20	20	180	
2.4. Distribute of queen bees		10	10	10	10	10									50	
3. Provide training beekeeping and related activities																
3.1. Formulate basic, advanced and specialized training plans.	10	10	10	10	10										50	GoPNG /donors/Private sector
3.2. Identify and select trainees for each training session.	10	10	10	10	10										50	
3.3. Conduct training as scheduled based on needs.	20	20	30	30	30	30	30	30	30	30	30	30	30	30	280	
4. Strengthen honey Processing & marketing system and propose improvement if necessary.																
4.1. Review the current marketing system and propose improvement if necessary.	10														10	GoPNG/donors Private sector
4.2. Establish honey processing and collection centres.	20	40	40	40	40	40	40	40	40	40	40	40	40	40	380	

Strategies/Activities	Budget Estimate in Thousand Kina										Funding Source	
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016		Total
4.3. Institute & operate a marketing system to capture domestic and overseas market.		20	30	40	40						130	
5. Address cross cutting issues affecting development of apiculture industry.												
5.1. Identify the issues and develop strategies to address them.	20										20	
5.2. Involve the private sector, service providers, HBA to assist to address these issues.	20	40									60	GoPNG / donors
5.3. Establish and operate a credit scheme to have access to credit.	40	100	100	100	100	100	100	100	100	100	940	
5.4. Monitoring of the process to ensure successful operation of the credit scheme.			10	20	20	20	20	20	20	20	150	
6. Provide extension services to beekeepers on a sustainable basis.												
6.1. Identify service providers.												
6.2. Training of service providers.		10	10	10	10	10	10	10	10		70	GoPNG/ donors
6.3. Establish nucleus farmer units with outgrowers.		20	40	40	60	60	60	60	60	60	460	
Total	230	340	340	360	380	320	310	310	280	280	3,150	

APPENDIX 39: RUBBER DEVELOPMENT FRAMEWORK

Goal: To Develop, Rehabilitate and Expand Rubber Industry to boost Production, Export Revenue, Create Employment, Generate income to Alleviate Rural

Objective / Strategy	Targets	Actions to be taken	Measurable output	Responsible Agency
Objective 1. To strengthen management, technical capacity and down stream processing in the Rubber Industry				
1.1 Establish a cost effective management system to coordinate the Rubber Industry	1.1.1 Management system established by Dec. 2007	1.1.1.1 Review Rubber Act / policies, established RIC with corporate plan	RIC established & operational	DAL, DPM, DoF, DNPM, IPBC, DTI
1.1 Establish a cost effective management system to coordinate the Rubber Industry	1.1.1 Management system established by Dec. 2008	1.1.1.1 Review Rubber Act / policies, established RIC with corporate plan	RIC established & operational	DAL, DPM, DoF, DNPM, IPBC, DTI
Objective 2. To Increase rubber production from current 5,000 tonnes to 20,000 tonnes in 5 years				
2.1 Rehabilitate existing Rubber plantations	2.1.1 15,000ha of existing rubber rehabilitation by 2011 (Central, ESP, WSP, Manus, New Ireland, Gulf, Western, Oro)	2.1.1.1 Rehabilitate 15,000 ha of existing plantations	Number of actual ha rehabilitated	NDAL, PDAL, Growers, private estates
2.2 Establish new smallholder rubber plantings	2.2.1 Feasibility studies on 14,000ha completed by 2008 (Morobe, Bougainville, Madang, Milne Bay, CP, Gulf, ESP, Sandaun)	2.2.1.1 Conduct awareness, feasibility studies and land issues in lowland provinces.	Number of new plantations established	NDAL, PDAL, Growers, Private
	2.2.2 Selected high yielding clones in all growing areas by 2010	2.2.2.1 Introduce & establish high yielding clones for bud-wood nurseries (source bush) in all rubber growing areas.	All required budwood clones are established.	NDAL, Private Sector and PDAL
2.3 Establish new nucleus estates to facilitate increased production	2.3.1 Fourteen new rubber estates to lowland provinces established by 2011	2.3.1.1 Identify potential areas and willing communities	Number of new estates established	NDAL, Private Sector and PDAL, Resource Owners
2.4 Securing Carbon Trading external funding for development of rubber growing areas in current grasslands to bring in additional K30m/yr	2.4.1 Development of 20,000 ha in state held grassland areas; 15000 ha in Urimo & other provinces to follow	2.4.1.1 Secure agreements under Kyoto protocol	Agreements in place	NDAL, GOPNG

Objective / Strategy	Targets	Actions to be taken	Measurable output	Responsible Agency
2.5 Rehabilitation and possible expansion of existing run down estates	2.5.1 Six estates rehabilitated by 2011(Hiri, Abau, Bereina, Rigo, Oro, Gulf) 2.5.2 Partnerships established with Gov't, Private Sector and Growers by 2008	2.5.1.1 Estate Expansion Programmes 2.5.1.2 Strengthen partnership with Private sector / Gov't and Rubber growers initiate the nucleus estate	Reports Signing of project agreements (MOU's / MOA's)	Private Sector, NDAL, PDAL Same as above
2.6 Establishment of new bud nurseries, genetic improvement and multiplication plots	2.6.1 Nurseries established	2.6.1.1 Yield Trials and Tissue Culture conducted 2.7.1.2 Registration of co-operative societies, buyers / exporters and train farmers	Trail Report No. of training programs conducted and people trained	NDAL and NARI Same as above
2.8 Carry out Quality Control and Monitoring	2.8.1 Conformance to Rubber Act Specification, all growing areas	2.8.1.2 Conduct Laboratory Tests	Quality Certification Reports	NARI, Rubber Board, Private Sector
2.9 Quarantine regulations review, and regular monitoring	2.9.1 Quarantine and product regulations monitored annually	2.9.1.1 Disease and Pest Control, Surveillance and Rubber Produce Price Set	Quality Certification, Reports and Survey/ Monthly Price List	Rubber Board, NDAL, Private Sector, NAQIA
Objective 3. To improve Human Resources Development				
3.1 Enhance Management & Staff capabilities through formal and informal training.	3.1.1 Refresher training for 20% of staff yearly	3.1.1.1 Identify training needs, trainees / trainers / farmers	104 staff trained, Training Plan developed	NDAL, Private Sector and PDAL
	3.1.2 1200of rubber growers trained yearly	3.1.1.2 Conduct National Rubber Workshop and awareness	6000 growers trained, National and Regional Workshop Conducted	NDAL, Private Sector, NARI, NAQIA, PDAL
Objective 4. To modernized and enhance processing Facility/capacity and Infrastructure in the province				
4.1 Re-tool Existing and defective factories	4.1.1 processing factories re-tooled by 2008; Cape Rodney and Gavien Factories	4.1.1.1 Identify faulty equipment for retooling	Study Report and awareness among all the shareholders;	NDAL, NPO, Stakeholders, Private Sector, Provinces, NGO and Donors
4.2 Rehabilitation and Construction of Roads/Bridges/Jetties/river and maritime transport	4.2.1 5000 km existing roads, construction by 2011	4.2.1.1 Take stock of all transport infrastructure	Infrastructure study reports	DoW, NDAL, Harbor Board, Private sector

Objective / Strategy	Targets	Actions to be taken	Measurable output	Responsible Agency
Objective 5. To increase rubber revenue from K17 Million to K63 Million by 2011				
5.1 Improved tapping, production, processing and export of rubber	5.1.1 Increase in revenue to K63m/yr	5.1.1.1 Improve growers tapping skills, factory processing efficiency and access to markets	20,000 m. tonnes exported	NDAC, PDAL, Private Sector & smallholder growers
Objective 6. Introduce downstream processing industries				
6.1 Start up of down stream processing factories, including master-batching facilities	6.1.1 At least two factories started by 2011; Central/NCD and Morobe	6.1.1.1 Planning, financing, design, construction	Product manufacturing, egg shoes, tiers, coir etc	NDAC, PDAL, Private Sector, IPA, PANGED

APPENDIX 40: RUBBER DEVELOPMENT IMPLEMENTATION SCHEDULE

Strategies	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Agency Responsible
1. Establish a cost effective management system to coordinate the Rubber Industry											
1.1. Review Rubber Act / policies											
1.2. Establish new corporate body to oversee the industry											DAL, DPM, DoF, DNPM, IPBC, DTI
2. Setting Price											
2.1 Monthly release of price											DAL, DPM, DoF, DNPM, IPBC, DTI
3. Rehabilitate existing Rubber plantations											
3.1.Rehabilitate 15,000 ha of existing plantations											NDAL, PDAL, Growers, Private
4. Establish new smallholder plantings											
4.1 Conduct awareness, feasibility studies & land issues											NDAL, Private Sector and PDAL, Resource Owners
4.2. Introduce & Establish high yielding clones for budwood in all rubber growing areas.											NDAL, GOPNG
5. Establish new nucleus estate to facilitate increased production											
5.1 Identify potential areas and willing communities											Private Sector, NDAL, PDAL
6 Securing carbon trading funding											
6.1 Secure agreements under Kyoto protocol agreements											NDAL and NARI
6.2 Sequestration research											NARI, Rubber Board, Private Sector
7 Rehabilitation and expansion											
7.1 Estate expansion program											Rubber Board, NDAL, Private Sector, NAQIA
7.2 Strengthen partnerships with stakeholders											NDAL, Private Sector and PDAL
8 Establish budwood nurseries											
8.1 Yield trials and clone research											NDAL, Private Sector, NARI, NAQIA, PDAL

Strategies	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Agency Responsible
9 Establish farmer cooperatives											
9.1 Establish dialogue with rubber stakeholders											DoW, NDAL, Harbor Board, Private sector
9.2 Registration of cooperatives											
10 Carry out quality assessment											
10.1 Quality PNGCR Lab testing											NDAL, PDAL, Private Sector & Farmers
10.2 PNGCR Factory inspections											NDAL, PDAL, Private Sector, IPA, PANGED
11 Quarantine regulations											
11.1 Disease and pest control											NDAL, PDAL, Private Sector & Farmers
12 Enhance staff management and capability											
12.1 Identify relevant training needs											NDAL, PDAL, Private Sector & Farmers
12.2 Conduct rubber workshops											NDAL, PDAL, Private Sector & Farmers
13 Factory retooling											
13.1 Correct faulty equipment											NDAL, PDAL, Private Sector & Farmers
14 Take stock of existing infrastructure											
14.1 Rehabilitation of roads and other transportation facilities											NDAL, PDAL, Private Sector & Farmers
15 Improve tapping, production and processing methods											
15.1 Improve grower tapping skills, factory processing efficiency and market access.											NDAL, PDAL, Private Sector & Farmers
16 Downstream processing											
16.1 Planning, design, financing and construction											NDAL, PDAL, Private Sector & Farmers

