NATIONAL AGRICULTURE AND LIVESTOCK

IMPLEMENTATION PLAN 2024-2033

"DOWNSTREAM PROCESSING AND COMMERCIALIZATION"



Transforming the Agriculture Sector:
Subsistence Farming to Commercial Enterprises

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National Agriculture Sector Plan 2024 - 2033

Agriculture Strategic Implementation Plan

"Downstream Processing and Commercialization"

Part IV

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FOREWORD



I remind myself that all extractive industries (gold, copper, nickel, cobalt, oil, LNG, condensate) in PNG have their lifespan and they will be exhausted in the course of time but agriculture remains our backbone and the foundation of our economy into the future. I further remind myself that every Papua New Guinean has his or her roots and strength in agriculture whereby parents, grandparents and forefathers have been farmers and traders (barter system). Thus, I firmly believe the wealth and prosperity of PNG is in agriculture.

Retrospectively, I have recognized the economic, cultural, heritage, health and spiritual values and connection of the people to agriculture, and thereby boldly declared to the world that PNG will become the "Richest Christian Black Nation in the world". My government prioritized economic independence and would like to achieve a K200 billion economy by 2030. Agriculture sector is a sleeping economic giant and it has my Government's undivided support to unlock the real treasure of this country. Thus, I have

tasked the sector to contribute K30 billion and contribute to the 1,000,000 job creation target by 2030.

I have made some strategic decisions to give prominence to the agriculture sector by creating four ministries for the sector to develop all the agriculture commodities to their full potential. It took five years for the sector to conceptualize my government priorities in agriculture commercialization and downstream processing of value-adding products that will double and triple revenue and create more employment for our people, our graduates and our youths who are the productive labour force. I am pleased the sector has formulated the PNG National Agriculture Sector Plan (NASP) 2024-2033 for my government to endorse. The plan captures my Government's vision for an agriculture-based economy and aligned to the strategic goals of Vision 2050, NPNG DSP 2010-2030 and MTDP IV 2023-2027.

I am delighted that 85% of the population will gain more benefits from NASP 2024-2033 investments. It has created a platform for the local, district, provincial and national governments, private investors and foreign direct investors to venture into strategic partnership with land owners and other stakeholders for development of large-scale commercial agriculture and downstream processing space. This ensures active participation in the economic development by all citizens where no one is left behind. Thus, my government will secure financial, nutritional and food security for PNG.

I would like to ensure the NASP 2024-2033 materializes through the Connect PNG program of the Government where rural PNG and agriculture production centres are connected by roads, ports, airports, energy and communication infrastructures. These deliberate intervention programs will stimulate economic growth and commercial centres in all rural PNG, improving connectivity, creating employment, increasing opportunities and improving livelihoods. I am pleased to note that NASP 2024-2033 will be anchored by Agriculture Sector Policy and Legislative Framework to advance the commercial agriculture development for PNG. I commend the Ministers for Agriculture, Coffee, Oil Palm and Livestock, the Department of Agriculture, Ministries of Coffee, Oil Palm, Livestock, Commodity Boards, Sector

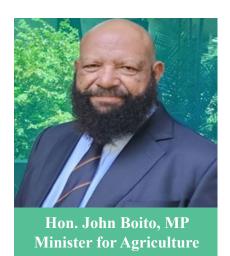
Agencies, National and Provincial Departments, Private Sector, Development Partners, NGOs, MSMEs, MSMIs and our hardworking farmers for collectively and carefully formulating this road-map. I am confident that the agriculture sector will achieve the K30 billion toward my government's commitment to have a K200 billion economy by 2030.

God will bless and guide us as we implement the NASP 2024-2033 for the people of Papua New Guinea.

HON. JAMES MARAPE, MP

Prime Minister of Papua New Guinea

MINISTER'S STATEMENT



PNG is an exporter of primary products of coffee (green bean), cocoa (cocoa bean), coconut (copra/copra oil), oil palm (crude oil), rubber (latex) and vanilla (dry pods) and importer of finished products. The export value is below K6 billion per annum. I am of the view that each agriculture commodity in PNG can generate above K1.0 billion if we increase production and do downstream processing and value adding. I have always maintained that the agriculture sector is a sleeping economic giant and has a combined worth of K50-100 billion per annum if each commodity, whether be it crop or livestock is traded as finished products such as Chocolate, instant coffee, cosmetics, pharmaceuticals, oils and so on. Agriculture alone can support the government budget and sustain the economy.

I reiterate and reaffirm the Government's prioritization on agriculture commercialization, and downstream processing and value adding of agriculture products. I will work closely with my three colleague ministers; Minister for Coffee, Minister for Oil Palm, and Minister for Livestock, to

ensure our sector achieves the goal of K30 billion of the K200 billion economy by 2030 target of the Government. While each Commodity Board has Key Result Areas and Key Performance Indicators to achieve, I expect all of us to cooperate with the Agriculture Department and the NASP Management Secretariat that will manage and coordinate the implementation of NASP 2024 - 2033. Our combined efforts will create more employment and income opportunities for our people and deliver our share of revenue contribution to the economy. The NASP provides us with the road map and direction to work together with our Provincial Governments, District Development Administrations, Local-Level Governments, development partners, private sector, investors and our farmers for the next 10 years, as a united body by sharing information, data, skills and land resources for the greater outcome for our people and our country.

Our major source of funding will come from the Government MTDP IV 2023-2027. We have also negotiated for external funding through soft loans and direct foreign investments to co-fund the NASP 2024-2033 for agriculture commercial development and downstream processing to accommodate our private sector players in the agriculture sector. We have the undivided support of our Prime Minister Hon. James Marape, MP and other colleague Ministers in other economic sector ministries; Treasury, Planning, Finance, Transport, Civil Aviation, Commerce and Industry, International Trade and Investment, Foreign Affairs, Labour and Industrial Relations, Climate Change Development Authority, NISIT, DPLGA, DoWH, DoCl, MITI, Energy Authority and Migration, who are ever ready to assist us deliver the NASP 2024-2033.

On this note, I express my sincere gratitude and appreciation to the Secretary of the Department, Dr Sergie Bang, former Acting Secretaries; Dr Nelson Simbiken and Mr Brown Konabe, National Agriculture Sector Plan Coordinator, Mr Mame Kasalau MBE, the consultants and the Secretariat team for delivering the NASP 2024-2033. I extend my gratitude to the Chairman and members of the Economic Sector Ministerial Committee for their invaluable guidance and undivided support; Members of the National Agriculture Council for their support and endorsement of the plan; Special appreciation to my predecessor. Hon. Aiye Tambua, the former Minister for Agriculture, for your remarkable leadership and wisdom in initiating the development of this plan; Hon John Simon, the former minister for Agriculture, for your continued support to the sector. Special acknowledgement and appreciation to Commodity Boards, National Departments, Private Sector, Provincial Administrations, NGOs, National Institutions, Development Partners and our hardworking farmers for the contributions and support. I am looking forward to working with you all in the implementation stages of the plan.

I encourage both public and private sector to partner with us and invest in the NASP.

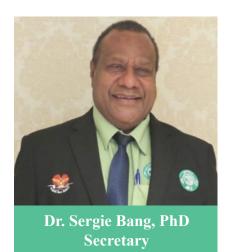
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May God bless this plan and bless us as we implement the NASP 2024-2033 to serve our people in Papua New Guinea.

HON: JOHN BOITO, MP

Minister for Agriculture

PREFACE



The Prime Minister of Papua New Guinea, Hon. James Marape, in his inaugural address to the nation, declared that Agricultural Development is his Government's top priority after the significant progress achieved so far in the non-renewable mining and petroleum sectors. This plan (NASP 2024–2033) is aligned to the Government's MTDP IV 2023-2027, which prioritizes the Agriculture Sector.

Currently, food insecurity and poor nutrition is a growing concern in PNG. There is an inconsistent daily supply of food to households (PNG DHS, 2016 - 2018) and a high malnutrition rate. One child out of 13 children dies due to malnutrition before s/he reaches 5 years and a significant 40% - 50% of the remaining children are stunted or wasting (UNICEF, 2021). PNG has a high poverty rate of 40%, especially in rural areas (UNDP, 2014). Unemployment is high in the country, with a reported 240, 000 people who actively looked for work in 2020 (Trading Economics, 2020). There are declining yields of

agricultural food gardens in densely populated areas across our country and these desperately need interventions to develop resilient agricultural production systems under our changing climate (Food Systems Profile - PNG, FAO, 2023).

Long-term sustained macroeconomic growth and development of the PNG economy heavily depends on Agriculture, which has the potential to create wealth, employment and trigger industrialisation and services leading to a significant increase in food security and poverty reduction amongst others. The sector's current share of GDP stands at around 30% and will continue to be the primary economic activity that provides livelihoods for over 80% of the rural population. Hence, its development has positive implications for the majority of the population and other sectors of the economy.

The development targets in the MTDP IV 2023-2027 and NASP 2024–2033 show us the contributions the Agriculture Sector must make to the nation in 2027 and beyond. These include; improved food supply to homes and reduced malnutrition and stunting in children. The Agriculture Sector is targeted to contribute K30 billion to the PNG Economy by 2033, thereby creating wealth for all Papua New Guineans. The production and export of Commodity Crops will have tripled or quadrupled, while increased domestic Food crops grown and livestock raised will replace imports, derived from climate-smart resilient production systems. Through this, 500, 000 new jobs or more will be created and 50, 000 SMEs established for the Nation.

The sector is developing a new vision with efficient service delivery mechanisms: "Make agriculture the "engine for socio-economic growth and development through commercial agriculture". To realize this vision, the NASP identified thirteen strategic Agriculture Priority Areas (APAs) to contribute towards achieving the following objectives:

- Enhanced Productivity, Improved Production Efficiency and Market Competitiveness
- Improved Infrastructure and Access to Markets
- Increased Agriculture Commodity Investment and Exports
- Sustainable Land Mobilisation, Use and Management
- Enabling Policy and Legal Environment for Mobilising Private Sector Participation
- Comprehensive Research and Development
- Integrated Agriculture Education, Training and Extension Services
- Effective Agricultural and Biosecurity Practices
- Improved Food and Nutrition Security and Safety Standards
- Climate-Smart Agriculture Practices
- Effective Institutional Reforms and Sector Development
- Improved Information Management and Use of ICT
- Effective National Agriculture Sector Plan Management

The thirteen APAs are divided into five major investment programmes for effective implementation and achievement of results:

- Commodity Commercialization Programme targets tree crops (oil palm, cocoa, coffee, coconut, rubber, tea),
 rice and grain, livestock, spices, and fresh produce, which will be implemented through commercial agriculture
 investments and entrepreneurship and market-driven agriculture production and downstream processing at
 smallholder, medium to large-scale.
- Agriculture Infrastructure Development Programme focuses on rehabilitation of run-down plantations and all
 infrastructure required for agricultural development, such as feeder roads, jetties, wharves, irrigation, marketing,
 processing and storage facilities.
- Private Sector Participation Programme looks at providing an enabling policy and legal environment for private sector to participate through investments, etc.
- Research and Development Programme targets research agenda for technological upgrading, promoting innovation and commercialization, improving research capacity and upgrading research facilities and equipment.
- Sector Governance and Management Programme focuses on institutional reform within the Department of Agriculture and Livestock to enable it to perform its role as the lead agency to ensure an effective and coordinated implementation and management of the sector.

An overarching Legal Framework has been put in place to coordinate and govern the operations of PNG's agriculture sector through the National Agriculture Administration Act (NAAA) Bill and the Agriculture Investment Corporation (AIC) Bill.

Gender, youth, and farmer health care issues, including HIV/AIDS, will be mainstreamed across the 13 APAs. Green economy principles and climate-smart agriculture practices will be adopted as safeguards with medium-large-scale commercialization and mechanization of agriculture.

It is hoped that with the National Agriculture Policy, Strategies and Results Framework, Implementation Plan and the two legislations, the NASP will be successfully implemented to ensure the sector plays its role as the engine for socioeconomic growth in PNG. I, therefore, entreat you all to embrace this plan and invest accordingly in the sector.

DR SERGIE BANG

Secretary for Department of Agriculture and Livestock



EXECUTIVE SUMMARY

Agriculture remains the backbone and the foundation of the economy; yesterday, today, tomorrow, and the foreseeable future. In all material times, the people depend on agriculture for food security and subsistence economy, called barter systems. PNG's cultural, spiritual and physical values, and its heritage are deeply rooted in agriculture. Agriculture continues to support more than 80% of the population, majority are rural based. Agriculture sector is the largest employer in PNG, both informal and formal employment. Every Papua New Guinean has his or her roots and strength in agriculture. People's current and future wealth and economic prosperity is in the Agriculture Sector.

Comparatively, agriculture contributes 14% of the total GDP while the agriculture export contributes between 3.5% to 6% in the last 8 years average at 4.8% per annum. The sector has contributed K31.826 billion into the economy between 2015 and 2022 through agriculture commodity export earnings. The annual income averages at K3.978 billion from exports. This income was generated from raw material exports of oil palm (crude oil), coffee (green bean), cocoa (dry bean), coconut (copra/copra oil), rubber (latex), vanilla (dry pods) and tea. Agriculture has a comparative advantage in the economy with its treasure for greater contribution to GDP remains unlocked.

Prime Minister Hon James Marape MP boldly declared to the world to make PNG the "Richest Christian Black Nation" where "No one is left behind." This is a patriotic statement of the Prime Minister to have PNG transform economically. The Government of Marape-Rosso tasked the economic sectors to generate K200 billion into the economy and create 1,000,000 additional jobs by 2030. The agriculture sector contribution will be K30 billion and further creating more employment opportunities in the NASP term. Agriculture sector is a sleeping economic giant with an estimated value of up to K100 billion and it can exceed the target.

It took almost five years for the sector to conceptualize the Government of Marape-Rosso's priorities in agriculture commercialization and domestic downstream processing of value adding products that will give 10-fold increase in revenue, create more employment opportunities for graduates and youths who are the productive labor force. The National Agriculture Sector Plan (NASP) 2024-2033 is the road map for the sector to unlock the treasure within the sector. It contains Implementation Plan with KRAs, KPIs, Outcomes and Outputs for each subsector, supported by National Sector Policy and Legal Frame Work that will enable NASP to achieve the Government's goal and priorities.

The NASP will stimulate economic growth in the agriculture sector in all Provinces. It is a 10-year stimulus package for commercialization, downstream processing and value adding of crops and livestock products that will increase economic value and high return into the economy. NASP has identified some selected commodities with larger volume advantage to be immediately supported for production and downstream processing through PPP business arrangement between Provincial Government and Investor on 60/40 shareholding, majority shares to the Provincial Government. NASP will support development of large-scale commercial crop and livestock production of an agriculture and livestock commodity of strength and comparative advantage in each province to build volume as well as supporting value chain development for selected commodities toward commercialization. NASP has thoroughly captured the Government of Marape-Rosso's vision, goal and priorities in the domestic production and downstream processing for the agriculture sector. In due course, all provinces shall have at least one downstream processing product and several large-scale commercial farm operations through its designated agriculture industrial park and commercial center to consistently supply volume to itself or to other provinces for downstream processing.

Total of K15,115 billion will be needed to finance NASP 2024-2033. The agriculture stimulus package will have two funding sources. A concessional soft loan of K8.0 billion for supporting capital investment into downstream processing of crop and livestock commodities shall be negotiated at 2% interest for 20 years repayment schedule. GoPNG funding allocation of K3.491 billion during phase 1 (2024-2029) and K3.624 billion during phase 2 (2029-2033) will support the Commodity Boards in implementation of NASP commercialization and downstream processing capacity building programs. Government, through the Department of Agriculture shall establish a Secretariat as a Program Management Coordination Unit (PMCU) for effective coordination, management and monitoring of NASP. All funding will be managed in the Agriculture Industry Corporation (AIC) and the operations of DAL, Commodity Boards and the Sector Governed by the Agriculture Administration Act (AAA).

SECTION A: INTRODUCTION





SECTION A: INTRODUCTION

The National Agriculture Sector Plan (NASP) 2024-2033 embraces the Prime Minister Hon James Marape's bold declaration to make PNG "Richest Christian Black Nation" where "no one is left behind". More than 95% of the population are millionaires by assets and natural resources, which affirms the view of the Prime Minister. NASP is a road map leading the people of Papua New Guinea to where the strength of the nation is and crystalizes the hidden treasure that is with the people, for the people and by the people. The hidden treasure is agriculture transformation, to transform subsistence and seasonal farming into specialized commercial production of crops or livestock (Figure A1), converting the primary products into diversified tertiary products through downstream processing and value adding, ultimately increasing economic values and economic returns.

There are 17 key priority programs in this Implementation Plan. The action strategies and outcomes are outlined in Section H as part of deliberate intervention programs, with strategic objectives, measurable KPIs, outputs and outcomes for the Program Management Coordination Unit (PMCU) to project manage, coordinate and monitor the performance of each sub-sector. The programs include;

Downstream Processing.

Commercial Agriculture and Livestock Development.

Agriculture MSMI/MSME and Value Chain Development.

National Seed Security & Commercial Seed Development. National Food Security.

Agriculture Research and Innovations.

Agriculture Extension and Rural Development.

Agriculture Biosecurity and Trade.

Climate Change.

Agriculture Input Supplies Accessibility and Affordability. Agriculture Statistics Bureau, Information and Publication. Graduate Development and Agripreneurship. Land Development.

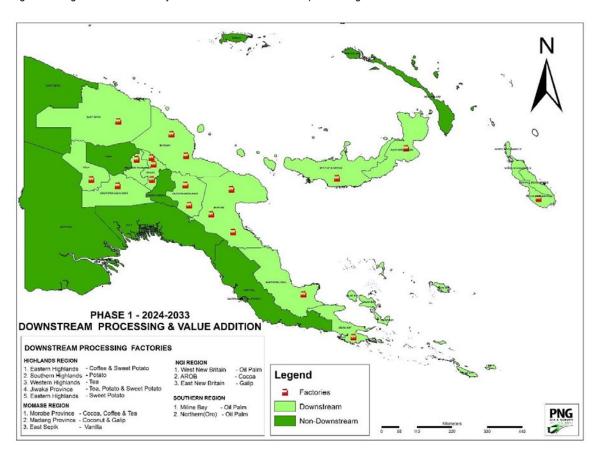
Rural Finance and Investment.

Financing Plan.

NASP Administration.

Implementing Partners/ Drivers.

Figure A1 Agriculture commodity distribution for downstream processing in NASP 2024-2033



SECTION B: VISION, MISSION, GOAL & OBJECTIVES

Vision: Modernized, innovative, sustainable and commercially oriented agriculture, culminating in a structurally transformed economy and evident in an empowered, healthy and prosperous agricultural communities in a financially, nutritionally and food secure Papua New Guinea (PNG).

Mission: To facilitate the transformation of agriculture in PNG from subsistence production to commercially viable enterprises through productive partnerships, innovation and sustainable entrepreneurial farming systems.

Goal: a) Achieve K30 billion target by improving productivity and increasing production volume of crops and livestock for downstream processing and value adding agriculture products, and creating employment for improved household income, financial security, nutritional security and food security.

b) Provide a framework for effective coordination and consultation between National and sub-national governments for improved agriculture sector performance.

Development Objectives

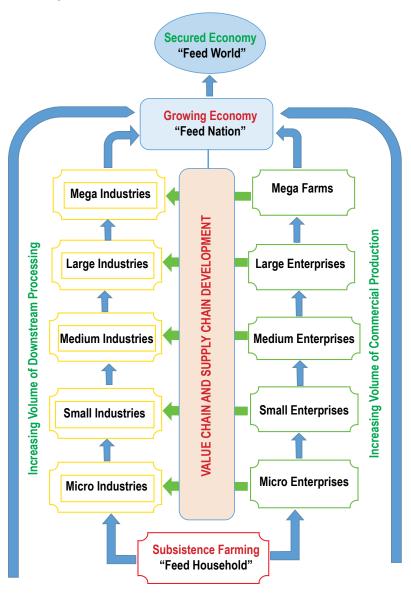
- Transform rural areas into agri-industrial and commercial centers.
- Develop agriculture MSMEs and MSMIs into employers and millionaires.
- Create employment opportunities for graduates, school leavers, youths, men and women in PNG.
- Improve the quality of life in rural villages and transform into economically vibrant communities.
- Ensure commercial agricultural developments and downstream processing are ecologically balanced and sustainable.
- Increase the rural cash circulation and improve provincial and district revenue for greater common good of each province in PNG.
- Agricultural products are accessible, affordable and enjoyable for every households in PNG whereby poverty, malnutrition and lifestyle illness are reduced and eliminated.

Our Core Values:

- *Integrity*: we live to resist the temptation of corruption and maintain honesty and trustworthy of self and of the country.
- **Accountability**: we serve to be accountable to God, to the Government and to the people of Papua New Guinea in the way we conduct business in the agriculture sector.
- *Inclusive*: our focus is on every person, family, community, ward, LLG, District and Province for equal participation in the economy where no one is left behind.
- *Innovation*: we work smart for product quality and customer satisfaction.
- **Teamwork**: unity with one purpose of improving the performance of the sector and reaching our goal together.
- **Excellence**: our services and products will be measured for quality, reliability, performance and relevance to the farming communities.

SECTION C: OPERATIONAL STRATEGIES

The NASP aims to contribute 15% of the K200 billion economy and creating employment opportunities toward 1,000,000 jobs by 2033. This will be achieved through commodity specialization, up-scaling production and downstream processing by each province as shown in Figure C.1. The NASP will be driven, guided and project managed through the Program Management Coordination Unit (PMCU) involving the entire country. The operational strategies are;



Strategy 1: People (farmer) mindset transformation to take farming from subsistence to commercial business enterprise for wealth creation employment, and financial, nutrition and food security.

Strategy 2: Land mobilization for commercial agriculture development in each province.

Strategy 3: Seed production and bulking of the commodity identified for each province.

Strategy 4: Commercial agriculture development and production volume for downstream processing of commodities identified for each province.

Strategy 5: Downstream processing of commodities identified for the province which has the volume to feed the processing plant.

Strategy 6: Up-scale and out-scale downstream processing of commodities identified for each province with volume.

Strategy 7: Repeat 1-5 for consistency of supply to meet the markets demand.

Figure C.1 Agriculture production up-scaling model

SECTION D: FINANCING STRATEGIES

Strategy 1: Investments financing of domestic Downstream Processing of crops and livestock products

Strong bilateral partnership between Government-to-Government provides the investment climate for external financiers. This creates opportunity for the GoPNG to seek NASP 2024-2033 Agriculture Stimulus Package of K8 billion soft concession loan from the Exim Banks at 2% annual interest rate over 20 years repayment schedule using MTDP IV money envelope for agriculture sector as the collateral. The drawdown will be K1.0 billion per annum for phase 1 (NASP2024-2028) and a further K1.0 billion per annum will be obtained for phase 2 (NASP 2028-2033). This financial package is purely for private sectors who participate in the Agriculture Sector for investments into diversified commercialization and downstream processing of crops and livestock value adding tertiary products. Other possible co-financiers include; Foreign Direct Investors (FDI), Bilateral and Multilateral Partners, and Private Investors.

The implementation structure for downstream processing and value adding investments financing is 10%

The implementation structure for downstream processing and value adding investments financing is 10% administration, 50% capital assets (capex) and 40% working capital (opex) (Figure D.1).

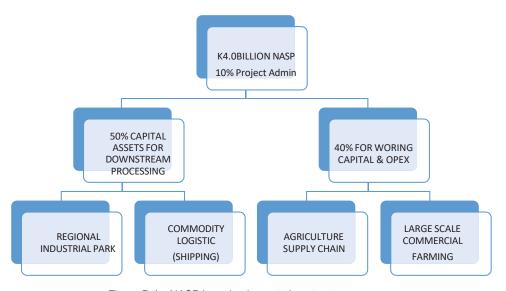


Figure D.1 NASP Loan implementation structure

Strategy 2: Large scale Commercial Development and Production financing

The MTDP IV provides the economic sectors with 11 deliberate intervention programs (DIPs) under SPA 1 to accelerate economic growth to reach the K200 billion economy by 2030. Total GoPNG funding allocation of K7.115 billion to the Agriculture Sector (MTDP IV: K3.491 billion; MTDP V: K3624 billion) is for the sector to generate K30 billion (Annex 2) and contribute toward 1,000,000 new jobs.

The MTDP IV money package shall be used for capacity building of farmers, agriculture MSMEs, MSMIs and value chain players and institutional capacity to achieve large scale commercial development and production of specialized crops and livestock. This will lead to increase in volume for downstream processing and create more employment opportunities and household incomes. Thus, NASP Financing Strategy 2 is through MTDP IV with the reference DIPs;

- DIP 1.1 Commercial Agriculture and Livestock Development
- DIP 1.6 Micro Small Medium Enterprise (MSME)
- DIP 1.9 Trade and Investment
- DIP 1.9 Manufacturing
- DIP 1.10 Land Development
- DIP 1.11 Downstream Processing

Financing for the enabling environment for the implementation and achievement of NASP are provided for under the following DIPs:

- DIP 6.4 Agriculture Biosecurity
- DIP 8.2 National Statistical System
- DIP 9.3 Agriculture Research
- DIP 9.6 Food Security
- DIP 10.1 Climate Change Mitigation and Adaption
- DIP 11.2 Labour Mobility
- DIP 11.4 Women Empowerment

NASP affirms the competitive advantage of each province and distributed crops and livestock accordingly for the commercial development and production (Figure D.2).

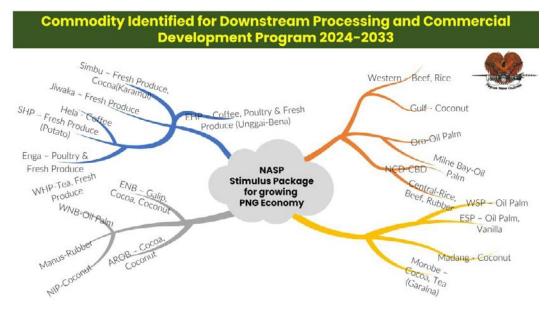


Figure D.2 Agriculture commodities distribution for large scale commercial development in NASP2024-2033

The NASP embraces key players and drivers whose participation and contribution are invaluable and critical for unlocking the wealth in the agriculture sector for economic growth and empowering the nation. The eight key players are identified with their roles;

Key Players # 1: The Parliament

- Pass bills concerning the national budget for funding allocations.
- Amend and pass bills concerning establishment and function of commodity boards.
- Pass bills concerning establishment of AIC and AAA to unify the sector.
- Approve bills concerning government loan to finance NASP.

Key Players # 2: The NEC and GoPNG

The NASP has the full support of the Prime Minister Hon James Marape MP to unlock the agriculture economic potential into commercialization, industrialization and downstream processing space through which more employment opportunities can be created for Papua New Guineans while growing the economy to K200 billion.

- Marape-Rosso Government ensures investment capital of K1.0 billion per annum for agriculture commercialization and downstream processing to accelerate economic growth is secured for co-financing of the plan.
- The NEC shall endorse NASP and give its approval for the establishment of Program Management Coordination Unit (PMCU), to function as a secretariat in the management and coordination of it.
- The Prime Minister is in constant dialogue with bilateral and multilateral partners for foreign direct investments (FDI) in the agriculture sector and negotiating market shares in the international markets for PNG products.
- The Prime Minister is in constant dialogue with development partners for soft concession loans arrangement at interest rate below 2% for growing the economy, and in particular agriculture sector.
- The Agriculture Minister shall ensure AAA and AIC Bills get the NEC endorsement for Parliament enactment for administration, management and governance of NASP and Agriculture Sector.
- The four Ministers for the Agriculture Sector, Hon Aiye Tambua MP, Agriculture; Hon Joe Kuli MP, Coffee; Hon Francis Maneke MP, Oil Palm and Hon Sekie Agisa MP, Livestock shall provide leadership and stewardship of the sector to achieve the target of K30 billion by 2030 and further growing the economy into the future.

Key Players # 3: The Central Government Agencies

- The Departments of National Planning, Finance and Treasury shall ensure MTDP IV funding for agriculture economic stimulus package is facilitated for implementation of NASP.
- The Departments of Works and Highways, Transport, Civil Aviation, Energy Authority, Communications shall ensure connect PNG reach all commercial agriculture production districts for efficient and effective agriculture supply chain and logistics.
- The Departments of Foreign Affairs, International Trade and Investment, Commerce and Industry, Customs, IRC, IPA, NISIT, Migration, CCDA, Labour & Industrial Relations and Central Bank shall facilitate foreign direct investments (FDI) and international partners for development of commercial agriculture and downstream processing.
- The Department of Provincial and LLGs shall ensure government mechanisms on the ground facilitate NASP implementation to grow the rural economy.
- The Department of Lands shall ensure state land for agriculture commercialization and downstream processing becomes available while facilitating mobilization of customary lands for commercial agriculture developments.

Key Players # 4: The Provincial, District and Local Level Governments

- The Provincial Governors and the PEC shall secure state land within the province suitable for large scale commercial production and downstream processing of an agriculture commodity as determined by NASP and enter into business partnership arrangement with FDIs on 60/40 shares, majority held by Provincial Govts.
- The Provincial Governors and District MPs shall align their provincial and district agriculture plans and corporate plans to NASP and MTDP IV for funding support for commercial agriculture development and downstream processing identified in the NASP.
- The LLG Presidents and ward members are key drivers at the community level to take ownership of the
 agriculture economic developments and create enabling environment conducive for agriculture industrial
 and commercial centres.
- The provincial and district administrators shall ensure the public service machinery in the provinces and districts are diligently performing their duties to grow their economy based on agriculture.
- The DDAs shall also use the DSIP allocation for economic sector support MSMEs and MSMIs on agriculture.

Key Players # 5: Commodity Boards

- The Commodity Boards shall be aligned to AAA and AIC for effective coordination and management of NASP in the sector.
- The respective Ministries of Agriculture, Oil Palm, Coffee and Livestock will have their corporate plans aligned to NASP for uniformity of KPIs, KRAs and generate the subsector targets to deliver the K30 billion sector goal while creating more employment in the subsector for graduates, school levers and youths.
- NASP requires sector data and information to be centralized in the Agriculture Statistics Bureau for wider benefits.

Key Players # 6: Development Partners, Private Sectors and Investors (FDIs)

- International DPs, FDIs, Drivers and Players include; WB, IMF, UN, EU, AusAid, NZAid, IFAD, FAO, ACIAR, SMU, ROC, Exim Banks and others.
- Domestic DPs, Drivers and Players include; Trukai, NGTB, Zenag, RAIL, NBPOL, Hargy Oil Palm, IAI, OXFARM, CARE, BB, Farmset, Chemica, Agmark, agriculture MSMEs and MSMIs, RIC, CIS, Growers Associations, Exporters, Importers, Freighters, Logistics Operators, Shipping, Airlines and others.
- All negotiations, MOUs and MOAs, funding and partnership arrangements for agriculture developments shall
 be aligned to NASP and MTDP IV DIPs, KPIs and KRAs to achieve the government's priorities on agriculture
 commercialization and domestic downstream processing programs in growing the economy toward the K200
 billion target by 2030 and beyond.

Key Players # 7: Department of Agriculture and Program Management Coordination Unit (PMCU)

- Embark on AAA Act 2023 and AIC Act 2023 to ensure the operations and management of NASP is implemented.
- NASP Stimulus Package is protected and controlled well to achieve its purpose.
- Act as central coordination agency on the management and implementation of NASP.
- Ensure equality and equitable sharing of financial and capital resources to all subsectors, provinces, districts, LLGs and Wards across PNG.
- Ensure transparency and accountability in the implementation of NASP 2024-2033.
- Performance monitoring, evaluation, reporting and reviews are conducted quarterly, annually and mid-terms.
- The Government is informed and advised regularly through the respective sector ministries and office of the PM & NEC.

Key Players # 8: Producers, Suppliers and Value Chain Players

- Farmers subsistence farmers, semi-commercial farmers, commercial farmers, active or new.
- MSMEs Micro Small Medium Entrepreneurs/Enterprise doing production of crops or livestock.
- MSMIs Micro Small Medium Industries doing downstream processing in crops or livestock.
- Traders produce aggregators and middle traders mobilizing volume for markets.
- Wholesalers those whose mobilize and move produce to the markets.
- Vendors those who do retailing in the markets.
- Transporters (road, air, sea) those moving produce to the markets and farm supplies to the farm.
- Grower Associations the ILGs and cooperatives who have documentation to venture into commercial agriculture development or want to do commercial agriculture.

SECTION F: BENEFICIARIES

The target beneficiaries will be supported and financed to improve productivity, increase production and improve their income. Large scale commercial agriculture operations and downstream processing will create employment opportunities to both skilled and unskilled Papua New Guineans. Financial incentives for the rehabilitation programs will benefit rundown plantation and block holders. NASP will ensure the deliberate investment programs are implemented in every province and districts across the country. The target beneficiaries include;

- Farmers up-skilling and up-scaling production
- MSMEs up-skilling and increasing production
- MSMIs increasing operational capacity
- Traders and Aggregators improving capacity
- Graduates employment
- School Dropouts employment
- Youths employment
- Value Chain Players increase capacity
- Plantation and Block owners financial incentives for rehabilitation and reviving business operations

Agriculture remains the foundation of the economy with unlimited potential to grow and sustain the economy into the future. Agriculture is also the largest employer in PNG, employing 85% of the population living in the rural communities. Agriculture contributed K31.826 billion into the economy between 2015 and 2022. However, agriculture contributes moderately to the GDP at 14% per annum while its potential for greater contribution to GDP remains unlocked. The GDP contribution comes from raw material exports of oil palm (crude oil), coffee (green bean), cocoa (dry bean), coconut (copra & copra oil), rubber (latex) Tea and spices. The annual export value of agriculture increased from K2.36 billion in 2015 to K5.78 billion in 2021 and decreased to K5.33 billion in 2022. Refer to Annex 2.8 for sector performance details.