APPENDIX 41: RUBBER DEVELOPMENT BUDGET SCHEDULE

Strategies	Budget Estimate in Thousand Kina											Funding Source				
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2,016	Total					
1. Establish a cost effective and productive management system to coordinate the Rubber Industry																
1.1. Review Rubber Act/ policies	100	100				100					100				400	NDAL
1.2. Establish and run new corporate body to oversee the industry (will take over activities from NDAL when formed)	100	100	100	100	100	100	100	100	100	100	100	100	100	100	1,000	DoF, DPM, NDAL
2. Setting Price																
2.1 Monthly release of price	10	10	10	10	10	10	10	10	10	10	10	10	10	10	100	NDAL
3. Rehabilitate existing Rubber plantations																
3.1 Rehabilitate 15,000 ha of existing plantations with income of K2.3m/yr	2,000	2,000	2,000	2,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	14,000	Private, Carbon Credit, Other
4. Establish new smallholder plantings																
4.1 Conduct awareness, feasibility studies & land issues	1,000	1,000	1,000	1,000	500	200	200	200	200	200	200	200	200	200	5,500	NDAL, Private
4.2. Introduce & Establish high yielding clones for bud-wood in all rubber growing areas.	300	300	300	300	300	300	300	300	300	300	300	300	300	300	3,000	NDAL, Private
5. Establish new nucleus estate to facilitate increased production and revenue to K40m/yr																
5.1 Identify potential areas and willing communities	100	100	100	100	100	100	100	100	100	100	100	100	100	100	1,000	NDAL, Private, Donor
6 Securing carbon trading funding - 20,000 ha externally funded to give total PNG rubber income of K93million/yr																
6.1 Secure agreements under Kyoto protocol agreements	100	100	100	100	100	100	100	100	100	100	100	100	100	100	1,000	GoPNG, NDAL, Donor
6.2 Research into carbon sequestration mechanisms and biomass availability	100	100	100	100	100	100	100	100	100	100	100	100	100	100	1,000	NARI
7 Rehabilitation and expansion																
7.1 Estate expansion program	300	600	600	600	500	500	500	500	500	500	500	500	500	500	5,100	Private, Carbon Credit, Other

Strategies	Budget Estimate in Thousand Kina											Funding Source	
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2,016	Total		
7.2 Strengthen partnership with stakeholders and payment schemes to improve output	100	100	100	100	100	100	100	100	100	100	100	1,000	Donor, NDAL
7.3 National Commodity Management System for identification of new rubber growing areas	100	100	100	100	100	100	100	100	100	100	100	1,000	
8 Establish bud wood nurseries													
8.1 Yield trials and clone research	100	200	200	200	200	200	200	200	200	200	200	1,900	NDAL, Private, Donor
9 Establish farmer cooperatives													
9.1 Establish dialogue with rubber stakeholders	100	100	100	100	100	100	100	100	100	100	100	1,000	NDAL, Private
9.2 Registration of cooperatives	100	100	100	100	50	50	50	50	50	50	50	700	NDAL, Private
10 Carry out quality assessment													
10.1 Lab PNGCR certification and DRC testing	100	100	100	100	100	100	100	100	100	100	100	1,000	Private
10.2 Quality inspection of factories	50	50	50	50	50	50	50	50	50	50	50	500	NDAL
11 Quarantine regulations													
11.1 Disease and pest control	50	50	50	50	50	50	50	50	50	50	50	500	NDAL, Private
12 Enhance staff management and capability	50	50	50	50	50	50	50	50	50	50	50	500	
12.1 Identify relevant training needs	50	50	50	50	50	50	50	50	50	50	50	500	NDAL, Donor
12.2 Conduct rubber workshops	50	50	50	50	50	50	50	50	50	50	50	500	NDAL, Donor
13 Factory retooling													
13.1 Correct faulty equipment	1,000	1,000	500	500	500	500	500	500	500	500	500	6,000	Private
14 Take stock of existing infrastructure													
14.1 Rehabilitation of roads and other transportation facilities	2,000	3,000	3,000	2,000	2,000	1,000	1,000	1,000	1,000	1,000	1,000	17,000	GoPNG, Donor, Private
15 Improve tapping, production and processing methods													
15.1 Improve grower tapping skills, stimulation, factory processing efficiency improvements, extension work and related costs	400	500	500	500	500	500	500	400	400	400	400	4,600	Private
16 Downstream processing	200	500	500	500	500	500	500	500	500	500	500	4,700	
16.1 Planning, design, financing and construction	500	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	9,500	Private
TOTAL	9,060	11,360	10,760	9,760	8,110	6,910	6,810	6,710	6,710	6,710	6,810	83,000	

APPENDIX 51: SPICES AND MINOR CROPS DEVELOPMENT IMPLEMENTATION FRAMEWORK

Goal: To promote and develop spice and minor crops, to diversify cash income generation opportunities and as alternate export commodity

Objectives / Strategies	Actions to be taken	Targets	Measurable outputs	Responsible Agency
Objective 1. To improve management & coordination in the Spice Industry Sector				
1.1 Provide Institutional & capacity building support	1.1.1 Appoint new Board members and conduct meetings 1.1.2 Staff appointment & recruitment to SIB Secretariat 1.1.3 Liaise with Provinces to appoint Spice Inspectors 1.1.4 Secure Resource & On Going Budget Support for SIB Secretariat	Appointments by 1st Quarter 2007 Yearly	Fully functional and operational SIB Quarterly Reports and Annual Management Reports	SIB/DAL
1.2. Establish export levy & licensing monitoring system	1.2.1 Levy instrument & collection	By second quarter 2007	Financial Reports	SIB/DAL/ NAQIA
1.3. Provide effective & efficient management of SIB	1.2.2 Establish export data base & monitoring system 1.3.1 Establish SIB Accounting system 1.3.2 Enhance performance management	By second quarter 2007	Management Report	SIB
Objective 2. To promote and assist sustainable production of spice and minor crops				
2.1. Conduct a survey to determine the current status and potential of spice and minor crops development in targeted provinces.	2.1.1. Identify areas and districts that are producing spices and minor crops. 2.1.2. Organise and conduct the survey to gauge the current situation and future potential of these crops 2.1.3. Sensitize the respective provinces, districts and farmers.	Survey completed by 200	Survey report and awareness among the stakeholders.	SIB/Districts, Provinces, private sector, farmers
2.2. Conduct feasibility studies to identify potential & viable projects to develop.	2.2.1. Organize and conduct the survey in consultation with provinces & districts	Study completed by 2008.	Survey report	SIB/provinces, districts, private sector.

Objectives / Strategies	Actions to be taken	Targets	Measurable outputs	Responsible Agency
	2.2.2. Undertake studies to evaluate the economic viability of the sites.			
	2.2.3. Assess the opportunities for cooperative marketing of the produce			
2.3. Demonstration of new technologies.	2.3.1. Identify strategic locations for demonstration farms.	Establish at least 10 facilities at different locations to demonstrate new technologies by 2009.	Number of units established annually.	SIB/ Province, districts, private sector.
	2.3.2. In collaboration with the private sector establish them to serve as demonstration community resource centre.			
3. Formulate and implement strategies to improve production, productivity and quality of spice and minor crops.				
3.1. Organise groups/cooperatives/nucleus farms.	3.1.1. Conduct awareness campaign and promote the nucleus farm concept	Task completed by 2009.	Number of units established and operated successfully.	SIB/NDAL/ NARI/ Service providers /Farmers.
	3.1.2. Investigate and where appropriate introduce cooperative management system.		M&E Report	
	3.1.3. Monitor and evaluate the operation of the system.		Number of units sustained.	
	3.1.4. Provide assistance to ensure sustainability.		Number of staff, farmers and others trained.	SIB/NDAL/ NARI/ Service providers
3.2. Strengthen Human Resource Development	3.2.1. Conduct Training need analysis for all stake holders	A well structured training system in place by 2008.		
	3.2.2. Develop and implant training programs to upgrade the skills of staff, farmers, processors and buyers			
3.3 Rehabilitation of old plantations & Expansion into new identified areas	3.3.1 Select project areas for rehabilitation & expansion of new plantings	A Rehabilitation & Expansion program in place by 2007	19 Provincial spice & minor crops programs -Rehabilitation ha -New plantings ha	SIB /NDAL /PDAL /Service Providers.

Objectives / Strategies	Actions to be taken	Targets	Measurable outputs	Responsible Agency
	3.3.2 Ensure farmers have high yielding planting materials			
	3.3.3 Establish and operate central processing centres.		No. of Units established	
	3.3.4 Develop a VEW and Service Provider Program to carryout above activities		No. of contracts	
3.4 Provide support for downstream processing	3.4.1 Identify & assess downstream processing projects	At least 1 project in each region by 2009	No. of Units established	SIB/NDAL/ PDAL/ Service Providers.
	3.4.2 Provide project support on a sustainable basis			
3.5 Provide support for Spice & Minor Crops Research & Development	3.4.1 Identify R & D priorities	A National R & D program in place by 2008	4 Regional R & D program	
	3.4.2 Develop a R & D program for spices and minor crops			
4. Improve marketing opportunities and post harvest handling of produce.				
4.1. Establish and operate an efficient and sustainable marketing network.	4.1.1.1. Identify local and overseas marketing agents.	Marketing network established by 2008.	Directory published.	SIB/NDAL/ private sector.
	4.1.1.2. Establish a directory listing both growers and buyers.			
4.2. Improve quality, reliability and consistency of supply of spices and minor crops.	4.2.1.1. Conduct awareness on quality maintenance and establish national standards	Inspection and certification process for quality assurance in place by 2007.	Quality of the produce that is available for marketing.	SIB/NDAL, DTI, private sector, service providers
	4.2.1.2. Provide training in quality control at all stages.			
4.3. Strengthen internal and external trading opportunities	4.3.1.1. Plan and implement market promotion at all levels.	An organised trade promotion plan in operation by 2008	Volume of produce accessing the market locally and overseas. Vanilla Cardamom, Chili	SIB/NDAL, DTI, private buyers & exporters.
	4.3.1.2. Undertake promotion in trade fairs overseas.			

APPENDIX 52: SPICE AND MINOR CROPS DEVELOPMENT IMPLEMENTATION SCHEDULE

Strategies/Activities	Year										Responsible Agency	
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016		
1. Provide Institutional & capacity building support												SIB GoPNG
1.1. Appoint new Board members and conduct meetings												
1.2. Staff appointment & recruitment to SIB Secretariat												
1.3. Liaise with Provinces to appoint Spice Inspectors												
1.4. Secure Resource & On Going Budget Support for SIB Secretariat												
1.5. Enhance performance management												
2. Establish levy and license collection and monitoring system												SIB
2.1 Levy instrument & collection & monitoring												
2.2 Establish export data base & monitoring system												
2.3 Establish SIB Accounting system												
3. Conduct a survey to determine current status and potential of spice												SIB/ PDAL, DAL/ private sector
3.1 Identify areas/districts that are producing spices and minor crops.												
3.2. Organise and conduct survey.												
3.3 Sensitize provinces/districts authorities and producers												
4 Identify & prioritize potential areas/sites to target development activities												SIB/ PDAL, DAL/ private sector
4.1 Organize and conduct feasibility study of potential sites												
4.2 Undertake studies to evaluate the economic viability of the sites												
4.3 Assess the opportunities for cooperative marketing of produce												
5. Develop and promote technologies to support the industry.												SIB / PDAL, Districts, Private sector
5.1 Establish demonstration farms & resource centres at different locations.												
6. Promote groups/cooperatives/nucleus farming concept.												SIB/ PDAL, DTI, Districts
6.1. Conduct awareness and promote nucleus farms.												
6.2. Cooperative farming system established.												
6.3. Monitor the operations.												
7. Promote Human Resource Development within the sub-sector												SIB/PDAL NGOs/service providers
7.1 Develop and implement training programs for farmers, service providers, extension personnel and others.												

Strategies/Activities	Year								Responsible Agency		
	2007	2008	2009	2010	2011	2012	2013	2014		2015	2016
8. Rehabilitation of old plantation and expand into new plantings											SIB/NARI Private sector
8.1 Select project areas for rehabilitation & expansion or new plantings											
8.2 Ensure farmers have high yielding planting materials											
8.3 Establish and operate central processing centres.											
8.4 Develop a VEW and Service Provider Program to carryout above activities											
9. Provide support for downstream processing											SIB/NARI Private sector
9.1 Identify & assess downstream processing projects											
9.2 Provide project support on a sustainable basis											
10. Promote Spice Research & Development											SIB/NARI Private sector
10.1 Identify R & D priorities											
10.2 Develop a R & D program for spices and minor crops											
11. Establish a marketing network to facilitate the industry.											SIB/Private sector, DPI
11.1. Identify local and overseas marketing agents											
11.2. Prepare and publish a directory listing for both growers and buyers											
12 Enhance quality, reliability and sustainability of supply											SIB/PDAL <
12.1. Conduct awareness on quality and establish national standards											Districts, Service providers, private
12.2. Provide training in quality control at all stages											SIB/DTI, Private sector
13. Promote local and international Trade											
13.1 Plan and implement market promotion locally and overseas											
13.2 Undertake promotion in trade fair overseas											

APPENDIX 53: SPICE AND MINOR CROPS DEVELOPMENT BUDGET SCHEDULE

Strategies/Activities	Budget Estimate in Thousand Kina										Funding Source		
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016		Total	
1. Provide Institutional & capacity building support													SIB/GoPNG
1.1 Appoint new Board members and conduct meetings	100	50	50	50	50	100	100	100	100	100	100	800	
1.2 Staff appointment & recruitment to SIB Secretariat	100	50	50	50	50	100	100	100	100	100	100	800	
1.3 Liaise with Provinces to appoint Spice Inspectors	100	50										150	
1.4 Secure Resource & On Going Budget Support for SIB Secretariat	500	350	350	350	350	400	400	400	400	400	400	3,900	
1.5 Enhance management performance (capacity building)	300	300	300									900	
2. Establish levy and license collection and monitoring system													SIB GoPNG
2.1 Levy instrument & collection	40											40	
2.2 Establish export data base & monitoring system	45	20	20	20	20	30	30	30	30	30	30	275	
2.3 Establish SIB Accounting system	45											45	
3. Conduct a survey to determine current status and potential of spice													GoPNG / Private sector
3.1 Identify areas/districts that are producing spices and minor crops.	25											25	
3.2. Organise and conduct survey.	125											125	
3.3 Sensitize provinces/districts authorities and producers	25	25	40	40	40	40	40	50	50	50	50	400	
4 Identify & prioritize potential areas/sites to target development activities													GoPNG / Private sector
4.1 Organize and conduct feasibility study of potential sites	100	50										150	
4.2 Undertake studies to evaluate the economic viability of the sites	50	50										100	
5. Develop and promote technologies to support the industry.													GoPNG /donors/ Private sector
5.1 Establish demonstration farms & resource centres at different locations.	90	40	40	40	40	60	60	60	60	60	60	550	
6. Promote groups/cooperatives/nucleus farming concept.													Go-PNG donors
6.1. Conduct awareness and promote nucleus farms.	100	50	50	50	50	60	60	60	60	60	60	600	
6.2. Cooperative farming system established.	350	200	300	100	100	50	50	50	50	50	50	1,300	
6.3. Monitor the operations.	20	50	50	50	50	50	50	50	50	50	50	470	
7. Promote Human Resource Development within the sub-sector													GoPNG/ donors
7.1 Develop and implement training programs for farmers, service providers, extension personnel and others.	300	200	200	200	100	100	100	100	100	100	100	1,500	
8. Rehabilitation of old plantation and expand into new plantings													GoPNG /donors/ private sector
8.1 Select project areas for rehabilitation & expansion or new plantings	100	100										200	

Strategies/Activities	Budget Estimate in Thousand Kina										Funding Source		
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016		Total	
8.2 Ensure farmers have high yielding planting materials	400	200										600	
8.3 Establish and operate central processing centres.	300	200	200									700	
8.4 Develop a VEW and Service Provider Program to carryout above activities	100	50	50	50	50	50	50	50	50	50	50	550	
9. Provide support for downstream processing													GoPNG /donors/ private sector
9.1 Identify & assess downstream processing projects	50											50	
9.2 Provide project support on a sustainable basis	50	50	50	100	100	50	50	50	50	50	50	600	
10. Promote Spice Research & Development													GoPNG /donors
10.1 Identify R & D priorities		50										50	
10.2 Develop a R & D program for spices and minor crops		100	100	100	100	100	100	100	100	100	100	900	
11. Establish a marketing network to facilitate the industry.													GoPNG /donors
11.1. Identify local and overseas marketing agents	100											100	
11.2. Prepare and publish a directory listing for both growers and buyers	100	100										200	
12 Enhance quality, reliability and sustainability of supply													GoPNG/donors
12.1. Conduct awareness on quality and establish standards	200	150	150	150	150	100	100	100	100	100	100	1,300	
12.2. Provide training in quality control at all stages	100	200	200	300	300	300	200	200	200	200	200	2,200	
13. Promote local and international Trade													GoPNG/ donors/ Private Sector
13.1. Plan and implement market promotion locally and overseas	70	100	100	100	200	200	200	200	200	200	160	1,530	
13.2 Undertake promotion in trade for overseas	50	100	150	150	150	150	100	100	100	100	100	1,150	
Total	4,135	2,935	2,500	1,950	1,950	2,000	1,850	1,860	1,860	1,820	1,820	22,860	

APPENDIX 57: AGRICULTURE QUARANTINE AND INSPECTION DEVELOPMENT FRAMEWORK

GOAL NO 1: To conserve, protect and sustain the animals, plants and fish in PNG including natural resources and agriculture produce from exotic pests, diseases and weeds
GOAL NO.2: To regulate and monitor compliance to ensure that PNG's international export/import trade activities comply with international quarantine protocols including

Objectives	Strategies/Activities	Targets / Outcome	Responsible organizations
<p>1. Prevent and minimize the risk of entry and spread of exotic pests, diseases and weeds, although the entry of disease-free animal and plant material is essential to improve agricultural pastoral, fishery, and forestry development in the country.</p>	<p>1.1 · Monitor, inspect, regulate, and control all imports of animals, fish and plants, and their parts and products.</p>	<p>Pest and Disease free status maintained</p>	<p>NAQIA, NDAL, NARI, CCI, OPRA, CIC, KIK, PDPI, NGOs, CUSTOMS,</p>
	<p>1.2 · Undertake all necessary actions to prevent arrival and spread of pests, diseases, contaminations, weeds and other adverse changes pertaining to animals, fish and plants, and their parts and products.</p>	<p>Pest and Disease free status maintained</p>	<p>NAQIA, NDAL, NARI, CCI, OPRA, CIC, KIK, PDPI, NGOs, CUSTOMS,</p>
	<p>1.3 · Develop import conditions for all agricultural product imports through Import/Pest Risk analysis.</p>	<p>Pest and Disease free status maintained</p>	<p>NAQIA</p>
	<p>1.4 · Monitor, and inspect all fish, frozen and processed food material imported into Papua New Guinea to ensure that relevant are complied with.</p>	<p>Pest and Disease free status maintained</p>	<p>NAQIA</p>
	<p>1.5 · Undertake and maintain inspection and quarantine surveillance relating to pests, diseases, weeds and any other symptoms.</p>	<p>Pest and Disease free status maintained</p>	
	<p>1.6 · Liaise with other countries and international agencies and organizations in developing policies strategies and agreements relating to quarantine, quality inspection matters in respect of animals, fish and plants.</p>	<p>Pest and Disease free status maintained</p>	<p>NAQIA</p>
	<p>1.7 · Provide quarantine and inspection information and services to individuals, agencies and organizations within the country and overseas in respect of animals, fish and plants.</p>	<p>Pest and Disease free status maintained</p>	<p>NAQIA, NDAL, NARI, CCI, OPRA, CIC, KIK, PDPI, NGOs, CUSTOMS,</p>

Objectives	Strategies/Activities	Targets / Outcome	Responsible organizations
2. Improve collaboration with other countries on animal and plant health and quarantine matters to protect domestic industries and ensure high quality of products, for domestic and overseas markets.	2.1 · Liaise with other countries and international agencies and organizations in developing policies strategies and agreements relating to quarantine, quality inspection matters in respect of animals, fish and plants. 2.2 · Monitor, inspect and control all exports of animals fish and plants and their parts and products to ensure that they are free from pests, diseases, weeds and any other symptoms and undertake all necessary actions to provide quality assurance to meet the import requirements for the importing countries.	Pest and Disease free status maintained	NAQIA
	2.3 · Issue permits, phytosanitary certificates and endorsements relating to imports and exports of animals, fish and plants and their parts and products to ensure protection and quality assurances.	Increased volume of trade	NAQIA
	2.4 · Regulate the movements of animals, fish and plants from one part of the country to another to control and prevent the spread of pests, diseases weeds and any other adverse symptoms. Introduction, adaptation and evaluation of new crops and crop varieties	Pest and Disease free status maintained	NAQIA
	2.5 · Undertake and maintain inspection and quarantine surveillance relating to pests, diseases, weeds and any other symptoms.	Pest and Disease free status maintained	NAQIA, NDAL, NARI, CCI, OPRA, CIC, KIK, PDPI, LDC, NGOs, CUSTOMS,
3. Maintain high quality product of agricultural exports in order to ensure products meet the required standards for domestic and overseas markets.	3.1 · Undertake and maintain inspection and quarantine surveillance relating to pests, diseases, weeds and any other symptoms.	Pest and Disease free status maintained	NAQIA, NDAL, NARI, CCI, CIC, KIK, PDPI, LDC

Objectives	Strategies/Activities	Targets / Outcome	Responsible organizations
4. · Maintain high quality standards for food imports for the health and safety of Papua New Guineans.	4.1 · Issue permits, certificates and endorsements relating to imports and exports of animals, fish and plants and their parts and products to ensure protection and quality assurances.	Increased volume of trade	NAQIA
	4.2 · Provide quarantine and inspection information and services to individuals, agencies and organizations within the country and overseas in respect of animals, fish and plants.	Pest and Disease free status maintained	NAQIA
	4.3 · Monitor, and inspect all fish, frozen and processed food material imported into Papua New Guinea to ensure that relevant are complied with.	Pest and Disease free status maintained	NAQIA, PDAL, LDC
5. · Protect and promote sustainable agricultural development by reviewing, developing and instituting appropriate legislation on agricultural quarantine, import and export quality assurance, and environmental aspects of safe agriculture and livestock industries.	5.1 · Provide quarantine and inspection information and services to individuals, agencies and organizations within the country and overseas in respect of animals, fish and plants.	Pest and Disease free status maintained	NAQIA
	5.2 Provide animal health extension services	Pest and Disease free status maintained	NAQIA, PDAL, LDC
	5.3· Undertake and maintain inspection and quarantine surveillance relating to pests, diseases, weeds and any other symptoms.	Pest and Disease free status maintained	NAQIA
	5.4· Regulate the movements of animals, fish and plants from one part of the country to another to control and prevent the spread of pests, diseases weeds and any other adverse symptoms.	Pest and Disease free status maintained	NAQIA

Objectives	Strategies/Activities	Targets / Outcome	Responsible organizations
6. Strengthening institutional capacity including human resources, human resource development and infrastructure and facilities	6.1 Establish Inventory and Databases	Data base established	NAQIA
	6.2 Develop Sound Corporate management systems	Revised Corporate Plan	NAQIA, ASF I
	6.3 Establish sound financial management systems	Annual Audit Reports	NAQIA, Auditor Gen.
	6.4 Promote good work ethic and governance	Improved work performance	NAQIA
	6.5 Establish staff career development plans and programmes	Career and Succession Plan developed	NAQIA
	6.6 Increase technical manpower strength	Qualified personnel recruited	NAQIA
	6.7 Human resource development through formal, workplace and cadetship training	Highly qualified staff with Improved performance	NAQIA, Int. Dev. partners
	6.8 Develop, replace and maintain, infrastructure, facilities and equipment throughout the country	Improved infrastructure and new equipments purchased	NAQIA
	6.9 Establish information network system	IT network established	NAQIA, Int. Dev. partners
	6.10 Upgrade current diagnostic laboratory facilities	Upgraded plant and animal diagnostic labs at kilakila	NAQIA
	6.11 Set up border facilities at Wutung and Daru	Infrastructure in Wutung and Daru established	NAQIA
	6.12 Restore quarantine facilities Buka and Buin	Facilities established at Buka and Buin	NAQIA