The vegetables, fruits, nuts, grains, spice and oil crops have high nutritional and economic value for commercial development and downstream processing to increase the product value. Livestock such as cattle, poultry, pigs and apiculture have potential to generate increased revenue into the economy. Their operations will be up-scaled and out-scaled to increase employment opportunities, improve nutrition and increase revenue. Agriculture sector has the potential to contribute between K50 billion - K100 billion per annum and sustain the economy into the future. NASP projection for the 10 years is K30 billion.

The NASP 2024-2033 cover 17 key priority areas. Key priorities 1-3 covers downstream processing and value addition, commercial agriculture development, value chain development, MSMEs and MSMIs development. Key priority 4 is National Seed Security and Commercial Seed Development, Key priority 5 National Food Security, Key priority 6 Agriculture Research and Innovations, Key priority 7 Agriculture Extension and Rural Development, Key priority 8 Agriculture Biosecurity and Trade, Key priority 9 Climate Change, Key priority 10 Agriculture Input Supplies Accessibility and Availability, Key priority 11 Agriculture Statistics Bureau, Information and Publication, Key priority 12 Graduate Development and Agripreneurship, Key priority 13 Agriculture Land Use and Development, Key priority 14 Rural Finance and Investment, Key priority 15 Financing Plan and Key priority 16 NASP Management. Key priority 17 concerns with Implementing Partners, Drivers and Actors. Each key priority has strategic objectives, outcomes and outputs and main deliverable activities. The activities will need to be unpacked into annual operational plans to achieve the key milestones.

DOWNSTREAM PROCESSING & VALUE ADDITION



1 DOWNSTREAM PROCESSING AND VALUE ADDITION (DIP 1.11)

Marape-Rosso's Government prioritization of domestic downstream processing and value adding of primary products will increase the agriculture sector revenue significantly and boost PNG economy and create more employment and income for households. Agriculture downstream processing will require large volumes of raw materials of each commodity to produce sufficient tertiary products volume for trading. The commodities with adequate supply of volume at present for immediate commencement of downstream processing and value adding include; **coffee, cocoa, oil palm, kaukau, coconut, galip nut, vanilla, potato, rubber and tea**. The action plans for downstream processing of these commodities are detailed in subsections 1.1 - 1.10.

1.1 Coffee Downstream Processing***

Coffee downstream and value adding products includes; roasted beans, ground coffee, instant coffee, customized sachets, confectioneries and other by-products. PNG currently produces about 50,000 tons (more than 800,000 bags) of green coffee per annum but NASP 2023-2033 aims to triple annual production volume to 160,000 tons per annum under the government's downstream processing and deliberate investment program. The coffee volume in the country is adequate for commencing downstream processing and value adding products. Downstream processing 20,000 tons green bean per annum into value adding products (roast, ground, instant coffee) will earn about K2.5 billion per annum into the economy. At the current price of K12.00 – K15.00 per kg for high grade green bean coffee for Arabica coffee and K8.00-K10.00 per kg green bean for Robusta coffee, direct earning returned into the rural economy will be K300 – 400 million per annum. Downstream processing adds value to coffee products and maximizes economic return on the commodity for increased benefits to the smallholders who produced more than 90% of the coffee volume. The leading Arabica coffee producers in PNG are EHP, WHP, Jiwaka and Simbu while ESP is the leading producer of Robusta coffee.

Strategic Objective: Downstream processing and value adding products of coffee achieved.

Output 1 Production resources mobilized and secured.

- Investment capital mobilized and secured.
- Manufacturing plant site identified and secured.
- Architectural, civil and construction designs prepared.
- Manufacturing processes and engineering designs secured.
- Skilled, technical and managerial talents are mobilized and secured.
- Plant Technicians and support labor are mobilized and secured.
- Legal framework established.

Output 2 Production Facilities Established and Tested.

- Process and production plant and equipment sourced and procured.
- Process and production facilities established and tested.
- Process and production facilities inspected and certified.
- Product development analysis completed and market tested.
- Production facilities commissioned.

Output 3 Value Added Products Manufactured and Marketed.

- Marketing and sales outlets established and formalized.
- Value added products manufactured.
- Value added products satisfactorily delivered to the market.
- Products improvement process and systems operationalized.
- Economic value and returns in Coffee increased and sustained.

Output 4 Governance and Management Systems Operationalized.

- Governance systems established.
- Business and Management structure developed and operationalized.
- Business operations formalized.
- Management and operations manuals developed and operationalized.
- Financial management and operations manuals developed and operationalized.
- Employment terms and conditions appraised and rewarded.

Outputs 5 Industry Performance Monitored and Evaluated.

- Food safety and health standards monitored.
- Occupational health and safety measures maintained.
- Environmental safety standards monitored and evaluated.
- Business performance audited and reported.
- Performance reports and reviews submitted.

Output 6 Downstream processing of coffee implemented.

- Implementation provinces identified and formalized (Table H1.1).
- Funding sources identified and funds secured (Table H1.1).
- Implementing agencies identified and formalized (Table H1.1).
- Target of 488,202 beneficiaries identified and quantified (Table H1.2).

Table H1.1 Particulars for implementation of Coffee downstream processing.

Implementing Location	Allocated Funds (K)	Funding Source	Key Drivers/Actors
EHP	160,000,000	MTDP IV DIP 1.11 (PIP)	DAL-PMCU
MOROBE		NASP 2024-2033 (PMCU)	CIC
		Provincial Government (PSIP)	Prov Govt, DDAs
		DDAs (DSIP)	Development Partners
		Development Partners	Coffee Exporters
		FDI	Coffee Processors

Table H1.2 Target beneficiaries for Coffee Downstream Processing

Category	Direct Beneficiaries	Total	
		Beneficiaries	
Direct Employment	200	1000	1,200
Graduate Development	250	750	1,000
Coffee Value Chain Players	1,000	5000	6,000
Coffee Growers	80,000	400,000	480,000
Provincial Government	2		2
DDA			
LLGs			
Wards			
Total	81,452	406,750	488,202

1.2 Cocoa Downstream Processing ***

PNG currently produces about 40,000 tons of cocoa beans per annum. Less than 1000 tons (2%) is processed into cocoa powder while more than 39,000 tons (98%) are exported. There is adequate volume for domestic downstream processing to add value and increase its economic return. The government's priority and deliberate investment program in agriculture commercialization and downstream processing provides the catalyst for increased downstream

processing. Cocoa Industry is expected to downstream process up to 10,000 tons per annum during the implementation of NASP 2024-2033. Downstream processing and value adding will generate up to K2.5 billion into the economy. Downstream processing adds value to cocoa products and maximizes economic return on the commodity with significant benefits to the smallholders who produced more than 90% of the cocoa volume. The leading cocoa producers in PNG are AROP, ESP and ENBP.

Strategic Objective: Downstream processing and value adding products of cocoa achieved.

Output 1 Production Resources Mobilized and Secured.

- Investment Partners Identified and Secured.
- Manufacturing plant site identified and secured.
- Architectural, civil and construction designs prepared.
- Manufacturing processes and engineering designs are secured.
- Skilled, technical and managerial talents are mobilized and secured.
- Plant Technicians and support labor are mobilized and secured.
- Legal framework established.

Output 2 Production Facilities Established and Tested.

- Process and production plant and equipment sourced and procured.
- Process and production facilities established and tested.
- Production facilities commissioned and operated.
- Production facilities inspected and certified.

Output 3 Value Added Products Manufactured and Marketed.

- 10,000 tons of downstream cocoa products manufactured.
- Food and health safety standards achieved.
- Value added products marketed.
- Economic value and returns in Cocoa increased and sustained.
- Marketing and sales outlets established and formalized.
- Value added products satisfactorily delivered to the market.
- Products improvement process and systems operationalized.
- Economic value and returns in Cocoa increased and sustained.

Output 4 Governance and Management Systems Operationalized.

- Governance systems established.
- Business and Management structure developed and operationalized.
- Business operations formalized.
- Management and operations manuals developed and operationalized.
- Financial management and operations manuals developed and operationalized.
- Employment terms and conditions appraised and rewarded.

Outputs 5 Industry Performance Monitored and Evaluated.

- Food safety and health standards monitored.
- Occupational health and safety measures maintained.
- Environmental safety standards monitored and evaluated.
- Business performance audited and reported.
- Performance reports and reviews submitted.

Output 6 Downstream processing of cocoa implemented.

- Implementation provinces identified and formalized (Table H1.3).
- Funding sources identified and funds secured (Table H1.3).
- Implementing agencies identified and formalized (Table H1.3).
- Target of 293,353 beneficiaries identified and quantified (Table H1.4).

Table H1.3 Particulars for implementation of Cocoa Downstream Processing

		3		
Implementing Location	Allocated Funds (K)	Funding Source	Drivers/Actors	
MOROBE	120,000,000	MTDP IV DIP 1.11 (PIP)	DAL-PMCU	
AROB		NASP 2024-2033 (PMCU)	Cocoa Board	
ENBP		Provincial Government (PSIP)	Prov. Govt, DDAs	
		DDAs (DSIP)	Development Partners	
		Development Partners, FDI	Cocoa Exporters/Processors	

Table H1.4 Target beneficiaries for Cocoa Downstream Processing

Category	Direct Beneficiaries	Indirect Beneficiaries	Total
Direct Employment	600	3,000	3,600
Graduate Development	250	500	750
Cocoa Value Chain Players	1,500	7,500	9,000
Cocoa Growers	40,000	240,000	280,000
Provincial Government	3		3
DDA			
LLGs			
Wards			
Total	42,353	251,000	293,353

1.3 Oil Palm Downstream Processing ***

PNG exports 657,000 tons of crude oil and generates K2.7 billion per annum. The crude oil is then refined into both edible and non-edible products in off-shore refineries. Major edible product is vegetable oil. Other food products include; margarine, ice cream, chocolate, cookies, confectioneries and food additives. The inedible products are cosmetics and pharmaceuticals. Other industrial products are also produced from oil palm. The growing demand for biofuel energy in the world today, to reduce dependence on fossil fuel energy, makes oil palm an alternative source for biofuel energy products. This demand stimulates the growth of oil production around the world including PNG. The by-products of oil palm include kernel cake for cattle feed.

World demand for oil palm products provides opportunities for PNG to have its own refinery for downstream processing. The government priorities oil palm as of the agriculture commodity form domestic downstream processing with a budget allocation of K120 million in MTDP IV 2023-2027. By 2027, PNG will have processed at least 30% of its crude oil onshore into finished products for domestic consumption as well as exports. By the end NASP term, PNG will have processed 40% of its crude oil onshore. The downstream products will increase the economic value of oil palm, increase employment opportunities, improves rural cash flow and contribute to the K30 billion target set by the government for the agriculture sector.

The leading oil palm producers in PNG are WNBP, Oro and MBP.

Strategic Objective: Domestic downstream processing and value adding products of oil palm achieved.

Output 1 Production resources mobilized and secured.

- Investment partners identified and secured.
- Manufacturing plant site identified and secured.
- Architectural, civil and construction designs prepared.
- Manufacturing processes and engineering designs are secured.
- Skilled, technical and managerial talents are mobilized and secured.
- Plant Technicians and support labor are mobilized and secured.
- Legal framework established.

Output 2 Oil palm refinery facilities established and operationalized.

- Process and refinery machines and equipment sourced and procured.
- Process and refinery facilities established and tested.
- Refinery facilities inspection and certification achieved.
- Refinery facilities commissioned and operated.
- Refinery process monitored and

Output 3 Value Added Products Manufactured and Marketed.

- Annual downstream production volume of 500,000 tons achieved.
- Food and health safety standards achieved.
- Value added products promoted and marketed.
- Economic value and returns in oil palm increased and sustained.
- Marketing and sales outlets established and formalized.
- Value added products satisfactorily delivered to the market.
- Products improvement process and systems operationalized.
- Economic value and returns in oil palm increased and sustained.

Output 4 Governance and Management Systems Operationalized.

- Governance systems established.
- Business and Management structure developed and operationalized.
- Business operations formalized.
- Management and operations manuals developed and operationalized.
- Financial management and operations manuals developed and operationalized.
- Graduate development program institutionalized.
- Labor mobility program institutionalized.

Outputs 5 Industry Performance Monitored and Evaluated.

- Food safety and health standards monitored.
- Occupational health and safety measures maintained.
- Environmental safety standards monitored and evaluated.
- Sustainability practices achieved.
- Business performance audited and reported.
- Performance reports and reviews submitted.

Output 6 Domestic downstream processing and value adding of oil palm implemented.

- Implementation provinces identified and formalized (Table H1.5).
- Funding sources identified and funds secured (Table H1.5).
- Implementing agencies identified and formalized (Table H1.5).
- Target of 465, 503 beneficiaries identified and quantified (Table H1.6).

Table H1.5 Particulars for implementation of Oil Palm Downstream Processing

Implementing Location	Allocated Funds (K)	Funding Source	Drivers/Actors
WNBP	120,000,000	MTDP IV DIP 1.11 (PIP)	DAL-PMCU
MBP		NASP 2024-2033 (PMCU)	OPIC
Oro		Provincial Government (PSIP)	Provincial Government
		DDAs (DSIP)	DDAs
		Development Partners	Development Partners
		FDI	NBPOL, Hargy

Table H1.6 Target beneficiaries for Oil Palm Downstream Processing

Category	Direct Beneficiaries	Indirect Beneficiaries	Total
Direct Employment	2,000	10,000	12,000
Graduate Development	500	1,000	1,500
Oil Palm Value Chain Players	2,000	10,000	12,000
Oil Palm Growers	40,000	400,000	440,000
Provincial Government	3		3
DDA			
LLGs			
Wards			
Total	44,503	421,000	465,503

1.4 Sweet Potato Downstream Processing ***

Sweet potato, commonly called *kaukau*, has huge potential for downstream processing and value adding products. Sweet potato can be processed into flour and used as the base ingredient for stock feed, baking, extraction of starch, or made into dried chips, noodles, bread, juice, candy, jam, ice cream and many other products for both human and animal nutrition. The processed sweet potato products increased shelf life, improves palatability and maintains nutrition and food security.

PNG produce an estimated 3 million tons of sweet potato annually. More than 99% of this volume are consumed and traded fresh while less than 1% of the volume is processed at a micro industry level into powder and other finished products. Few attempts have been made for fresh tuber exports and abandon the business due to post-harvest management issues.

The government's priority and deliberate investment program in agriculture commercialization and downstream processing provides the prospect for downstream processing and value adding of sweet potato products for both domestic and international markets. Creating sweet potato industries will truly have impact on the entire rural population in PNG. Sweet potato downstream processing adds value to the rich diversity and gives PNG competitive advantage. Sweet potato is a national agriculture commodity.

Strategic Objective: Downstream processing and value adding products of sweet potato achieved.

Output 1 Downstream Production Resources Mobilized and Secured.

- Investment Partners Identified and Secured.
- Manufacturing plant site identified and secured.

- Architectural, civil and construction designs prepared.
- Manufacturing processes and engineering designs secured.
- Skilled, technical and managerial talents mobilized and secured.
- Plant Technicians and support labor mobilized and secured.
- Legal framework established.

Output 2 Production Facilities Established and Tested.

- Process and production plant and equipment sourced and procured.
- Process and production facilities established.
- Production facilities inspected and certified.
- 2x Production facilities commissioned and operated.

Output 3 Value Added Products Manufactured and Marketed.

- Downstream products developed and tested.
- Value added products markets established.
- 50,000 tons of downstream sweet potato products delivered to the markets.
- Food and health safety standards achieved.
- Economic value and returns in sweet potato increased and sustained.

Output 4 Sweet potato market ecosystem enhanced and improved.

- Market ecosystems improved.
- Value chain players profiled.
- Supply consistency enhanced and coordinated.
- Market demands enhanced and sustained.
- Sweet potato downstream processing promoted.
- Sweet potato nutrition and health benefits packaged and promoted.

Output 5 Governance and Management Systems Operationalized.

- Governance systems established.
- Business structure developed and operationalized.
- Business operations formalized.
- Management and operations manuals developed and operationalized.
- Financial management and operations manuals developed and operationalized.
- Employment terms and conditions appraised and rewarded.

Output 6 Downstream processing of sweet potato implemented.

- Implementation provinces identified and formalized (Table H1.7).
- Funding sources identified and funds secured (Table H1.7).
- Implementing agencies identified and formalized (Table H1.7).
- Target of 83,003 beneficiaries identified and quantified (Table H1.8).

Outputs 7 Sweet potato Industry body established and operationalized.

- Sweet potato industry policy developed.
- Sweet potato inspections and monitoring systems established.
- Food safety and health standards monitored and evaluated.
- Occupational health and safety measures maintained.
- Environmental safety standards monitored and evaluated.

- Business performance audited and reported.
- Industry performance evaluated and improved.
- Regulatory and Biosecurity compliances applied.

Table H1.7 Particulars for implementation of sweet potato downstream processing

Implementing Location	Allocated Funds (K)	Funding Source	Drivers/Actors
EHP	20,000,000	MTDP IV DIP 1.11 (PIP)	DAL-PMCU
JWK		NASP 2024-2033 (PMCU)	FPDA
Hela		Provincial Government (PSIP)	Provincial Government
		DDAs (DSIP)	DDAs
		Development Partners, FDI	Development Partners

Table H1.8 Target beneficiaries for Sweet Potato Downstream Processing

Category	Direct Beneficiaries	Indirect Beneficiaries	Total
Direct Employment	200	1,400	1,600
Graduate Development	100	200	300
Sweet Potato Value Chain Players	100	1,000	1100
Sweet Potato Growers	10,000	70,000	80,000
Provincial Government	3		3
DDA			
LLGs			
Wards			
Total	10,403	72,600	83,003

1.5 Coconut Downstream Processing **

Tall varieties of coconut have an economic life span of 60-80 years and produce up to a maximum of 150 nuts per tree per year with an average yield of 70-100 nuts per tree. Dwarf varieties have shorter economic lifespan of 40-50 years and produce more nuts. It is reported that PNG produces an average of 56 nuts per tree per year from mostly aging trees. The annual copra production is about 73,000 tons, yielding about 38,000 tons of crude oil and 720 tons of biodiesel fuel. Income generated from the dried copra equivalent is K126.6 million per annum.

Current research and development into downstream processing shows promising results for diversification of value adding products in coconut. The discovery and extraction of virgin coconut essential oils (VCEO) and lauric acid from desiccated coconut increases the economic value 10-20 folds. It is conservatively estimated that diversification of downstream products into the VCEO space will multiple the industry value up to K5.0 billion per annum or higher. NASP will support the capacity of 13 downstream processors and MSMIs to develop the sub-sector. The MTDP IV 2023-2027 target of 113,000 tons of volume for downstream processing will be directed toward VCEO to maximize economic returns by 2027. This will in turn increase the subsector revenue and significantly impact the rural communities relying on coconut for income. The GDP contribution to the economy will also increase. Employment opportunities will also be created for graduates, school leavers and youths.

The government's priority and deliberate investment program in agriculture commercialization and downstream processing provides the catalyst for diversification of downstream products of coconuts. Downstream processing adds value to coconuts products and maximizes economic return on the commodity with significant benefits to the smallholders who produced more than 90% of the coconut volume. The leading coconut producers in PNG are Madang, Bougainville and ENB.

Strategic Objective: Downstream processing and value adding products of coconut achieved.

Output 1 Production Resources Mobilized and Secured.

- Investment Partners Identified and Secured.
- Manufacturing plant site identified and secured.
- Skilled, technical and managerial talents are mobilized and secured.
- Plant Technicians and support labor are mobilized and secured.
- Legal framework established.

Output 2 Production Facilities Established and Tested.

- Process and production plant and equipment sourced and procured.
- Process and production facilities established and tested.
- Production facilities established.
- Production facilities inspected and certified.

Output 3 Value Added Products Manufactured and Marketed.

- 113,000 tons of downstream coconut products delivered to the markets.
- Food and health safety standards achieved.
- Value added products marketed.
- Economic value and returns in Coconut increased and sustained.

Output 4 Governance and Management Systems Operationalized.

- Governance and management systems operationalized.
- Business management structure developed operationalized.
- Business operations formalized.
- Management and operations manuals developed and operationalized.
- Financial management and operations manuals developed and operationalized.
- Employment terms and conditions appraised and maintained.

Outputs 5 Industry Performance Monitored and Evaluated.

- Food safety and health standards monitored.
- Occupational health and safety measures maintained.
- Environmental safety standards monitored and evaluated.
- Business performance audited and reported.
- Performance reports and reviews submitted.

Output 4 Downstream processing of coconut implemented.

- Implementation provinces identified and formalized (Table H1.9).
- Funding sources identified and funds secured (Table H1.9).
- Implementing agencies identified and formalized (Table H1.9).
- Target of 173,500 beneficiaries identified and quantified (Table H1.10).

Table H1.9 Particulars for implementation of Coconut Downstream Processing

Implementing Location	Allocated Funds (K)	Funding Source	Drivers/Actors
Madang	40,000,000	MTDP IV DIP 1.11 (PIP) NASP 2024-2033 (PMCU)	DAL-PMCU KIK
		Provincial Government (PSIP)	Pro. Govt, DDAs
		DDAs (DSIP)	Development Partners
		Development Partners, FDI	Exporters (copra, crude oil)

Table H1.10 Target beneficiaries for Coconut Downstream Processing

Category	Direct Beneficiaries	Indirect Beneficiaries	Total
Direct Employment	500	3,500	4,000
Graduate Development	500	1,000	1,500
Coconut Value Chain Players	1000	7,000	8,000
Coconut Growers	20,000	140,000	160,000
Provincial Government	1		1
DDA			
LLGs			
Wards			
Total	22,000	151,500	173,500

1.6 Galip Downstream Processing **

Galip is a native plant to PNG. The rich protein content in the nut is highly nutritious for human health and has competitive advantage for PNG to establish a robust galip industry. After 20 years of research, NARI undertaken downstream processing and has delivered 1000 kg kernel per annum between 2018 and 2022 at its processing facility in ENBP. The kernels were packaged in 60, 100 and 1000 g and sold at retail value of K164.00 - K200.00/kg at CPL Port Moresby. Despite the price hike, customers demand for the native nuts were overwhelming and have not been met due to inconsistency of raw material supply.

The standing tree estimate is 1,000,000 in the provinces of ENB, WNB, NSP, Madang, NIP and ESP. An additional 1,000,000 seedlings have been planted in four provinces of NSP, WNBP, Madang and ESP. The kernel yield is 4-7 tons per ha per year (1kg/tree/yr). NASP 2024-2033 supports MTDP IV 2023-2027 and Marape-Rosso Government's priority on agriculture commercialization and downstream processing and seeks to up-scale and out-scale production and domestic downstream processing. Hence, NASP 2034-2033 target is to reach 5,000,000 bearing trees with an additional 3,000,000 seedlings planting in eight provinces of NSP, WNBP, NIP, Manus, Morobe, Madang, ESP, WSP. It is projected that the industry will generate K100 million per annum from 1,000 tons processed kernel. Increasing the kernel volume up to 10,000 tons per annum, the industry will generate K1.0 billion per annum. This will in turn increase the subsector revenue and significantly impact the rural communities in ENBP, WNBP, NSP, Manus, Morobe, Madang, ESP and WSP having diversified their income stream. The GDP contribution to the economy will also increase. Employment opportunities will also be created for graduates, school leavers and youths.

Strategic Objective: Downstream processing and value adding of galip achieved.

Output 1 Production Resources Mobilized and Secured.

- Investment Partners Identified and Secured.
- Manufacturing plant site identified and secured.
- Skilled, technical and managerial talents are mobilized and secured.
- Plant Technicians and support labor are mobilized and secured.
- Legal framework established.

Output 2 Production Facilities Established and Tested.

- Process and production plant and equipment sourced and procured.
- Process and production facilities established and tested.
- Production facilities up-scaled and out-scaled.
- Production facilities inspected and certified.

Output 3 Value Added Products Manufactured and Marketed.

- Galip market established.
- 10,000 tons of downstream galip products delivered to the markets.
- Food and health safety standards achieved.
- Value added products diversified and marketed.
- Economic value and returns in galip nut increased and sustained.

Output 4 Governance and Management Systems Operationalized.

- Business management structure developed and operationalized.
- Board and Governance systems established.
- Business operations formalized.
- Management and operations manuals developed and operationalized.
- Financial management and operations manuals developed and operationalized.
- Employment terms and conditions appraised and rewarded.

Outputs 5 Industry Performance Monitored and Evaluated.

- Food safety and health standards monitored.
- Occupational health and safety measures maintained.
- Environmental safety standards monitored and evaluated.
- Business performance audited and reported.
- Performance reports and reviews submitted.

Output 6 Downstream processing of galip nut implemented.

- Implementation provinces identified and formalized (Table H1.11).
- Funding sources identified and funds secured (Table H1.11).
- Implementing agencies identified and formalized (Table H1.11).
- Target of 32,272 beneficiaries identified and quantified (Table H1.12).

Table H1.11 Particulars for implementation of Galip Nut Downstream Processing

Implementing Location	Allocated Funds (K)	Funding Source	Drivers/Actors
ENBP	20,000,000	MTDP IV DIP 1.11 (PIP)	DAL-PMCU
Madang		NASP 2024-2033 (PMCU)	FPDA
		Provincial Government (PSIP)	Prov. Govt, DDAs
		DDAs (DSIP)	Development Partners
		Development Partners, FDI	MSMIs

Table H1.12 Target beneficiaries for Galip Nut Downstream Processing

Category	Direct Beneficiaries	Indirect Beneficiaries	Total
Direct Employment	200	1,400	1,600
Graduate Development	150	300	450
Galip Nut Value Chain Players	20	200	220
Galip Nut Growers	5000	25,000	30,000
Provincial Government	2		2
DDA			
LLGs			
Wards			
Total	5,372	26,900	32,272

1.7 Vanilla Downstream Processing **

Vanilla products include food flavors, beverages, beauty and care products, perfumes, pharmaceutical and many high value additives. Vanilla is a lucrative industry in PNG in the cured bean market with an average price of US250 per kg. There is a strong market growth for dried vanilla bean globally.

However, NASP 2024-2033 supports MTDP IV 2023-2027 and Marape-Rosso Government's priority on agriculture commercialization and downstream processing and seeks to up-scale and out-scale commercial production and domestic downstream processing of vanilla into high value products .The target is to increase the income up to K1.0 billion into the economy and continue to transform the livelihood of the people. The GDP contribution to the economy will also increase. Employment opportunities will also be created for graduates, school leavers and youths.

Strategic Objective: Downstream processing and value adding products of vanilla achieved.

Output 1 Downstream Production Resources Mobilized and Secured.

- Investment Partners Identified and Secured.
- Manufacturing plant site identified and secured.
- Skilled, technical and managerial talents are mobilized and secured.
- Plant Technicians and support labor are mobilized and secured.
- Legal framework established.

Output 2 Downstream production capacity up-scaled and out-scaled.

- Process and production plant and equipment sourced and procured.
- Process and production facilities established and tested.
- Production facilities up-scaled and out-scaled.

Output 3 Value added products increased and delivered to the Markets.

- 100 tons of downstream vanilla products delivered to the markets.
- Food and health safety standards achieved.
- Value added products diversified and marketed.
- Economic value and returns in vanilla nut increased and sustained.

Output 4 Downstream processing of vanilla implemented.

- Implementation provinces identified and formalized (Table H1.13).
- Funding sources identified and funds secured (Table H1.13).
- Implementing agencies identified and formalized (Table H1.13).
- Target of 237,921 beneficiaries identified and quantified (Table H1.14).

Table H1.13 Particulars for implementation of Vanilla Downstream Processing

Implementing Location	Allocated Funds (K)	Funding Source	Drivers/Actors
ESP	28,000,000	MTDP IV DIP 1.11 (PIP)	DAL-PMCU
		NASP 2024-2033 (PMCU)	Spice Board
		Provincial Government	Provincial Government
		(PSIP)	DDAs
		DDAs (DSIP)	Development Partners
		Development Partners, FDI	Exporters

Table H1.14 Target beneficiaries for Vanilla Downstream Processing

Category	Direct Beneficiaries	Indirect Beneficiaries	Total
Direct Employment	220	1,100	1,320
Graduate Development	200	400	600
Vanilla Value Chain Players	1,000	5,000	6,000
Vanilla Growers	30,000	200,000	230,000
Provincial Government	1		1
DDA			
LLGs			
Wards			
Total	31,421	206,500	237,921

1.8 Potato Downstream Processing **

Potato is one of the major income earning commodity for rural farming communities living above 1800 masl. Production volume in PNG is estimated at 50,000 tons per annum. More than 90% of the volume is traded in the open markets and consumed as fresh vegetable. About 10% of the volume enters mining enclaves, institutions and supermarkets.

Potato chips making and trading are popular in hotels, restaurants and fast food outlets. Downstream processing and value adding are minimal. Only recently, Innovative Agro Industries established a downstream processing plant with a capacity of 80 tons per week in Ialibu, SHP to produce frozen chips. The potato volume received met only 50% of the per annum processing capacity to produce Kuk Chips, product name. The volume issues for downstream can to be addressed and processing capacity can be up-scaled and out-scale given the field production volume is adequate. Hence, NASP 2024-2033 supports MTDP IV 2024-2027 and Marape-Rosso Government's priority on agriculture commercialization and downstream processing and seeks to up-scale and out-scale field commercial production and domestic downstream processing of potato. It is estimated that the industry will generate K150 million per annum with a downstream processing capacity of 10,000 tons per annum. Increasing the processing capacity up to 20,000 tons by 2033, the industry will generate more than K300 million per annum. This will in turn increase the subsector revenue and significantly impact the rural communities living at higher altitudes. The GDP contribution to the economy will also increase. Employment opportunities will also be created for graduates, school leavers and youths.

Strategic Objective: Downstream processing and value adding products of potato achieved.

Output 1 Downstream Production Resources Mobilized and Secured.

- Investment Partners Identified and Secured.
- Manufacturing plant site identified and secured.
- Skilled, technical and managerial talents are mobilized and secured.
- Plant Technicians and support labor are mobilized and secured.
- Legal framework established.

Output 2 Downstream Production Facilities Established and Operated.

- Process and production plant and equipment sourced and procured.
- Two process and production facilities established and operated.
- Production facilities up-scaled and out-scaled.

Output 3 Value Added Products Diversified, manufactured and Marketed.

- 50,000 tons of downstream potato products delivered to the markets.
- Food and health safety standards achieved.
- Value added products diversified and marketed.
- Economic value and returns in potato increased and sustained.

Output 4 Downstream processing of potato implemented.

- Implementation provinces identified and formalized (Table H1.15).
- Funding sources identified and funds secured (Table H1.15).
- Implementing agencies identified and formalized (Table H1.15).
- Target of 351,902 beneficiaries identified and quantified (Table H1.16).

Table H1.15 Particulars for implementation of Potato Downstream Processing

Implementing Location	Allocated Funds (K)	Funding Source	Drivers/Actors
SHP	20,000,000	MTDP IV DIP 1.11 (PIP)	DAL-PMCU
JWK		NASP 2024-2033 (PMCU)	FPDA
		Provincial Government	IAI
		(PSIP)	Provincial Government
		DDAs (DSIP)	DDAs
		Development Partners, FDI	Development Partners

Table H1.16 Target beneficiaries for Potato Downstream Processing

Category	Direct Beneficiaries	Indirect Beneficiaries	Total
Direct Employment	500	2,500	3,000
Graduate Development	300	600	900
Potato Value Chain Players	1000	7,000	8,000
Potato Growers	40,000	300,000	340,000
Provincial Government	2		2
DDA			
LLGs			
Wards			
Total	41,802	310,100	351,902

1.9 Rubber Downstream Processing*

PNG currently produces about 6,000 tons of Rubber annually and supports 30 000 households in PNG. Raw rubber is exported to Malaysia without any domestic downstream processing. The MTDP IV 2023-2027 captures Rubber as one of the Government's priority commodity for commercial development and downstream processing. Total budget appropriation K75 million allocated for downstream processing program. NASP 2024-2033 requires the Rubber Industry to produce value adding products. This will in turn increase the subsector revenue and significantly impact the rural communities relying on rubber for income. The GDP contribution to the economy will also increase. Employment opportunities will also be created for graduates, school leavers and youths.

The government's priority and deliberate investment program in agriculture commercialization and downstream processing provides the prospect for Rubber downstream processing. This will adds value to rubber products, increased participation of rubber value chains players and maximizes economic return on the commodity. The provinces producing rubber are Central and Western.

Strategic Objective: Domestic downstream processing and value adding products of rubber achieved.

Output 1 Downstream Processing Resources Mobilized and Secured.

- Investor Identified and Secured.
- Manufacturing plant site identified and secured.
- Skilled, technical and managerial talents are mobilized and secured.
- Plant Technicians and support labor are mobilized and secured.
- Legal framework established.

Output 2 Processing Facilities Established and Tested.

- Process and production plant and equipment sourced and procured.
- At least 2 process and production facilities established and tested.
- Processing facilities operated and managed.

Output 3 Value Added Products Manufactured and Marketed.

- 1,000 tons of downstream rubber products delivered to the markets.
- Health and safety standards achieved.
- Value added products marketed.
- Economic value and returns in rubber increased and sustained.

Output 4 Downstream processing of rubber implemented.

- Implementation provinces identified and formalized (Table H1.17).
- Funding sources identified and funds secured (Table H1.17).
- Implementing agencies identified and formalized (Table H1.17).
- Target of 20,201 beneficiaries identified and quantified (Table H1.18).

Table H1.17 Particulars for implementation of Rubber Downstream Processing

Implementation Location	Allocated Funds (K)	Funding Source	Drivers/Actors
Central	75,000,000	MTDP IV DIP 1.11 (PIP)	DAL-PMCU
		NASP 2024-2033 (PMCU)	RIB
		Provincial Government (PSIP)	Prov. Govt, DDAs
		DDAs (DSIP)	Development Partners
		Development Partners, FDI	Exporters

Table H1.18 Target beneficiaries for Rubber Downstream Processing

Category	Direct Beneficiaries	Indirect Beneficiaries	Total
Direct Employment	500	2,500	3,000
Graduate Development	100	200	300
Rubber Value Chain Players	150	750	900
Rubber Growers	2,000	14,000	16,000
Provincial Government	1		1
DDA			
LLGs			
Wards			
Total	2,751	17,450	20,201

1.10 Tea Downstream Processing *

PNG produced about 200 tons of tea annually and contributes K1.1 million into the economy. The target is to increase the volume to 1000 tons per annum and its value to K5 million per annum. This will be achieved through rehabilitation and new planting programs. Increased in production will create employment opportunities for more people and increase rural cash flow and other business opportunities such as MSMEs. Innovation and promotion of tea products, will increase the market share and maximizes economic return on the commodity.

The MTDP IV 2023-2027 captures Tea as one of the commodity for commercial development and downstream processing. The government's priority and deliberate investment program in agriculture commercialization and downstream processing provides the prospect for reviving rundown Tea estates in WHP and Morobe. Currently, tea estates are based in Jiwaka province.

Strategic Objective: Domestic downstream processing and value adding products of tea achieved.

Output 1 Downstream processing resources mobilized and secured.

- Investor Identified and Secured.
- Manufacturing plant site identified and secured.
- Skilled, technical and managerial talents are mobilized and secured.
- Plant Technicians and support labor are mobilized and secured.
- Legal framework established.

Output 2 Tea processing facilities established and tested.

- Process and production plant and equipment sourced and procured.
- At least 2 process and production facilities established and tested.
- Process inspection and certification standards achieved.
- Processing facilities operated and managed.

Output 3 Production of tea increased.

- New development of 5 plantations achieved.
- Rehabilitation of 5 run down plantations achieved.
- Production of tea increased.
- Mobilization of 1000 ha achieved.

Output 4 Value adding products of high quality standards achieved.

- 1,000 tons of downstream tea products delivered to the markets.
- Occupational Health and safety standards achieved.
- Food safety standards certification achieved
- Value added products marketed.
- Economic value and returns in rubber increased and sustained.

Output 5 Downstream processing of Tea implemented.

- Implementation provinces identified and formalized (Table H1.19).
- Funding sources identified and funds secured (Table H1.19).
- Implementing agencies identified and formalized (Table H1.19).
- Target of 58,053 beneficiaries identified and quantified (Table H1.20).

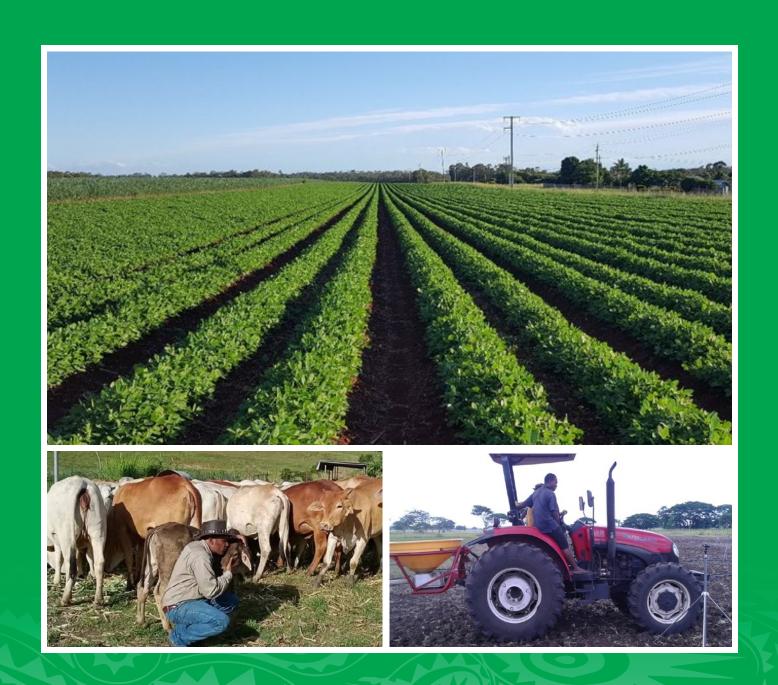
Table H1.19 Particulars for implementation of Tea Downstream Processing

Implementation Location	Allocated Funds (K)	Funding Source	Drivers/Actors
Morobe	20,000,000	MTDP IV DIP 1.11 (PIP)	DAL-PMCU, TIB
WHP		NASP 2024-2033 (PMCU)	Provincial Government
JWK		Provincial Government (PSIP)	DDAs
		DDAs (DSIP)	Development Partners
		Development Partners	Exporters
		FDI	WR Companies

Table H1.20 Target beneficiaries for Tea Downstream Processing

Category	Direct Beneficiaries	Indirect Beneficiaries	Total
Direct Employment	300	1500	1,800
Graduate Development	150	300	450
Tea Value Chain Players	600	3,000	3600
Tea Growers	6,000	30,000	36,000
Provincial Government	3		3
DDA			
LLGs			
Wards			
Total	7,053	51,000	58,053

COMMERCIAL AGRICULTURE DEVELOPMENT AND PRODUCTION



2 COMMERCIAL AGRICULTURE DEVELOPMENT AND PRODUCTION (DIP 1.1)

Large scale commercial agriculture development of crops and livestock is to ensure consistent supply of large volumes of supply for downstream processing as well as meeting the domestic needs and export market quota. The commodities that have commercial significance and have shown competitive advantage are given priority for commercialization in NASP2024-2033.

2.1 Oil Palm

Oil is a major agriculture export commodity, making up 64% of agriculture commodity exports. PNG exports an average of 657,500 tons of crude palm oil and palm kernel oil which earned about K2.7 billion per annum. More than 90% of this volume is currently produced by plantation and smallholders contribute less than 10%. Oil palm is grown Milne Bay, Oro, WNBP, ENBP, NIP, Morobe and Madang provinces. New development areas will be East and Wes Sepik provinces.

The Government's priority and emphasis are Agriculture Commercialization and Downstream Processing. Thus, NASP encourages and supports domestic downstream processing and value adding products of oil palm. The proportion of downstream volume will be progressively achieved 10% per annum and 50% by 2027.

Under the commercialization program, crude oil and kernel oil production shall increase from 657,000 tons to 1,300,000 tons per annum by 2027. Total production target for MTDP IV is 5,533,000 tons. The revenue expected to be earned by 2027 is K5.3 billion per annum. The subsector is expected to generate a total of K22.6 billion in MTDP IV. This value will increase with income generated from downstream products.

Strategic Objective Increased production of high grade palm oil achieved.

Outcome 1 Development of oil palm plantations in new areas achieved.

Output 1 Good quality seeds and planting materials adequately supplied.

- National Seed Scheme of commercial oil palm variety developed.
- Seed production capacity (manpower & facility) improved.
- Seed supply and distributions adequately achieved.
- Seed inspection and certification standards maintained.
- In-vitro seed multiplication and conservation maintained.
- Establishment of 13 district oil palm nurseries for new development areas achieved.
- Annual production and distribution of 60 million oil palm seedlings achieved.

Output 2 New Plantations development on 600,000 ha achieved.

- Land for new oil palm development mobilized.
- Benefit sharing arrangements formalized.
- New oil palm plantations developed.
- New smallholder oil palm development achieved.
- Road access to production sites constructed.
- Commercial development of oil palm in new areas achieved (Table H2.1).

Outcome 2 Rehabilitations of old Oil Palm plantations achieved.

Output 1 Run down plantations rehabilitation achieved.

- Rehabilitation of 26 run down plantations completed.
- Rehabilitation of 2,000 smallholder oil palm blocks completed.
- Replanting of new seedlings completed.
- Road access to production sites rehabilitated.

Output 2 Production volume of crude palm oil increased.

- Production access road length of 620km developed and accessed.
- Smallholder farms up-scaled and out-scaled.
- Production labour mobilized and utilized.
- Fresh fruit bunch production of 19,500,000 tons delivered.
- Export crude oil volume of 5,533,000 achieved.
- Export revenue target of K22.6 billion achieved.
- Smallholder productivity and production improved.
- One hundred smallholder cooperatives developed and established.

Output 3 High grade palm oil produced.

- Oil palm mills constructed, approved and certified.
- Quality control standards established and maintained.
- Oil quality tested and certified.
- Annual target oil production achieved.
- Mill capacity (manpower and facility) continuously improved.
- OHS standards maintained.
- Zero accidents achieved.
- Six downstream processing mills established and operated.

Output 4 Growers incentives secured and sustained.

- Price incentive secured and sustained.
- Freight subsidy secured and sustained.

Outcome 3 Employment created

Output 1 Employment opportunities created.

- Development of 1000 value chain players achieved.
- Graduate development of 500 graduates into oil palm growers and entrepreneurs achieved.
- Employment target of 16,500 new jobs achieved (Table H2.1).
- Target beneficiaries of 127,509 achieved (Table H2.2).

Table H2.1 Particulars for implementation of Oil Palm commercial development

Implementation Location	Allocated Funds (K)	Funding Source	Drivers/Actors
ENBP, WNBP, NIP	264,000,000	MTDP IV DIP 1.1 (PIP)	DAL-PMCU, OPIC
WSP, ESP, Madang,		NASP 2024-2033 (PMCU)	Prov Govt, DDAs
Morobe		Provincial Government (PSIP)	DPs (NBPOL, Hargy)
MBP, Oro,		DDAs (DSIP)DPs, FDI	Exporters (NBPOL, Hargy)

^{*} Total MTDP IV funding of K384 m -K120m (downstream processing) = K264m

Table H2.2 Target beneficiaries for commercial development of Oil Palm

Category	Direct Beneficiaries	Indirect Beneficiaries	Total
Direct Employment	5,000	35,000	40,000
Graduate Development	500	1,000	1,500
Oil Palm Value Chain Players	1,000	5,000	6,000
Oil Palm Growers	10,000	70,000	80,000
Provincial Government	9		9
DDAs			
LLGs			
Wards			
Total	16,509	111,000	127,509

2.2 Coffee

More than 90% of this volume is currently produced by smallholders in all the four regions (Highlands, Momase, Southern, NGI) of PNG, where Arabica coffee dominates higher altitudes and Robusta coffee at lower altitudes in all coastal provinces. An estimated 2-3 million people participate in the coffee value chain from production to the markets and earn their income from coffee business.

The Government's priority and emphasis on Agriculture Commercialization and Downstream Processing provides the opportunity for coffee growers and planters to improve productivity and increase production volume for increased income. NASP supports rehabilitation of plantations, up-scale and out-scale of coffee blocks, smallholder rehabilitation and new plantings to ensure increased volume is achieved for downstream processing and value adding products (. In the absence of coffee census data, the best estimate is 170-200 million standing coffee trees and target is to triple the number of trees in this MTDP IV. Commercialization of coffee increases the economic value of coffee and contribute to PNG Gross Domestic Product (GDP).

Under the commercialization program, Production shall increase from 47,000 tons (averages 800,000 bags, 60kg GB) to 160,000 tons per annum. The volume required to commence downstream processing is 10,000 tons and shall increase to absorb 50% of the volume. The 50% of volume shall be for export. The green bean export volume of 20-30,000 tons per annum will generate between K300 – 400 million into the economy, in addition to earnings from downstream products.

Strategic Objective

- 1. Increase production of coffee for export and downstream processing achieved.
- 2. Higher cupping quality score of PNG coffee achieved.

Outcome 1 Coffee nurseries established

Output 1 Good quality seeds and planting materials adequately supplied.

- Commercial coffee varieties identified and secured.
- National seed scheme for coffee developed.
- Seed production capacity (manpower & facility) improved.
- Seed supply and distributions adequately achieved.
- Seed inspection and certification standards maintained.
- In-vitro seed multiplication and conservation maintained.
- District coffee nurseries established and operated in each province.
- Annual production and distribution of 50 million coffee seedlings achieved.

Outcome 2 Increased planting in new areas achieved.

Output 1 New areas for coffee developed.

- Land for development of new coffee planting identified.
- Land owners for development of coffee identified and profiled.
- Benefit sharing agreement and consensus reached.
- Land for new planting developed.
- Commercial development of coffee achieved (Table H2.3).

Outcome 3 Increased production of coffee achieved.

Output 1 Green coffee volume increased.

- Hundred and twenty four plantations rehabilitated, developed and managed.
- Block holding farms rehabilitated, up-scaled and managed.
- Smallholder farms up-scaled and out-scaled.
- Labour mobilized and utilized.
- Smallholder productivity and production increased.
- Eighty five coffee cooperatives developed and established.
- Coffee development and expansion achieved (Table H2.3)

Output 2 Cupping quality score improved and promoted.

- Wet and dry processing facilities centralized.
- Quality control standards improved.
- PNG coffee brands promoted and marketed.
- Single Variety-Single Origin Specialty produced and marketed.
- Seed to Cup enhanced and promoted.
- Cupping competition facilitated and enhanced.

Output 3 Employment Opportunities Created.

- Hundred and fifteen coffee MSME developed and enhanced.
- Five hundred graduates developed into coffee farmers and entrepreneurs.
- Up to 9,500 new jobs created and sustained (Table H2.4).
- A target of 2,768,783 beneficiaries achieved (Table H2.4).

Output 4 Growers Incentives Secured and Sustained.

- Price incentive secured and sustained.
- Freight subsidy secured and sustained.
- Organic certification earned and promoted.

Table H2.3 Particulars for implementation of Coffee commercial development

Implementation Location	Allocated Funds (K)	Funding Source	Drivers/Actors
Arabica: EHP, JWK, WHP,	388,000,000*	MTDP IV DIP 1.1 (PIP)	DAL-PMCU, CIC
SHP, Enga, Hela, Simbu,		NASP 2024-2033 (PMCU)	Prov Govt, DDAs
Morobe, Central		Provincial Government (PSIP)	Development Partners
Robusta: WSP, ESP,		DDAs (DSIP)	Coffee Exporters
Madang, ENBP, WNBP,		Development Partners	Coffee Processors
NIP, MBP, Oro, Gulf		FDI	

^{*} Total MTDP IV funding for coffee K548 m –K160m (downstream processing) = K388m

Table H2.4 Target beneficiaries for commercial development of coffee

Category	Direct Beneficiaries	Indirect Beneficiaries	Total
Direct Employment	6,000	42,000	48,000
Graduate Development	500	1,000	1,500
Coffee Value Chain Players	3,000	15,000	18,000
Coffee MSME	115	1,150	1,265
Coffee Growers	300,000	2,400,000	2,700,000
Provincial Government	18		18
DDAs			
LLGs			
Wards			
Total	309,633	2,459,150	2,768,783

2.3 Cocoa

Cocoa is one of the major agriculture export commodity in PNG. PNG produces an average 36,600 tons per annum. More than 90% of this volume is currently produced by smallholders in the coastal provinces of PNG and a small volume is produced in Simbu and Jiwaka provinces. Less than 10% of the cocoa volume is produced by the plantations.

The Government's priority and emphasis on Agriculture Commercialization and Downstream Processing provides the opportunity for cocoa growers and planters to improve productivity and increase production volume to 60,000 tons or more. Hence, NASP supports rehabilitation of plantations, up-scale and out-scale, smallholder rehabilitation and new plantings to ensure increased volume for exports as well as downstream processing and value adding products. The cocoa industry is expected to increase new plantings up to 13 million trees.

Strategic Objective: Increased volume of improved cocoa bean quality.

Outcome 1 Cocoa nurseries established

Output 1 Cocoa development in new areas achieved.

- Land for development of new cocoa planting identified.
- Land owners for development of cocoa identified and profiled.
- Benefit sharing agreement and consensus reached.
- Land for new cocoa planting developed.
- Commercial development of cocoa achieved (Table H2.5).

Output 2 Quality Planting Materials Developed and Supplied.

- Commercial clones developed.
- 80 National Seed Scheme Established.
- 108 cocoa nurseries established and operated in each cocoa growing province.
- 13,000,000 new planting materials distributed and planted.

Outcome 2 Increased production of cocoa achieved.

Output 1 Cocoa Bean Volume and value Increased.

- 85 plantations rehabilitated, developed and managed.
- Block holding farms rehabilitated, up-scaled and managed.
- Smallholder farms up-scaled and out-scaled.
- Labour mobilized and utilized.
- Smallholder productivity and production improved.
- Good quality cocoa bean volume of 60,000 tons delivered.
- Sector income of K450 million generated.
- 360km of cocoa roads developed and maintained.

Output 2 Cocoa Quality Standards Maintained.

- 150 Cocoa Drying Facilities Established and Maintained.
- Quality Control Standards Improved.
- PNG Cocoa Brands Promoted and Marketed.
- Single Origin Specialty products produced and marketed.
- Seed to Cup enhanced and promoted.
- Cupping Competition facilitated and enhanced.

Output 3 Cocoa beneficiaries increased (Table H2.6).

- 145 Cocoa MSME developed and supported.
- 145 market linkages established.
- 250 Graduates trained and developed into cocoa farmers and entrepreneurs.
- Target of 838,860 beneficiaries achieved (Table H2.6).

Output 4 Growers Incentives Secured and Sustained

- Price incentive secured and sustained.
- Freight subsidy secured and sustained.
- Organic certification earned and promoted.
- 130 grower cooperatives established.

Table H2.5 Particulars for implementation of Cocoa commercial development

Implementation Location	Allocated Funds (K)	Funding Source	Drivers/Actors
AROB, ENBP, WNBP,	209,000,000*	MTDP IV DIP 1.1 (PIP)	DAL-PMCU, Cocoa Board
NIP, Manus, Morobe,		NASP 2024-2033 (PMCU)	Prov Govt, DDAs
Madang, ESP, WSP		Provincial Government (PSIP)	Development Partners
Simbu, Central, MBP,		DDAs (DSIP)	Cocoa Exporters
Western, Oro, Gulf		Development Partners, FDI	Cocoa Processors

^{*} Total MTDP IV funding for cocoa K329 m –K120m (downstream processing) = K209m

Table H2.6 Target beneficiaries for commercial development of cocoa

Category	Direct Beneficiaries	Indirect Beneficiaries	Total
Direct Employment	3,000	21,000	24,000
Graduate Development	250	1,000	1,250
Cocoa Value Chain Players	2,000	10,000	12,000
Cocoa MSMEs	145	1,450	1,595
Cocoa Growers	100,000	700,000	800,000
Provincial Government	15		15
DDAs			
LLGs			
Wards			
Total	105,410	733,450	838,860

2.4 Coconut

Coconut is one of the agriculture export commodity in PNG. PNG produces an average 73,000 tons of copra per annum. More than 95% of this volume is currently produced by smallholders from declining plantations in the coastal provinces of PNG. Less than 5% of the coconut volume is produced by well-managed plantations.

The Government's priority and emphasis on Agriculture Commercialization and Downstream Processing provides the prospect for coconut growers and planters to increase new plantings, improve productivity and increase production volume to 133,000 tons or more per annum. Hence, NASP supports rehabilitation of plantations, up-scale and outscale, smallholder rehabilitation and new plantings to ensure increased volume for exports as well as downstream processing and value adding products. The coconut industry is expected to increase new plantings up to 14 million seedlings.

Strategic Objective: Increased volume of copra for export and downstream processing.

Outcome 1 Coconut nurseries established

Output 1 Coconut development in new areas achieved.

- Land for development of new coconut planting identified.
- Land owners for development of coconut identified and profiled.
- Benefit sharing agreement and consensus reached.
- Land for new coconut planting developed.
- Commercial development of coconut achieved (Table H2.7).

Output 2 Quality Planting Materials Developed and Supplied.

- 10 National Seed Scheme Established.
- 12 coconut nurseries established and operated in each coconut growing province.
- Accessibility to coconut seedling improved.
- 14,000,000 new planting materials distributed and planted.

Outcome 2 Increased production of coconut achieved.

Output 1 Copra Volume and value Increased.

- 28 plantations rehabilitated, developed and managed.
- Smallholder farms up-scaled and out-scaled.
- Labour mobilized and utilized.

- Smallholder productivity and production improved.
- Good quality copra volume of 133,000 tons delivered.
- Sector export income of K203 million generated.
- 105km of coconut roads upgraded and maintained.
- 70 jetties developed and maintained for market access.
- 17 vessels for transportation established and accessed for markets.

Output 2 Food Safety and Standards maintained.

- 50 Copra Drying Facilities Established and Maintained.
- Quality Control Standards Improved.
- PNG Brands Promoted and Marketed.
- Specialty products produced and marketed.
- Food safety and health standards maintained

Outcome 3 Employment in coconut industry increased.

Output 1 Micro Small Medium Entrepreneurs Developed and Enhanced.

- 70 Coconuts MSME developed and enhanced.
- 30 market linkages established.
- 200 Graduates trained and developed into coconut farmers and entrepreneurs.

Output 2 Growers Incentives Secured and Sustained

- Price incentive secured and sustained.
- Freight subsidy secured and sustained.
- Organic certification earned and promoted.
- 10 grower cooperatives established.
- More than 3,193,530 million people benefited (Table H2.8).

Table H2.7 Particulars for implementation of Coconut commercial development

Implementation Location	Allocated Funds (K)	Funding Source	Drivers/Actors
AROB, ENBP, WNBP,	276,000,000*	MTDP IV DIP 1.1 (PIP)	DAL-PMCU, KIK
NIP, Manus, Madang,		NASP 2024-2033 (PMCU)	Prov Govt, DDAs
WSP, Gulf, Oro, Morobe		Provincial Government (PSIP)	Development Partners
		DDAs (DSIP)	Copra Exporters
	(1/040 //0 //	Development Partners, FDI	Copra oil Processors

^{*} Total MTDP IV funding for coconut K316 m –K40m (downstream processing) = K276m

Table H2.8 Target beneficiaries for commercial development of coconut

Category	Direct Beneficiaries	Indirect Beneficiaries	Total
Direct Employment	1,500	15,000	16,500
Graduate Development	200	400	600
Coconut Value Chain Players	2,000	10,000	12,000
Coconut MSMEs	70	350	420
Coconut Growers	464,000	2,700,000	3,164,000
Provincial Government	10		10
DDAs			
LLGs			
Wards			
Total	467,780	2,725,750	3,193,530

2.5 Rubber

Rubber is an agriculture export commodity and the industry production base is in Central and Western provinces. The Estate in Doa, Central Province and smallholder production sites are scattered in Cape Rodney in Central, North and South Fly districts of Western province. The annual production of 6,000 tons generates K58 million into the economy. The Government's priority and emphasis on Agriculture Commercialization and Downstream Processing provides the prospect for rubber industry to flourish with up-scaling and out-scaling in new areas with new plantings, improve productivity and increase production. Hence, NASP supports rehabilitation of plantations and new developments to ensure increased volume for exports as well as downstream processing and value adding products. The rubber industry is expected to increase the volume to 12,000 tons by 2027.

Strategic Objective: Increased volume of rubber for export and downstream processing.

Outcome 1 Rubber nurseries established

Output 1 Rubber development in new areas achieved.

- Land for development of new rubber planting identified.
- Land owners for development of rubber identified and profiled.
- Benefit sharing agreement and consensus reached.
- Land for new rubber planting developed.
- Commercial development of rubber achieved (Table H2.9).

Output 2 Quality Planting Materials Developed and Supplied.

- 10 National seed scheme established.
- 10 rubber nurseries established and operated in each coconut growing province.
- 8,500,000 new planting materials distributed and planted.

Outcome 2 Increased production of rubber achieved.

Output 1 Rubber Production Volume and value Increased.

- 28 plantations rehabilitated, developed and managed.
- Smallholder farms up-scaled and out-scaled.
- Production provinces increased to 14.
- Smallholder productivity and production improved.
- Good quality rubber volume of 12,000 tons delivered.
- Sector export income of K28 million generated.
- 50 thousand hectares developed into rubber estates.

Outcome 3 Increased employment in the rubber industry created.

Output 1 Micro Small Medium Entrepreneurs Developed and Enhanced.

- 30 Rubber MSME developed and enhanced.
- 30 market linkages established.
- 30 Graduates trained and developed into rubber farmers and entrepreneurs.
- Total target beneficiaries of 247,226 achieved (Table H2.10).

Output 2 Growers Incentives Secured and Sustained

- Price incentive secured and sustained.
- Freight subsidy secured and sustained.
- 20 grower cooperatives established.

Table H2.9 Particulars for implementation of Rubber commercial development

Implementation Location	Allocated Funds (K)	Funding Source	Drivers/Actors
Manus, Central, Gulf, Oro,	82,000,000*	MTDP IV DIP 1.1 (PIP)	DAL-PMCU, Rubber Board
MBP, Western		NASP 2024-2033 (PMCU)	Prov Govt, DDAs
		Provincial Government (PSIP)	Development Partners
		DDAs (DSIP)	Rubber Exporters
		Development Partners, FDI	

^{*} Total MTDP IV funding for rubber K157 m –K75m (downstream processing) = K82m

Table H2.10 Target beneficiaries for commercial development of rubber

Category	Direct Beneficiaries	Indirect Beneficiaries	Total
Direct Employment	500	1,500	2,000
Graduate Development	50	100	150
Rubber Value Chain Players	150	4,500	4,650
Rubber MSMEs	70	350	420
Rubber Growers	30,000	210,000	240,000
Provincial Government	6		6
DDAs			
LLGs			
Wards			
Total	30,776	216,450	247,226

2.6 Tea

Tea is an agriculture export commodity but production has declined over the years to about 5,600 tons per annum at present. Many plantations have been abandoned due to issues of land tenure, price fluctuations, farm input costs and management. WR Carpenter owns and maintains the only estate in Jiwaka province to keep the industry active in PNG.

The Government's priority and emphasis on Agriculture Commercialization and Downstream Processing provides business opportunities for the Tea Industry to flourish within the next 5-10 years. Hence, NASP 2024-2033 seeks to rehabilitate plantations and new developments to ensure increased volume for downstream processing and value adding products. The tea industry is expected to increase the export volume to 2,000 tons by 2033.

Strategic Objective: Tea Industry Revitalized and Economic Performance Improved

Outcome 1 Tea nurseries established

Output 1 Tea development in new areas achieved.

- Land for development of new tea planting identified.
- Land owners for development of tea identified and profiled.
- Benefit sharing agreement and consensus reached.
- Land for new tea planting developed.
- Commercial development of tea achieved (Table H2.11).

Output 2 Quality planting materials of tea developed and supplied.

- 2x National need scheme established.
- 6x tea nurseries established and operated in tea growing provinces.
- 50,000 new planting materials distributed and planted.

Outcome 2 Increased production of tea achieved.

Output 1 Tea Production Volume and Value Increased.

- 5x plantations rehabilitated and managed.
- 5x new plantations developed and managed.
- Production provinces increased to 3.
- Production volume of 2,000 tons delivered.
- Sector export income of K17 million generated.
- 1000 hectares mobilized and developed into tea estates.

Output 2 Industry Partnerships and Collaboration Developed and Enhanced.

- 10x Partnerships developed and enhanced.
- 30 market linkages improved and sustained.
- 50 Graduate cadets trained and developed into industry experts.
- Price incentive secured and sustained.

Outcome 3 Increased employment in the tea industry created.

Output 1 Micro small medium entrepreneurs for tea developed and enhanced.

- 30 Rubber MSME developed and enhanced.
- 30 market linkages established.
- 30 Graduates trained and developed into rubber farmers and entrepreneurs.
- Total target beneficiaries of 45,013 achieved (Table H2.12).

Output 2 Growers Incentives Secured and Sustained

- Price incentive secured and sustained.
- Freight subsidy secured and sustained.
- 10 grower cooperatives established.

Table H2.11 Particulars for implementation of Tea commercial development

Implementation Location	Allocated Funds (K)	Funding Source	Drivers/Actors
WHP, JWK, Morobe	40,000,000*	MTDP IV DIP 1.1 (PIP)	DAL-PMCU,
		NASP 2024-2033 (PMCU)	Prov Govt, DDAs
		Provincial Government (PSIP)	Development Partners
		DDAs (DSIP)	Tea Planters & Exporters
		Development Partners, FDI	·

^{*} Total MTDP IV funding for tea K60 m –K20m (downstream processing) = K40m

Table H2.12 Target beneficiaries for commercial development of tea

Category	Direct Beneficiaries	Indirect Beneficiaries	Total
Direct Employment	360	1,800	2,160
Graduate Development	30	90	120
Tea Value Chain Players	100	500	600
Tea MSMEs	30	100	130
Tea Growers	6,000	36,000	42,000
Provincial Government	3		3
DDAs			
LLGs			
Wards			
Total	6,523	38,490	45,013

2.7 Rice

Rice was introduced into 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 ESP; Nuku in WSP; Madang; Finschafen and Markham valley in Morobe Province; Warangoi in ENBP; New Ireland and Karamui in Simbu.

PNG is a rice importer and consumer. Annual bills for rice import is around K1.2 billion for 400,000 tons. Domestic production is about 5,000 tons per year to contribute to, a mere 1.2% of the domestic market demand. Commercialization of rice in PNG is stagnant due to many factors including deliberate government investment to develop the local rice industry over the past years.

The Government's priority and emphasis on Agriculture Commercialization and Downstream Processing and MTDP IV 2023-2027 deliberation investment programs provide the prospect for large scale commercial production and downstream processing of rice. Rice technology and technical expertise for production and processing can be mobilized locally and sourced abroad. Hence, NASP 2024-2033 seeks up-scaling and out-scaling of production to reduce rice imports by 20-25% in the next 5-10 years, subsequently reducing the import bills. It will also create employment for graduates, school leavers and youths.

Strategic Objective 1: Large Scale Commercial Production of Rice Achieved and Sustained.

2. Rice nucleus estates and farms in institutions and small holding farms developed.

Output 1 Seed scheme established and maintained.

- Seeds of superior rice varieties identified and sourced.
- Seed scheme established and sustained.
- Seed standards and requirements maintained and sustained.

Output 2 Rice production capacity improved and enhanced.

- Between 20 and 30 thousand hectares of land mobilized and cultivated.
- Investment partnership deal achieved and sealed for four sites.
- Production machinery and equipment sourced and utilized in four sites.
- Commercial rice production up-scaled and out-scaled in four sites.
- 4x Rice milling facility constructed and operated.
- Smallholder rice production facilitated and supported.
- Institutional capacity in rice production and marketing developed and enhanced.
- Technical capacity in rice production developed and enhanced.
- Grower exposure and learning in rice production facilitated.
- Farmer adoption of sustainable and environmentally safe cultivation practices in rice production achieved.
- 60,000 tons of rice delivered to the markets.

Output 3 Rice value chain system enhanced and improved.

- Value chain players relationships enhanced and improved.
- Supply chain systems developed and established.
- Dedicated transport systems developed and sustained.
- Post-harvest management practices improved and maintained.
- Value chain players profiled and maintained.

Output 4 Rice market ecosystem enhanced and improved.

- Market ecosystems improved.
- Supply consistency enhanced and coordinated.
- Market demands enhanced and sustained.
- Accessibility to market infrastructure improved.

Output 5 Downstream processing of Rice implemented.

- Implementation provinces identified and formalized (Table H2.13).
- Funding sources identified and funds secured (Table H2.13).
- Implementing agencies identified and formalized (Table H2.13).
- Total of 117,911 target beneficiaries quantified (H2.14).

Output 6 Rice Industry Authority and Governance systems established and functioned.

- Rice Industry Authority Established and Functioned.
- Rice regulatory systems established.
- Import reduction policy developed and implemented.
- Rice import reduction target of 25% achieved.
- Rice Development Program adequately coordinated.