APPENDIX 58: AGRICULTURAL QUARANTINE IMPLEMENTATION SCHEDULE

- Goals :**
1. To conserve, protect and sustain the animals, plants and fish in PNG including natural resources and agriculture produce from exotic pests, diseases and weeds in the interest of national, social and economic development of the country
 2. To regulate and monitor compliance to ensure that PNGs international export/import trade activities comply with international quarantine protocols including sanitary and phytosanitary standards of IPPC, OIE, and food safety regulations of FAO

Strategies/ Activities	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Agency Responsible
1.1 Monitor, inspect, regulate and control all imports of animals, fish and plants and their parts and products											NAGIA, DTI, DFA, NIDAL, NARI, CCI, OPRA, KIK, PDPI, ,NGOs, Customs
1.1.1 To conduct regular inspections to all ports and border stations to monitor, regulate all imports into the country											
1.2 Undertake all necessary actions to prevent arrival and spread of pests, diseases, contaminants, weeds and other adverse changes pertaining to animals, fish and plants and their parts and products											
1.2.1 Improve inspection facilities at all ports to prevent arrival and spread of pests, diseases, contaminants, weed and other adverse charges											NAGIA, Customs
1.2.2 Improve capacity needs for staff to be effective and efficient in their jobs.											NAGIA, Customs
1.3 Develop import conditions for all agricultural product imports through import/ Pest Risk analysis.											
1.3.1 Conduct Pest Risk analysis for all agricultural import products											NAGIA, Donors, Agencies
1.3.2 Collaborate with international partners for improved Pest Risk management practices											NAGIA,
1.4 Monitor, and inspect all fish frozen and processed food material imported into Papua New Guinea to ensure that relevant rules are complied with.											
1.4.1 Formulate and develop relevant rules to monitor and inspect all fish, frozen and processed food materials imported into PNG.											NAGIA,
1.4.2 Establish appropriate infrastructure to support inspection and monitoring work and monitoring work											NAGIA,

Strategies / Activities	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Agency Responsible
1.5 Undertake and maintain inspection and quarantine surveillance relating to pests, diseases, weeds and any other symptoms.											
1.5.1 Conduct inspection and quarantine surveillance on pests, diseases, weeds and others.											NAGIA,
1.6 Liaise with other countries and international agencies & organizations in developing policies, strategies and agreements relating to quarantine.											
1.6.1 Develop relevant policies, strategies and agreements in relation to quarantine											NAGIA, NDAL, PDAL
1.7 Provide quarantine inspection information and services to individuals, agencies and organizations within the country and overseas in respect of animals, fish and plants											
1.7.1 Develop information materials on quarantine inspection and services											
1.7.2 Conduct awareness on quarantine inspection and services											NAGIA
1.7.3 Improve information and publication facilities											
2.1 Liaise with other countries and international agencies and organizations in developing policies, strategies and agreements relating to quarantine, quality, inspection, matters in respect on animals, fish, and plants.											
2.1.1 Develop relevant policies, strategies and agreements on quality control, and better inspection of animal, fish and plants matters											NAGIA, PDPI
2.2. Monitor, inspect and control all exports of animals, fish and plants and their parts and products to ensure that they are free from pests, diseases, weeds and any other symptoms and undertake all necessary actions to provide quality assurance to meet the import requirements for the importing countries.											
2.2.1 Establish infrastructure for effective monitoring, inspection and control of all exports including, animals, fish and plant and their parts, and products											NAGIA, Donors
2.3 Issue permits, phytosanitary certificates and endorsements relating to imports and exports of animals fish and plants and their parts and products to ensure protection and quality assurances.											
											NAGIA

Strategies/ Activities	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Agency Responsible
2.3.1 To issue permits, phytosanitary certificates and endorsements relating to imports and exports of animals, fish and plants and other parts and products											NAGIA, PDPI, NDAL
2.4 · Regulate the movements of animals, fish and plants from one part of the country to another and prevent the spread of pests, diseases, weeds and any other adverse symptoms, introduction, adaptation and evaluation of new crops and crop varieties											
2.4.1 Develop rules to control the movement of animals, fish and plants from one part of the country to another											
3.1 · Undertake and maintain inspection and quarantine surveillance relating to pests, diseases, weeds and any other symptoms											NAGIA
3.1.1 Conduct inspection and maintain quarantine surveillance relating to pests and diseases, weeds and any other symptoms											
4.1 Issue permits, certificates and endorsements relating to imports and exports of animals, fish and plants and their parts and products to ensure protection and quality assurances											
4.1.1 Issue permits, certificates and endorsements relating to imports and exports of animals, fish, and plant and their parts and products											NAGIA
4.2 · Provide quarantine and inspection information and services to individuals, agencies and organizations within the country and overseas in respect of animals, fish and plants											
4.2.1 Develop quarantine and inspections information and services to individuals, agencies, and organizations											NAGIA
4.3 · Monitor, and inspect all fish, frozen and processed food material imported into Papua New Guinea to ensure that relevant rules are complied with											
4.3.1 Monitor and inspect all fish frozen and processed food materials imported into PNG											NAGIA
5.1 Provide quarantine and inspection information and services to individuals, agencies and organizations within the country and overseas in respect of animals, fish and plants.											

Strategies / Activities	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Agency Responsible
5.1.1 Develop information and services on quarantine to individuals, agencies and organizations											NAGIA
5.2 Provide animal health extension services											
5.2.1 Conduct animal health extension services											NAGIA
5.3- Undertake and maintain inspection and quarantine surveillance relating to pests, diseases, weeds and any other symptoms.											
5.3.1 Conduct surveillance of pests, diseases, weeds and other symptoms											NAGIA
5.4- Regulate the movements of animals, fish and plants from one part of the country to another to control and prevent the spread of pests, diseases, weeds and any other adverse symptoms.											
5.4.1 Develop rules and regulations on the movements of animals, fish and plants											NAGIA
6.1 Establish Inventory and Databases											
6.1.1 Develop an inventory and database for human resources											NAGIA
6.2 Develop Sound Corporate management systems											
6.2.1 Develop a Corporate plan											NAGIA

Strategies / Activities	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Agency Responsible
6.3 Establish sound financial management systems											
6.3.1 Develop a sound financial management system											NAGIA
6.4 Promote good work ethic and governance											
6.4.1 Promote good work ethic and governance											NAGIA,AISF
6.5 Establish staff career development plans and programmes											
6.5.1 Develop career development plans for staff											NAGIA
6.6 Increase technical manpower strengthened											
6.6.1 Strengthen technical capacity of NAGIA											NAGIA
6.7 Human resource development through formal, workplace and cadetship training											
6.7.1 Develop human resources through formal, in-service and cadetship training											NAGIA
6.8 Develop, replace and maintain, infrastructure, facilities and equipment throughout the country											
6.8.1 Rehabilitate, Redevelop existing and new infrastructures											NAGIA
6.9 Establish information network system											
6.9.1 Establish an IT network											NAGIA
6.10 Upgrade current diagnostic laboratory facilities											
6.10.1 Restock and upgrade current laboratory facilities											NAGIA
6.11 Set up border facilities at Wutung and Daru											
6.11.1 Establish border facilities at Wutung and Daru											NAGIA,PDPI
6.12 Restore quarantine facilities at Buka and Buin											
6.12.1 Re-establish quarantine facilities at Buka and Buin											NAGIA,PDPI

APPENDIX 59: AGRICULTURAL QUARANTINE BUDGET

Strategies/ Activities	Budget Estimate in Thousand Kina											Funding	
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total		
1.1 Monitor, inspect, regulate and control all imports of animals, fish and plants and their parts and products													
1.1.1 To conduct regular inspections to all ports and border stations to monitor, regulate all imports into the country	300	111	111	111	111	111	111	111	111	111	111	1299	Donor, Govt
1.2 Undertake all necessary actions to prevent arrival and spread of pests, diseases, contaminants, weeds and other adverse changes pertaining to animals, fish and plants and their parts and products													
1.2.1 Improve inspection facilities at all ports to prevent arrival and spread of pests, diseases, contaminants, weed and other adverse charges	400	151	151	151	151	151	151	151	151	151	151	1759	Donor, Govt
1.2.2 Improve capacity needs for staff to be effective and efficient in their jobs.	125	125	125	125	125	125	125	125	125	125	125	1250	Donor, Govt
1.3 Develop import conditions for all agricultural product imports through import/ Pest Risk analysis.													
1.3.1 Conduct Pest Risk analysis for all agricultural import products	50	50	50	50	50	50	50	50	50	50	50	500	Donor, Govt
1.3.2 Collaborate with international partners for improved Pest Risk management practices	50	50	50	50	50	50	50	50	50	50	50	500	Donor, Govt
1.4 Monitor, and inspect all fish frozen and processed food material imported into Papua New Guinea to ensure that relevant rules are complied with.													
1.4.1 Formulate and develop relevant rules to monitor and inspect all fish, frozen and processed food materials imported into PNG.	50	50	50	50	50	50	50	50	50	50	50	500	Donor, Govt
1.4.2 Establish appropriate infrastructure to support inspection and monitoring work and monitoring work	50	50	50	50	50	50	50	50	50	50	50	500	Donor, Govt
1.5 Undertake and maintain inspection and quarantine surveillance relating to pests, diseases, weeds and any other symptoms.													
1.5.1 Conduct inspection and quarantine surveillance on pests, diseases, weeds and others.	100	100	100	100	100	100	100	100	100	100	100	1000	
1.6 Liaise with other countries and international agencies & organizations in developing policies, strategies and agreements relating to quarantine.													
1.6.1 Develop relevant policies, strategies and agreements in relation to quarantine	150	10	150	150	150	150	150	150	150	150	150	1360	

Strategies/ Activities	Budget Estimate in Thousand Kina											Funding	
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total		
1.7 Provide quarantine inspection information and services to individuals, agencies and organizations within the country and overseas in respect of animals, fish and plants													
1.7.1 Develop information materials on quarantine inspection and services	57	57	57	57	57	57	57	57	57	57	57	570	Donor, Govt
1.7.2 Conduct awareness on quarantine inspection and services	57	57	57	57	57	57	57	57	57	57	57	570	Donor, Govt
1.7.3 Improve information and publication facilities	57	57	57	57	57	57	57	57	57	57	57	570	Donor, Govt
2.1 Liaise with other countries and international agencies and organizations in developing policies, strategies and agreements relating to quarantine, quality, inspection, matters in respect on animals, fish, and plants.													
2.1.1 Develop relevant policies, strategies and agreements on quality control, and better inspection of animal, fish and plants matters	120	120	120	120	120	120	120	120	120	120	120	1200	Donor, Govt
2.2. Monitor, inspect and control all exports of animals, fish and plants and their parts and products to ensure that they are free from pests, diseases, weeds and any other symptoms and undertake all necessary actions to provide quality assurance to meet the import requirements for the importing countries.													
2.2.1 Establish infrastructure for effective monitoring, inspection and control of all exports including, animals, fish and plant and their parts, and products	80	80	80	80	80	80	80	80	80	80	80	800	Donor, Govt
2.3 Issue permits, phytosanitary certificates and endorsements relating to imports and exports of animals fish and plants and their parts and products to ensure protection and quality assurances.													
2.3.1 To issue permits, phytosanitary certificates and endorsements relating to imports and exports of animals, fish and plants and other parts and products	60	60	60	60	60	60	60	60	60	60	60	600	Donor, Govt
2.4 - Regulate the movements of animals, fish and plants from one part of the country to another to control and prevent the spread of pests, diseases, weeds and any other adverse symptoms, introduction, adaptation and evaluation of new crops and crop varieties													
2.4.1 Develop rules to control the movement of animals, fish and plants from one part of the country to another	190	190	190	190	190	190	190	190	190	190	190	1900	Donor, Govt