Table H2.13 Particulars for implementation of rice commercialization phase 1 (2024-2028)

Implementation Location	Allocated Funds (K)	Funding Source	Drivers/Actors
Central, Morobe, Western		MTDP IV DIP 1.11 (PIP)	DAL-PMCU
(Large scale farming)	200,000,000	NASP 2024-2033	Provincial Government
Gulf, MBP, Oro, EHP,		(PMCU)	DDAs
JWK, SHP, WHP, Hela		Prov. Govt (PSIP)	Development Partners (ROC,
(Small scale farming)	40,000,000	DDAs (DSIP)	Taiwan, JICA, Trukai, Homestate,
Milling & Downstream	120,000,000	Development Partners,	GFI, Rigo Rice)
Total	360,000,000	FDI	Institutions (UOT, UNRE, NARI, CIS)

Table H2.14 Target beneficiaries for commercial development of rice

Category	Direct Beneficiaries	Indirect Beneficiaries	Total
Direct Employment	500	3000	3,500
Graduate Development	100	200	300
Rice Value Chain Players	100	500	600
Rice MSMEs	100	500	600
Rice Growers	12,900	100,000	112,900
Provincial Government	11		11
DDAs			
LLGs			
Wards			
Total	13,711	104,200	117,911

2.8 Spices

Global market growth for spices products is favorably projected at 7.9% per annum. They have high value for volume. The sub-sector has been stagnant until vanilla boom in ESP. The potential for commercial development and creating downstream processing industries have been presented in MTDP IV. Two spices identified in NASP 2024-2033 for large scale commercial development are vanilla and ginger. Significant proportion of the population grow these commodities in large quantities nationwide as crops. Commercial development of in provinces with competive advantage are identified (Table H2.15) and the aim is to reach 1,773,810 target beneficiaries (Table H2.16).

2.8.1 Vanilla

Vanilla commercialization and export happened in Maprik District of ESP and draw the attention of the world market to PNG. Vanilla production peak 300 tons per annum, generating K570 million into the economy from export earnings. Smallholders growers earned this income and transformed Maprik district into a commercial center. The export price of US\$200 – US\$300 per kg makes vanilla a worthy commodity for large scale commercial development to increase volume for downstream and value adding products. MTDP IV target is to reach 600 tons by 2027 while NASP seeks to further increase to 1000 tons by 2033.

Hence, NASP 2024-2033 supports MTDP IV 2023-2027 and Marape-Rosso Government's priority on agriculture commercialization and downstream processing and seeks to up-scale and out-scale field commercial production (point 2.5) and domestic downstream processing of vanilla. This will in turn increase the subsector revenue and significantly impact the rural communities to PNG diversify their income stream. The GDP contribution to the economy will also increase. Employment opportunities will also be created for graduates, school leavers and youths.

Strategic Objective: Large scale commercial development of vanilla and increased volume achieved.

Output 1 Seed scheme established and maintained.

- Seed scheme established and sustained.
- Seed supplied sustained
- Seed standards and requirements maintained and sustained.

Output 2 Vanilla production capacity improved and enhanced.

- One thousand hectares of land mobilized and cultivated.
- Investment partnership deal achieved and sealed.
- Production machinery and equipment sourced and operated.
- 5x large scale commercial farms developed.
- Increased smallholder production facilitated and supported.
- 1,000 tons of vanilla delivered to the markets.
- Personnel capacity enhanced.
- Grower cooperatives facilitated and established.

Output 3 Vanilla value chain system improved.

- Value chain players relationships enhanced and improved.
- Supply chain systems developed and established.
- Dedicated transport systems developed and sustained.
- Post-harvest management practices improved and maintained.
- Value chain players profiled and maintained.

Output 4 Vanilla market ecosystem enhanced and improved.

- Market ecosystems improved.
- Supply consistency maintained and coordinated.
- Market surveillance and intelligence conducted.

Output 5 Vanilla Industry standards maintained.

- Vanilla Industry policy developed and applied.
- Inspections and monitoring systems established.
- Regulatory compliances applied.
- Quality standards maintained.

2.8.2 Ginger

Ginger is a popular spice grown throughout PNG at a micro level production. Small to medium scale production are happening in Sogeri, Central province, South Whagi in Jiwaka province, Hagen central and Nebylier in WHP. Ginger export potential was trialed in the New Zealand market in 2012. The export was discontinued due to inconsistency of volume. Large scale commercial development to increase volume for downstream and value adding products as well as export can be achieved.

Global ginger market value is projected at US\$7.5 billion by 2032 at a grow rate of 4.5% per annum. US is the leading importer of ginger. Local market value is K6-10/kg whole sale price and fluctuates depending on demand and supply.

NASP 2024-2033 supports MTDP IV 2023-2027 and the Government's priority on agriculture commercialization and downstream processing and seeks to up-scale and out-scale ginger production and domestic downstream processing of ginger. This will in turn increase the subsector revenue and significantly impact the rural communities to PNG increase their income stream. The GDP contribution to the economy will also increase. Employment opportunities will also be created for graduates, school leavers and youths.

Strategic Objective: Large scale commercial development of ginger achieved.

Output 1 Clean seed scheme established and maintained.

- 200x clean seed scheme established and sustained.
- Clean seed farmers identified and engaged.
- 50,000 clean seeds supplied sustained
- Seed standards and requirements maintained and sustained.

Output 2 Ginger production increased and sustained

- One thousand hectares of land mobilized and cultivated.
- Investment partnership deal achieved and sealed.
- Production machinery and equipment sourced and operated.
- 20x large scale commercial farms developed.
- Increased smallholder production facilitated and supported.
- 10,000 tons of fresh ginger delivered to the markets.
- Personnel capacity enhanced.
- Grower cooperatives facilitated and established.
- Commercial production of ginger achieved.
- Target beneficiaries achieved.

Output 3 Ginger value chain system improved.

- Value chain players relationships enhanced and improved.
- Supply chain systems developed and established.
- Dedicated transport systems developed and harnessed.
- Post-harvest management practices improved and maintained.
- Value chain players profiled and maintained.

Output 4 Market ecosystem for ginger enhanced and improved.

- Market ecosystems improved.
- Supply consistency maintained and coordinated.
- Market surveillance and intelligence conducted.
- 2x export markets established and supplied.

Output 5 Ginger Industry standards maintained.

- Ginger Industry policy developed and applied.
- Ginger inspections and monitoring systems established.
- Regulatory and Biosecurity compliances applied.
- Quality standards maintained.

Table H2.15 Particulars for implementation of spices (vanilla, ginger) commercial development

Implementation Location	Allocated Funds (K)	Funding Source	Drivers/Actors
ESP, Morobe, Western,	87,000,000	MTDP IV DIP 1.1 (PIP)	DAL-PMCU, Spice Board
Madang, WSP, Manus		NASP 2024-2033 (PMCU)	Prov Govt, DDAs
(Vanilla)		Provincial Government (PSIP)	Development Partners
Central, JWK, WHP, EHP	14,000,000	DDAs (DSIP)	Spices Planters & Exporters
(Ginger)		Development Partners, FDI	Spices Processors
Total	101,000,000		

Table H2.16 Target beneficiaries for commercial development of spices (vanilla, ginger)

Category	Direct Beneficiaries	Indirect Beneficiaries	Total
Direct Employment	1,500	15,000	16,500
Graduate Development	100	200	300
Spices Value Chain Players	500	3,000	3,500
Spices MSMEs	500	3,000	3,500
Spices Growers	250,000	1,500,000	1,750,000
Provincial Government	10		10
DDAs			
LLGs			
Wards			
Total	252,610	1,521,200	1,773,810

2.9 Sweet Potato (Kaukau)

PNG has a competitive advantage as the center of diversity and gene bank for sweet potato. There are thousands of sweet potato varieties that have potential for commercial development. Currently, commercial sweet potato growers in EHP, WHP and JWK have developed their popular varieties into commercial varieties. Seven of these varieties have been cleaned from sweet potato virus by NARI distributed to commercial growers as clean planting materials. Sweet potato was commercialized recently as a cash crop in Asaro valley of EHP, Hagen Central, Mul, Dei and Nebylier districts of WHP. South Whagi district of Jiwaka province is increasing commercial production of sweet potato. Production volume of sweet potato in PNG is about 3 million tons per annum. Commercial sweet potato production volume that enters urban markets is estimated at 60,000 tons per annum, with retail market value of between K70 million and K90 million. Sweet potato industry value is estimated at K4.5 billion per annum.

The Government's priority and emphasis on Agriculture Commercialization and Downstream Processing increased opportunities for sweet potato growers and traders to increase commercial production, improve productivity and increase production volume to 120,000 tons or more per annum. Hence, NASP supports up-scale and out-scale of production to ensure increased volume for downstream processing, fresh markets and exports where market is arranged.

Strategic Objective: Commercial Production of Sweet Potato Up-scaled and Out-scaled.

Outcome 1 Increased production of disease free planting material of sweet potato established.

Output 1 Sweet potato clean seed scheme established and maintained.

- Clean seed (planting material) growers identified and engaged.
- Clean seed growers capacity enhanced.
- Clean seed multiplication and distribution sites identified and established.
- Clean seed standards and requirements maintained and sustained.

Output 2 Consistent supply of disease free planting material of sweet potato achieved...

- Clean seed produced and supplied.
- Clean seed supplier and commercial growers network established.
- Consistent supply of planting material achieved.
- Disease free planting material accessibility improved.

Outcome 2 Increased production of sweet potato achieved.

Output 1 Sweet potato production capacity improved and enhanced.

- Commercial growers identified and profiled.
- Commercial growers business and entrepreneur skills identified and learning facilitated.
- Farm mechanization and irrigation systems established.
- Commercial production up-scaled and out-scaled (Table H2.17).
- Sweet potato growers cooperatives and associations established.
- 500,000 tons of clean sweet potato delivered to the markets.

Output 2 Sweet potato value chain system enhanced and improved.

- Value chain players relationships enhanced and improved.
- Cool chain systems developed and established.
- Dedicated transport systems developed and sustained.
- Post-harvest management practices improved and maintained.
- Value chain players profiled.
- Sweet potato commercialization beneficiaries target of 89,651 achieved (Table H2.18).

Output 3 Sweet potato market ecosystem enhanced and improved.

- Market ecosystems improved.
- Supply consistency enhanced and coordinated.
- Market demands enhanced and sustained.
- Sweet potato volume for downstream processing adequately supplied.
- Sweet potato export market created.

Table H2.17 Particulars for implementation of sweet potato commercial development

Implementation Location	Allocated Funds (K)	Funding Source	Drivers/Actors
EHP, JWK, WHP, Morobe,	25,000,000	MTDP IV DIP 1.1 (PIP)	DAL-PMCU, FPDA
SHP, Hela,		NASP 2024-2033 (PMCU)	Prov Govt, DDAs
		Provincial Government (PSIP)	Development Partners
		DDAs (DSIP)	Growers, Traders
		Development Partners, FDI	Processors

Table H2.18 Target beneficiaries for commercial development of sweet potato

Category	Direct Beneficiaries	Indirect Beneficiaries	Total
Direct Employment	1,200	7,200	8.400
Graduate Development	45	200	245
Sweet Potato Value Chain Players	500	3,000	3500
Sweet Potato MSMEs	500	3,000	3500
Sweet Potato Commercial Growers	10,000	70,000	80,000
Provincial Government	6		6
DDAs			
LLGs			
Wards			
Total	12,251	83,400	89,651

2.10 Potato

Potato is a cash crop for villagers dwelling above 1800m above sea level. Production data is sketchy but domestic trading in large volumes is common throughout the year. Major potato production provinces are; WHP, EHP, ENGA, SIMBU and JWK. Commercial development into mechanized farming and precision agriculture will be the focus to increase volume in these provinces for downstream processing.

The two new commercial varieties for frozen chips, *Makis* and *Santana*, introduced in 2018 are adapting to PNG conditions and performing well in the field. The two varieties also gain popularity in the market and among the consumers. They add value to the existing gene pool of 11 varieties and provides opportunities for up-scaling and out-scaling of potato production. Commercial production should generate adequate volume for the downstream processing plant in Pangia, SHP, which is undersupplied at present.

The Government's priority and emphasis on Agriculture Commercialization and Downstream Processing increased opportunities for potato growers and traders to increase commercial production, improve productivity and increase production volume to 100,000 – 200,000 tons per annum. Hence, NASP supports up-scale and out-scale of production to ensure increased volume is achieved for downstream processing as well as fresh markets.

Strategic Objective: Commercial Production of Potato Up-scaled and Out-scaled.

Outcome 1 Increased production disease free planting material.

Output 1 Potato clean seed scheme improved and accelerated.

- In vitro seed potato production and multiplication accelerated.
- Seed potato production and multiplication up-scaled and accelerated.
- Seed potato growers increased.
- Seed potato growers capacity up-skilled and improved.
- Seed potato standards and requirements maintained and sustained.
- Seed potato inspection and certification maintained.
- Seed potato distribution improved.
- Seed potato supplier and commercial growers network established.

Outcome 2 Increase production volume of potato achieved.

Output 1 Commercial potato production capacity improved and enhanced.

- Commercial potato growers identified and profiled.
- Commercial potato growers business and entrepreneur skills developed.
- Commercial potato production up-scaled and out-scaled.
- Potato growers cooperatives and associations established.
- 500,000 tons of potato delivered to the markets.
- Commercial development of sweet potato achieved (Table H2.19).

Output 2 Potato value chain system enhanced and improved.

- Potato value chain players relationships enhanced and improved.
- Potato cool chain systems developed and established.
- Dedicated transport systems developed and sustained.
- Post-harvest management practices improved and maintained.
- Potato value chain players profiled.
- Target beneficiaries of 95,655 of potato profiled and supported (Table H2.20).

Output 3 Potato market ecosystem enhanced and improved.

- Market ecosystems for potato improved.
- Supply consistency for potato enhanced and coordinated.
- Market demands for potato enhanced and sustained.
- Potato volume for downstream processing adequately and consistently supplied

Table H2.19 Particulars for implementation of potato commercial development

Implementation Location	Allocated Funds (K)	Funding Source	Drivers/Actors
EHP, JWK, WHP, Enga,	20,000,000	MTDP IV DIP 1.1 (PIP)	DAL-PMCU, FPDA
Simbu, SHP, Hela, ENBP,		NASP 2024-2033 (PMCU)	Prov Govt, DDAs
Central, Morobe		Provincial Government (PSIP)	Development Partners
		DDAs (DSIP)	Growers, Traders
		Development Partners, FDI	Processors

Table H2.20 Target beneficiaries for commercial development of potato

Category	Direct Beneficiaries	Indirect Beneficiaries	Total
Direct Employment	1,200	7,200	8,400
Graduate Development	45	200	245
Potato Value Chain Players	500	3,000	3,500
Potato MSMEs	500	3,000	3,500
Potato Commercial Growers	10,000	70,000	80,000
Provincial Government	10		10
DDAs			
LLGs			
Wards			
Total	12,255	83,400	95,655

2.11 Round Onion

Round onion production, marketing and consumption is popular in PNG. Marginalized rural communities across PNG grow round onion as an alternative cash crop. Round onions become popular among urban dwellers with increased

consumer preferences for food flavoring. The import volume averages 2000 tons per year. Production fluctuates throughout the year. Major production provinces are; SIMBU and JWK. Other provinces with potential for commercial development includes; EHP, WHP, Enga, SHP, Morobe and Central. Commercial development into mechanized farming and precision agriculture will be the focus to increase volume in these provinces for downstream processing. The Government's priority and emphasis on Agriculture Commercialization and Downstream Processing increased opportunities for potato growers and traders to increase commercial production, improve productivity and increase production volume to 5,000 – 10,000 tons per annum. Hence, NASP supports up-scale and out-scale of production to ensure increased volume is achieved for downstream processing as well as fresh markets.

Strategic Objective: Commercial Production of Round Onion Up-scaled and Out-scaled.

Outcome 1 National seed scheme for bulb onion developed and sustained.

Output 1 Round Onion seed production and distribution system developed.

- Open pollinated tropical varieties introduced and tested.
- Field testing and validation of open pollinated varieties achieved.
- Seed standards and certification system developed.
- Seed production and distribution of commercially adaptable varieties achieved.
- Domestic seed growers and suppliers established.

Output 2 Accessibility, availability and affordability of round onion seeds achieved.

- Seed supplier and commercial growers network established.
- Imports of round onion seeds regulated and monitored.
- Imports, distribution and supply of round onion seeds incentivized.
- Consistency, adequacy, accessibility and availability of round onion seeds improved.
- Input supplies for onion seedling production provided and supported.

Outcome 2 Production volume of round onion increased and sustained.

Output 1 Commercial round onion production capacity developed and enhanced.

- Round onion production areas increased and developed (Table H2.21).
- Commercial development drivers identified and supported (Table H2.21).
- Commercial round onion growers identified and profiled.
- Commercial round onion growers business and entrepreneur skills developed.
- Commercial round onion production up-scaled and out-scaled.
- Round onion growers cooperatives and associations established.
- 50,000 tons of round onion delivered to the markets.

Output 2 Round onion value chain system enhanced and improved.

- Round onion value chain players relationships enhanced and improved.
- Round onion cool chain systems developed and established.
- Dedicated transport systems developed and sustained.
- Post-harvest management and curing practices improved and maintained.
- Round onion value chain players profiled.

Outcome 3 Employment in round onion industry increased.

Output 1 MSMEs and MSMIs in round onion industry developed and Enhanced.

- 500 round onion MSMEs/MSMIs developed and enhanced.
- 20 market linkages established.
- 50 Graduates trained and developed into round onion farmers and entrepreneurs.
- Growers/MSMEs/MSMIs learning exposures instituted.

Output 2 Growers incentives secured and sustained.

- Price incentive secured and sustained.
- Freight subsidy secured and sustained.
- Organic certification earned and promoted.
- 10 onion grower cooperatives established.
- Target beneficiaries of 39,258 achieved (Table H2.22).

Output 3 Round onion market ecosystem enhanced and improved.

- Market ecosystems for round onion improved.
- Supply consistency for round onion enhanced and coordinated.
- Market demands for round onion enhanced and sustained.
- Round onion volume for downstream processing adequately and consistently supplied.

Table H2.21 Particulars for implementation of round onion commercial development

Implementation Location	Allocated Funds (K)	Funding Source	Drivers/Actors	
Simbu, EHP, JWK, WHP,	25,000,000	MTDP IV DIP 1.1 (PIP)	DAL-PMCU, FPDA	
Enga, SHP, Morobe,		NASP 2024-2033 (PMCU)	Prov Govt, DDAs	
Central,		Provincial Government (PSIP)	Development Partners	
		DDAs (DSIP)	Growers, Traders, SFML	
		Development Partners,	OxFarm, Cooperatives,	
		FDI	Tininga, NKW	

Table H2.22 Target beneficiaries for commercial development of round onion

Category	Direct Beneficiaries	Indirect Beneficiaries	Total
Direct Employment	1,000	7,200	8,200
Graduate Development	50	200	250
Round Onion Value Chain Players	300	3,000	3,300
Round Onion MSMEs	500	3,000	3,500
Round Onion Commercial Growers	3,000	21,000	24,000
Provincial Government	8		8
DDAs			
LLGs			
Wards			
Total	4,858	34,400	39,258

2.12 Root Staples and Vegetables

PNG has abundance of roots and leafy vegetables that can also be developed commercially and build into industries of their own. Following root staples and vegetables are selected for commercial development through the NASP. These commodities are already grown in large volumes in Morobe, Oro, Milne Bay provinces and traded domestically that can be up-scaled and out-scaled. The commodities include; *taro, yam, cassava, brassicas*.

The selected commodities can be up-scaled and out-scaled with improved varieties and production practices to build up volumes for downstream processing and value adding products. An estimated 200,000 tons of these vegetables are produced annually.

Strategic Objective: Large scale commercial development of root staples and vegetables achieved.

Outcome 1 National seed scheme for root staples and vegetables developed and sustained.

Output 1 Accessibility of seeds and planting materials of root staples vegetables of selected commodities improved and accessed.

- Root staples and vegetables seed production and distribution system developed.
- Vegetative propagation methods of roots staples and vegetables developed.
- Field testing of vegetative propagation conducted and validated.
- Seed standards and certification systems for roots staples and vegetables developed.
- Seed production and distribution of commercially adaptable varieties achieved.
- Domestic seed growers and suppliers established.

Output 2 Commercial seed production and distribution achieved.

- Commercial seed growers of varieties of selected roots and vegetables identified and trained.
- Commercial seed production sites of varieties of selected roots and vegetables identified.
- Seeds of commercial varieties of selected roots and vegetables cleaned and multiplied.
- Clean seeds of commercial varieties of selected roots and vegetables distributed.
- Research and development of commercial seed production enhanced and facilitated.
- Commercial seed production of selected commercial varieties of root staples and vegetables achieved.

Outcome 2 Commercial production of selected root staples and vegetables achieved.

Output 1 Commercial production skills and capacity improved.

- Commercial growers of selected root staples and vegetables identified and profiled.
- Technical and business skills capacity of commercial growers developed.
- Commercial growers production capacity improved and increased.
- Commercial production of selected root staples and vegetables achieved.
- Partnerships for agriculture commercialisation of selected root staples and vegetables developed.
- Commercial development of root staples and vegetables expanded (Table H2.23).

Output 2 Postharvest and value chain management skills developed.

- Postharvest and value chain management training packages developed.
- Postharvest and value chain management trainers identified and sourced.
- Postharvest and value chain management training facilitated and delivered.
- Postharvest and value chain management skills and technology developed.
- Postharvest management losses reduced.

Output 3 Value chain system for selected root stables and vegetables developed.

- Value chain players relationships enhanced and improved.
- Cool chain systems for selected root staples and vegetables developed and established.
- Dedicated transport systems for root staples and vegetables developed and sustained.
- Post-harvest and supply chain management improved and maintained.
- Value chain players profiled and networked.

Output 4 Markets for selected root staples and vegetables accessed and supplied.

- Markets for selected root staples and vegetables established.
- Marketing terms for selected root staples and vegetables formalized.
- Market dynamics for selected root staples and vegetables determined and mapped.
- Consistent supply of high grade root staples and vegetables to the markets achieved.
- Pathway for export identified and developed.
- Relationships with the market end established and maintained.
- Information for commercial marketing exchanged and utilized.

Outcome 3 Increased employment in the root staples and vegetables created.

Output 1 MSMEs and MSMIs for root staples and vegetables developed and enhanced.

- 500 MSMEs/MSMIs in vegetables developed and enhanced (Table H2.24).
- 50 market linkages for roots staples and vegetables established.
- 50 Graduates trained and developed into vegetables farmers and entrepreneurs (Table H2.24).
- Total target beneficiaries of 29,359 achieved (Table H2.24).

Output 2 Growers Incentives Secured and Sustained

- Price incentive secured and sustained.
- Freight subsidy secured and sustained.
- 5 grower cooperatives established.

Table H2.23 Particulars for implementation of root staples and vegetables commercial development

Implementation Location	Allocated Funds (K)	Funding Source	Drivers/Actors
MBP, Oro, Gulf, Central,	20,000,000	MTDP IV DIP 1.1 (PIP)	DAL-PMCU, FPDA
Morobe, EHP, Simbu,		NASP 2024-2033 (PMCU)	Prov Govt, DDAs
JWK, WHP,		Provincial Government (PSIP)	Development Partners
		DDAs (DSIP)	Growers, Traders, SFML,
		Development Partners, FDI	Cooperatives, Tininga, NKW

Note: Root staples and vegetables for commercial development includes; yam, taro, cassava, brassicas

Table H2.24 Target beneficiaries for commercial development of root staples and vegetables

Category	Direct Beneficiaries	Indirect Beneficiaries	Total
Direct Employment	3,000	7,200	10,200
Graduate Development	50	100	150
Roots & Vegetables Value Chain Players	500	3,000	3,500
Roots & Vegetables MSMEs	500	3,000	3,500
Roots & Vegetables Commercial Growers	1,500	10,500	12,000
Provincial Government	9		9
DDAs			
LLGs			
Wards			
Total	5,559	23,800	29,359

2.13 Grains and Legumes

Stock feed supply do not satisfy the demand in the country. Grains and legumes are good sources for livestock feed. Production of grains and legumes are small scale and do not have the volume for feed mill industry. Legumes are

rich in plant protein for human and livestock food. They also have the ability to capture atmospheric nitrogen and converts them into plant food nitrogen, which ameliorate the soil. Grains and legumes have commercial value but production is on small holding. Health conscious consumers turn to plant proteins and demand for plant proteins increases. The value of legume and grain industry is estimated at K1.0 billion.

The grains and legumes that have potential for commercial development through the NASP are carefully selected. These commodities are already grown in large volumes in Morobe, Simbu, Jiwaka, WHP and traded domestically that can be up-scaled and out-scaled. The commodities include; *corn*, *sorghum*, *peanut*, *soybean and beans*.

These agriculture commodities can be up-scaled and out-scaled with improved varieties and production practices to build up volumes for downstream processing and value adding products. An estimated 50,000 tons these grains and legumes are produced annually.

Strategic Objective: Large scale commercial development of grains and legumes achieved.

Outcome 1 Seed production and accessibility of the selected grains and legumes increased and accessed.

Output 1 Commercial seed production and distribution of grains and legumes achieved.

- Commercial seed growers of varieties of selected grains and legumes identified and trained.
- Commercial seed production sites of varieties of selected grains and legumes identified.
- Seeds of commercial varieties of selected grains and vegetables cleaned and multiplied.
- Clean seeds of commercial varieties of selected grains and legumes distributed.
- Research and development of commercial seed production enhanced and facilitated.
- Commercial seed production of selected commercial varieties of grains and legumes achieved.

Outcome 2 Commercial production of selected grains and legumes achieved.

Output 1 Commercial production skills and capacity improved.

- Commercial growers of selected grains and legumes identified and profiled.
- Technical and business skills capacity of commercial growers developed.
- Commercial growers production capacity improved and increased.
- Commercial production of selected grains and legumes achieved.
- Partnerships for agriculture commercialisation of selected grains and legumes developed.
- Implementation arrangements for commercialization formalized.
- Commercial production of grains and legumes implemented (Table H2.25).

Outcome 3 Consistent supply of high grade quality of grains and legumes to the markets achieved.

Output 1 Postharvest and value chain management skills developed.

- Postharvest and value chain management training packages developed.
- Postharvest and value chain management trainers identified and sourced.
- Postharvest and value chain management training facilitated and delivered.
- Postharvest and value chain management skills and technology developed.
- Postharvest management losses reduced.

Output 2 Value chain system for selected grains and legumes developed.

- Value chain players relationships enhanced and improved.
- Cool chain systems for selected grains and legumes developed and established.
- Dedicated transport systems for grains and legumes developed and sustained.

- Post-harvest and supply chain management improved and maintained.
- Value chain players grains and legumes profiled and network established.

Output 3 Markets for selected grains and legumes accessed and supplied.

- Markets for selected grains and legumes established.
- Marketing terms for selected grains and legumes formalized.
- Market dynamics for selected grains and legumes determined and mapped.
- Consistent supply of high grade grains and legumes to the markets achieved.
- Pathway for export identified and developed.
- Relationships with the market end established and maintained.
- Information for commercial marketing exchanged and utilized.

Outcome 4 Increased employment in the root staples and vegetables created.

Output 1 MSMEs and MSMIs for grains and legumes developed and enhanced.

- 500 MSMEs/MSMIs in grains & legumes developed and enhanced.
- 50 market linkages for grains and legumes established.
- 50 Graduates trained and developed into grains and legumes farmers and entrepreneurs.
- Total target beneficiaries of 44,252 achieved (Table H2.26).

Output 2 Grains and Legumes Growers Incentives Secured and Sustained

- Price incentive secured and sustained.
- Freight subsidy secured and sustained.
- 12 grower cooperatives established.

Table H2.25 Particulars for implementation of grains and legumes commercial development

Implementation Location	Allocated Funds (K)	Funding Source	Drivers/Actors
Morobe, ESP, Madang,	20,000,000	MTDP IV DIP 1.1 (PIP)	DAL-PMCU, FPDA
EHP, Simbu, JWK, WHP,		NASP 2024-2033 (PMCU)	Prov Govt, DDAs
Hela, Oro, Central, AROB,		Provincial Government (PSIP)	Development Partners
ENBP		DDAs (DSIP)	Growers, Traders, SFML,
		Development Partners, FDI	Cooperatives, Tininga, NKW

Note: Grains and legumes for commercial development includes; corn, sorghum, peanut, soybean and beans

Table H2.26 Target beneficiaries for commercial development of grains and legumes

Category	Direct Beneficiaries	Indirect Beneficiaries	Total
Direct Employment	1,000	7,200	8,200
Graduate Development	50	100	120
Grains & Legumes Value Chain Players	300	2,100	2,400
Grains & Legumes MSMEs	500	3,000	3,500
Grains & Legumes Commercial Growers	5,000	35,000	40,000
Provincial Government	12		12
DDAs			
LLGs			
Wards	_		
Total	6,862	37,400	44,252

2.14 Fruits and Nuts

PNG has some high value indigenous fruits and nuts with competitive advantage for commercial development and downstream processing. Examples include galip, okari, pandanus (red & nut). Production and distribution are at small scale. The taste and sweetness of tropical fruits and nuts delicious and have competitive market advantage in both the domestic and international markets. PNG Products samples of fruits and nuts (eg. galip nuts) in world expos in Dubai and Paris have won awards. The demand has been established but volume is inadequate. Agriculture commercialization and downstream processing program of the government in the MTDP IV and NASP 2024-2033 creates the pathway for commercial development of the fruits and nuts industry.

Health conscious consumers prefer plant based diets, especially fruits and nuts. Thus, demand for fruits and nuts, either processed or fresh are in high demand. The value of legume and grain industry is estimated at K2.5 billion.

The fruits and nuts that have shown potential are considered for commercial development through the NASP. These commodities are already grown in large volumes in Morobe, Simbu, Jiwaka, EHP, WHP, Central and traded domestically that can be up-scaled and out-scaled. The commodities include; *cavendish*, *plantain*, *pawpaw*, *pineapple*, *lime/lemon*, *galip and pandanus (red)*.

The crops can be up-scaled and out-scaled with improved varieties and production practices to build up volumes for downstream processing and value adding products. An estimated 80,000 tons these fruits and nuts are produced annually.

Strategic Objective: Large scale commercial development of fruits and nuts achieved.

Outcome 1 Seed and planting material production and accessibility of the selected fruits and nuts increased and accessed.

Output 1 Commercial seed production and distribution of fruits and nuts achieved.

- Commercial seed growers of varieties of selected fruits and nuts identified and trained.
- Commercial seed production sites of varieties of selected fruits and nuts identified.
- Seeds of commercial varieties of selected fruits and nuts cleaned and multiplied.
- Clean seeds of commercial varieties of selected fruits and nut distributed.
- Research and development of commercial seed production enhanced and facilitated.
- Commercial seed production of selected commercial varieties of fruits and nuts achieved.

Outcome 2 Increased production of selected fruits and nuts achieved.

Output 1 Commercial production skills and capacity improved.

- Commercial growers of selected fruits and nuts identified and profiled.
- Technical and business skills capacity of commercial growers developed.
- Commercial growers production capacity improved and increased.
- Commercial production of selected fruits and nuts achieved and increased (Table H2.27).
- Partnerships for agriculture commercialisation of selected fruits and nuts developed (Table H2.27).
- Commercial production of fruits and nuts expanded (Table H2.27).

Outcome 3 Consistent supply of high grade quality of fruits and nuts to the markets achieved.

Output 1 Postharvest and value chain management skills developed.

Postharvest and value chain management training packages developed.

- Postharvest and value chain management trainers identified and sourced.
- Postharvest and value chain management training facilitated and delivered.
- Postharvest and value chain management skills and technology developed.
- Postharvest management losses reduced.

Output 2 Value chain system for selected fruits and nuts developed.

- Value chain players relationships enhanced and improved.
- Cool chain systems for selected fruits and nuts developed and established.
- Dedicated transport systems for fruits and nuts developed and sustained.
- Post-harvest and supply chain management improved and maintained.
- Value chain players fruits and nuts profiled and network established.

Output 3 Markets for selected fruits and nuts accessed and supplied.

- Markets for selected fruits and nuts established.
- Marketing terms for selected fruits and nuts formalized.
- Market dynamics for selected fruits and nuts determined and mapped.
- Consistent supply of high grade fruits and nuts to the markets achieved.
- Pathway for export of the selected fruits and nuts identified and developed.
- Relationships with the market end established and maintained.
- Information for commercial marketing of fruits and nuts exchanged and utilized.

Outcome 4 Increased employment and beneficiaries in the fruits and nuts subsector created.

Output 1 MSMEs and MSMIs for fruits and nuts developed and enhanced.

- 500 MSMEs/MSMIs in fruits and nuts developed and enhanced.
- 50 market linkages for fruits and nuts established.
- 50 Graduates trained and developed fruits and nuts farmers and entrepreneurs.
- Total target beneficiaries of 98,712 achieved (Table H2.28).

Output 2 Grains and Legumes Growers Incentives Secured and Sustained

- Price incentive secured and sustained.
- Freight subsidy secured and sustained.
- 12 grower cooperatives established.

Table H2.27 Particulars for implementation of fruits and nuts commercial development

Implementation Location	Allocated Funds (K)	Funding Source	Drivers/Actors	
AROB, ENBP, WNBP, NIP,	20,000,000	MTDP IV DIP 1.1 (PIP)	DAL-PMCU, FPDA	
Manus Morobe, Madang,		NASP 2024-2033 (PMCU)	Prov Govt, DDAs	
EHP, Simbu, JWK, WHP,		Provincial Government (PSIP)	Development Partners	
Central		DDAs (DSIP)	Growers, Traders, SFML,	
		Development Partners, FDI	Cooperatives, Tininga, NKW	

Note: Fruits and nuts for commercial development includes; cavendish, plantain, pawpaw, pineapple, lime/lemon, galip and pandanus (red).