Strategies/ Activities	Budget Estimate in Thousand Kina										Funding	
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016		Total
3.1 - Undertake and maintain inspection and quarantine surveillance relating to pests, diseases, weeds and any other symptoms												
3.1.1 Conduct inspection and maintain quarantine surveillance relating to pests and diseases, weeds and any other symptoms	190	190	190	190	190	190	190	190	190	190	190	1900
4.1 Issue permits, certificates and endorsements relating to imports and exports of animals, fish and plants and their parts and products to ensure protection and quality assurances												
4.1.1 Issue permits, certificates and endorsements relating to imports and exports of animals, fish, and plant and their parts and products	50	50	50	50	50	50	50	50	50	50	50	500
4.2 - Provide quarantine and inspection information and services to individuals, agencies and organizations within the country and overseas in respect of animals, fish and plants												
4.2.1 Develop quarantine and inspections information and services to individuals, agencies, and organizations	200	200	200	200	200	200	200	200	200	200	200	2000
4.3 - Monitor, and inspect all fish, frozen and processed food material imported into Papua New Guinea to ensure that relevant rules are complied with												
4.3.1 Monitor and inspect all fish frozen and processed food materials imported into PNG	200	200	200	200	200	200	200	200	200	200	200	2000
5.1 Provide quarantine and inspection information and services to individuals, agencies and organizations within the country and overseas in respect of animals, fish and plants.												
5.1.1 Develop information and services on quarantine to individuals, agencies and organizations	50	50	50	50	50	50	50	50	50	50	50	500
5.2 Provide animal health extension services												
5.2.1 Conduct animal health extension services	120	120	120	120	120	120	120	120	120	120	120	1200
5.3- Undertake and maintain inspection and quarantine surveillance relating to pests, diseases, weeds and any other symptoms.												
5.3.1 Conduct surveillance of pests, diseases, weeds and other symptoms	50	50	50	50	50	50	50	50	50	50	50	500

Strategies/ Activities	Budget Estimate in Thousand Kina											Funding
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total	
5.4- Regulate the movements of animals, fish and plants from one part of the country to another to control and prevent the spread of pests, diseases, weeds and any other adverse symptoms.	100	100	100	100	100	100	100	100	100	100	1000	Govt.
5.4.1 Develop rules and regulations on the movements of animals, fish and plants												
6.1 Establish Inventory and Databases												
6.1.1 Develop an inventory and database for human resources	205	205	205	205	205	205	205	205	205	205	2050	Donor, Govt
6.2 Develop Sound Corporate management systems												
6.2.1 Develop a Corporate plan	200			200					200		600	Donor, govt
6.3 Establish sound financial management systems												
6.3.1 Develop a sound financial management system	250	250	250	250	250	250	250	250	250	250	2500	Govt
6.4 Promote good work ethic and governance												
6.4.1 Promote good work ethic and governance	90	90	90	90	90	90	90	90	90	90	900	Govt.
6.5 Establish staff career development plans and programmes												
6.5.1 Develop career development plans for staff	250	250	250	250	250	250	250	250	250	250	2500	Govt
6.6 Increase technical manpower strengthened												
6.6.1 Strengthen technical capacity of NAQIA	240	240	240	240	240	240	240	240	240	240	2400	Govt
6.7 Human resource development through formal, workplace and cadetship training												
6.7.1 Develop human resources through formal, in-service and cadetship training	250	250	250	250	250	250	250	250	250	250	2500	Donor, Govt
6.8 Develop, replace and maintain, infrastructure, facilities and equipment throughout the country												
6.8.1 Rehabilitate, Redevelop existing and new infrastructures	520	520	520	520	520	520	520	520	520	520	5200	Donor, Govt
6.9 Establish information network system												
6.9.1 Establish an IT network	350	350	350	350	350	350	350	350	350	350	3500	Donor, Govt
6.10 Upgrade current diagnostic laboratory facilities												
6.10. Restock and upgrade current laboratory facilities	1000	422	422	422	422	422	422	422	422	422	4798	Donor, Govt
6.11 Set up border facilities at Wutung and Daru												
6.11.1 Establish border facilities at Wutung and Daru	1200	472	472	472	472	472	472	472	472	472	5448	Donor, Govt
6.12 Restore quarantine facilities at Buka and Buin												
6.12.1 Re-establish quarantine facilities at Buka and Buin	500	772	572	622	522	632	622	572	472	562	5848	Donor, Govt
Grand Total	7911	6099	6039	6089	6189	6099	6089	6039	6139	6029	62722	

APPENDIX 55: GENDER, SOCIAL AND HIV/AIDS IMPLEMENTATION SCHEDULE

- GOAL: 1.** To promote equal participation of women in all aspects of agriculture and livestock development so as to improve the status of women through economic development.
2. To ensure that gender, social issues and HIV/AIDS are mainstreamed in all agricultural development programs.

Objective / Strategy	Targets	Actions to be taken	Measurable indicators	Responsible Agency
<p>Objective 1. To increase proportion of women to participate in planning and decision making in all levels of government and other decision making bodies within the agricultural sector. (Gender mainstreaming)</p>				
<p>1.1 Establish WIAD offices within the provincial/districts and nominate women representatives on various agricultural boards specifically to address gender issues.</p>	<p>1.1.1 20 WIAD desk established and fully funded by 2008</p>	<p>1.1.1.1 Create WIAD desks and positions in all provincial setups as per NAC 1995 resolutions. 1.1.1.2 Secure Funding for the WIAD desks in the provinces and national level through budgetary support. 1.1.1.3 Procure office equipments, and recruit support staff.</p>	<p>Number of desk / positions established Funds secured</p>	<p>NDAL/PDAL / NGO / NCW / Commodities industries</p>
<p>1.2 Coordinate and facilitate women's groups to form associations.</p>	<p>1.1.2 At least 80% of workforce gender sensitized by 2011. 1.1.3 At least a women representative on all boards by 2008 1.2.1 Women's groups / association formed in all provinces by 2011.</p>	<p>1.1.2.1. Conduct gender awareness training to sensitize the work force on gender issues and training of gender officers within the provinces and districts. 1.1.3.1 Identify & nominate women representatives to be on all agriculture commodity boards. 1.2.1.1 Identify potential women groups and register. 1.2.1.2 Conduct management/ leadership training and awareness on financial literacy and investment opportunities.</p>	<p>Number of NDAL / PDAL staff sensitized / trained Number of women rep on commodity board No. groups association formed Number of awareness / training conducted</p>	<p>PDAL/NDAL/NGO's / NCW / PCW / FPDA / SBDC</p>

Objective / Strategy	Targets	Actions to be taken	Measurable indicators	Responsible Agency
1.3 Improve and strengthen women's networking	1.3.1 Networks improved and strengthened by 2011 1.3.2 A 5 year national strategic plan developed by 2007	1.3.1.1 Mobilize, establish and or strengthen networks with other women associations National & Internationally 1.3.1.2 Coordinate and conduct National forum / conferences to address gender issues and develop a 5 year national strategic plan.	Level of dialogue Reports/plans produced	NDAL/PDAL/NGOs / Line agencies/ NARI / SBDC / FPDA / Universities
Objective 2. To promote and increase participation of women & youth in agricultural development and to enhance capacity building in all provinces & districts.				
2.1 Organise training and capacity building to improve technical and managerial skills of women and youth in agriculture.	2.1.1 50% increase number of women and youth engaged and trained in different agricultural skills and technology. 2.1.2 At least 30-40% of women and youth trained in various skills by agric. agencies and commodities annually.	2.1.1.1 Identify Training needs 2.1.1.2 Identify trainers and trainees to conduct training 2.1.1.3 Secure funding 2.1.1.4 Conduct Training of trainers in provinces and districts. 2.1.2.1 Incorporate and conduct farmer training programs to women and youth within all relevant agencies and commodities. 2.1.2.2 Conduct and attend field visits/ field days and shows to expose and share knowledge and skill nationally and internationally.	No. of trainers/ trainees identified Funding secured No. of trainers trained No. & types of training conducted No. of field days/ show conducted / attended	
2.2 Encourage and support women and youth to participate in self employment and small cottage industries/ floriculture food processing within the agricultural sector.	2.2.1 30% increase number of women and youth engaged in different varieties of employment and cottage industries. 2.2.2 At least 30% of loan guarantees specifically for women entrepreneurs.	2.2.1.1 Identify different cottage activities in agriculture 2.2.1.2 Identify entrepreneurs engaged in small agribusiness 2.2.1.3 Design and submit project proposal to donors and Micro- finance agencies/ RDB for funding. 2.2.1.4 Assist entrepreneurs in agric business management and link to Micro-finance agencies including RDB.	No. of different cottage industries identified No. of entrepreneurs identified No. of proposal designed No.& types of training conducted & no. loan acquired	

Objective / Strategy	Targets	Actions to be taken	Measurable indicators	Responsible Agency
2.3 Support and strengthen linkages in the dissemination of information to farmers and WIAD offices in the provinces /districts (Resource Centres)	2.3.1 Information produced and disseminated on timely basis.	2.3.1.1 Identify information needs	No. of information needs identified	
		2.3.1.2 Produce relevant information & strengthen link to research institutions	No. of booklets produced	
2.4 Create gender sex desegregation database useful for planning purposes identifying target and identifying groups for extension services and major impact projects (M&E).	2.4.1 Data base established by 2008	2.3.1.3 Collect and disseminate specific agricultural information to farmers.	No. of information disseminated	
		2.4.1.1 Identify project sites and create awareness	Number of sites visited	NDAL ,PDAL, NARI
		2.4.1.2 Prepare questionnaires and conduct survey in selected provinces.	Survey report	
		2.4.1.3 Compile /input data collected and produce report.	Data report	
Objective 3. To encourage and empower the people to participate and integrate HIV/AIDS programs within the agricultural sector in respond to the effects of the epidemic in PNG.		2.4.1.4 Link database to website and dissemination to all WIAD centres and agencies for use.		
3.1 Develop a HIV/AIDS work place policy for the agricultural sector in compliment to the NAC NEC submission 2005.	3.1.1 Policy in place by 2007	3.1.1.1. Form a inter agency agriculture HIV/AIDS's working committee.	Number of members	NDAL, PDAL, NGO's / NAC /
		3.1.1.2 Conduct consultation with all stakeholders and formulate policy.	Policy document	PAC / Donors / Industries / NARI /
		3.1.1.3 Produce policy document and have it launched.	Policy launched	NAQIA / Universities
		3.1.1.4 Conduct awareness to all stakeholders in the provinces/districts	No. of awareness conducted	
		3.1.1.5 Incorporate policy into the provincial/district and commodity plans for implementation	N0. of plans formulated	