Table H2.28 Target beneficiaries for commercial development of fruits and nuts

Category	Direct Beneficiaries	Indirect Beneficiaries	Total
Direct Employment	1,500	10,500	12,000
Graduate Development	100	200	300
Fruits & Nuts Value Chain Players	300	2,100	2,400
Fruits & Nuts MSMEs	500	3,000	3,500
Fruits & Nuts Commercial Growers	10,000	70,500	80,500
Provincial Government	12		12
DDAs			
LLGs			
Wards			
Total	12,412	86,300	98,712

2.15 Livestock

PNG imports 317,000 tons of meat between 2017 and 2022. These imports include beef, lamb flaps, pork and poultry meats. Annual import bills on meat import is K450 million. Domestic production of meat is about 20,000 tons per annum. Bulk of these are poultry meats produced by NGTBs and Zenag. Ramu Agri Industries Ltd is the major commercial producer and supplier of beef in PNG with herd capacity of 24,500 heads of cattle and 1000 breeding cows per annum. Rumion and Pelgens are major pork producers.

Commercial development of livestock by local farmers and entrepreneurs remain at MSME level. NASP 2024-2033 supports MTDP IV 2023-2027 and the Government's priority on large scale commercial development and downstream processing in the livestock industry. The focus livestock in the NASP are; cattle (Beef, Diary), Poultry (Meat, Egg), Piggery and Apiculture and seeks to up-scale and out-scale their production and domestic downstream processing of these livestock. This will in turn increase the subsector revenue and significantly impact the rural communities and improved nutrition. The GDP contribution to the economy will also increase. Employment opportunities will also be created for graduates, school leavers and youths in the subsector.

2.15.1 Beef Cattle

PNG imports total of 43,000 tons of beef between 2017 and 2022, which averages 7200 tons per annum. PNG also import large volumes of dairy products form Australia and New Zealand. Domestic head of cattle is estimated at 80,000. Local beef production is 3,000 tons per annum. Cattle has huge potential for commercial development to replace imports and make beef and dairy products accessible and affordable for the population.

Strategic Objective: Cattle Industry Developed and Commercialized.

Output 1 Breeder stock improved and maintained.

- 10 breeder farms established.
- 10,000 breeder stock supplied and maintained.
- Industry standards and requirements maintained and sustained.
- Feed stock developed and utilized.
- 5 distribution centers developed and operated.

Output 2 Domestic Beef Demand Supplied

- 18 ranges developed and maintained.
- Commercial farm operations achieved.
- Annual supply of 100,000 steers achieved.

- Pasture improvement achieved.
- Feedlot development and utilization achieved.

Output 3 Abattoirs Improved and Operationalized.

- 14 abattoirs rehabilitated and operationalized to industry specifications.
- Operational standards and requirements established and maintained.
- Facilities are regularly inspected and certified.
- 30,000 tons of beef delivered to the markets.
- Import reduction by 50% achieved.
- Smallholder participation increased.

Output 4 Industry Compliances Maintained.

- Industry policy developed and applied.
- Inspections and monitoring systems established.
- Regulatory and Biosecurity compliances applied.
- Quality standards and certifications achieved.

Output 5 Industry Capacity Improved and enhanced.

- Institutional Capacity developed and enhanced.
- Staff capacity improved and retained.
- 500 Graduate development and entrepreneurship facilitated.
- Institutional assets serviced and maintained.
- Grower cooperatives facilitated and established.
- 2000 employment opportunities created.
- Research, innovation and technology development supported and facilitated.

2.15.2 Dairy Cattle

PNG imports and consumes about 14,000,000 litres of dairy products annually. Large proportion (>90%) of the dairy products are imported from Australia and New Zealand. The value of import is about K400 million, which can be reduced with domestic dairy cattle development. Dairy products include fresh milk, cheese, yogurts, milk flavored chocolates and confectionaries.

Illimo Farm located outside Port Moresby city is the only domestic producer of dairy products and has demonstrated that PNG has the potential to develop its own dairy industry for milk and other dairy products. The government's deliberate intervention program in cattle development dairy industry as well. Potential sites for dairy cattle development include; Central, Western, Western Highlands, Southern Highlands, Hela and East Sepik provinces, where state and customary land can be mobilized and developed for dairy farms. This will reduce imports, increase foreign reserves and create more employment opportunities.

Strategic Objective: Dairy Industry Developed and Commercialized.

Output 1 Dairy cattle stock introduced and established.

- Due diligence and feasibility completed.
- Operational requirements formalized.
- 3 dairy farms established.
- 5,000 lactating stock supplied and maintained.
- Industry standards and requirements maintained and sustained.
- Pasture developed enhanced and developed.
- Distribution centers developed and operated.

Output 2 Domestic dairy demand supplied.

- 3 ranges developed and maintained.
- Commercial farm operations achieved.
- Annual supply of up to 1,000,000 litres per annum of dairy products achieved.
- Pasture improvement achieved.
- Feedlot development and utilization achieved.

Output 3 Milk production facilities established and operated.

- At least 2 milk production facilities established.
- Milk production facilities certified and approved.
- Operational standards and requirements established and maintained.
- Facilities are regularly inspected and certified.
- 1,000,000 litres of dairy products delivered to the markets.
- Import reduction by 10% achieved.
- Smallholder participation increased.

Output 4 Industry Compliances Maintained.

- Industry policy developed and applied.
- Inspections and monitoring systems established.
- Regulatory and biosecurity compliances applied.
- Food quality standards and certifications achieved.

Output 5 Industry Capacity Improved and enhanced.

- Institutional capacity developed and enhanced.
- Staff capacity improved and retained.
- 100 Graduate development and entrepreneurship facilitated.
- Institutional assets serviced and maintained.
- Grower cooperatives facilitated and established.
- Employment opportunities created.
- Research, innovation and technology development institutionalized.

2.15.3 **Poultry**

Poultry products (meat and egg) are cheaper animal proteins and in high demand. PNG imports total of 159,000 tons of poultry meat between 2017 and 2022, which averages 26,500 tons per annum. Local production is about 40,000 tons per annum. The annual growth for poultry products is 7.5%, which suggest that up-scaling and out-scaling of commercial poultry operations will ensure domestic markets are adequately supplied.

Strategic Objective: Poultry Industry developed and commercialized.

Output 1 Breeder stock developed and achieved.

- 5 breeder farms established.
- Superior breeds, sourced developed and maintained
- Annual supply of 10 million day old chicks achieved.
- Industry standards and requirements achieved.

Output 2 Domestic Poultry Meat and Egg Demand Supplied

- 3 local hatcheries developed and operated.
- 10 Commercial farms development and production achieved.
- Annual day old chicks demand adequately supplied.
- Domestic poultry meat demand adequately supplied.
- Poultry egg demand adequately supplied.
- Domestic feed demand adequately supplied.

Output 3 Abattoirs Improved and Operationalized.

- 5 abattoirs developed, rehabilitated and operationalized to industry specifications.
- Operational standards and requirements achieved.
- Facilities inspections and certifications achieved.
- 20,000 tons of poultry meat delivered.
- Import reduction by 50% achieved.
- Smallholder participation increased.

Output 4 Feed Mills Developed and Operationalized.

- 3 Feed Mills developed and operationalized to industry specifications.
- Operational standards and requirements achieved.
- Facilities inspections and certifications achieved.
- 50,000 tons of poultry feed delivered.
- Import reduction by 50% achieved.
- Smallholder participation increased.

Output 5 Industry Compliances Maintained.

- Industry policy developed and applied.
- Inspections and monitoring systems established.
- Regulatory and Biosecurity compliances applied.
- Quality standards and certifications achieved.

Output 6 Industry Capacity Improved and enhanced.

- Institutional Capacity developed and enhanced.
- Staff capacity improved and retained.
- 1000 graduates development into poultry entrepreneurs facilitated and achieved.
- Institutional assets serviced and maintained.
- 10x Grower cooperatives facilitated and established.
- 1000 poultry MSMEs developed.
- Research, innovation and technology development supported and facilitated.

2.15.4 Piggery (Swine)

Annual demand for pig meat (pork) grow at about 2.7% in PNG. Local production of pig meat is about 80,000 tons per annum. PNG imports total of 23,700 tons of pig meat between 2017 and 2022, which averages 4,000 tons per annum. The up-scaling and out-scaling of commercial pig operations will ensure domestic markets are adequately supplied.

Strategic Objective: Pig Industry developed and commercialized.

Output 1 Breeder stock developed and achieved.

- 20 breeder farms established at SME level.
- Superior breeds, sourced developed and maintained
- Industry standards and requirements achieved.

Output 2 Pig Meat Demand Adequately Supplied

- 10 Commercial farms development and production achieved.
- Domestic market linkages created and enhanced.
- Annual pig meat demand adequately supplied.
- Domestic pig meat demand adequately supplied.
- Export Market created and supplied.
- Domestic feed demand adequately supplied.

Output 3 Abattoirs Improved and Operationalized.

- 5 abattoirs developed, rehabilitated and operationalized to industry specifications.
- Operational standards and requirements achieved.
- Facilities inspections and certifications achieved.
- 100,000 tons of pig meat delivered.
- Import reduction by 50% achieved.
- Smallholder participation increased.

Output 4 Feed Mills Developed and Operationalized.

- 3 Feed Mills developed and operationalized to industry specifications.
- Operational standards and requirements achieved.
- Facilities inspections and certifications achieved.
- 80,000 tons of pig feed delivered.
- Import reduction by 50% achieved.
- Smallholder participation increased.

Output 5 Industry Compliances Maintained.

- Industry policy developed and applied.
- Inspections and monitoring systems established.
- Regulatory and Biosecurity compliances applied.
- Quality standards and certifications achieved.

Output 6 Industry Capacity Improved and enhanced.

- Institutional Capacity developed and enhanced.
- Staff capacity improved and retained.
- 1000 graduate development and entrepreneurship facilitated and achieved.
- Institutional assets serviced and maintained.
- 30x Grower cooperatives facilitated and established.
- 1000 piggery MSMEs developed.
- Research, innovation and technology development supported and facilitated.

2.15.5 Apiculture (Honey)

Apiculture industry in PNG stagnant because of vertically integrated value chain. Single operators concerns with everything including; bee keeping, honey production, processing and by-product development to supply domestic demands. Industry has potential to grow and expand through horizontal integrated value chain and increased participation in the value chain. Current honey production and marketing is at MSME level.

Domestic demand for honey is 200,000 kg per annum. Imports met 50% of the demand in the country while local production of honey is about 20,000 kg per annum, which only meet 10% of the demand. There is a gap of 40% in the domestic demand to meet. Available data showed that total production between 2001 and 2009 was 166,000 kg, which averages 4,000 kg per annum. Thus, commercial development of the Apiculture Industry under MTDP IV and Marape- Rosso Government's Agriculture Commercialization and Downstream Processing priorities will ensure domestic demand for honey is adequately supplied whilst exploring opportunities for export into niche markets.

Apiculture Industry value at present is estimated at K28 million based on price range of K35.00 to K140.00 per kilo gram.

Strategic Objective: Apiculture Industry is Developed and Commercialized.

Output 1 Stakeholder collaboration and Partnership Developed and Implemented.

- Needs assessment conducted.
- Stakeholder/farmer capacity building facilitated and achieved.
- Partnership and investment arrangements/agreements formalized.
- Industry standards and requirements achieved.
- Industry stakeholders participation coordinated and enhanced.

Output 2 Queen Bee Breeding Facilities and Colony Development Centres Established.

- 20 breeder farms established at SME level.
- Superior gueen bee breeds sourced, developed and maintained
- Industry standards and requirements achieved.

Output 3 Honey Demand Adequately Supplied

- Commercial bee keepers and production farms established and supported.
- Bee keeping and honey production capacity improved and sustained.
- Standardized equipment/materials sourced and supplied.
- Honey extraction facilities developed and operationalized.
- Domestic honey demand adequately supplied.
- Smallholder participation increased.
- Export Market created and supplied.

Output 4 Honey Extraction Facilities Developed and Operationalized.

- Engagement honey processors formalized.
- Honey Processing facilities developed and standardized.
- Facilities inspections and certifications achieved.
- Commercial extraction of honey achieved.
- Annual honey production target of 100 tons achieved.
- Import reduction by 50% achieved.

Output 5 Industry Compliances Achieved.

- Industry policy developed and applied.
- Inspections and monitoring systems established.
- Regulatory and Biosecurity compliances applied.
- Quality standards and certifications achieved.
- Industry compliance standards awareness achieved.

Output 6 Industry Capacity Improved and enhanced.

- Institutional Capacity developed and enhanced.
- Staff capacity improved and retained.
- Extension and advisory services improved and sustained.
- 1000 graduate development and entrepreneurship in apiculture facilitated and achieved.
- .Institutional assets serviced and maintained.
- 100x Grower cooperatives facilitated and established.
- 1000 bee keeping MSMEs developed.
- Research, innovation and technology development supported and facilitated.

Table H2.29 Commercial investment capital for livestock development in K'millions (MTDP IV)

Investment Category	2023	2024	2025	2026	2027	Total
National Livestock Development Program	30	50	50	50	50	230
Rehabilitating and New Abattoirs	0	10	20	20	10	60
Commercial Animal Feed Farm	0	15	20	10	5	50
Total (K'million)	30	75	90	80	65	340

Table H2.30 Particulars for implementation of livestock commercial development in phase 1 (2024-2028)

Implementation Location	Allocated Funds (K)	Funding Source	Drivers/Actors
Beef Cattle: Western, WHP,	140,000,000	MTDP IV DIP 1.1 (PIP)	DAL-PMCU, FPDA
EHP, Morobe, WNBP, WSP,		NASP 2024-2033 (PMCU)	Prov Govt, DDAs
Madang, MBP, Oro		Prov. Govt (PSIP)	Development Partners
Dairy Cattle: Western,	60,000,000	DDAs (DSIP)	Growers, Traders, NBPOL,
Central, ESP, JWK, ENBP		Development Partners,	NGTB, Zenag, CLTC,
Poultry: Enga, SHP, JWK,	80,000,000	FDI	Rumion, Pelgens
EHP, Morobe, Simbu, AROB,			
ESP, Manus, NIP, ENBP			
Piggery: Morobe, Hela,	40,000,000		
Madang, Gulf, Central, AROB			
Apiculture: EHP, Simbu,	20,000,000		
WHP,SHP, Enga	340,000,000		

Note: Livestock for commercial development includes; Cattle (beef & dairy), poultry, piggery, apiculture (honey).

Table H2.31 Target beneficiaries for commercial development of livestock

Category	Direct Beneficiaries	Indirect Beneficiaries	Total
Direct Employment	10,000	60,000	70,000
Graduate Development	1,000	2,000	3,000
Livestock Value Chain Players	1,000	7,000	8,000
Livestock MSMEs	1,000	7,000	8,000
Livestock Commercial Growers	200,000	1,400,000	1,600,000
Provincial Government	22		22
DDAs			
LLGs			
Wards			
Total	213,022	1,476,000	1,689,022

AGRICULTURE MSME / MSMI AND VALUE CHAIN DEVELOPMENT



3 AGRICULTURE MSME/MSMI AND VALUE CHAIN DEVELOPMENT (DIP 1.6)

Overview on Agriculture MSMI, MSME and Value Chain Development

Three key players are identified in this section, who progress from subsistence farming to large scale commercial farming and downstream processing of crops and livestock. Micro small medium industry (MSMI) operators are engaged in downstream processing and value adding. Micro small medium entrepreneur (enterprise) are engaged in farm production of crops and livestock. MSMIs become the market for MSMEs. Capacity boosting of MSMI will trigger increase in production volume of MSMEs. Value chain systems connect the production to the markets where consistency of supply, volume and quality are maintained. The classification depends on their scale of operation, considering; land area for MSME, number of employees, use of technology, volume of production (both) and annual turnover (Table H3.1).

NASP will ensure there is progression from micro level to large scale where farmers and millionaires in agriculture are declared. Participants at each level have to graduate into the next level as shown in Figure C.1.

Table H3.1 Agriculture MSMI and MSME levels for Papua New Guinea context.

Category	Size of Industry or Enterprise	Land Size (ha)	No. of Employees	Volume Output (tons/year)	Total Annual Turnover (K'000)
MSMI	Micro	<1	<5	<5	<200
	Small	1-2	5 - <40	5 - <50	200 - <500
	Medium	3.5	40 - <100	50 – 100	>500 - <10,000
MSME	Micro	1-5	<5	<5	<200
	Small	6-10	5 - <40	5 - <50	200 - <500
	Medium	11-20	40 - <100	50 – 100	>500 - <10,000

Many self-taught and independent MSMI in PNG require government assistance to expand and upscale the downstream processing to produce value-added products. The MSMI in both crops and livestock sectors is captured.

Value Chain Development (VCD)

Value Chain Development for each crop and livestock involves a systematic approach to improving production, processing, marketing, and consumption. This approach aims to increase production, improve productivity, and create value at each stage of the value chain, originating from the farm to the plate or cup. By implementing these strategies and fostering collaboration among all stakeholders, value chain development for each crop and livestock can lead to increased income for farmers, improved food nutrition and security for communities, and contribute to the economic growth.

The NASP 2024-2033, is packaged to address the prevailing value chain and supply chain challenges in the agriculture sector. These include;

- Agriculture input supplies availability and accessibility issues,
- Logistics and cool chain issues
- Market accessibility issues,
- Pricing issues,
- Dedicated transportation issues
- Postharvest management issues,
- Agriculture value chain system issues,
- Traceability issues.
- Labour issues, and
- Mindset issues.

The NASP is designed to mitigate these challenges with strategic interventions for targeted crops and livestock. In this section, specific outcomes, outputs and activities for MSMI, MSMI, and value chain development are outlined. The implementer should unpack them and develop five-year and annual operational plans.

Food crops and livestock MSMI, MSME and Value Chain Development

The value chain for the selected food crops and small livestock will be properly developed to progress the participants in MSMI and MSME. Production and marketing of these commodities will have to be increased and advanced. The vegetable value chain has multitasked and multifaceted challenges, which are identified in the KPIs and will have to delivered. The resilience of the people remains the strength to achieve the government's priorities for agriculture commodity specialization, commercial production and downstream processing of root crops, grains and cereals, fruits, nuts and spices. Similar value chain development and advancement will be made for the selected livestock.

Several MSMIs are actively doing downstream processing of the selected crops and livestock. NASP will boost their production output capacity to graduate them into large industries. The capacity of MSMEs will also be developed and supported to increase production volume to feed the MSMIs. The production and supply chain will be supported and strengthened for sustainability of each commodity industry.

Figure H3.1 Selected crops and livestock for value chain development

VEGETABLES	FRUITS	NUTS	GRAINS &	OILS & OTHERS	LIVESTOCK
Sweet Potato	Strawberry	Cashew	LEGUMES	Red Pandanus	Village Chicken
Taro	Pineapple	Okari	Corn	Noni	Ducks
Yam	Citrus	Galip	Sorghum	Moringa	Goats
Cassava	Pawpaw		Peanut	Floriculture	Deer
Potato	Tomato		Soy Bean	Mushroom	
Brassicas	Avocado			Peanut	
Asparagus	Cavendish			Soy Bean	

3.1 Root Vegetables MSMI, MSME and Value Chain Development

3.1.1 Root vegetable MSMIs and Value Chain Development

Strategic Objective: Production of high quality value added products processed and marketed.

Outcome 1 Consistent production and supply chain of roots and vegetables achieved.

Outputs 1 Downstream processing developed and operated.

- Design of downstream processing facilities completed.
- Downstream processing facility and equipment procured, constructed and installed.
- Technical capacity of the entrepreneurs improved and up killed.
- Value added products increased, diversified and promoted.
 Investment funding accessed and secured.
- Land ownership to establish downstream processing secured.

Output 2 Production volume of high quality sweet potato value added products increased.

- Capacity of sweet potato MSMIs improved and up scaled.
- Sweet potato MSMIs increased and maintained.
- Volume of high quality tubers increased.
- MSMIs consolidate value added products and supply on consistent basis achieved.

Output 3 Effective and efficient value chain systems developed.

- Value chain analysis completed.
- Empowering entrepreneurs with tailored business knowledge and skills achieved.
- Develop value chain logistics for value added product completed.
- Dedicated transport system provided and sustained.
- Partnership with research and innovation institutions enhanced.
- Networking and information sharing with MSMIs established.
- Best downstream processing model and practice reviewed, sustained and replicated.

Output.4: Value added product's market ecosystem completed.

- Effective market linkages established.
- Market size for value added products increased.
- Value added product branding and promotion completed.
- Consumer demand trend and preferences researched and assessed.
- Nutrition and health benefits packaged and promoted.
- Product nutrient content analysis and certification of labelling by accredited body secured.

Outputs 5 Monitoring and evaluation implemented.

- Monthly report based on the reporting format submitted and verified.
- Quarterly reviews conducted and recommendations on slack performances completed.
- Abuse and unethical instances identified in the review for action implemented.
- Annual reviews conducted as per NASP M&E framework completed.

3.1.2 Root vegetable MSMEs and Value Chain Development

Strategic Objective: Capacity building of MSMEs for sustainable production and marketing completed.

Outcome 1 Development of roots and vegetables MSMEs enhanced.

Output 1 MSMEs take selected root vegetable farming as a business enhanced.

- Training manual on each root vegetable crop production, postharvest and marketing delivered.
- 6,375 MSMEs (individuals and farmer groups) identified and profiled.
- Capacity of MSMEs assessed and improved.
- MSME data bank created and identification system developed (green card).
- Market oriented extension services provided.
- Training manual on simple farm accounting, financial literacy and gross margin delivered.
- Agribusiness knowledge and skills improved.
- Farmer information integrated with ITC-IMS completed.
- Networking of MSMEs and sharing information established.

Output 2 Roots and Vegetables MSME's production capacity improved and productivity sustained.

- High quality planting materials (seed and vegetative materials) sourced.
- Capacity of each root staple crop MSME improved.
- Production up-scaling and out-scaling implemented.
- Post-harvest management practices improved and maintained.
- Agriculture innovation (new varieties, precision agriculture, etc.) enhanced.
- Integrated farming systems practices (CSA, GAP, GPP, SFS) utilized.
- Partnerships with research and innovation institution established.

Output 3 Root staples value chain from farm to the market end (MSMI) facilitated.

- Value chain player's relationships improved.
- Cool chain and storage facilities established.
- Dedicated transport systems provided and sustained.
- Value chain players profiled.
- Food safety, health and hygiene techniques for compliances introduced.
- Health and safety of entrepreneurs and employees protected.

Output 4 Market ecosystem from farm to market end enhanced.

- Market linkages established.
- Consistent supply of selected root staple crop coordinated and sustained.
- Market demands and customer preferences assessed and mapped.
- Market partnerships and business relationships enhanced.

Outputs 5 Monitoring and Evaluation implemented.

- Monthly report based on the reporting format submitted and verified.
- Quarterly reviews conducted and recommendations on slack performances completed.
- Abuse and unethical instances identified in the review for action implemented.
- Annual reviews conducted as per NASP M&E framework completed.

Output 6 Five years' root staple crops MSMI, MSME and value chain development implemented.

- Implementation provinces identified and formalized (Table H3.2).
- Investment cash flow (Table H3.3).
- Funding sources identified and funds secured (Table H3.4).
- Implementation agencies identified and formalized (Table H3.4).
- Target beneficiaries identified and quantified (Table H3.5).

Table H3.2 Particulars for Implementation of root vegetables MSMI, MSME and Value chain development

Implementation Province	Allocated Funds (K'million)	Funding Sources	Implementing Agency
EHP, WHP, JWK, Simbu ,Morobe, Madang, ENBP, Gulf, Oro, MBP, NIP, ESP, AROB	28	GoPNG & DP	FPDA. NDAL. PPP, MSMI, MSME. Prov Govt, DDAs

Table H3.3 Investment cash flow for root vegetables from 2024-2033

First five years (2024-2028)

DIP Link	MTDP IV Budgeted	Allocated Funds	Yearly cash flow in K'millions					
	(K'million)	(K'million)	2024	2025	2026	2027	2028	
DIP 1.1.	83	28	2.8	2.8	2.8	2.8	2.8	

Second five years (2029-2033)

DIP Link	MTDP IV Budgeted	Allocated Funds	Yearly cash flow in K'millions				
	(K'million)	(K'million)	2029	2030	2031	2032	2033
DIP 1.1.	83	28	2.8	2.8	2.8	2.8	2.8

Table H3.4 KPIs of root vegetables MSMIs, MSMEs and Value Chain Development

Key indicators	Targets	Actuals
Volume (tons)		
MSMI volume of added product (tons)	187.2	
MSME raw product (tons)	318,24	
Value (K'millions)		
MSMI value (K'millions)	936.00	
MSME from raw product (K'millions)	159.12	
Subtotal value (K'millions)	1,095.12	
Investment (MTDP IV) (K'Millions)	28	
Return on Investment (ROI)	1:39	
Land area cultivated by MSMEs (Ha)	5,400	

Table H3.5 Target Beneficiaries for root staple crops MSMIs and MSMEs

Category	В	eneficiaries
Direct employment	Direct	Indirect
Industry player(MSMI)		
Micro	90	540
Small	25	150
Medium	10	60
Subtotal	125	750
Entrepreneur (MSME)		
Micro	3,200	19,200
Small	2,075	12,450
Medium	1,100	6,600
Subtotal	6375	28,250
Total	6,500	29,000

3.2 Brassicas MSMI/MSME and Value Chain Development

Brassica is the market leader of the leafy vegetables in general. For the MSMI and value chain development, broccoli and cauliflower are selected for downstream processing. All other brassicas listed here will be developed under MSME and value chain development.

3.2.1 Brassicas (Broccoli & Cauliflower) MSMI and Value Chain Development

Value added products: Branched and chilled broccoli and cauliflower products for formal markets.

Broccoli and cauliflower are major vegetables from the brassicas grown by rural farmers in the highlands. However, these crops are highly perishable but of high value. Proper handling is required after harvesting to control the freshness and quality until it reaches retail supermarkets in cities or catering services in mining enclaves. To this end, there are surmountable challenges, but resilient farmers in PNG transport broccoli and cauliflower to Port Moresby and mining towns using basic postharvest techniques they learned while in business.

Broccoli and Cauliflower have similar requirement for value creating activities with relevant facilities, equipment, tools and testing instruments based on key value adding aspects.

- a) Field inspections (right stage and time to harvest).
- b) Harvesting techniques (highest standard)
- c) Pre-cooling
- d) Sorting, grading and washing
- e) Trimming, branching and drying
- f) Weighing, portioning and packaging

- g) Quality control (food safety & hygiene)
- h) Cool storage and distribution/transport
- i) Waste management

Strategic Objective: Production of high quality value added products of broccoli and cauliflower increased and marketed.

Outcome: Value added product production and supply on consistent basis to markets achieved

Outputs 1 D downstream processing facilities for broccoli and cauliflower established and operated.

- Design and procurement of facilities and equipment supported.
- Downstream processing (cooling and packaging) facility, equipment and machineries established. Training manual on simple accounting, financial literacy and gross margin delivered
- Training on operating downstream processing equipment's completed.
- Broccoli and cauliflower product brands produced.
- Access credit facilities and funding secured.
- Location for facility secured.

Output 2 Production of broccoli and cauliflower value added products increased.

- 40 broccoli and cauliflower MSMIs supported and maintained.
- Volume of high quality broccoli and cauliflower increased.
- Farmer groups aggregate broccoli and cauliflowers and supply on consistent basis enhanced.

Output 3 Effective value chain system for broccoli and cauliflower products developed.

- Value chain analysis for broccoli and cauliflower completed.
- Follow up and networking of key stakeholders completed.
- Broccoli and cauliflower value chain players profiled and identification card issued.
- Dedicated transport provided and sustained.
- Partnership with research and innovation institutions enhanced.
- Food safety, health and hygiene techniques for compliances introduced.
- Health and safety of entrepreneur and employees protected.
- Product certification for traceability and labeling (PNG Made) obtained.

Output 4 Robust market ecosystem for broccoli and cauliflower value added products connected...

- Effective market linkages for broccoli and cauliflower products established.
- Market size for broccoli and cauliflower products increased.
- Consistency of supply of broccoli and cauliflower value added products improved
- Consumer demand and preferences assessed.

Outputs 5 Monitoring and Evaluation effected.

- Monthly report based on the reporting format submitted and verified.
- Quarterly reviews conducted and recommendations on slack performances completed.
- Abuse and unethical instances identified in the review for action implemented.
- Annual reviews conducted as per NASP M&E framework completed.

3.2.2 Brassicas MSME and Value Chain Development

Brassicas has wide range of species including; *Brassica oleracea*, *B. rapa*, *B. napus*, *B. juncea*, *B. hirta* and **Lettuce**. NASP will support Brassica MSMEs in the highlands and lowlands and appropriately develop the value chain of brassicas. *B. naputs* (Canola) has high oil content and a potential commodity that will be introduced for commercialization and downstream during NASP term

Strategic Objective: Capacity development of brassica MSMEs for sustainable and consistent production and marketing achieved.

Outcome 1 Brassica MSMEs developed and strengthened.

Output 1 MSMEs in brassicas farming as a business developed and empowered.

- Training manual on brassica production, postharvest and marketing delivered.
- 87 Farmers/MSME identified and profiled to data bank.
- Market oriented extension services provided
- Knowledge and skills on appropriate farm mechanization and water irrigation improved
- Information, IT- IMS systems integrated.

Output 2 Brassica production capacity enhanced and productivity improved by 50% per year.

- Brassica commercial production and postharvest management practiced.
- Production up-scaling and out-scaling implemented.
- MSMEs' business skills (basic accounting, financial literacy, PV, etc.) developed and improved.
- MSME linkages and association developed.
- High quality farm input systems (seeds/vegetative materials, chemicals, machineries, etc.) established.
- Integrated farming systems implemented.

Output 3 Brassica value chain improved from farm to the market end by 80 %.

- Value chain player's relationships improved and profiled.
- Logistics for aggregating, storage, cool chain facilities, and operations are established.
- Dedicated transport systems provided.
- Post-harvest management practices improved and maintained.
- Research and development partnerships created.
- Food safety, health and hygiene techniques for compliances to Codex, HACCP, SPS, etc. are practiced.
- Health and safety of entrepreneur and employees protected.

Output .4 Brassica market ecosystem from farm to market end enhanced.

- Market linkages for brassica supply chain consistency established.
- Brassica value added products diversified, branded and promoted.
- Market demands and customer preferences mapped.
- Brassica nutrition and health benefits packaged and promoted.

Outputs 5 Monitoring and Evaluation effected.

- Monthly report based on the reporting format submitted and verified.
- Quarterly reviews conducted and recommendations on slack performances completed.
- Abuse and unethical instances identified in the review for action implemented.
- Annual reviews conducted as per NASP M&E framework completed.

Output 6. Brassicas MSMI, MSME and value chain development implemented.

- Implementation agencies identified and formalized (Table H3.6).
- Implementation agencies identified and formalized.
- Funding sources identified and funds secured (Table H3.6).
- Implementation cash flow from 2024-2033 (Table H3.7).
- Annual KPIs achieved (Table H3.8).
- Target beneficiaries identified and quantified (Table H3.9).

Table H3.6 Particulars for Implementation of brassicas MSMI, MSME and Value chain development

Implementation Province	Allocated Funds (K'million)	Funding Sources	Implementing Agency
WHP, Simbu, EHP, ENBP, AROB, NIP, Morobe	15	GoPNG & DP	FPDA. NDAL. PPP, MSME, MSMI Prov Govt, DDAs,

Table H3.7 Investment cash flow for brassicas from 2024-2033

First five years (2024-2028)

DIP Link	MTDP IV Budgeted	Allocated Funds	Yearly cash flow in K'millions				
	(K'million)	(K'million)	2024	2025	2026	2027	2028
DIP 1.1.	83	15	1.5	1.5	1.5	1.5	1.5

Second five years (2029-2033)

DIP Link	MTDP IV Budgeted	Allocated Funds	Yearly cash flow in K'millions				
	(K'million)	(K'million)	2029	2030	2031	2032	2033
DIP 1.1.	83	15	1.5	1.5	1.5	1.5	1.5

Table H3.8 Key Performance Indicators of brassicas MSMI, MSME and Value Chain Development

Key indicators	Targets	Actuals
Volume (tons)		
MSMI volume of value added product (tons)	31,000	
MSME raw product (tons)	126,000	
Value (K'millions)		
MSMI value (K'millions)	155.0	
MSME from raw product (K'millions)	126.0	
Subtotal value for brassicas (K'millions)	281.0	
Investment (MTDP IV) (K'Millions)	15	
Return on Investment (ROI)	1:19	
Land area cultivated by MSMEs (Ha)	6600	

Table H3.9 Target Beneficiaries for brassicas MSMI and MSME

Category		Beneficiaries
Direct employment	Direct	Indirect
Industry player (MSMI)		
Micro	20	120
Small	15	90
Medium	5	30
Subtota	1 40	240
Entrepreneur (MSME)		
Micro	60	360
Small	40	240
Medium	20	1200
Subtota	l 120	720
Tota	l 160	960

3.3 Fruits MSMI/MSME and Value Chain Development

MSMI and MSME of the selected fruits: strawberry, pineapple, citrus, pawpaw, tomato, capsicum, avocado, Cavendish, and plantain, will be supported and their value chain developed properly into commercialization and downstream processing in the first phase of NASP (2024-2028). Other fruits will be developed in phase 2 (2029-2033).

3.3.1 Fruits MSMI and Value Chain Development

General value added products of fruits are jam, jelly. Banana flour, alcohol, vinegar, juice, squash, etc. It can be used in ice cream, salad dressing, salad dressing, blended drinks, and baked goods. For specific details, it can be search under each fruit that an entrepreneur wishes to develop it.

Strategic Objective: Production of high quality value added products of strawberry increased and marketed.

Outcome 1 Downstream processing facilities for strawberry established and operated.

Outputs 1 Downstream processing facilities for selected fruit established and operated.

- Design for facility completed.
- Downstream processing facility and equipment procured and installed.
- Downstream processing facility, equipment and machineries improved and maintained.
- Technical capacity of entrepreneur enhanced and up-skilled.
- Selected fruit's value added product produced, branded and promoted.
- Effectively accessed credit facilities and funding secured.
- Location for facility secured with no land issues.

Output 2 Production of selected fruit's value added products increased and sustained.

- Number of MSMIs increased and maintained.
- Volume of high quality fruit product increased.
- Farmer groups aggregate and supply to target market on consistent basis.
- Successful models reviewed and replicated.

Output 3 Vibrant and effective value chain system for selected fruit products developed.

- Value chain analysis completed.
- Follow up and networking key stakeholders mapped.
- Strawberry value chain players profiled.
- Dedicated transport provided.
- Partnership with research and innovation institutions enhanced.

Output 4 Robust market ecosystem for each fruit value added products developed by 80%.

- Effective market linkages for fruit products established.
- Market size for fruit products increased.
- Consistency of supply of value added products improved
- Consumer demand and preferences for selected fruit assessed.

3.3.2 Fruit MSME and Value Chain Development

Strategic Objective: Capacity of each fruit MSMEs for sustainable and consistent production and marketing enhanced.

Outcome 1 Development of selected or each fruit MSMEs completed.

Output 1 Empower MSMEs to take fruit farming as a business completed.

- Training manual on production, postharvest and marketing for selected fruit delivered.
- 104 Farmers/MSME identified and profiled.
- Market oriented extension services provided
- Knowledge and skills on appropriate farm mechanization and water irrigation improved
- Information integrated with IT-IMS.

Output .2 Selected fruit production capacity enhanced and productivity improved.

- Selected fruit commercial production and postharvest practices improved.
- Production up-scaling and out-scaling implemented.
- Business skills (basic farm accounting, financial literacy and gross margin) developed and improved.
- MSME linkages and association developed.
- High quality farm input systems (seeds/runners, chemicals, machineries, etc.) established.
- Integrated farming systems (GAP, GPP, CSA, SFS, etc.) implemented.

Output 3 Fruit value chains improved from farm to the market end completed.

- Value chain player's business relationships improved.
- Logistics for aggregating, storage, cool chain facilities, and operations established.
- Dedicated transport systems provided and sustained.
- Post-harvest management practices improved and maintained.
- Value chain analysis and chain players profile completed.
- Food safety, health and hygiene techniques for compliances conducted.
- Health and safety of entrepreneur and employees protected.
- Product certification for traceability and labeling (PNG Made) obtained.

Output .4 Fruit's market ecosystem from farm to market end enhanced.

- Market linkages for selected fruit supply chain consistency established.
- Selected fruit's value added products diversified, branded and promoted.
- Market demands and customer preferences mapped.
- Selected fruit's nutrition and health benefits packaged and promoted.

Outputs 5 Monitoring and Evaluation implemented.

- Monthly report based on the reporting format submitted and verified.
- Quarterly reviews conducted and recommendations on slack performances completed.
- Abuse and unethical instances identified in the review for action implemented.
- Annual reviews conducted as per NASP M&E framework completed.

Output 6. Selected fruit's MSMI, MSME and value chain development implemented

- Implementation provinces identified and formalized (Table H3.10).
- Investment cash flow from 2024-2033 (Table H3.11)

- KPIs of kaukau MSMI, MSME and value chain development (Table H3.12)
- Target beneficiaries identified and quantified (Table H3.13).

Table H3.10 Particulars for Implementation of selected fruit's MSMI, MSME and Value chain development

Implementation Province	Allocated Funds (K"million)	Funding Sources	Implementing Agency
EHP, Simbu, JWK, WHP, Enga, SHP, Hela	22	GoPNG & DP	FPDA. NDAL. PPP, MSMI, MSME Prov Govt, DDAs,

Table H3.11 Investment cash flow from 2024-2033

First five years (2024-2028)

DIP Link	MTDP IV Budgeted	Allocated Funds	Yearly cash flow in K'millions				
	(K'million)	(K'million)	2024	2025	2026	2027	2028
DIP 1.1.	83	22	2.2	2.2	2.2	2.2	2.2

Second five years (2029-2033)

IV DIP Link	MTDP IV Budgeted	Allocated Funds	Yearly cash flow in K'millions				
	(K'million)	(K'million)	2029	2030	2031	2032	2033
DIP 1.1.	83	22	2.2	2.2	2.2	2.2	2.2

Table H3.12 Key Performance Indicators of selected fruit's MSMI, MSME and value chain development

Key indicators	Targets	Actuals
Volume (tons)		
MSMI volume of value added product (tons)	20250	
MSME raw product (tons)	105,000	
Value (K'millions)		
MSMI value (K'millions)	101.26	
MSME from raw product (K'millions)	210.00	
Subtotal value (K'millions)	311.26	
Investment (MTDP IV) (K'Millions)	22	
Return on Investment (ROI)	1:14	
Land area cultivated by MSMEs (Ha)	510	

Table H3.13 Target Beneficiaries for selected fruit's MSMI and MSME

Category	Benefic	iaries
Direct employment	Direct	Indirect
Industry player (MSMI)		
Micro	6	360
Small	6	360
Medium	2	12
Subtotal	14	84
Entrepreneur (MSME)		
Micro	70	420
Small	20	120
Medium	15	90
Subtotal	104	630
Total	118	714

3.4 Nuts MSMI, MSME and Value Chain Development

Cashew and okari are selected for value chain development. The MSMIs and MSMEs of these nut crops will be supported and their value chain developed properly. Good practice and understanding of value chain systems will lead to large scale commercial development and downstream processing of these crops.. Other nut crops will be developed in phase 2 (NASP 2029-2033).

3.4.1 Cashew and Okari MSMI and Value Chain Development

Value added products for cashew and okari nuts: butter, cheese, oil, cashew nutshell liquid (CNSL), etc.

Objective: Production of high quality value added products of cashew increased and marketed.

Outcome 1 Value added product production and supply of cashew and okari on consistent basis to markets achieved

Outputs1 Downstream processing of cashew and okari established and operated.

- Design for downstream processing completed.
- Appropriate downstream processing facility and equipment procured and established.
- Technical capacity for downstream processing enhanced and up-skilled.
- Cashew and okari product brands produced and sustained..
- Access credit facilities and funding secured.
- Location for facility secured.

Output 2 Production of cashew and okari value added products increased.

- 6 cashew and okari MSMIs mapped and supported.
- Volume of high quality cashew and okari increased.
- MSMIs aggregate and supply cashew and okari value added products to target market achieved.
- Successful models reviewed and replicated.
- Access credit facilities and funding secured.
- Location for facility secured.

Output 3 Effective and efficient value chain system for cashew and okari products developed.

- Value chain analysis for cashew and okari completed.
- Follow up and networking key stakeholders mapped.
- Cashew and okari value chain players profiled.
- Dedicated transport provided and sustained.
- Partnership with research and innovation institutions enhanced.
- Food safety, health and hygiene techniques for compliances conducted.
- Health and safety of entrepreneur and employees protected.
- Product certification for traceability and labeling (PNG Made) obtained.

Output 4 Robust market ecosystem for cashew and okari value added products developed.

- Effective market linkages for t cashew products established.
- Market size for cashew products increased.
- Consistency of supply of cashew and okari value added products improved
- Consumer demand and preferences assessed.

Output 5 Monitoring and Evaluation implemented.

- Monthly report based on the reporting format submitted and verified.
- Quarterly reviews conducted and recommendations on slack performances completed.
- Abuse and unethical instances identified in the review for action implemented.
- Annual reviews conducted as per NASP M&E framework completed.

3.4.2 Cashew and Okari MSME and Value Chain Development

Strategic Objective: Capacity of cashew and okari MSMEs for sustainable production and marketing achieved.

Outcome 1 Okari and cashew MSMEs development enhanced

Output 1 Entrepreneurs take okari and cashew farming as a business completed.

- 36 entrepreneurs identified and profiled.
- MSME data bank created and identification system utilized.
- Technical know-how on appropriate farm mechanization and water irrigation improved
- Market oriented extension services provided
- Entrepreneur's knowledge and skills on agribusiness completed.
- Information integration with IT-IMS achieved.

Output 2 Cashew and okari production capacity enhanced and productivity improved.

- Commercial production skills enhanced and improved.
- Production up-scaled and out-scaled implemented.
- On the job business skills developed and improved.
- MSME linkages and association developed.
- High quality farm input systems (seeds/vegetative material, chemicals, machineries, etc.) established.
- Integrated farming systems (GAP, GPP, CSA, SFS, etc.) implemented.

Output 3 Cashew and okari value chain improved from farm to the market completed.

- Value chain player's relationships improved.
- Storage and packaging facility established.
- Dedicated transport systems provided and sustained.
- Post-harvest management practices improved and maintained.
- Value chain players profiled.
- Food safety and hygiene techniques practiced.

Output 4 Cashew and okari market ecosystem established.

- Market linkages for cashew and okari established.
- Supply consistency coordinated.
- Market demands and customer preferences mapped.
- Cashew nutrition and health benefits packaged and promoted

Output 5 Monitoring and Evaluation effected.

- Monthly report based on the reporting format submitted and verified.
- Quarterly reviews conducted and recommendations on slack performances completed.
- Abuse and unethical instances identified in the review for action implemented.
- Annual reviews conducted as per NASP M&E framework completed.

Output 6 Cashew and okari nut MSMI, MSME and value chain development implemented.

- Implementation provinces identified and formalized (Table H3.14).
- Implementing cash flow form 2024-2033 (Table H3.15)
- Key Performance Indicators of cashew and okari MSMI, MSME and value chain development (Table H3.15).
- Target beneficiaries identified and quantified (Table H3.17).

Table H3.14 Particulars for Implementation of cashew and okari MSMI, MSME and value chain development

Implementation Province	Allocated Funds (K"million)	Funding Sources	Implementing Agency
EHP, Morobe,	10	GoPNG & DP	FPDA. NDAL. PPP,
Central, Western			Prov Govt, DDAs,

Table H3.15 Investment cash flow for cashew and okari from 2024-2033

First five years (2024-2028)

DIP Link	MTDP IV Budgeted	Allocated Funds	Yearly cash flow in K'millions				
	(K'million)	(K'million)	2024	2025	2026	2027	2028
DIP 1.1	83	10	1	1	1	1	1

Second five years (2029-2033)

DII	P Link	MTDP IV Budgeted	Allocated Funds	Yearly cash flow in K'millions				
		(K'million)	(K'million)	2029	2030	2031	2032	2033
DII	P 1.1	83	10	1	1	1	1	1

Table H3.16 Key Performance Indicators of cashew and okari MSMI, MSME and value chain development

Key indicators	Targets	Actuals
Volume (tons)		
MSMI volume of value added product (tons)	3,528	
MSME raw product (tons)	5,040	
Value (K'millions)		
MSMI value (K'millions)	70.56	
MSME from raw product (K'millions)	25.20	
Subtotal value (K'millions)	95.76	
Investment (MTDP IV) (K'Millions)	10	
Return on Investment (ROI)	1:9	
Land area cultivated by MSMEs (Ha)	384	

Table H3.17 Target Beneficiaries for cashew and okari MSMI and MSME

Category	Benefic	iaries
Direct employment	Direct	Indirect
Industry player (MSMI)		
Micro	3	30
Small	2	30
Medium	1	2
Subtotal	6	62
Entrepreneur (MSME)		
Micro	20	300
Small	10	60
Medium	6	30
Subtotal	36	390
Total	42	433

3.5 Spices MSMI, MSME and Value Chain Development

Spices are high value crops for food flavoring and manufacturing industries. NASP will support spices MSMIs and MSMEs and adequately develop their value chains to create an industry through the Spice Industry Board. Spice crops selected for value chain development during phase 1 (NASP2024-2028) include; *ginger* and *turmeric*. Value cahin development of spice crops in phase 2 (NASP2029-2033) include: *cardamom*, *ginger*, *turmeric*, *cinnamon*, *pepper*, *citronella*, and *nutmeg*.

NASP deliberate investments and partnership arrangements will address the following inherent challenges to elevate the performance Spice Industry Subsector.

- Production issues,
- Quality Issues,
- Postharvest management issues,
- Pest and disease issues.
- Marketing and value chain issues,
- Limited-value addition,
- > Inconsistent supply issues,
- Market intelligence and linkages issues,
- > Transportation and logistics issues, and
- > Training and capacity building issues.

3.5.1 Spices MSMI and Value Chain Development

Strategic Objective: Production of high quality spice value added products sustained and marketed.

Outcome 1 Value added product production and supply on consistent basis to markets achieved

Outputs 1 Downstream processing facilities established and operated.

- Design for downstream processing completed.
- Appropriate downstream processing facility and equipment procured and established.
- Technical capacity for downstream processing equipment enhanced and up-skilled.
- Selected spice's value added product diversified, branded and promoted.
- Access credit facilities and funding secured.
- Location for facility secured.

Output .2 Production of selected spice's value added products increased.

- 28 Spice MSMIs participant supported and maintained.
- Volume of high quality spice product increased.
- MSMIs aggregate their product for group marketing on consistent basis facilitated.

Output 3 Vibrant and effective value chain system for spice value added products developed.

- Value chain analysis completed.
- Follow up and networking key stakeholders mapped.
- Selected spice value chain players profiled.
- Dedicated transport provided and sustained.
- Food safety, health and hygiene techniques for compliances practiced.
- Health and safety of entrepreneur and employees protected.
- Product certification for traceability and labeling (PNG Made) obtained.

Output 4 Robust market ecosystem for selected spices' value added products developed

- Effective market linkages for spice products established.
- Market size for spice products increased.
- Consistency of supply of spice products improved
- Consumer demand and preferences assessed.

Outputs 5 Monitoring and Evaluation implemented

- Monthly report based on the reporting format submitted and verified.
- Quarterly reviews conducted and recommendations on slack performances completed.
- Abuse and unethical instances identified in the review for action implemented.
- Annual reviews conducted as per NASP M&E framework completed.

3.5.2 Spices MSME and Value Chain Development

Strategic Objective: Capacity of spices MSMEs for sustainable production and marketing achieved.

Outcome 1 Development of spice MSMEs enhanced.

Output 1 Empower spice MSMEs to take farming as a business completed.

- Training manual on spice production, postharvest and marketing delivered.
- 1,600 Farmers/MSME identified and profiled to data bank.
- Training manual on production, postharvest, and marketing for each spice delivered.
- Market oriented extension services provided.
- Technical know-how on appropriate farm mechanization and water irrigation improved
- Information integration with IT-IMS achieved.

Output 2 Spice production capacity enhanced and productivity improved.

- Training manual on business skills delivered.
- Spice commercial production and postharvest practices implemented.
- Production up-scaling and out-scaling implemented.
- Training on business skills (basic farm accounting, financial literacy, gross margin) delivered.
- MSME linkages and association developed.
- High quality farm input systems (seeds/vegetative materials, chemicals, etc.) established.
- Integrated farming systems (GAP, GPP, CSA, SFS, etc.) implemented.

Output 3 Spice value chain improvement from farm to the market completed

- Value chain player's profiled and relationships improved.
- Logistics for aggregating, storage, cool chain facilities, and operations are established.
- Dedicated transport systems provided and sustained.
- Post-harvest management practices improved and maintained.
- Food safety, health and hygiene techniques for compliances implemented.
- Health and safety of entrepreneur and employees protected.

Output 4 Spice market ecosystem from farm to market end enhanced.

- Market linkages established.
- Market demands and customer preferences mapped.
- Spice nutrition and health benefits packaged and promoted.
- Market partnership and business relationships established.

Outputs 5 Monitoring and Evaluation implemented

- Monthly report based on the reporting format submitted and verified.
- Quarterly reviews conducted and recommendations on slack performances completed.
- Abuse and unethical instances identified in the review for action implemented.
- Annual reviews conducted as per NASP M&E framework completed.

Output 6. Spice MSMI, MSME and value chain development implemented

- Implementation provinces identified and formalized (Table H3.18).
- Investment cash flow from 2024-2933 (Table H3.19)
- Key Performance Indicators of cashew and okari MSMI, MSME and value chain development (Table H3.20)
- Target beneficiaries identified and quantified (Table H3.21).

Table H3.18 Particulars for Implementation of spices MSMI, MSME and Value chain development

Implementing Province	Allocated Funds (K"million)	Funding Sources	Implementing Agency				
Central, Gulf, Morobe, Oro, ESP,	20	GoPNG, DP, FDI	FPDA. NDAL. PPP, Spice				
Western, NIP, WSP, WNBP, EHP,			Board, MSMI, MSME, Prov				
ENBP, MBP, AROB, Madang, Simbu			Govt., , DDAs				

Table H3.19 Investment cash flow for spices from 2024-2033

First five years (2024-2028)

DIP Link	MTDP IV Budgeted	Allocated Funds	Yearly o	ash flow	in K'milli	ons	
	(K'million)	(K'million)	2024	2025	2026	2027	2028
DIP 1.1.9	80	20	2	2	2	2	2

Second five years (2029-2033)

DIP Link	MTDP IV Budgeted	Allocated Funds	Yearly o	ash flow	in K'milli	ons	
	(K'million)	(K'million)	2029	2030	2031	2032	2033
DIP 1.1.9	80	20	2	2	2	2	2

Table H3.20 Key Performance Indicators of spice MSMI, MSME and Value Chain Development

Key indicators	Targets	Actuals
Volume (tons)		
MSMI volume of value added product (tons)	18,000	
MSME raw product (tons)	2,880,000	
Value (K'millions)		
MSMI value (K'millions)	180.00	
MSME from raw product (K'millions)	5,760.00	
Subtotal value (K'millions)	360	
Investment (MTDP IV) (K'Millions)	20	
Return on Investment (ROI)	1:306	
Land area cultivated by MSMEs (Ha)	14,400	

Table H3.21 Target Beneficiaries for spice MSMI and MSME

Category	Benefic	iaries
Direct employment	Direct	Indirect
Industry player (MSMI)		
Micro	16	96
Small	8	48
Medium	4	24
Subtotal	28	168
Entrepreneur (MSME)		
Micro	1,000	6,000
Small	500	3,000
Medium	100	600
Subtotal	1,600	9,600
Total	1,628	9,768

3.6 Grain and Legumes MSMI, MSME and Value Chain Development

Stock feed shortages and inadequate supply issues will be addressed by up-scaling and out-scaling of domestic feed mills and production capacities. Grains and legumes are important base ingredient for stock feed. NASP will support grain and legumes MSMI and MSMEs and ensure their value chain is adequately developed for sustainable production and downstream processing. Grains and legumes identified for value chain development in phase 1 (NASP2024-2029) include; *corn, sorghum, soy bean, beans, peanuts*. Value chains of other grains and legumes will be developed in phase 2 (NASP 2029-2033).

3.6.1 Grains and legumes MSMI and Value Chain Development

Strategic Objective Production of high quality grain and legume value added products enhanced and marketed.

Outcome 1 Value added product production and supply on consistent basis to markets achieved.

Outputs 1 Downstream processing facilities for selected grain and legumes established and operated.

- Design for facility completed.
- Small scale downstream processing facility and equipment procured and installed.
- Training manual on the use of equipment and processing procedures delivered.
- Technical capacity of entrepreneur enhanced and up-skilled.
- Value added product produced, branded and promoted.
- Access credit facilities and funding secured.
- Location for facility secured.

Output 2 Production capacity of MSMIs of selected grain and legume's value added products increased

- 24 MSMIs participation supported and maintained.
- Volume of high quality grain and legume product increased.
- Farmer groups aggregate and supply to target market on consistent basis achieved.
- Successful models reviewed and replicated.

Output 3 Vibrant and effective value chain system for selected grain and legume developed.

- Value chain analysis completed.
- Follow up and networking key stakeholders mapped.
- Value chain players profile and identification systems completed.

- Dedicated transport provided and sustained.
- Partnership with research and innovation institutions enhanced.
- Regulatory support on import to encourage MSMIs enhanced.
- Product certification for traceability and labeling (PNG Made) obtained.

Output 4 Robust market ecosystem for each selected grain and legume's value added products developed

- Effective market linkages for grain and legume products established.
- Market size for grain and legume products increased.
- Consistency of supply of value added products improved
- Consumer demand and preferences for selected grain and legume assessed.
- Market partnerships and business relationships created.

Outputs 5 Monitoring and evaluation effected.

- Monthly report based on the reporting format submitted and verified.
- Quarterly reviews conducted and recommendations on slack performances completed.
- Abuse and unethical instances identified in the review for action implemented.
- Annual reviews conducted as per NASP M&E framework completed.

3.6.2 Grains and legumes MSME and Value Chain Development

Strategic Objective: Capacity development of MSMEs for consistent production and supply of grain and legumes achieved.

Outcome 1 Development of grain and legume MSMEs completed.

Output 1 MSMEs take grain and legume farming as a business completed.

- Training manual on production, postharvest and marketing of selected grain and legume delivered.
- Training manual on agribusiness (simple accounting, financial literacy, gross margin,) delivered.
- 160 entrepreneurs identified and profiled.
- MSME data bank created and identification system utilized.
- Technical know-how on appropriate farm mechanization and water irrigation enhanced.
- Entrepreneur's business skills developed and improved.
- Market oriented extension services provided
- Entrepreneur's knowledge and skills on agribusiness completed.
- Information integrated with IT-IMS completed.

Output 2 Grain and legume's production capacity enhanced and productivity improved.

- Commercial production skills enhanced and improved.
- MSME linkages and networking developed.
- Commercial production and postharvest practices implemented.
- Production up-scaling and out-scaling implemented.
- High quality farm input systems (seeds/vegetative materials, chemicals, machineries, etc.) established.
- Integrated farming systems (GAP, GPP, CSA, SFS, etc.) implemented.

Output 3 Grain and legume value chain improvement from farm to the market completed.

- Value chain player's relationships improved.
- Logistics for aggregating, storage, cool chain facilities, and operations are established.

- Dedicated transport systems provided and sustained.
- Post-harvest management practices improved and maintained.
- Value chain players profiled.
- Food safety, health and hygiene techniques for compliances implemented.
- Health and safety of entrepreneur and employees protected.
- Regulatory support on import of grains and legumes to encourage MSMEs enhanced.

Output .4 Spice market ecosystem from farm to market end enhanced.

- Market linkages for spice supply chain consistency established.
- Spice value added products diversified, branded and promoted.
- Market demands and customer preferences mapped.
- Spice nutrition and health benefits packaged and promoted.

Outputs 5 Monitoring and evaluation effected.

- Monthly report based on the reporting format submitted and verified.
- Quarterly reviews conducted and recommendations on slack performances completed.
- Abuse and unethical instances identified in the review for action implemented.
- Annual reviews conducted as per NASP M&E framework completed.

Output 6. Grain and legume MSMI, MSME and value chain development implemented.

- Implementation provinces identified and formalized (Table H3.22).
- Implementation cash flow from 2024-2033 (Table H3.23)
- Key Performance Indicators of grain and legume MSMI, MSME and Value Chain Development (Table G
- H3.24)
- Target beneficiaries identified and quantified (Table H3.25).

Table H3.22 Particulars for Implementation of grain and legume MSMI, MSME and value chain development

Implementation Province	Allocated Funds (K"million)	Funding Sources	Implementing Agency
Morobe, Central, ESP, WSP, SHP, Hela, EHP, WHP, Western, Madang, Gulf	20	GoPNG & DP	FPDA. NDAL. PPP, Prov Govt, DDAs,

Table H3.23 Investment cash flow for grain and legume from 2024-2033

First five years (2024-2028)

DIP Lir	k	MTDP IV Budgeted	Allocated Funds Yearly cash flow in K'millions					
		(K'million)	(K'million)	2024	2025	2026	2027	2028
DIP 1.1	.7	80	20	2	2	2	2	2

Second five years (2029-2033)

DIP Link	MTDP IV Budgeted	Allocated Funds	Yearly ca	ash flow in	K'millions	5	
	(K'million)	(K'million)	2029	2030	2031	2032	2033
DIP 1.1.7	80	20	2	2	2	2	2

Table H3.24 Key Performance Indicators of grain and legume MSMI, MSME and value chain development

Key indicators	Targets	Actuals
Volume (tons)		
MSMI volume of value added product (tons)	172, 920	
MSME raw product (tons)	483,840	
Value (K'millions)		
MSMI value (K'millions)	483.84	
MSME from raw product (K'millions)	172.92	
Subtotal value (K'millions)	656.76	
Investment (MTDP IV) (K'Millions)	20	
Return on Investment (ROI)	1:33	
Land area cultivated by MSMEs (Ha)	1,440	

Table H3.25 Target Beneficiaries for grain and legume MSMI and MSME

Category	Be	neficiaries
Direct employment	Direct	Indirect
Industry player (MSMI)		
Micro	12	72
Small	8	42
Medium	4	24
Subtotal	24	138
Entrepreneur (MSME)		
Micro	100	600
Small	50	300
Medium	10	60
Subtotal	160	960
Total	184	9,768

3.7 Oils and Condiments MSMI, MSME and Value Chain Development

Oils and condiments products are for body beauty purposes and pharmaceutical uses. Oil products are also used in cooking. NASP will support the capacity of MSMIs and MSMEs producing oils and condiments and up-scale their operations to increase volume outputs. Their value chains will be adequately developed to create a sustainable domestic industries. Oil and condiment crops identified for value chain development in phase 1 (NASP2024-2028) include; *red pandanus, noni, jatropa and moringa*. Value chains of other oil and condiment crops will be developed in phase 2 (NASP 2029-2033).

3.7.1 Oils and Condiments MSMI and Value Chain Development

Strategic Objective Production of high quality oils and condiment value added products increased and marketed. Outcome 1 Value added product production and supply on consistent basis to markets achieved

Outputs 1 Downstream processing for selected oils and condiment established and operated.

- Downstream processing facility, equipment and machineries established.
- Technical capacity of oils and condiments downstream processing enhanced and up-skilled.
- Oils and condiment product brands promoted.
- Access to credit facilities and funding secured.
- Location for facility secured.

Output 2 Production of oils and condiment's value added products increased.

- 12 MSMIs participants supported and maintained.
- Volume of high quality oils and condiment's product increased.
- MSMIs aggregate and supply value added products to target market achieved.
- Successful models reviewed and replicated.

Output 3 Five vibrant and effective value chain system for oils and condiment products developed.

- Value chain analysis for oils and condiment completed.
- Follow up and networking key stakeholders mapped.
- Value chain players profiled.
- Dedicated transport provided.
- Partnership with research and innovation institutions enhanced.
- Product certification for traceability and labeling (PNG Made) obtained.
- Food safety, health and hygiene techniques for compliances practiced.
- Health and safety of entrepreneur and employees protected.

Output.4 Robust market ecosystem for oils and condiment value added products developed.

- Effective market linkages for oils and condiment products established.
- Market size for oils and condiment products increased.
- Consistency of supply of oils and condiment value added products improved.
- Consumer demand and preferences assessed.
- Market partnerships and business relationships established.

Outputs 5 Monitoring and evaluation implemented.

- Monthly report based on the reporting format submitted and verified.
- Quarterly reviews conducted and recommendations on slack performances completed.
- Abuse and unethical instances identified in the review for action implemented.
- Annual reviews conducted as per NASP M&E framework completed.

3.7.2 Oils and Condiments MSME and Value Chain Development

Strategic Objective: Capacity of oil and condiment MSMEs for sustainable production and marketing completed.

Outcome 1 Development of oils and condiments MSMEs completed.

Output 1 Oils and condiments MSMEs take farming as a business completed.

- 65 entrepreneurs identified and profiled.
- MSME data bank created and identification system utilized.
- Technical know-how on appropriate farm mechanization and water irrigation improved
- Market oriented extension services provided
- Entrepreneur's knowledge and skills (simple accounting, financial literacy) completed.
- Information integrated with IT-IMS completed.

Output 2 Oils and condiments production capacity enhanced and productivity improved.

- Commercial production skills enhanced and improved.
- Production up-scaling and out-scaling implemented.
- Business skills developed and improved.
- Post-harvest management practices improved and maintained.
- MSME linkages and association developed.
- High quality farm input systems (seeds/vegetative materials, chemicals, machineries, etc.) established.
- Appropriate farm mechanization and water irrigation systems established.
- Integrated farming systems implemented.

Output 3 Oils and condiment's value chain improved from farm to the market end completed.

Value chain player's relationships improved.

- Storage /Cool chain systems established.
- Dedicated transport systems provided.
- Value chain players profiled.
- Food safety and hygiene techniques practiced.

Output 4 Oils and condiments market ecosystems created.

- Market linkages established.
- Supply consistency coordinated.
- Market demands and customer preferences mapped.
- Benefit of selected oils and condiments' nutrition and health benefits packaged and promoted.

Outputs 5 Monitoring and evaluation effected.

- Monthly report based on the reporting format submitted and verified.
- Quarterly performance reviews and evaluations conducted.
- Milestone achievements celebrated.
- Issues, concerns and challenged effectively addressed.
- Annual reviews conducted as per NASP M&E framework completed.

Output 6 Oils and condiments MSMI, MSME and value chain development implemented.

- Implementation provinces identified and formalized (Table H3.26).
- Investment cash flow from 2024-2033 (Table H3.27).
- Key Performance Indicators of grain and legume MSMI, MSME and value chain development (Table H3.28).
- Target beneficiaries identified and quantified (Table H3.29).

Table H3.26 Particulars for Implementation of oils and condiments MSMI, MSME and Value chain development

Implementation Province	Allocated Funds (K"million)	Funding Sources	Implementing Agency
EHP, Simbu, JWK,	20	GoPNG & DP	FPDA. NDAL. PPP,
WHP, Enga, SHP, Hela			Prov Govt, DDAs,

Table H3.27 Investment cash flow for oils and condiments from 2024-2033 First five years (2024-2028)

DIP Link	MTDP IV Budgeted	Allocated Funds	d Funds Yearly cash flow in K'millions				
	(K'million)	(K'million)	2024	2025	2026	2027	2028
DIP 1.1.	83	20	2	2	2	2	2

Second five years (2029-2033)

DIP Link	MTDP IV Budgeted	Allocated Funds	Yearly cash flow in K'millions				
	(K'million)	(K'million)	2029	2030	2031	2032	2033
DIP 1.1.	83	20	2	2	2	2	2

Table H3.28 Key Performance Indicators of oils and condiments MSMI, MSME and value chain development

Key indicators	Targets	Actuals
Volume (tons)		
MSMI volume of value added product (tons)	6,171	
MSME raw product (tons)	43,200	
Value (K'millions)		
MSMI value (K'millions)	246,82	
MSME from raw product (K'millions)	144.00	
Subtotal value (K'millions)	390.82	
Investment (MTDP IV) (K'Millions)	20	
Return on Investment (ROI)	1:19	
Land area cultivated by MSMEs (Ha)	279	

Table H3.29 Target Beneficiaries for oils and condiments MSMI and MSME

Category	Beneficiaries		
Direct employment	Direct	Indirect	
Industry player (MSMI)			
Micro	5	30	
Small	5	30	
Medium	2	2	
Subtotal	12	12	
Entrepreneur (MSME)			
Micro	50	300	
Small	10	60	
Medium	5	30	
Subtotal	65	390	
Total	77	402	

3.8 Floriculture MSME and Value Chain Development

Floriculture is a thriving industry. Domestic demand is increasing while opportunities for export of native orchids and flowers can be explored. Biodiversity in PNG is an unlocked treasure for developing large scale commercial industries. NASP will support floriculture MSMEs and properly develop their value chains to create a sustainable industry. This include regulatory frameworks, biosecurity and conservations of the natural flora. Floriculture components identified for value chain development in phase 1 (NASP2024-2029) include; *orchids, flowers and ornamentals*. Value chains other floriculture components will be developed in phase 2 (NASP 2029-2033).

Strategic Objective 1: Capacity development of floriculture MSMEs achieved. Strategic Objective: 2 Floriculture value chain systems developed and enhanced.

Outcome 1 Development of floriculture MSMEs facilitated.

Output 1 Floriculture MSME take flower and ornamental farming as a business completed.

- Access to and availability of farm inputs improved.
- MSME identified and profiled.
- MSME operation sizes determined and up scaling.
- MSME individuals/groups profiled.
- MSME data bank created and identification system utilized.
- Market oriented extension services provided.
- Knowledge and skills improved.
- Information integrated with ITC-IMS completed.

Output 2 Flower, orchid and ornamental production capacity enhanced and productivity improved.

- Seed or vegetative supply systems enhanced.
- Design for floriculture shed completed.
- Procurement of hardware materials, tools, materials and chemicals provided.
- Nursery and Commercial production skills enhanced and improved.
- Production up-scaled and out-scaled implemented.
- Business skills developed and improved.
- MSME linkages and association developed.
- Climate Smart Agriculture practices utilized.

Output 3 Flower, orchid and ornamental value chain from farm to the market end improved.