Objective / Strategy	Targets	Actions to be taken	Measurable indicators	Responsible Agency
3.2 Create awareness on adverse effects of HIV/AIDS and the socio-economical factors in the agricultural sector	3.2.1 Awareness training conducted annually throughout the workplaces and extension services in Provinces/Districts.	<p>3.1.1.6 Ensure that all service providers are trained and they integrate HIV/AIDS programs in their training programs and contracts.</p> <p>3.2.1.1 Identify resource persons/ service providers to conduct awareness and Training of trainers.</p> <p>3.2.1.2 Secure funding to conduct awareness programs</p> <p>3.2.1.3 Conduct awareness programs to staff and farmers in the department agencies and commodities within the provinces and districts.</p> <p>3.2.1.4 Source information from National Aids Council to support and enhance extension services in the awareness programs.</p>	<p>No. of service providers trained</p> <p>No. of service providers identified</p> <p>Funds Secured</p> <p>No. & type of training conducted</p>	NDAL/PDAL / Industries / NAC / PAC / Donors ? LLG
3.3 Establish and strengthen partnership and technical cooperation with relevant donor and national agencies.	3.3.1 Strengthen partnership and collaboration established by 2008 onwards	<p>3.3.1.1 Seek and secure technical and financial support in combating the HIV/AIDS epidemic with supporting agencies.</p> <p>3.3.1.2 Source partnership and identify relevant agencies and programs to facilitate within the sector.</p> <p>3.3.1.3 Conduct programs jointly, geared towards HIV/AIDS and food security targeting rural settings and high risk areas in the provinces and districts.</p>	<p>Funds & technical support secured</p> <p>No. of agencies linked to & program identified</p> <p>No. & type of programs conducted</p>	NDAL/PDAL / Industries / NAC / PAC / Donors ? LLG

APPENDIX 55: GENDER, SOCIAL AND HIV/AIDS IMPLEMENTATION SCHEDULE

Project /Activities	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Responsible Agency
1. Establish WIAD offices in Provinces/districts											
1.1 Create WIAD Desks/ positions in Provinces											NDAL, PDAL
1.2 Secure funding for WIAD desks in Provinces and Nat. level through budgetary support.											NDAL, PDAL
1.3 Procure of equipments and recruitment of support staff.											NDAL, PDAL, Industries
1.4 Conduct Gender awareness training and training of gender officers											NDAL, PDAL, Industries
1.5 Nominate women representatives to boards											NDAL, PDAL, NCW
2. Coordinate and facilitate women's groups/ Associations											
2.1. Identify potential women groups and register.											
2.2. Conduct management leadership training and awareness on financial literacy and investment opportunities.											NDAL, PDAL, NCW
3. Improve and strengthen women's network											
3.1 Mobilize, establish and strengthen networks with other women associations											NDAL, PDAL, NCW
3.2 Coordinate and conduct national forum to discuss gender issues and develop a 5 year national strategic plan											NDAL, PDAL, Commodities, Line agencies
4. Organise training and capacity building to improve technical and managerial skills.											
4.1 Identify training needs											NDAL, PDAL, NGO's
4.2 Identify trainers & trainees to conduct training.											NDAL, PDAL, NGO's, NDAL
4.2 Secure funding											NDAL /PDAL, Line agencies, Commodities
4.3 Conduct training of trainers in provinces and districts.											
4.4 Incorporate & conduct appropriate farmer training to women and youths within all relevant agencies/commodities											NDAL, PDAL, Line agencies, Commodities
4.5 Conduct field visits/ field days and shows to expose and share knowledge and skills, national & internationally.											NDAL, PDAL, Line agencies, Commodities

Project /Activities	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Responsible Agency
5. Encourage and support women and youth to participate in self - employment and small cottage industries											
5.1 Identify different cottage activities in agriculture.											NDAL, PDAL
5.2 Identify entrepreneurs engaged in small agro-business.											NDAL, PDAL, Agencies
5.3 Design and submit project proposal to donors and micro-finance agencies.											NDAL/ PDAL, Agencies
5.4 Assist entrepreneurs in agric business management and link to Micro-finance.											NDAL, PDAL, NARI, FPDA, Industries
6. Support and strengthen linkages in the dissemination of information to farmers											
6.1 Identify information needs											NDAL, PDAL, Research Inst.
6.2 Produce relevant information											NDAL, PDAL
6.3 Collect and disseminate specific agric information to farmers.											NDAL/PDAL
7. Create gender database useful for identifying target groups for extension services and major impact project											
7.1 Identify project sites base on criteria.											NDAL, PDAL, LLG's,
7.2 Prepare questionnaires and conduct survey.											NAC, PAC, Industries
7.3 Compile /input data collected/produce report											NDAL, PDAL, NAC, PAC, Industries
7.4 Link database to website and disseminate to all WIAD centres and agencies for use.											NDAL, PDAL, NAC, PAC, Industries
8. Develop a HIV/AIDS workplace policy for the agricultural sector											
8.1 Form a inter-agency agric. HIV/AIDS committee											NDAL, PDAL, NAC/PAC, Industries
8.2 Conduct consultation with stakeholders and formulate policy.											NDAL, PDAL, Industries
8.3 Produce document & have it launched.											NDAL, PDAL, NAC, PAC, Industries
8.4 Conduct awareness to all stakeholders in Prov/Districts.											NDAL, PDAL, NAC, PAC, Industries
8.5 Incorporate policy into all provinces /district/commodity plans for implementation.											NDAL, PDAL, NAC, PAC, Industries
8.6 Ensure that all service providers are trained and integrate HIV/AIDS in their training programs and contracts.											NDAL, PDAL, NAC, PAC, Industries

Project /Activities	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Responsible Agency
9. Create awareness on the adverse effects of HIV/IDS and the socio-economical factors in the agricultural sector											
9.1 Identify resource person's service providers to conduct awareness.											NDAL, PDAL, NAC, PAC, Industries
9.2 Secure funding to conduct awareness.											NDAL, NCW
9.3 Conduct awareness and in-house training to staff and farmers in provinces/dist and commodity agencies.											NDAL, PDAL, NAC, PAC, Industries
9.4 Source information from NAC to support and enhance extension services in the awareness programs.											NDAL, PDAL, NAC, PAC, Industries
10. Establish and strengthen partnership and technical cooperation with relevant donor and national agencies											
10.1 Seek and secure technical & financial support in combating HIV/AIDS epidemic.											NDAL, PDAL, NAC, PAC, Industries
10.2 Source partnership and identify relevant agencies / programs to facilitate within the sector.											NDAL, PDAL, NAC, PAC, Industries
10.4 Conduct out-reaches programs jointly targeting high risk areas in agriculture and rural settings especially geared towards HIV/AIDS gender and food security.											NDAL, PDAL, NAC, PAC, Industries, Donors
10.4 Conduct out-reaches programs jointly targeting high risk areas in agriculture and rural settings especially geared towards HIV/AIDS gender and food security.											NDAL, PDAL, NAC, PAC, Industries, Donors

APPENDIX 55: GENDER, SOCIAL AND HIV/AIDS IMPLEMENTATION SCHEDULE

Project /Activities	Budget Estimate in Thousand Kina											Funding Source			
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total				
1. Establish WIAD offices in Provinces/districts															
1.1 Create WIAD Desks/ positions in Provinces	20	20	10											50	GoPNG
1.2 Secure funding for WIAD desks in Provinces and Nat. level through budgetary support.	50	50	50	50	50	50	50	50	50	50	50	50	50	500	GoPNG, Donors
1.3 Procure of equipments and recruitment of support staff.	100	100	100	100	100	100	100	100	100	100	100	100	100	1000	GoPNG, Donors
1.4 Conduct Gender awareness training and training of gender officers	50	50	50	50	50	50	50	50	50	50	50	50	50	500	GoPNG, Industries
1.5 Nominate women representatives to boards	10		10		10		10		10		10		10	50	GoPNG
2. Coordinate and facilitate women's groups/ Associations															
2.1. Identify potential women groups and register.	10		10		10		10		10		10		10	50	GoPNG, Donor
2.2. Conduct management leadership training and awareness on financial literacy and investment opportunities.	25	25	25	25	25	25	25	25	25	25	25	25	25	250	GoPNG
3. Improve and strengthen women's network														0	
3.1 Mobilize, establish and strengthen networks with other women associations	10		10		10		10		10		10		10	50	GoPNG
3.2 Coordinate and conduct national forum to discuss gender issues and develop a 5 year national strategic plan	50	50												100	GoPNG, Donors
4. Organise training and capacity building to improve technical and managerial skills.															
4.1 Identify training needs	10		10		10		10		10		10		10	50	GoPNG, Donors
4.2 Identify trainers & trainees to conduct training.	10	10	10	10	10	10	10	10	10	10	10	10	10	100	GoPNG
4.3 Secure funding	10	10	10	10	10	10	10	10	10	10	10	10	10	100	GoPNG
4.4 Conduct training of trainers in provinces and districts.	50	50	50	50	50	50	50	50	50	50	50	50	50	500	GoPNG, Donors
4.5 Incorporate & conduct appropriate farmer training to women and youths within all relevant agencies/commodities	100	100	100	100	100	100	100	100	100	100	100	100	100	1000	GoPNG, Donors

Project /Activities	Budget Estimate in Thousand Kina										Funding Source	
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016		Total
4.6 Conduct field visits/ field days and shows to expose and share knowledge and skills, national & internationally.	50	50	50	50	50	50	50	50	50	50	500	GoPNG
5. Encourage and support women and youth to participate in self - employment and small cottage industries												
5.1 Identify different cottage activities in agriculture.	10		10		10		10			10	50	GoPNG, Donors
5.2 Identify entrepreneurs engaged in small agro-business.	10		10		10		10		10	10	60	GoPNG
5.3 Design and submit project proposal to donors and micro-finance agencies.	10	10	10	10	10	10	10	10	10	10	100	
5.4 Assist entrepreneurs in agric business management and link to Micro-finance.	2000	400	400	400	400	300	300	300	300	300	5100	GoPNG
6. Support and strengthen linkages in the dissemination of information to farmers												
6.1 Identify information needs	10	10	10	10	10	10	10	10	10	10	100	GoPNG, Donors
6.2 Produce relevant information	10	10	10	10	10	10	10	10	10	10	100	GoPNG
6.3 Collect and disseminate specific agric information to farmers.	10	10	10	10	10	10	10	10	10	10	100	GoPNG
7. Create gender database useful for identifying target groups for extension services and major impact project												
7.1 Identify project sites base on criteria.		50									50	GoPNG, Donors
7.2 Prepare questionnaires and conduct survey.		100									100	GoPNG, Donors
7.3 Compile /input data collected/produce report		100									100	GoPNG
7.4 Link database to website and disseminate to all WIAD centres and agencies for use.		10	10	10	10	10	10	10	10	10	90	GoPNG
8. Develop a HIV/AIDS workplace policy for the agricultural sector												
8.1 Form a inter-agency agric. HIV/AIDS committee	50										50	GoPNG
8.2 Conduct consultation with stakeholders and formulate policy.	50	50									100	GoPNG, Donors
8.3 Produce document & have it launched.	50	50									100	GoPNG
8.4 Conduct awareness to all stakeholders in Prov/Districts.	20	20	20	20	20	20	20	20	20	20	200	GoPNG, Industries
8.5 Incorporate policy into all provinces /district/commodity plans for implementation.	10	10	10	10	10	10	10	10	10	10	100	GoPNG
8.6 Ensure that all service providers are trained and integrate HIV/AIDS in their training programs and contracts.	50	50	50	50	50	50	50	50	50	50	500	GoPNG, Donors
9. Create awareness on the adverse effects of HIV/IDS and the socio-economical factors in the agricultural sector												

Project /Activities	Budget Estimate in Thousand Kina												Funding Source	
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total			
9.1 Identify resource person's service providers to conduct awareness.	20	20	20	20	20	20	20	20	20	20	20	20	200	
9.2 Secure funding to conduct awareness.	10	10	10	10	10	10	10	10	10	10	10	10	100	
9.3 Conduct awareness and in-house training to staff and farmers in provinces/dist and commodity agencies.	100	100	100	100	100	100	100	100	100	100	100	100	1000	
9.4 Source information from NAC to support and enhance extension services in the awareness programs.	20	20	20	20	20	20	20	20	20	20	20	20	200	GoPNG, Donors, Private Sectors
10. Establish and strengthen partnership and technical cooperation with relevant donor and national agencies														
10.1 Seek and secure technical & financial support in combating HIV/AIDS epidemic.	10	10	10	10	10	10	10	10	10	10	10	10	100	GoPNG, Donors
10.2 Source partnership and identify relevant agencies / programs to facilitate within the sector.	10	10	10	10	10	10	10	10	10	10	10	10	100	
10.3 Conduct out-reaches programs jointly targeting high risk areas in agriculture and rural settings especially geared towards HIV/AIDS gender and food security.	100	100	100	100	100	100	100	100	100	100	100	100	1000	
Total	3,115	1,665	1,315	1,245	1,305	1,145	1,195	1,155	1,195	1,165	1,165	1,165	14,500	

APPENDIX 60: LAND USE PLANNING AND MANAGEMENT FRAMEWORK

Goal: To provide all agencies of the government and private enterprise with basic land resource information necessary for planning sustainable development

Objectives / Strategies	Targets	Actions to be taken	Measurable outputs	Responsible Agency
1. Increases capacity and availability of Land resource information for planning at various levels of survey intensities to suit client needs				
1.1 Increase land resource (soil, water and environment) surveys	4 nationwide survey needs assessments	1.1.1 Assess the need and level of surveys intensities	Consultation report of provincial and private sector requirement	NDAL, PDAL, NGOs, Developers
	25 reconnaissance and regional based surveys conducted	1.1.2 Conduct reconnaissance or broad-based regional scale resource surveys for national land use project	25 project location identified	NDAL, PDAL, NGOs, Developers
	15 major project scale surveys conducted from 2007-2011	1.1.3 Conduct detailed provincial and district land use survey	15 projects benefits from the survey and field reports	NDAL, Project Initiators
	various projects surveys	1.1.4 Conduct specific project scale surveys Farmer and trainer training	survey field reports	NDAL, Project Initiators
	various site inspections	1.1.5 Site Inspection and assessments	30 field reports of site assessments	NDAL, Project Initiators
	various land resource survey equipments in 2008 and 2011	1.1.6 acquire soil, water, climate survey equipments	Inventory of survey equipments	NDAL, Government Agencies, Donor agencies
1.2 Improve availability and quality of land resource (soils, water, climate, geomorphology) information	60 reports of all scales of intensities over five years	1.2.1 Land resource survey report produced for clients	report released to clients	NDAL
	4 regional Distribution points	1.2.2 Establish appropriate information dissemination process	4 regional distribution points established	NDAL, PDAL
2. Develop sustainable land use plans for national, provincial, and district levels				

Objectives / Strategies	Targets	Actions to be taken	Measurable outputs	Responsible Agency
2.1 Enhance Land Use Planning Capacity	5 reviews conducted each years	2.1.1 Conduct review and identify new planning methods	Review Reports each year for 5 years	NDAL, National Agencies and International Institutions
	4 Regional Advisors trained	2.1.1.1 Training of Land Use Planners	output improved	NDAL, Universities, Donor agencies,
	4 regional workshops and one regional workshops	2.1.2 Conduct National and Regional Land Use Planning Workshop	Quarterly and annual Workshop each year	NDAL, Collaborating Agencies
	3 conferences a year	2.1.3 Participate at regional and international Land Resource management conferences	15 back-to-Office Conference reports by 2011	NDAL, Collaborating Agencies
	4 quarterly meetings each year	2.1.4 Conduct land use planning Committee meeting	quarterly reports of the committee meetings	NDAL, PDAL
	Conduct yearly provincial consultation on needs assessments	2.2.1 Conduct planning need assessments	Consultation reports completed and needs identified	NDAL, Donor agencies, PDAL, land developers
	1 Plan produced in 2007	2.2.2 Production of a National Agriculture Land Resource Development Plan	National Agriculture Land Resource Plan Developed	NDAL, National Agencies and Collaborating Agencies
	19 provincial plans	2.2.3 Provincial Land Use	19 Land Resource Plans Developed	NDAL, Provincial administration and collaborating agencies
	89 or more district plans	2.2.4 District land Use plans	89 or more Land resource plans developed	NDAL, Provincial & Districts administration, and JPPBC
	major agriculture land Use plans	2.2.5 Major Agriculture Land Use (Project) Plans	Plans developed	NDAL, National Agencies, Developers, and landowners
2.2 Increase planning Activities				

Objectives / Strategies	Targets	Actions to be taken	Measurable outputs	Responsible Agency
3. Enhance Geographical Presentation of Land Resource and capability Maps	1 conducted in 2007 and 2009	3.1.1 Re-assess current cartographic and mapping systems	Assessment Reports in 2007 and 2009	NDAL, Consultancy service
	Material Acquisition in 2008 and 2010	3.1.2 Acquire, install and commission computer and update mapping software's	project reports	NDAL, International agency and Donors
3.1 Increase mapping and cartographic mapping capability	2008 and 2010 and other years for land Use staff	3.1.3 Provide on-the-job-training for NDAL Staff	Quarterly training reports	NDAL, National and International agencies
	1 x international per years and 2x national per year	3.1.4 Professional Training for staff in remote sensing and advance GIS	Training reports	NDAL, UPNG, UNITECH, International Institutional and Donors
	national wide consultation survey on need assessment	3.2.1 Conduct out need assessment	2 needs assessment reports, 2007, 2009	NDAL
	15 national resource maps	Production of national land use and land resource maps	maps produced	NDAL, National agencies
	19 provincial x 15 resource maps	production of provincial land resource maps	285 provincial resource maps	NDAL, PDAL
	89 district x 15 resource maps	production of district maps	1335 district maps produced	NDAL, PDAL, District administration
4. Land Resource Inventory and Database Management	Various maps	Production of Project maps	project map reports	
	2 update conducted	4.1.1 Conduct regular information update	2 reviews and updates in 2008, and 2011	NDAL
4.1 Maintenance of current database and GIS systems	2 validation events	4.1.2 Validation of the information in current GIS and other database	2 validation report I 2008 and 2010	NDAL,

Objectives / Strategies	Targets	Actions to be taken	Measurable outputs	Responsible Agency
	2 upgrades	4.1.3 Conduct hardware and software upgrade	2 upgrade of computer hardware and software in 2008 and 2010	NDAL, Consulting agency, donor sponsor
5. To increase collaboration with national, regional and international organizations to enhance capacity and product quality and				
5.1 Establish strong linkage with land resource survey bodies	affiliation to international bodies	5.1.1 Affiliation to international land resource survey bodies such as Asocon, Vetivar Network, ISRIC, FAO, USDA, and others	membership established	NDAL, ASOCON, VETIVAR, ISRIC, FAO, USDA
	collaboration	5.1.2 Strengthen collaboration Regional soils and land resource network, Landcare, SPC, Pacific land	membership established	NDAL, SPC, NZ LANDCARE, Aust. LANDCARE
	collaboration	5.1.3 Strengthen partnership with Department of Environment and Conservation, Land Department	membership established with relevant agencies	NDAL, DEC, DLPP, NFS
5.2 Develop relevant policy guidelines on sustainable land use.	code of conduct guidelines	5.2.2 Establish a land use code-of-conduct and good practice guidelines.	guideline published in 2007	NDAL, collaborators and national agencies
	Land Use Policy established	5.2.1 Establish Land Use development policy for major land development.	Policy guidelines established in 2008	NDAL, collaborators and national agencies

APPENDIX 61: LAND USE PLANNING AND MANAGEMENT IMPLEMENTATION SCHEDULE

Objective / Strategy	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
1. Increase capability and availability of land resource information for planning at various levels of survey intensities based on client needs										
1.1 Increase land resource surveys										
1.2 Improve availability and quality of land resource information										
2. Develop sustainable land use development plans for national, provincial and district levels										
2.1 Enhance land use planning capacity										
2.2 Increase planning activities										
3. Enhance geographical presentation of land resource and land capability maps										
3.1 Increase mapping and cartographic capability										
3.2 Improve mapping productivity and quality										
4. Land Resource Inventory and database management										
4.1 Maintain high standard of current database and GIS systems										
5. To increase collaboration with national, regional and international agencies to enhance capacity and product quality and develop sound land use and land resource development and conservation policy										
5.1 Establish strong linkage with land resource survey bodies										
5.2 Develop relevant good practice guidelines and policies on sustainable land use										

APPENDIX 62: LAND USE PLANNING AND MANAGEMENT BUDGET

Objective / Strategy	BUDGET ESTIMATE IN THOUSAND KINA											Funding Source	
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total		
1. Increase capability and availability of land resource information for planning at various levels of survey intensities based on client needs+A5													
1.1 Increase land resource surveys	75	100	125	150	175	175	100	125	150	175	1,350	GoPNG	
1.2 Improve availability and quality of land resource information	50	50	50	50	50	50	50	50	50	50	500	GoPNG	
2. Develop sustainable land use development plans for national, provincial and district levels													
2.1 Enhance land use planning capacity	60	65	115	120	75	60	65	115	120	75	870	GoPNG	
2.2 Increase planning activities	50	50	50	50	50	50	50	50	50	50	500	GoPNG	
3. Enhance geographical presentation of land resource and land capability maps													
3.1 Increase mapping and cartographic capability	50	50	50	50	50	50	50	50	50	50	500	GoPNG / Donors	
3.2 Improve mapping productivity and quality	50	50	50	50	50	50	50	50	50	50	500	GoPNG / Donors	
4. Land Resource Inventory and database management													
4.1 Maintain high standard of current database and GIS systems	15	20	25	30	40	15	20	25	30	40	260	GoPNG / Donors	
5. To enhance capacity and product quality and develop sound land use and land resource development and conservation policy													
5.1 Establish strong linkage with land resource survey bodies	30	35	40	40	45	30	35	40	40	45	380	GoPNG	
5.2 Develop relevant good practice guidelines and policies on sustainable land use	50	50	50	50	50	50	50	50	50	50	500	GoPNG	
Total	430	470	555	590	585	530	470	555	590	585	5,360		

APPENDIX 63: CODEX AND FOOD SAFETY IMPLEMENTATION FRAMEWORK

- Goal: 1.** To ensure consumer health is protected against contaminated processed food
2. To facilitate trade through the cohesive international food standards, code of practices and other guidelines, hence eliminating barrier to trade

Objective / Strategy	Actions to be taken	Targets	Measurable outputs	Responsible Agency/ Collaborators
Objective 1. Strengthen Codex National Codex Management and Coordination	1.1.1. Office allocation 1.1.2. Establish Codex and food safety library services 1.1.3. Procure Office facilities and equipment	1.1.1.1. Separate office for codex	office established and allocated 2007	DAL,
		1.1.1.2. Fully equipped library	library and archive established in 2008	
		1.1.1.3. Office material and furniture	Functional office by 2007 as planned	
1.2 Capacity building and staff training	1.2.1. Create positions (Gr 15, 14, 12, 12) in NDAL structure 1.2.1.1. Recruit Expert to Lead Codex & Food Branch 1.2.3. Professional Training to technical staff 1.2.4. Formalize National Codex Committee 1.2.5. Formalize National Codex Contact Point	1.2.1.1. 4 positions created	DPM approval	NDAL, other government agencies CACC, NEC, DPM, International Institutions
		1.2.2.1. Employ staff	Staff recruited	
		1.2.3.1. Recruit 3 technical staff	3 staff trained	
		1.2.4.1. 1 formal NCC by 2007	Legalized and formally recognized NCC	
		1.2.5.1. CCP operational by 2007	Inclusion of Codex Unit into DAL structure	
1.3 Strengthen partnership with International Organizations	1.3.1. Regional Codex and Food safety Office 1.3.2. Collaborate food safety and food standards activities with FAO, WHO, WTO, etc.	1.3.1.1. National contact point for regional and international collaboration and liaison		NDAL, Regional and International Institutions, FAO, WTO,