- Value chain player's relationships improved.
- Packing facility established.
- Storage /Cool chain systems established.
- Dedicated transport systems provided.
- Post-harvest management practices improved and maintained.
- Value chain players profiled and mapped.
- Partnerships on research and innovation strengthened.
- Floriculture farmer group organized (cooperative / association) and trained.

Output 4 Development of floriculture market ecosystem established.

- Market linkages for mushroom established.
- Supply consistency coordinated.
- Market demands and customer preferences mapped.
- Market partnerships and business relationships established.

Output 5 Floriculture MSMI, MSME and value chain development implemented

- Implementation provinces identified and formalized (Table H3.30).
- Investment cash flow from 2024-2033 (Table H3.31)
- Floriculture MSMI, MSME and value chain development KPIs achieved (Table H3.32)
- Target beneficiaries identified and quantified (Table H3.33).

Table H3.30 Particulars for Implementation of floriculture MSMI, MSME and Value chain development

Implementation Province	Allocated Funds (K"million)	Funding Sources	Implementing Agency
EHP, Simbu, JWK, WHP	10	GoPNG & DP	FPDA. NDAL. PPP, Prov Govt, DDAs,

Table H3.31 Floriculture investment cash flow from 2024-2033

First five years (2024-2028)

DIP Link	MTDP IV Budgeted	Allocated Funds	Yearly cash flow in K'millions				
	(K'million)	(K'million)	2024	2025	2026	2027	2028
DIP 1.1.	83	10	1	1	1	1	1

Second five years (2029-2033)

DIP Link	MTDP IV Budgeted	Allocated Funds	Yearly cash flow in K'millions				
	(K'million)	(K'million)	2029	2030	2031	2032	2033
DIP 1.1.	83	10	1	1	1	1	1

Table H3.32 Key Performance Indicators of floriculture MSMI, MSME and value chain development

Key indicators	Targets	Actuals
Volume (tons)		
MSMI volume of value added product		
MSME raw product (number of plants)	17,280	
Value (K'millions)		
MSMI value (K'millions)	N/A	
MSME from raw product (K'millions)	25.9	
Subtotal value (K'millions)	25.9	
Investment (MTDP IV) (K'Millions)	10	
Return on Investment (ROI)	1:2.6	
Land area cultivated by MSMEs (Ha)	60	

Table H3.33 Target Beneficiaries for floriculture MSMI and MSME

Category	Beneficiaries		
Direct employment	Direct	Indirect	
Industry player (MSMI)			
Micro	No processing	No processing	
Small	No processing	No processing	
Medium	No processing	No processing	
Subtotal			
Entrepreneur (MSME)			
Micro	100	600	
Small	50	300	
Medium	10	60	
Subtotal	160	960	
Total	160	960	

3.9 Asparagus MSMI, MSME and Value Chain Development

Asparagus is an emerging high value crop. NASP will support Asparagus MSMIs and MSMEs and diligently develop the value chain of asparagus to create an industry. Industry development will focus on commercial seed production and distribution, up-scaling and out-scaling of MSMIs and MSMEs, developing commercial farms, and improving the value chains. Value added products of asparagus include; *pickle, chips, fries, and used as pasta and salad dressing*.

NASP focus provinces for commercial development of asparagus in phase 1 (NASP2024-2028) are; EHP, Simbu and WHP. Development of downstream process will be in phase 2 (NASP2029=2033).

3.9.1 ` Asparagus MSMI and Value Chain Development

Strategic Objectives 1 Downstream processing capacity of asparagus MSMIs developed.

2 Effective value chain systems for asparagus products developed and sustained.

Outcome 1 Value added product production and supply on consistent basis to markets achieved.

Output 1 Downstream processing of asparagus value added products produced and marketed.

- Design for downstream processing completed.
- Procurement of materials and equipment completed.
- Downstream processing facility improved and maintained.
- Technical capacity of asparagus downstream processing enhanced.
- Asparagus product brands promoted.
- Access credit facilities and funding secured.
- Location for facility secured.

Output 2 Production of asparagus value added products increased.

- 7 asparagus MSMIs supported and maintained.
- Volume of high quality asparagus increased.
- Farmer groups aggregate carrot and supply on consistent basis enhanced.

Output 3 Vibrant and effective value chain system for asparagus value added products developed.

- Value chain analysis for asparagus completed.
- Follow up and networking key stakeholders mapped.
- Logistics and cool chain for asparagus from farm to market end developed.
- Asparagus value chain players profiled.
- Dedicated transport provided.
- Partnership with research and innovation institutions enhanced.
- Collaboration and partnerships with research and development enhanced.
- Product certification for traceability and labeling obtained.

Output 4 Robust market ecosystem for asparagus value added products developed.

- Effective market linkages for asparagus products established.
- Market size for asparagus products increased.
- Consistency of supply of asparagus value added products improved.
- Consumer demand and preferences assessed.
- Market partnerships and business relationships created.

3.9.2 Asparagus MSME and Value Chain Development

Strategic Objectives 1 Production capacity of asparagus MSMEs developed.

2 Effective value chain systems asparagus enhanced.

Outcome 1 Development of asparagus MSME completed.

Output 1 Asparagus MSME taking farming as a business completed.

Output 1 Asparagus MSMEs take farming as a business completed.

- Training manual on asparagus production, postharvest and marketing delivered.
- Training manual for agribusiness (farm planning, basic accounting, financial literacy) delivered.
- 35 farmers/MSME identified and profiled.
- Market oriented extension services provided.
- Training on MSME with business skills developed and improved.
- Knowledge and skills on appropriate farm mechanization and water irrigation improved.
- Information integrated with IT-IMS completed.

Output .2 Asparagus production capacity enhanced and productivity improved.

- Asparagus commercial production and postharvest practices implemented.
- Production up-scaling and out-scaling implemented.
- MSME linkages and association developed.
- High quality farm input systems (seeds/vegetative material, chemicals, machineries, etc.) established.
- Integrated farming systems (GAP, GPP, CSA, SFS, etc.) implemented.

- Food safety, health and hygiene techniques for compliances completed.
- Product certification for traceability and labeling sourced.

Output 3 Asparagus value chain from farm to the market end improved.

- Value chain player's relationships improved.
- Logistics for aggregating, storage, cool chain facilities, and operations are established.
- Dedicated transport systems provided.
- Post-harvest management practices improved and maintained.
- Value chain players profiled.
- Health and safety of entrepreneur and employees protected.

Output .4 Asparagus market ecosystem from farm to market end enhanced.

- Market linkages for asparagus supply chain consistency established.
- Asparagus value added products diversified, branded and promoted.
- Market demands and customer preferences mapped.
- Asparagus nutrition and health benefits packaged and promoted.
- Market partnerships and business relationships created.

Outputs 5 Monitoring and evaluation completed.

- Monthly report based on the reporting format submitted and verified.
- Quarterly reviews conducted and recommendations on slack performances completed.
- Abuse and unethical instances identified in the review for action implemented.
- Annual reviews conducted as per NASP M&E framework completed.

Output 6 Asparagus MSMI, MSME and value chain development implemented.

- Implementation provinces identified and formalized (Table H3.34).
- Implement cash flow from 2023-2033 (Table H3.35)
- Key Performance Indicators of grain and legume MSMI, MSME and value chain development (Table H3.36)
- Target beneficiaries identified and quantified (Table H3.37).

Table H3.34 Particulars for Implementation of asparagus MSMI, MSME and value chain development

		1 0	•
Implementation Province	Allocated Funds (K"million)	Funding Sources	Implementing Agency
EHP, Simbu, JWK, WHP	4	GoPNG & DP	FPDA. NDAL. PPP, Prov Govt, DDAs,

Table H3.35 Investment cash flow for asparagus from 2024-2033

First five years (2024-2028)

DIP	Link	MTDP IV Budgeted	Allocated Funds	Yearly cash flow in K'millions				
		(K'million)	(K'million)	2024	2025	2026	2027	2028
DIP '	1.1	83	5	0.5	0.5	0.5	0.5	0.5

Second five years (2029-2033)

DIP Link	MTDP IV Budgeted	Allocated Funds	Yearly cash flow in K'millions				
	(K'million)	(K'million)	2029	2030	2031	2032	2033
DIP 1.1	83	5	0.5	0.5	0.5	0.5	0.5

Table H3.36 Key Performance Indicators of asparagus MSMI, MSME and value chain development

Key indicators	Targets	Actuals
Volume (tons)		
MSMI volume of value added product (tons)	500	
MSME raw product (tons)	3,000	
Value (K'millions)		
MSMI value (K'millions)	50.0	
MSME from raw product (K'millions)	30.0	
Subtotal value for asparagus (K'millions)	80	
Investment (MTDP IV) (K'Millions)	5	
Return on Investment (ROI)	1 : 16	
Land area cultivated by MSMEs (Ha)	360	

Table H3.37 Target beneficiaries for asparagus MSMI and MSME

Category	Beneficiaries	
Direct employment	Direct	Indirect
Industry player (MSMI)		
Micro	3	18
Small	2	12
Medium	2	12
Subtotal	7	42
Entrepreneur (MSME)		
Micro	20	120
Small	10	60
Medium	5	30
Subtotal	35	210
Total	42	252

3.10 Mushroom MSMI, MSME and Value Chain Development

Mushroom is a high value commodity. People's Republic of China introduced commercial mushroom technology called Juncao Technologies. Juncao Technologies diversified household income opportunities and employment for grassroots, particularly in EHP. NASP will support Juncao Technologies and up-scale and out-scale into other provinces to increase volume and create a sustainable industry.

NASP will address the prevailing challenges with industry and development partners.

- ✓ Market accessibility issues
- ✓ Up-scaling and out-scaling issues
- ✓ Capacity building issues
- ✓ Pest and disease issues
- ✓ Seed accessibility and availability issues
- ✓ Production issues
- ✓ Quality control and postharvest management issues.

3.10.1 Mushroom MSMI and Value Chain Development

Value added products for mushroom: pickle, jam, sauce, candy, chips, etc.

Strategic Objective: Production of high quality value added products of mushroom increased and marketed.

Outcome 1 Value added product production and supply on consistent basis to markets achieved

Outputs 1 Production of mushroom value added products sustained and marketed.

- Design for mushroom downstream processing completed.
- Downstream processing facilities and equipment procured and constructed.
- Mushroom product brands promoted.
- Access credit facilities and funding secured.
- Location for facility secured.
- Input suppliers available and accessed.

Output 2 Capacity for production of mushroom value added production completed.

- Training manual on mushroom value adding delivered.
- Market oriented extension services provided
- Farm input suppliers available and accessed.
- Training on mushroom value added processing techniques completed.
- Volume of high quality value added mushroom increased.
- Farmer groups aggregate mushroom and supply on consistent basis enhanced.

Output 3 Two vibrant and effective value chain system for mushroom products developed.

- Value chain analysis for mushroom completed.
- Follow up and networking key stakeholders mapped.
- Mushroom value chain players profiled.
- Logistics for mushroom production and supply to markets established.
- Dedicated transport provided and sustained.
- Partnership with research and innovation institutions enhanced.

Output 4 Robust market ecosystem for mushroom value added products developed.

- Effective market linkages for mushroom products established.
- Market size for mushroom products increased.
- Consistency of supply of high quality mushroom value added products delivered. .
- Consumer demand and preferences assessed.

Outputs 5 Monitoring and evaluation effected.

- Monthly report based on the reporting format submitted and verified.
- Quarterly reviews conducted and recommendations on slack performances completed.
- Abuse and unethical instances identified in the review for action implemented.
- Annual reviews conducted as per NASP M&E framework completed.

3.10.2 Mushroom MSME Value Chain Development

Strategic Objective: Capacity of Mushroom MSMEs for sustainable production and marketing enhanced

Outcome: Value added product production and supply on consistent basis to markets achieved

Output 1 Mushroom MSME take mushroom farming as a business completed.

- MSME identified and profiled.
- Training manual on mushroom production, postharvest and marketing delivered.
- 77 mushroom growers supported and maintained.
- Farmers/MSME identified and profiled.
- Market oriented extension services provided
- Information integrated with IT-IMS completed.

Output 2 Mushroom production capacity enhanced and productivity improved.

- Farm input suppliers available and accessed.
- Commercial production area/mushroom house improved.
- Production up-scaling and out-scaling implemented.
- Business skills developed and improved.
- MSME linkages and association developed.
- Climate Smart Agriculture practices used.
- Sustainable and resilient farming systems used.

Output 3 Mushroom value chain improved from farm to the market end completed.

- Value chain player's relationships improved.
- Storage /Cool chain systems established.
- Dedicated transport systems provided.
- Post-harvest management practices improved and maintained.
- Value chain players profiled.
- Food safety and hygiene techniques practiced.

Output 4 Enhanced mushroom market ecosystem by 80%.

- Market linkages for mushroom established.
- Supply consistency coordinated.
- Market demands and customer preferences mapped.
- Mushroom nutrition and health benefits packaged and promoted

Outputs 5 Monitoring and evaluation effected.

- Monthly report based on the reporting format submitted and verified.
- Quarterly reviews conducted and recommendations on slack performances completed.
- Abuse and unethical instances identified in the review for action implemented.
- Annual reviews conducted as per NASP M&E framework completed.

Output 6 Mushroom MSMI, MSME and value chain development implemented

- Implementation provinces identified and formalized (Table H3.38).
- Investment cash flow from 2024-2033 (Table H3.39)
- Key Performance Indicators of grain and legume MSMI, MSME and value chain development (Table H3.40)
- Target beneficiaries identified and quantified (Table H3.41).

Table H3.38 Particulars for Implementation of mushroom MSMI, MSME and Value chain development

Implementation	Allocated Funds	Funding Sources	Implementing
Province	(K"million)		Agency
EHP, Simbu	5	GoPNG & DP	FPDA. NDAL. PPP,
			Prov Govt, DDAs,

Table H3.39 Mushroom investment cash flow from 2024-2033

First five years (2024-2028)

DIP Link	MTDP IV Budgeted	Allocated Funds	Yearly cash flow in K'millions				
	(K'million)	(K'million)	2024	2025	2026	2027	2028
DIP 1.1.	80	5	0.5	0.5	0.5	0.5	0.5

Second five years (2029-2033)

DIP Link	MTDP IV Budgeted	Allocated Funds Yearly cash flow in K'millions					
	(K'million)	(K'million)	2029	2030	2031	2032	2033
DIP 1.1.	80	5	0.5	0.5	0.5	0.5	0.5

Table H3.40 Key Performance Indicators of mushroom MSMI, MSME and value chain development

Key indicators	Targets	Actuals
Volume (tons)		
MSMI volume of value added product (tons)	50	
MSME raw product (tons)	500	
Value (K'millions)		
MSMI value (K'millions)	50.00	
MSME from raw product (K'millions)	5.00	
Subtotal value (K'millions)	55.00	
Investment (MTDP IV) (K'Millions)	10	
Return on Investment (ROI)	1 : 5.5	
Land area cultivated by MSMEs (Ha)	5	

Table H3.41 Target Beneficiaries for mushroom MSMI and MSME

Category	Beneficiaries	
Direct employment	Direct	Indirect
Industry player (MSMI)		
Micro	5	30
Small	5	30
Medium	2	2
Subtotal	12	12
Entrepreneur (MSME)		
Micro	50	300
Small	30	180
Medium	20	120
Subtotal	100	600
Total	120	612

3.11 Village Chicken MSMI, MSMEs and Value Chain Development

Village chicken refers to chickens that are raised in rural or traditional settings, as opposed to commercial poultry farming. These chickens are often considered to have a more natural or rustic flavor due to their free-range lifestyle and diet. Village half chicken refers a crossbreed between a commercial breed chicken and a village chicken that combines the benefits of both worlds. The commercial breed contributes higher egg and meat production, while the village chicken adds resilience, adaptability, and a more natural lifestyle to the offspring, creating a hardy, dual-purpose chicken suitable for diverse environments and culinary preferences.

NASP will support Village Chicken MSMIs and MSMEs in capacity building for commercial production and upscaling. The value chain of village chicken will also be developed properly to create an industry. Village chicken provide organic meat and eggs.

3.11.1 Village Chicken MSMI and Value Chain Development

Strategic Objective: Production of high quality value added village chickens increased and marketed.

Outcome 1 Value added product production and supply of village chicken on consistent basis to markets achieved

Outputs 1 Facilitate downstream processing of village chicken established and operated.

- 5 appropriate chicken slaughtering, processing and freezer facility and equipment established.
- Technical capacity of village chicken downstream processing enhanced and up-skilled.
- Village chicken meat and egg products promoted.
- Access to credit facilities and funding secured.
- Location for facility secured.
- Access to inputs suppliers facilitated.

Output 2 Production of village chicken value added products increased.

- Design for simple village chicken fencing, house and egg cages completed.
- Chicken fencing and building materials procured and constructed.
- Chicken breeders and suppliers easily available and accessed.
- Purchased chickens from suppliers
- Volume of high quality village chicken eggs and meat increased.
- Farmer groups aggregate eggs and chicken products on consistent basis achieved.

Output 3 Effective value chain system for village chicken products developed.

- Value chain analysis for village chicken completed.
- Follow up and networking key stakeholders mapped.
- Logistics for village chicken from processor to targeted markets established.
- Village chicken value chain players profiled and identification cards issued.
- Dedicated transport provided and sustained.
- Partnership with research and innovation institutions enhanced.
- Partnerships with markets and business relationships established.

Output.4 Robust market ecosystem for village chicken value added products developed.

- Effective market linkages for village chicken products established.
- Market size for village chicken products increased.
- Consistency of supply of village chicken value added products improved
- Consumer demand and preferences assessed.

3.11.2 Village chicken MSME and Value Chain Development

Strategic Objective: Capacity of village chicken MSMEs for sustainable production and marketing achieved.

Outcome Development of village chicken MSMEs completed.

Output 1 Village chicken MSME take village chicken farming as a business completed.

- Training manual on chicken farming and feed processing delivered.
- MSMEs identified and profiled.
- Groups MSMEs (farm group or coop) profiled.
- MSME data bank created and identification system utilized.
- Market oriented extension services provided.
- Knowledge and skills on village chicken farming improved
- Information integrated with IT-IMS.

Output .2 Village chicken production capacity enhanced and productivity improved.

- Farm inputs available and accessed.
- Purchased parent breeder chicks from suppliers.
- Production up-scaled and out-scaled implemented.
- 200 village chicken growers developed and maintained.
- Business skills developed and improved.
- MSME linkages and association developed.
- Climate Smart Agriculture practices used.
- Sustainable and resilient farming systems used.

Output 3 Village chicken value chain improved from farm to the market end completed.

- Value chain player's relationships improved.
- Curing facility established.
- Storage /Cool chain systems established.
- Dedicated transport systems provided.
- Post-harvest management practices improved and maintained.
- Value chain players profiled.
- Food safety and hygiene techniques practiced.

Output 4 Development of village chicken market ecosystem completed.

- Market linkages for village chicken established.
- Supply consistency coordinated.
- Market demands and customer preferences mapped.
- Village chicken nutrition and health benefits packaged and promoted.

Outputs 5 Monitoring and Evaluation effected.

- Monthly report based on the reporting format submitted and verified.
- Quarterly reviews conducted and recommendations on slack performances completed.
- Abuse and unethical instances identified in the review for action implemented.
- Annual reviews conducted as per NASP M&E framework completed.

Output 6. Village chicken MSMI, MSME and value chain development implemented.

- Implementation provinces identified and formalized (Table H3.42).
- Investment cash flow from 2024-2033 (Table H3.43).
- Key Performance Indicators of grain and legume MSMI, MSME and value chain development (Table H3.44).
- Target beneficiaries identified and quantified (Table H3.45).

Table H3.42 Particulars for Implementation of village chicken MSMI, MSME and Value chain development

Implementation Province	Allocated Funds (K"million)	Funding Sources	Implementing Agency
Simbu, JWK, WHP, Enga, SHP,	20	GoPNG & DP	LDC, NDAL. PPP,
Hela, AROB, NIP, ENBP, WSP, ESP, Western, Oro, MBP, Morobe			Prov Govt, DDAs,

Table H3.43 Investment cash flow village chicken from 2024-2033

First five years (2024-28)

DIP Link	MTDP IV Budgeted	Allocated Funds	Yearly cash flow in K'millions				
	(K'million)	(K'million)	2024	2025	2026	2027	2028
DIP 1.1.8	230	20	2	2	2	2	2

Second five years (2028-2033)

DIP Link	MTDP IV Budgeted	Allocated Funds Yearly cash flow in K'millions					
	(K'million)	(K'million)	2029	2030	2031	2032	2033
DIP 1.1.8	230	20	2	2	2	2	2

Table H3.44 Key Performance Indicators of village chicken MSMI, MSME and Value Chain Development

Key indicators	Targets	Actuals
Volume (tons)		
MSMI volume of value added product (tons)	153.60	
MSME raw product (tons)	192,00	
Value (K'millions)		
MSMI value (K'millions)	4.6	
MSME from raw product (K'millions)	3.84	
Subtotal value (K'millions)	8.44	
Investment (MTDP IV) (K'Millions)	5	
Return on Investment (ROI)	1:2	
Land area cultivated by MSMEs (Ha)	20	

Table H3.45 Target Beneficiaries for village chicken MSMI and MSME

Category	Benefic	ciaries
Direct employment	Direct	Indirect
Industry player (MSMI)		
Micro	5	30
Small	3	18
Medium	2	12
Subtotal	10	20
Entrepreneur (MSME)		
Micro	100	600
Small	60	360
Medium	40	240
Subtotal	200	1,200
Total	210	1,220

3.12 Ducks MSMI, MSME and Value Chain Development

Ducks and geese found in various provinces and play and important role in the local ecosystem and culture. With the influx of Asian population in the country, demand of duck and geese is increasing.

There are wide variety of duck species, including the Pacific black duck, the wandering whistling duck, and the masked lapwing in PNG. Goose or geese is not commonly grown in PNG but few places have magpie goose, with its distinctive black and white plumage.

With increase in population and influx of Asians, commercial farming for ducks is an important aspect and interest MSMEs can get involved.

3.12.1 Ducks MSMI and Value Chain Development

Value added products for ducks: meat, eggs and waste used as fertilizer.

Objective: Production of high quality value-added products of ducks/goose increased and marketed.

Outcome 1 Value added product production and supply on consistent basis to markets achieved

Outputs 1 Facilitate downstream processing of village ducks established and operated.

- 6 appropriate chicken slaughtering, processing and freezer facility and equipment established.
- Technical capacity of duck downstream processing enhanced and up-skilled.
- Duck meat and egg products promoted.
- Access to credit facilities and funding secured.
- Location for facility secured.
- Access to inputs suppliers facilitated.

Output 2 Production of duck value added products increased.

- Design for simple duck fencing, house and egg cages completed.
- Duck fencing and building materials procured and constructed.
- Duck breeders and suppliers easily available and accessed.
- Volume of high quality village chicken eggs and meat increased.
- Aggregation of 100 farmer groups on consistent production and supply of poultry products achieved.

Output 3 Effective value chain system for duck developed.

- Value chain analysis for duck chicken completed.
- Follow up and networking key stakeholders mapped.
- Logistics for ducks from processor to targeted markets established.
- Village chicken value chain players profiled and identification cards issued.
- Dedicated transport provided and sustained.
- Partnership with research and innovation institutions enhanced.
- Partnerships with markets and business relationships established.

Output.4 Robust market ecosystem for duck value added products developed.

- Effective market linkages for duck products established.
- Market size for duck products increased.
- Consistency of supply of duck value added products improved
- Consumer demand and preferences assessed.

3.12.2 Ducks MSME and Value Chain Development

Strategic Objective: Capacity of duck MSMEs for sustainable production and marketing achieved.

Outcome 1 Development of duck MSMEs completed.

Output 1 Village duck MSME take village duck farming as a business completed.

- Training manual on duck farming and feed processing delivered.
- 81 MSME identified and profiled.
- MSME individuals/groups profiled.
- MSME data bank created and identification system utilized.
- Market oriented extension services provided.
- Knowledge and skills on duck farming improved
- Information integrated with IT-IMS facilitated.

Output .2 Duck production capacity enhanced and productivity improved.

- Farm inputs available and accessed
- Production up-scaled and out-scaled implemented.
- Purchased parent breeder chicks from suppliers
- 81 village duck growers developed and maintained.
- Business skills developed and improved.
- MSME linkages and association developed.
- Climate Smart Agriculture practices used.
- Sustainable and resilient farming systems used.

Output 3 Duck value chain improved from farm to the market end completed.

- Value chain player's relationships improved.
- Farm input suppliers available and accessed.
- Storage /Cool chain systems established.
- Dedicated transport systems provided.
- Post-harvest management practices improved and maintained.
- Value chain players profiled.
- Food safety and hygiene techniques practiced.

Output 4 Development of duck market ecosystem enhanced.

- Market linkages established.
- Supply consistency coordinated.
- Market demands and customer preferences mapped.
- Duck nutrition and health benefits packaged and promoted

Outputs 5 Monitoring and evaluation effected.

- Monthly report based on the reporting format submitted and verified.
- Quarterly reviews conducted and recommendations on slack performances completed.
- Abuse and unethical instances identified in the review for action implemented.
- Annual reviews conducted as per NASP M&E framework completed.

Output 6. Duck MSMI, MSME and value chain development implemented.

- Implementation provinces identified and formalized (Table H3.46).
- Investment cash flow from 2024-2033 (Table H3.47).

- Key Performance Indicators of grain and legume MSMI, MSME and value chain development (Table H3.48).
- Target beneficiaries identified and quantified (Table H3.49).

Table H3.46 Particulars for Implementation of duck MSMI, MSME and Value chain development

Implementation Province	Allocated Funds (K"million)	Funding Sources	Implementing Agency
EHP, JWK, Morobe Enga, SHP, Hela, Central, Gulf, ENBP, NIP	2	GoPNG & DP	LDC NDAL. PPP, Provl Govt, DDAs,

Table H3.47 Investment cash flow for duck from 2024-2033

First five years (2024-28)

DIP Link	MTDP IV Budgeted	Allocated Funds	Yearly cash flow in K'millions				
	(K'million)	(K'million)	2024	2025	2026	2027	2028
DIP 1.1.	230	2	0.2	0.2	0.2	0.2	0.2

Second five years (2028-2033)

DIP Link	MTDP IV Budgeted	Allocated Funds	Yearly cash flow in K'millions				
	(K'million)	(K'million)	2029	2030	2031	2032	2033
DIP 1.1.	230	5	0.2	0.2	0.2	0.2	0.2

Table H3.48 Key Performance Indicators of Duck MSMI, MSME and Value Chain Development

Key indicators	Targets	Actuals
Volume (tons)		
MSMI volume of value added product (tons)	76.80	
MSME raw product (tons)	96,00	
Value (K'millions)		
MSMI value (K'millions)	2.3	
MSME from raw product (K'millions)	4.22	
Subtotal value (K'millions)		
Investment (MTDP IV) (K'Millions)	2	
Return on Investment (ROI)	1:2	
Land area cultivated by MSMEs (Ha)	10	

Table H3.49 Target Beneficiaries for duck MSMI and MSME

Category	Benefic	ciaries
Direct employment	Direct	Indirect
Industry player (MSMI)		
Micro	3	18
Small	3	18
Medium		
Subtotal	6	36
Entrepreneur (MSME)		
Micro	50	300
Small	20	120
Medium	5	30
Subtotal	75	450
Total	81	486

3.13 Goats MSMI, MSME and Value Chain Development

People in PNG grow goat on a small scale but prices are very high due to high demand. A number of existing breeds available are Boer, Kiko, Spanish breeds, etc. NASP will support goat MSMI and MSME production capacity and develop the value chain systems to create goat meat and milk industry. This will increase protein accessibility, availability and income diversification and well as employment creation. Breeding stock, productivity improvement and grazing improvements will be the major focus in phase 1 (NASP2024-2028). Out-scaling of large commercial farm operations will be considered in phase 2 (NASP2029-2033).

3.13.1 Goats MSMI and Value Chain Development

Value added products for goat:

- a) Meat: chevon or mutton processed into different meat products: curry or stew, kebab, chops and cutlets,
- b) Other products: dry- fermented sausage, dry cured meat, ground meat, ribs, loins, shanks, ribs, etc.

Objective: Production of high quality value-added products of goat increased and marketed.

Outcome 1 Value added product production and supply on consistent basis to markets achieved

Outputs 1 Appropriate downstream processing facilities for goat established and operated.

- Design and procure equipment and tools for slaughtering and processing completed.
- Appropriate processing facility, equipment and freezers established.
- Technical capacity for slaughtering and processing provided.
- Goat meat product brands promoted.
- Access to credit facilities and funding secured.
- Location for facility secured.

Output 2 Production of goat value added products increased

- 20 goat growers increased and maintained.
- Volume of high quality goat increased.
- 5 farmer groups aggregate goat and supply on consistent basis.

Output 3 Effective value chain system for goat products developed.

- Value chain analysis for goat products completed.
- Follow up and networking key stakeholders mapped.
- Goats value chain players profiled.
- Dedicated transport provided and sustained.
- Partnership with research and innovation institutions enhanced.

Output 4 Robust market ecosystem for goat value added products developed.

- Effective market linkages for goat products established.
- Market size for goat products increased.
- Consistency of supply of goat value added products improved
- Consumer demand and preferences assessed.

3.13.2 Goat MSME and Value Chain Development

Strategic Objective: Capacity of goat MSMEs for sustainable production and marketing achieved.

Outcome 1 Development of goat MSMEs achieved.

Output 1 Development of goat MSME taking farming as a business completed.

- Training manual on goat farming and feed processing delivered.
- MSME identified and profiled.
- MSME individuals/groups profiled.
- MSME data bank created and identification system utilized.
- Market oriented extension services provided.
- Knowledge and skills on duck farming improved
- Information integration with IT-IMS achieved.

Output 2 Goat production capacity enhanced and productivity improved.

- Farm inputs available and accessed
- Production up-scaled and out-scaled implemented.
- Purchase parent breeder stock from goat breeders achieved.
- Service of artificial insemination with high quality gene introduced.
- 100 village goat growers developed and maintained.
- Business skills developed and improved.
- MSME linkages and association developed.
- Training on health, disease, pests and hygiene of animal completed.
- Climate Smart Agriculture practices used.

Output 3 Goat value chain improved from farm to the market end completed.

- Value chain player's relationships improved.
- Farm input suppliers available and accessed.
- Storage and logistics for feed and veterinary materials/drugs established.
- Dedicated transport systems provided.
- Post-harvest management practices improved and maintained.
- Value chain players profiled.
- Partnership with research and innovation institution established.
- Partnership with stakeholders and key government agencies established.

Output 4 Goat market ecosystem from farm to processor or other markets established.

- Market linkages established.
- Supply consistency coordinated.
- Market demands and customer preferences mapped.
- Goat nutrition and health benefits packaged and promoted

Outputs 5 Monitoring and Evaluation effected.

- Monthly report based on the reporting format submitted and verified.
- Quarterly reviews conducted and recommendations on slack performances completed.
- Abuse and unethical instances identified in the review for action implemented.
- Annual reviews conducted as per NASP M&E framework completed.

Output 6 Goat MSMI, MSME and value chain development implemented

- Implementation provinces identified and formalized (Table H3.50).
- Implementing cash flow from 2024-2033 (Table H3.51)
- Key Performance Indicators of grain and legume MSMI, MSME and value chain development (Table H3.52)
- Target beneficiaries identified and quantified (Table H3.53).

Table H3.50 Particulars for Implementation of goat MSMI, MSME and Value chain development

Implementation Province	Allocated Funds (K"million)	Funding Sources	Implementing Agency
EHP, Simbu, JWK, WHP, Enga, SHP, Hela	20	GoPNG & DP	LDC. NDAL. PPP, Prov Govt, DDAs,

Table H3.51 Investment cash flow for goat from 2024-2033

First five years (2024-2028)

DIP Link	MTDP IV Budgeted	Allocated Funds	Yearly cash flow in K'millions				
	(K'million)	(K'million)	2024	2025	2026	2027	2028
DIP 1.1.8	230	20	2	2	2	2	2

Second five years (2029-2033)

DIP Link	MTDP IV Budgeted	Allocated Funds	Yearly cash flow in K'millions				
	(K'million)	(K'million)	2029	2030	2031	2032	2033
DIP 1.1.8	230	20	2	2	2	2	2

Table H3.52 Key Performance Indicators of goat MSMI, MSME and Value Chain Development

Key indicators	Targets	Actuals
Volume (tons)		
MSMI volume of value added product (tons)	17,100	
MSME raw product (tons)	30,780	
Value (K'millions)		
MSMI value (K'millions)	342.00	
MSME from raw product (K'millions)	307.80	
Subtotal value (K'millions)	649.80	
Investment (MTDP IV) (K'Millions)	20	
Return on Investment (ROI)	1:17	
Land area cultivated by MSMEs (Ha)	84	

Table H3.53 Target Beneficiaries for goat MSMI and MSME

Category	Beneficiaries		
Direct employment	Direct	Indirect	
Industry player (MSMI)			
Micro	5	30	
Small	3	18	
Medium	2	12	
Subtotal	10	20	
Entrepreneur (MSME)			
Micro	100	600	
Small	60	360	
Medium	40	240	
Subtotal	200	700	
Total	210	720	

3.14 Native Pig MSMI, MSME and Value Chain Development

Pig is a common domestic livestock in PNG. Pig plays an important cultural value, especially in the highlands. The economic values of pigs increase recently. The price range for pigs in the highlands is K1,000.00 – K10,000.00 for

60kg – 80kg, making pork availability and accessibility on special occasions only such as feasts and bride price. Commercially, domestic pork demand is high and supply is inadequate, providing opportunity for increase in production and value chain development.