Objective / Strategy	Actions to be taken	Targets	Measurable outputs	Responsible Agency/ Collaborators
Objective 2. Enhance codex and food safety activities				
2.1 Conduct strategic extension and public awareness	2.1.1. Workshop on awareness of food safety and trade 2.1.2. Media production of awareness material 2.1.3. Participate in national meetings/conferences/workshops to create awareness 2.1.4. participate at international conferences of committee on selected food standards	2.1.1.1. Annual workshops 2.1.2.1. 4X radio programmes, 1 video 2.1.3.1 Two meetings annually 2.1.4.1. Four conferences annually on various aspects	Workshops in 2nd quarter of each year Awareness created Awareness created Awareness created and capacity enhanced and increased participation	NDAL, other government agencies, International Institutions
2.2 Conduct strategic research and other studies	2.2.1. National dietary expose assessment/study 2.2.2. Chemical contaminant risk assessment and monitoring 2.2.3. Microbial contaminant risk assessment and monitoring 2.2.4. Survey/assessment of GMF situation in PNG 2.2.5. support to accredited laboratories 2.2.6. Survey/assessment of food labeling	2.2.1.1. Two studies per year 2.2.2.1. Two risk assessments annually 2.2.3.1. Two risk assessments annually 2.2.4.1. One survey 2.2.5.1. Two accredited labs 2.2.6.1. One survey annually	Create better understanding for necessary actions Report to improve performance and food standards Report to improve performance and food standards Report to improve performance and food standards Better services and quality data Report to improve performance and food standards	NDAL, International Agencies, Accredited Laboratories,
2.3 Database management	2.3.1. Establishment of Food, Producer and Trading Registries 2.3.2. Registry and library of food standards, ect	2.3.1.1. Food, producer and trading registries 2.3.2.1. Library facility by 2008	Food, Producer and Trading register databases established 2007 Food standards databases established 2007	NDAL, Consultancies

Objective / Strategy	Actions to be taken	Targets	Measurable outputs	Responsible Agency/ Collaborators
Objective 3. Ensure fair practice is maintained by food manufacturers, processors, importers				
3.1 Develop and regulate of food standard and relevant policies	3.1.1. Review food standards and regulations 3.1.2. Develop food standard for locally produced food 3.1.3. Test and monitor product inspection & feed back mechanism	3.1.1.1. Four reviews 3.1.2.1 Food standards for local food 3.1.3.1. Regular inspection & feed back to producer	Review reports completed Number of food standards Reports of product quality test	NDAL, NCC members, regional and international agencies, food producers

APPENDIX 64: CODEX AND FOOD SAFETY IMPLEMENTATION SCHEDULE

Objective / Strategy	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Objective 1. Strengthen Codex National Codex Management and Coordination										
1.1 Institutional Strengthening and infrastructure support										
1.2 Capacity building and staff training										
1.3 Strengthen partnership and collaboration with international organizations										
Objective 2. Enhance codex and food safety activities										
2.1 Conduct extension and public awareness										
2.2 Conduct strategic research and other studies										
2.3 Database management										
Objective 3. Ensure fair practice is maintained by food manufacturers, processors, importers										
3.1 Develop and regulate food standards, and relevant policies										

APPENDIX 65: CODEX AND FOOD SAFETY BUDGET

Objective/Strategy	BUDGET ESTIMATE IN THOUSAND KINA										Funding Source		
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016		Total	
Objective 1. Strengthen Codex National Codex Management and Coordination													
1.1 Institutional Strengthening and infrastructure support	100	100	100	100	100	100	100	100	100	100	100	1,000	Donor, Govt
1.2 Capacity building and staff training	100	100	100	100	100	100	100	100	100	100	100	1,000	Donor, Govt
1.3 Strengthen partnership and collaboration with international organizations	50	50	50	50	50	50	50	50	50	50	500	500	Donor, Govt
Objective 2. Enhance codex and food safety activities													
2.1 Conduct extension and public awareness	50	50	50	50	50	50	50	50	50	50	500	500	Donor, Govt
2.2 Conduct strategic research and other studies	100	100	100	100	100	100	100	100	100	100	1,000	1,000	Donor, Govt
2.3 Database management	100	100	100	100	100	100	100	100	100	100	1,000	1,000	Donor, Govt
Objective 3. Ensure fair practice is maintained by food manufacturers, processors, importers													
3.1 Develop and regulate food standards, and relevant policies	150	150	150	150	150	150	150	150	150	150	1,500	1,500	Donor, Govt
Total	650	650	650	650	650	650	650	650	650	650	6,500	6,500	

APPENDIX 66: NADP MANAGEMENT IMPLEMENTATION FRAMEWORK

Goal: A responsive secretariat and NADP management with common vision cooperating with all stakeholders with transparency.

Objective / Strategy	Activity	Measurable output	Responsible Agency/ Collaborators
Objective 1. A responsive secretariat and NADP management with common vision cooperating with all stakeholders with transparency.			
1.0 NDAL established secretariat unit to manage the operation of NADP	1.1 NADP secretariat established within NDAL with inputs from stakeholders 1.2 Establish NADP TAC & Coordinate meetings 1.3 Coordinate planning of NADP programs 1.4 Organise & Coordinate NAC conferences 1.5 Review progress of NADP projects, monitor, evaluate & report	NADP secretariat established by 2007 NADP TAC established by 2007 No. meetings organized No. NAC meeting organized No. of reports on review, monitoring & evaluation completed	NDAL & NADP stakeholders NDAL & Secretariat NADP Secretariat NADP Secretariat NDAL & Secretariat & NADP stakeholders
Objective 2.0 A dedicated policy & planning units to provide appropriate analyses & provide options for agriculture development	2.1 Through the FER, establish a dedicated policy and planning unit for NADP 2.2 Develop appropriate guidelines for policy & planning unit	Dedicated policy & planning unit for NADP established by end of 2007 Draft guidelines completed by mid 2007	NDAL & Secretariat & NADP stakeholders NADP Secretariat
Objective 3.0 Capacity building for NADP managers at all levels for coordination, monitoring and evaluation, and systematic and timely reporting.	3.1 Develop a strategic training program for NADP managers in the area of coordination, monitoring & evaluation & reporting & train participants	Training program documented	NDAL & Secretariat & NADP stakeholders
Objective 4. Coordinate and implement Participatory Planning, Monitoring and Evaluation of NADP	4.1 Develop appropriate guidelines for NADP management & stakeholders in participating in the NADP consultation process 4.2 Develop appropriate guidelines for NADP management process, monitoring & evaluation & reporting and Implement M&E.	Draft guidelines completed by mid 2007 Draft guidelines completed by mid 2007	NDAL & Secretariat & NADP stakeholders NDAL & Secretariat & NADP stakeholders
Objective 5. Support to intra sector cooperative formations	5.1. Develop with National Cooperative Unit guidelines for cooperative formation and promote agricultural sector cooperatives 5.2. Coordinate training of cooperative members and managers 5.3. Support to agriculture sector cooperatives revolving fund	Agriculture sector cooperative guidelines and number of cooperatives formed Number of cooperative members / managers trained Revolving funds established and operational by June 2007	NDAL. National Cooperatives Unit, Industry Boards, DPI's NDAL. National Cooperatives Unit, Industry Boards, DPI's NDAL. National Cooperatives Unit, Industry Boards and Corporations, DPI's

APPENDIX 67: NADP MANAGEMENT IMPLEMENTATION SCHEDULE

Objective / Strategy / Activity	Year									
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Objective 1. A responsive secretariat and NAP management with common vision cooperating with all stakeholders with transparency.										
1.0 NODAL established secretariat unit to manage the operation of NADP										
1.1 NADP secretariat established within NDAL with inputs from stakeholders										
1.2 Establish NADP TAC & Coordinate meetings										
1.3 Coordinate planning of NADP programs										
1.4 Organise & Coordinate NAC conferences										
1.5 Review progress of NADP projects, monitor, evaluate & report										
2.0 A dedicated policy & planning units to provide appropriate analyses & provide options for agriculture development										
2.1 Through the FER, establish a dedicated policy and planning unit for NADP										
2.2 Develop appropriate guidelines for policy & planning unit										
3.0 Capacity building for NADP managers at all levels for coordination, monitoring and evaluation, and systematic and timely reporting.										
3.1 Develop a strategic training program for NADP managers in the area of coordination, monitoring & evaluation & reporting & train participants										
4. Coordinate and implement Participatory Planning, Monitoring and Evaluation of NADP										
4.1 Develop appropriate guidelines for NADP management & stakeholders in participating in the NADP consultation process										
4.2 Develop appropriate guidelines for NADP management process, monitoring & evaluation & reporting and Implement M&E,										
5. Support to intra sector cooperative formations										
5.1. Develop with National Cooperative Unit guidelines for cooperative formation										
5.2. Coordinate training of cooperative members and managers										
5.3. Support to agriculture sector cooperatives revolving fund										

APPENDIX 68: NADP MANAGEMENT BUDGET

Objective/Activity	Budget Estimate in Thousand Kina										Funding Source		
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016		Total	
Objective 1. A responsive secretariat and NADP management with common vision cooperating with all stakeholders with transparency.													
1.0 NDAL established secretariat unit to manage the operation of NADP													
1.1 NADP secretariat established within NDAL with inputs from stakeholders	300	250	250	250	250							1,300	GoPNG
1.2 Establish NADP TAC & Coordinate meetings	150	100	100	100	100	100	100	100	100	100	100	1,050	GoPNG
1.3 Coordinate planning of NADP programs	200	200	200	200	200	200	100	100	100	100	100	1,600	GoPNG
1.4 Organise & Coordinate NAC conferences	150	100	100	100	100	100	100	100	100	100	100	1,050	GoPNG
1.5 Review progress of NADP projects, monitor, evaluate & report	200	150	150	150	150	150	150	150	150	150	150	1,550	GoPNG
2.0 A dedicated policy & planning units to provide appropriate analyses & provide options for agriculture development													
2.1 Through the FER, establish a dedicated policy and planning unit for NADP	600	250	250	250	250	250	250	250	250	250	250	2,350	GoPNG
2.2 Develop appropriate guidelines for policy & planning unit	300											300	GoPNG
3.0 Capacity building for NADP and sector Managers at all levels for coordination, monitoring and evaluation, and systematic and timely reporting.													
3.1 Develop a strategic training program for NADP managers in the area of coordination, monitoring & evaluation & reporting & train participants	600	600	600	600	600							3,000	GoPNG / Donors

Objective/Activity	Budget Estimate in Thousand Kina										Funding Source			
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016		Total		
4. Coordinate and implement Participatory Planning, Monitoring and Evaluation of NADP														
4.1 Develop appropriate guidelines for NADP management & stakeholders in participating in the NADP consultation process and implement	500	300	300	300	300								1,700	GoPNG
3.2 Develop appropriate guidelines for NADP management process, monitoring & evaluation & reporting and implement M&E,	1,500	700	700	700	700	200	200	200	200	200			5,300	GoPNG
5. Support to intra sector cooperative formations														
5.1. Develop with National Cooperative Unit guidelines for cooperative formation and promote agricultural sector cooperatives	200												200	GoPNG
5.2. Coordinate training of cooperative members and managers	300	300	400	500	500								2,000	GoPNG
5.3. Support to agriculture sector cooperatives revolving fund	500	700	600	500	500	200	200	200	200	200			3,800	GoPNG
Total	5,500	3,650	3,650	3,650	3,650	1,200	1,100	1,100	850	850			25,200	