NASP will support native pig MSMI and MSME production capacity and development the value chain properly to create an industry. Deliberate Intervention projects will include improving breeding stock, increasing production and increasing capacity. Biosecurity aspect of production and marketing will be safeguarded through the intervention programs.

3.14.1 Native Pig MSMI and Value Chain Development

Pigs are a versatile source of meat, and a wide variety of pork products can be derived from them. Here are some common pig and pork products.

Products: bacon, ham, pork chops, pork ribs, pullet pork, pork tenderloin, pork spear ribs, etc.

Strategic Objective: Production of high quality value-added products of native pigs increased and marketed.

Outcome 1 Value added product production and supply on consistent basis to markets achieved

Outputs 1 Appropriate downstream processing facilities for pig established and operated.

- Design and procure equipment and tools for slaughtering and processing completed.
- Appropriate processing facility, equipment and freezers established.
- Technical capacity for slaughtering and processing provided.
- Native pig meat product brands promoted.
- Access to credit facilities and funding secured.
- Location for facility secured.

Output 2 Production of pig value added products increased

- 500 pig growers increased and maintained.
- Volume of high quality pig increased.
- 5 farmer groups aggregate pig and supply on consistent basis.

Output 3 Effective value chain system for pig products developed.

- Value chain analysis for pig products completed.
- Follow up and networking key stakeholders mapped.
- Native pig value chain players profiled.
- Dedicated transport provided and sustained.
- Partnership with research and innovation institutions enhanced.

Output 4 Robust market ecosystem for pig value added products developed.

- Effective market linkages for pig products established.
- Market size for pig products increased.
- Consistency of supply of pig value added products improved
- Consumer demand and preferences assessed.

3.14.2 Native Pig MSME and Value Chain Development

Strategic Objective: Capacity of native pig MSMEs for sustainable production and marketing achieved.

Outcome 1 Development of pig MSMEs completed.

Output 1 Development of pig MSME taking farming as a business completed.

- Training manual on goat farming and feed processing delivered.
- MSME identified and profiled.
- MSME individuals/groups profiled.
- MSME data bank created and identification system utilized.
- Market oriented extension services provided.
- Knowledge and skills on duck farming improved
- Information integrated with IT-IMS facilitated.

Output .2 Native pig production capacity enhanced and productivity improved.

- Farm inputs available and accessed
- Production up-scaled and out-scaled implemented.
- Purchase parent breeder stock from pig breeders achieved.
- Service of artificial insemination (AI) with high quality gene introduced.
- 500 village pig growers developed and maintained.
- Business skills developed and improved.
- MSME linkages and association developed.
- Training on health, disease, pests and hygiene of animal completed.
- Climate Smart Agriculture practices used.

Output 3 Native pig value chain improved from farm to the market end completed.

- Value chain player's relationships improved.
- Farm input suppliers available and accessed.
- Storage and logistics for feed and veterinary materials/drugs established.
- Dedicated transport systems provided.
- Post-harvest management practices improved and maintained.
- Value chain players profiled.
- Partnership with research and innovation institution established.
- Partnership with stakeholders and key government agencies established.

Output 4 Native pig market ecosystem from farm to processor or other markets established.

- Market linkages established.
- Supply consistency coordinated.
- Market demands and customer preferences mapped.
- Goat nutrition and health benefits packaged and promoted

Outputs 5 Monitoring and Evaluation effected.

- Monthly report based on the reporting format submitted and verified.
- Quarterly reviews conducted and recommendations on slack performances completed.
- Abuse and unethical instances identified in the review for action implemented.
- Annual reviews conducted as per NASP M&E framework completed.

Output 6 Pig MSMI, MSME and value chain development implemented.

- Implementation provinces identified and formalized (Table H3.54).
- Implementing cash flow from 2024-2033 (Table H3.55).
- Key Performance Indicators of grain and legume MSMI, MSME and value chain development (Table H3.56).
- Target beneficiaries identified and quantified (Table H3.57).

Table H3.54 Particulars for Implementation of piggery MSMI, MSME and Value chain development

Implementation Province	Allocated Funds (K"million)	Funding Sources	Implementing Agency
EHP, Simbu, JWK,	20	GoPNG & DP	LDC. NDAL. PPP,
WHP, Enga, SHP, Hela			Prov Govt, DDAs,

Table H3.55 Piggery investment cash flow from 2024-2033

First five years (2024-2028)

DIP Link	MTDP IV Budgeted	Allocated Funds	Yearly cash flow in K'millions				
	(K'million)	(K'million)	2024	2025	2026	2027	2028
OIP 1.1	230	20	2	2	2	2	2

Second five years (2029-2033)

DIP Link	MTDP IV Budgeted	Allocated Funds	Yearly cash flow in K'millions				
	(K'million)	(K'million)	2029	2030	2031	2032	2033
DIP 1.1	230	20	2	2	2	2	2

Table H3.56 Key Performance Indicators of piggery MSMI, MSME and value chain development

Key indicators	Targets	Actuals
Volume (tons)		
MSMI volume of value added product (tons)	50,700	
MSME raw product (tons)	91,260	
Value (K'millions)		
MSMI value (K'millions)	1,014.00	
MSME from raw product (K'millions)	912.00	
Subtotal value (K'millions)	1,926.00	
Investment (MTDP IV) (K'Millions)	20	
Return on Investment (ROI)	1:96	
Land area cultivated by MSMEs (Ha)	84	

Table H3.57 Target Beneficiaries for piggery MSMI and MSME

Category	Beneficiaries		
Direct employment	Direct	Indirect	
Industry player (MSMI)			
Micro	5	30	
Small	3	18	
Medium	2	12	
Subtotal	10	20	
Entrepreneur (MSME)			
Micro	100	600	
Small	60	360	
Medium	40	240	
Subtotal	200	700	
Total	210	720	

3.15 Deer MSMI, MSME and Value Chain Development

Introduction of deer farming started in 1970s with various deer species, including the red deer (*Cervus elaphus*) and the Rusa deer (*Rusa timorensis*). These deer species were primarily introduced for sport hunting and as potential sources of meat in the southern part. Small scale deer farming started recently due to high demand deer meat in both domestic markets. The meat is often marketed as a healthier and leaner alternative to traditional livestock meats. Deer farming involves semi-intensive or intensive systems. These animals are often provided with supplementary feed including grasses, legumes, and other food by-products. The grass on pastures and browse on natural vegetation. PNG has suitable climate for deer farming. Deer meat sold in Port Moresby at times is expensive due to its lean quality.

Challenges faced by deer farming are lack of knowledge and skills on health and disease management, and value chain logistics (abattoir, cool chain facilities and animal house) for breeding, handling and processing. Additionally, lack of initiative and effort from the government agencies to develop the animal since 1970s.

With NASP intervention, projects can be developed by the responsible sector and private sector with appropriate training, vaccination programs, AI, and the promotion of better management practices. There is untapped potential for deer to escalate to commercial level.

3.15.1 Deer MSMI and Value Chain Development

Value added products for deer: venison steak, tenderloin, roasts, sausages, jerky, minced meat.

Strategic Objective: Production of high quality value-added products of deer increased and marketed.

Outcome 1 Value added product production and supply on consistent basis to markets achieved.

Outputs 1 One downstream processing of deer established and operated.

- Appropriate slaughtering and processing facility, equipment and freezers established.
- Technical capacity of abattoir enhanced and up-skilled.
- Deer meat/product brands promoted.
- Access credit facilities and funding secured.
- Location for facility secured.

Output.2 Production of deer value added products increased.

- 20 deer growers developed and maintained.
- Volume of high quality deer increased.
- Two farmer groups aggregate deer and supply on consistent basis.

Output 3 Effective value chain system for deer products developed.

- Value chain analysis for deer completed.
- Follow up and networking key stakeholders mapped.
- Deer value chain players profiled.
- Dedicated transport provided.
- Partnership with research and innovation institutions enhanced.

Output 4 Robust market ecosystem for deer value added products developed.

- Effective market linkages for deer products established.
- Market size for deer products increased.
- Consistency of supply of deer value added products improved.
- Consumer demand and preferences assessed.

3.15.2 Deer MSME and Value Chain Development

Strategic Objective: Capacity of deer MSMEs for sustainable production and marketing achieved.

Outcome 1 Development of deer MSMEs completed.

Output 1 MSME take deer farming as a business completed.

- Training manuals on deer farming and marketing delivered.
- 10 MSME identified and profiled.
- 2 Deer farmer groups profiled.
- MSME operation sizes determined and categorized.
- MSME data bank created and identification system utilized.
- Market oriented extension services provided.
- Knowledge and skills improved
- Information integrated with ITC-IMS facilitated.

Output 2 Deer production capacity enhanced and productivity improved.

- Commercial production skills enhanced and improved.
- Production up-scaling and out-scaling implemented.
- Business skills developed and improved.
- MSME linkages and association developed.
- Climate Smart Agriculture practices implemented.
- Sustainable and resilient farming systems implemented.

Output 3 Deer value chain improved from farm to the market end completed.

- Value chain player's relationships improved.
- Value chain logistics (Storage /Cool chain systems) established.
- Dedicated transport systems provided and sustained.
- Post-harvest management practices improved and maintained.
- Value chain players profiled.
- Food safety and hygiene techniques practiced.

Output .4 Enhanced deer market ecosystem

- Market linkages for deer established.
- Supply consistency coordinated.
- Market demands and customer preferences mapped.
- Deer nutrition and health benefits packaged and promoted.

Outputs 5 Monitoring and evaluation completed.

- Monthly report based on the reporting format submitted and verified.
- Quarterly reviews conducted and recommendations on slack performances completed.

- Abuse and unethical instances identified in the review for action implemented.
- Annual reviews conducted as per NASP M&E framework completed.

Output 6 Deer MSMI, MSME and value chain development implemented.

- Implementation provinces identified and formalized (Table H3.58).
- Implementing cash flow from 2024-2033 (Table H3.59).
- Key Performance Indicators of grain and legume MSMI, MSME and value chain development (Table H3.60).
- Target beneficiaries identified and quantified (Table H3.61).

Table H3.58 Particulars for Implementation of deer MSMI, MSME and Value chain development

Implementation Province	Allocated Funds (K"million)	Funding Sources	Implementing Agency
Western, Gulf, Central	10	GoPNG & DP	LDC. NDAL. PPP, Prov Govt, DDAs,

Table H3.59 Deer investment cash flow from 2024-2033

Frist five years (2024-2028)

DIP Link	MTDP IV Budgeted	Allocated Funds Yearly cash flow in K'millions					
	(K'million)	(K'million)	2024	2025	2026	2027	2028
DIP 1.1	230	10	1	1	1	1	1

Second five years (2029-2033)

DIP Link	MTDP IV Budgeted	Allocated Funds Yearly cash flow in K'millions					
	(K'million)	(K'million)	2029	2030	2031	2032	2033
DIP 1.1	230	10	1	1	1	1	1

Table H3.60 Key Performance Indicators of deer MSMI, MSME and Value Chain Development

Key indicators	Targets	Actuals
Volume (tons)		
MSMI volume of value added product (tons)	11,400	
MSME raw product (tons)	20520	
Value (K'millions)		
MSMI value (K'millions)	570.00	
MSME from raw product (K'millions)	410.40	
Subtotal value for kaukau (K'millions)	980.40	
Investment (MTDP IV) (K'Millions)	20	
Return on Investment (ROI)	1:49	
Land area cultivated by MSMEs (Ha)	84	

Table H3.61 Target Beneficiaries for deer MSMI and MSME

Category	Beneficiaries		
Direct employment	Direct	Indirect	
Industry player (MSMI)			
Micro	5	30	
Small	3	18	
Medium	2	12	
Subtotal	10	20	
Entrepreneur (MSME)			
Micro	100	600	
Small	60	360	
Medium	40	240	
Subtotal	200	700	
Total	210	720	

NATIONAL SEED SECURITY AND COMMERCIAL SEED DEVELOPMENT



NATIONAL SEED SECURITY AND COMMERCIAL SEED DEVELOPMENT (DIP 9.6)

Economic value, genetic potential, production capacity and life preservation of crops are held in their seeds, both true seed propagation and vegetative propagation crops. In livestock, these qualities are held in the semen and ovum. National seed security and commercial seed production of crops for development into large industries are very critical. Aging plant and animal stock will be replaced with good seed backup system. Large commercial production of crops will require large volumes of seed stock.

Conservation and preservation of seeds of both food and commercial crops are important for national seed security. All commodity boards and farmer groups will have seed conservation and preservation systems and managed systematically. The simple fact is: NO SEED, NO INDUSTRY.

NASP will ensure agriculture sector has good seed systems for to support large scale commercial production of crops and livestock. This systematic approach is to have seed sources, seed production, seed distribution and crop or livestock production.

4.1 Laboratory Seed and Planting Material Preservation

NASP recognizes the value of laboratories for National Seed Security, rapid multiplication of disease free planting materials, conservation and preservation of plant and animal tissues to support the government's priorities in commercial crop and livestock production and downstream processing. NASP also recognizes the value of laboratories to do food tests, water quality tests, soil and plant nutrient analyses and other technical services to the sector. NASP will support and facilitate the upgrading and improvement of the laboratory facilities in partnership with Commodity Boards and Development Partners.

The laboratory or in-vitro preservation requires the use of following techniques such as gene bank, pollen, seed, seedling, tissue culture and DNA banks. The purposes for laboratory preservation are:

- Keep threatened endangered species.
- Produce material for biology and agriculture research.
- Bulk up germplasm for storage in various forms of ex situ facility (tissue culture lab, freeze, etc.).
- Supply material for various purposes to remove or reduce pressure from wild collection.
- Produce material for reintroduction, reinforcement, habitat restoration and management.
- Produce materials for seed multiplication garden and commercial farming.

The agriculture and livestock research institution and universities will be the co-partners in implementing this program. They are the National Agriculture Research Institute, Coffee Research Institute, Cocoa Research Institute, Kokonas Indastri Koperesen, Oil Palm Research Association, Agriculture Departments of Unitech and University and Goroka, and the University of National Resources and Environment. Also, Forest Research Institute would be a copartner with edible tree crops and spices.

Every new planting should start with clean and vigorous seed and planting material to achieve commercial production potential. NARI has developed its expertise and technical capacity in producing clean planting material using tissue culture technology to support the agriculture sector. CRI, NBPOL, Cocoa Board also have laboratories to develop clean planting materials. NASP will support the accessibility and availability of clean planting material. This tissue culture technology improves farmer's access to clean (disease free) planting materials. Laboratories will be upgraded and increase capacity to develop tissue culture for crops identified for commercial development in phase 1 (NASP2024-2028) (Table H4.1) using advanced plant propagation techniques and technologies such a tissue culture.

Table H4.1 Target crops for tissue culture propagation

Root Crops	Tree Crop	Fruit & Vegetables	Oil & Minor Crops	Grains/Cereal	Spice
Sweet potato	Robusta	Brassicas	Galip	Rice	Vanilla
Irish potato	Arabica -Geisha	Tomato	Jathropa	Corn	Ginger
Tao	Avocado	Carrot	Cashew	Peanut	Turmeric
Yam	Mango	Celery	Okari	Sugar cane	Kava
	Coconut	Strawberry		Bean	Garlic
	Tea	Pawpaw		Peas	
	Cacao	Cavendish			
	Rubber	Plantain			
	Pawpaw	Pineapple			

Strategic Objective: Laboratory preservation of crop species achieved and sustained.

Outcome 1 In-vitro preservation of seeds (true seeds and pollens) and vegetative materials achieved.

Output 1 Laboratory method of seed and vegetative material preservation for 4x regions completed.

- 4x infrastructure for seed and gene bank (biorepository)at each research station established.
- Equipment, machinery and tools procured and installation completed.
- Baseline assessment of plant species in danger and economic value is completed.
- Plant/crop selection and prioritization completed.
- Genetic management and adaptation with changing conditions introduced.
- Collection and acquisition of genetic materials (seed, pollen, plant cuttings, etc.) completed.
- Project commissioned documentation and record keeping submitted.
- Share genetic materials (seed, vegetative materials, pollen) with other organizations.
- Participate in International events.
- Habitat restoration and reintroduction of genetic materials to its locality.
- Implement security measures against natural disaster, wild animals and humans.

Outputs 2 Monitoring and Evaluation completed.

- Monthly report based on the reporting format submitted and verified.
- Quarterly reviews conducted and recommendations on slack performances completed.
- Abuse and unethical instances identified in the review for action implemented.
- Annual reviews conducted as per NASP M&E framework completed.

Outcome 2 Rapid multiplication of planting materials for commercial farming enhanced.

Output 1 Market research and customer preferences assessed.

- Conduct market research and customer preferences for various subsection
- Identify crop species with concern pathogen completed.
- Identify crop species with best quality attributes and high economic impact completed.
- Identify target audience and segment the market for each crop variety completed.

Output 2 Establish plant material portfolio completed.

- Prioritize the crop with market requirements completed.
- Produce and supply species, varieties and strains with market requirements and demands completed.

Output 3 Design and procure building materials for biotechnology laboratory completed.

- Design of biotechnology/tissue culture laboratory and other facilities completed.
- Procure building materials, instruments, equipment and other completed.

Output 4 Biotechnology laboratory facilities and equipment installation completed.

- Construction of biotechnology lab completed.
- Biotechnology equipment, instruments and hardening facilities completed.
- Utilities (electricity, backup power, water, etc.) installed.

Output 5 Planning and production of pathogen tested materials (selected ones) completed.

- Develop a production plan (procure medium, produce disease free crop varieties, establishing nurseries, and implementing strict sanitation and testing procedures).
- Production of in-vitro biotechnology of plant materials in mass production,
- Hardening and distribution of disease free crop materials...
- Transfer hardened disease free vegetative material to

Output 6 Quality and control testing in compliances with protocols and requirements.

- Establish quality control measures to test the disease free material.
- Collaborate with other Biotechnology Laboratory for verification.

Output 7 Legal and regulatory compliances are complied.

- Plant material production and marketing activities comply with local and international regulations achieved.
- Coordination on the compliance completed.

Output 8 Clean and hardened disease free plant materials to screen houses and MSMEs farmers completed.

- Supply of disease free materials to MSME/farmers or farmer groups with screening facilities completed.
- Partnerships and networking created for feedback and improvement.

Output 9 Adaptation to changing conditions environment, social and climate conditions.

- Adapt marketing strategy to production of disease free materials based on changing market conditions achieved.
- Implement environmental sustainability and climate smart agriculture practices completed.

Output 10 Risk management achieved.

- Assess and identify potential risk to biotechnology activities and disease free materials completed.
- Provide mitigating strategies implemented.

Output 11 Business management and operation commenced.

- Biotechnology experts for management and operation completed.
- Operations of vegetative disease free material production with sufficient cash flow enhanced.
- Management of disease free planting materials production, coordination and distribution completed.
- Partnership arrangement under PPP for private sector to operative the tissue culture business completed.

Outputs 12 Monitoring and Evaluation effected.

- Monthly report based on the reporting format submitted and verified.
- Quarterly reviews conducted and recommendations on slack performances completed.
- Abuse and unethical instances identified in the review for action implemented.
- Annual reviews conducted as per NASP M&E framework completed.

Output 13 Tissue culture MSME and value chain development implemented.

• Implementation provinces identified and formalized (Table H4.2).

- Investment cash flow from 2023-2033 (Table H4.3)
- Funding sources identified and funds secured (Table H4.4)
- Target beneficiaries identified and quantified (Table H4.5).

Table H4.2 Particulars for Implementation of tissue culture MSME and Value chain development

Implementation Province	Allocated Funds (K"million)	Funding Sources	Implementing Agency
EHP, Simbu, JWK,	10	GoPNG & DP	FPDA. NDAL. PPP,
WHP, Enga, SHP, Hela			Prov Govt, DDAs,

Table H4.3 Tissue culture investment cash flow from 2024-2033

First five years (2024-2028)

DIP Link	MTDP IV Budgeted	Allocated Funds	Yearly cash flow in K'millions				
	(K'million)	(K'million)	2024	2025	2026	2027	2028
DIP 1.1.	83	10	2	2	2	2	2

Second five years (2029-2033)

DIP Link	MTDP IV Budgeted	Allocated Funds Yearly cash flow in K'millions		ons			
	(K'million)	(K'million)	2024	2025	2026	2027	2028
DIP 1.1.	83	10					

Table H4.4 Key Performance Indicators of tissue culture MSME and Value Chain Development

Key indicators	Targets	Actuals
Volume (tons)		
MSMI volume of value added product (tons)	N/A	
MSME raw product (tons)	684,000	
Value (K'millions)		
MSMI value (K'millions)		
MSME from raw product (K'millions)	342	
Subtotal value (K'millions)		
Investment (MTDP IV) (K'Millions)	10	
Return on Investment (ROI)	1:34	
Land area cultivated by MSMEs (Ha)	11,400	

Table H4.5 Target Beneficiaries for tissue culture MSMI and MSME

Category	Beneficiaries		
Direct employment	Direct	Indirect	
Industry player (MSMI)			
Micro	N/A	N/A	
Small	N/A	N/A	
Medium	N/A	N/A	
Subtotal			
Entrepreneur (MSME)			
Micro	1,000	6,000	
Small	600	3,600	
Medium	400	2,400	
Subtotal	2,000	12,000	
Total	2,000	12,000	

4.2 Germplasm Collection

Genetic erosion can be minimized with germplasm collection and conservation. It involves costs to maintain large collections but worth the money as germplasm is the gene bank of PNG. Future economic value is in the germplasm collection. NASP supports germplasm collection and conservation of commercial value crops. NASP will ensure a systematic and institutionalized way to conserve seed and planting materials. Institutions, farmers and individuals who committed themselves to conservation and preservation of indigenous plants and commercial crops will be recognized and supported to protect genetic diversity.

Strategic Objective: Germplasm and conservation of food and commercial value crops institutionalized.

Outcome 1 Conservation of targeted plant species seed and vegetative materials achieved.

Output 1 Germplasm collection of seed and vegetative materials on the station completed.

- Baseline assessment of indigenous/native plant species in danger or of economic value completed.
- Comprehensive list of target plant species conservation provided.
- Ecological and botanical survey reports (including distribution maps) provided.
- Detailed assessment of existing threats and challenges to the target species provided.
- Protected areas with crop/plant species in danger of extinction completed.
- Develop on-farm and on-station seed and vegetative material multiplication completed.

Output 2 Germplasm collection (genetic reserve) capacity improved.

- Assessment of germplasm (species, varieties) crop species in each research stations completed.
- Develop policy and strict protocols for germplasm collection on research stations delivered.
- 4 regional germplasm facilities on NARI research stations completed.
- Developed and enforced germplasm protection regulations for the government research institutions.
- Build the capacity of research staff for germplasm collection and preservation completed.
- Different plant species and varieties on the research station implemented.
- Development and utilization of propagated and reintroduction of plant species enhanced.

Output 3 Four national reserved park (genetic reserve) established with SEZ or agro-park completed.

- Assessment of economic, cultural and endangered plant species, variety and strain completed.
- Develop policy and standards for national reserve park collection (species, varieties and strains) completed.
- Design and procure materials for national reserve park on Agro SEZ completed.
- Develop technical capacity for national reserve park in each agro-park or SEZ completed.
- Development and utilization of propagated and reintroduced plant species completed.

Output 4 Research and monitoring plant species and varieties for conservation completed.

- Regular monitoring of on-farm target plant species and conservation activities implemented.
- Conducted research on ecological, genetic, and reproductive aspects of target crop species.
- Collaborative research and development created within PNG, external research partners, development partners and institutions implemented.

Output 5 Stakeholder engagement completed.

- Engaged local communities and other stakeholders in the conservation process.
- Involved local communities in the conservation activities (conserved area) enhanced.
- Collaborate and partner with government agencies, NGOs, development partners, and others.

Output 6 Climate Change and Adaptation completed.

- Develop strategies to mitigate and adapt to climate change impacts on conserved plant species enhanced.
- Promoting conservation (communities, station and SEZ) of resilient genetic plant materials implemented.

4.3 Commercial Seed Production

For commercial farming, a farmer requires a high quality, safe and healthy seeds or vegetative materials. These kinds of planting materials are good for domestic market and international trade. Therefore, a strategic plan for seed standards and certification with a focus on biosecurity and regulatory measure in PNG is envisaged.

PNG has not explored the option of commercial seed production and marketing in PNG, except New Britain Palm Oil Development at Dami Oil Palm Research Station, Kimbe. The NBPOL has a robust and vibrant seed production and distribution system for hybrid tenera palm which is a commercial variety. Similar approach should be developed for tree crops and food crops with strict seed standards and certification system.

Challenges faced by farmers are inaccessibility and unavailability of seed for commercial farming. In addition, many seed are sold on the streets with not proper regulation. The seed sold on the streets have high seed losses during nursery and pose risk of introducing noxious weed seeds, seed borne diseases, etc. into the country.

This activity under field conservation program is designed to mitigate this challenge and ensure seeds and vegetative materials are available on a sustainable basis. Therefore, commercialization of seed production and supply through seed production and supply on commercial basis like NBPOL is envisaged.

Strategic Objective: Commercial production of seed and vegetative planting material for commercial farming implemented.

Outcome 1 Commercial seed production and distribution achieved

Output 1 Market research and farmer preferences assessed.

- Conduct market research and farmer preferences for seeds and vegetative materials completed.
- Identify crop species with best quality attributes and high economic impact completed.
- Identify target audience and segment the market for each crop variety/strain completed.
- Crop species and varieties on high demand selected.

Output 2 Design and procurement of building materials for field seed production completed.

- Design of seed production farm plan and storage facilities with testing equipment completed.
- Procure farm equipment for land cultivation, seed/vegetative propagation and water irrigation completed.
- Technical capacity building and training on the use of equipment and tools completed.
- Design and plan nucleus and out grower program (if need arises) completed.
- Training manuals for seed production and marketing issued delivered.

Output 3 Farm production and postharvest processing of seed completed.

- Securing of farm land (individually or in farm groups) completed.
- Land preparation and water irrigation systems established.
- Seed crop production and postharvest for each selected crop is established.
- Seed viability and other test for seed quality completed.
- Seeds Packed and labelled

- Strict sanitation and testing procedures) completed.
- Compliances to national and international seed standards and regulations implemented.

Output 4 Quality and control testing in compliances with protocols and requirements enhanced.

- Establish quality control measures to test the seeds and vegetative material.
- Collaborate with other seed farmers and government agencies and development partners.

Output 5 Legal and regulatory compliances are complied.

Complying with local and international regulations completed.

Output 6 Supply of clean seed and vegetative planting materials to commercial farmers and retailers enhanced.

- Retail shops selling local seeds completed.
- Commercial farmer accessing in advance notice facilitated.
- Partnerships and business relationships with seed producer and buyer facilitated.

Outcome 2 Commercial vegetative material multiplication and distribution completed.

Output 1 Market research and farmer preferences assessed.

• Follow the same activities as in output 1 of outcome 1 for vegetative materials selected.

Output 2 Design and procurement of building materials for field seed production completed.

• Follow the same activities as in output 1 of outcome 1 for vegetative materials selected delivered.

Output 3 Farm production of vegetative materials completed.

- Securing of farm land (individually or in farm groups) completed.
- Land preparation and water irrigation systems established.
- Seed crop production and postharvest for each selected crop is established.
- Selection of high quality planting material completed.
- Vegetative material cutting, handling and pack out and labeling completed.
- Strict sanitation and testing procedures) completed.
- Compliances to national and international vegetative propagation standards and regulations implemented.
- Dedicated transport system provided.

Output 4 Risk management implemented.

- Assess and identify potential risk to seed and vegetative propagated materials production completed.
- Mitigating strategies for risks provided.

Output 5 Business management and operation for seed production completed.

- Employ expert for seed management and operation to train local seed farmers completed.
- Entrepreneur training on business skills completed.
- Sufficient labors are provided.
- Appropriate farm machinery, water supply and farm inputs available and accessible enhanced.
- Farm Staff or family labour have technical know-how and skills.
- Effective and efficient function of enterprise achieved.

Output 9 Seed farmer MSMI, MSME and value chain development implemented

- Implementation provinces identified and formalized (Table 4.6).
- Investment cash flow from 2023-2033 (Table H4.7)

- Funding sources identified and funds secured (Table H4.8)
- Target beneficiaries identified and quantified (Table H4.9).

Table H4.6 Implementation for commercial seed production in provinces

Implementation Province	Allocated Funds (K"million)	Funding Sources	Implementing Agency
Western, Gulf, Central,	10	GoPNG & DP	FPDA. NDAL. PPP,
EHP, JWK, Simbu,			Prov Govt, DDAs,

Table H4.7 Investment cash flow for commercial seed production from 2024-2033 Frist five years (2024-2028)

DIP Link	MTDP IV Budgeted	Allocated Funds	Yearly cash flow in K'millions				
	(K'million)	(K'million)	2024	2025	2026	2027	2028
DIP 1.1.8	83	10	2	2	2	2	2

Second five years (2029-2033)

DIP Link	MTDP IV Budgeted	Allocated Funds	Yearly cash flow in K'millions				
	(K'million)	(K'million)	2029	2030	2031	2032	2033
DIP 1.1.8	80	10	2	2	2	2	2

Table H4.8 Key Performance Indicators of commercial seed farmer

Key indicators	Targets	Actuals
Volume (tons)		
MSMI volume of value added product (tons)		
MSME raw product (tons)	684	
Value (K'millions)		
MSMI value (K'millions)		
MSME from raw product (K'millions)	342	
Subtotal value for kaukau (K'millions)		
Investment (MTDP IV) (K'Millions)	10	
Return on Investment (ROI)	1:34	
Land area cultivated by MSMEs (Ha)	11,400	

Table H4.9 Target Beneficiaries for commercial seed program

Category	Beneficiaries		
Direct employment	Direct	Indirect	
Industry player (MSMI)			
Micro	N/A	N/A	
Small	N/A	N/A	
Medium	N/A	N/A	
Subtotal			
Entrepreneur (MSME)			
Micro	1,000	6,000	
Small	600	3,600	
Medium	400	2,400	
Subtotal	2,000	12,000	
Total	2,000	12,000	

4.4 National Seed Standards and Certification

For commercial farming, a farmer requires a high quality, safe and healthy seeds or vegetative materials. Seed commercialization has good potential for domestic market and international trade. Therefore, a strategic plan for seed standards and certification with a focus on biosecurity and regulatory measure in PNG is envisage.

PNG has not explored the option of commercial seed production and marketing in PNG, except New Britain Palm Oil Development at Dami Oil Palm Research Station, Kimbe. NBPOL has a robust and vibrant seed production and distribution system for hybrid tenera palm which is a commercial variety. Similar approach should be developed for tree crops and food crops with strict seed standards and certification system.

Seed Standard refers to the minimum percentage of pure seeds and maximum permissible limits for defects such as weed seeds, seed borne diseases, mechanical damage, insect damage, etc. except as standard.

Certified seed is a known variety produced under strict standards to maintain purity, meet other crop standard for a minimum defect, germination, and high score of viability test.

Strategic Objective: National seed standards and certification compliance systems established and enforced.

Outcome 1 Support seed quality and safety standards completed.

Output: 1 Establish a national seed standard team or seed mastery by key stakeholders completed.

- Reps from NAQIA, Commodity Boards, DAL, NISIT, etc. form a dedicated seed authority enhanced.
- Seed mastery functions on regulatory powers cascaded from NAQIA completed.
- Seeds standards aligned with international and national standards completed.

Output 2 Harmonize PNG's seed standards with international norms and standards completed.

- Collaborate with international seed organizations to ensure PNG's standards harmonized.
- Participate in regional and international seed quality and safety standardization initiatives/programs achieved.

Output 3 Inspection and certification processes enhanced.

- Comprehensive seed inspection and certification completed.
- Training officers or inspectors and certifiers to adhere to strict international biosecurity protocols completed.

Output 4. Improve regulatory compliances and 'biosecurity measures completed

- Design, procurement and construction of biosecurity facilities in the four regions completed.
- Strengthened quarantine and phytosanitary measures at ports of entry implemented.
- Invest in advanced detection and monitoring systems for imported and exported seeds completed.
- Develop and update relevant seed-related legislation and regulations to comply (e.g., IPPC) completed.
- Enforce strict penalties for non-compliances completed.

Output 5. Capacity building and training completed.

Capacity building and training of staff (agriculture sector, NAQIA, customs and others) provided.

Output 6. Collaboration, partnership and governance completed.

- Negotiate and sign agreements with key seed-exporting and importing companies completed.
- Seek recognition for PNG's adherence to international standards and regulations completed.
- Publish annual reports delivered.

- Contribute to global seed quality and safety standards completed.
- Actively participate in international seed-related forums and conferences enhanced.

Output 7. Risks Management strategies developed.

- Assess all the risks associated with seed certification and standards for export and imports completed.
- Provide mitigating strategy for each challenge and issues identified.

Outputs 5 Monitoring and Evaluation effected.

- Monthly report based on the reporting format submitted and verified.
- Quarterly reviews conducted and recommendations on slack performances completed.
- Abuse and unethical instances identified in the review for action implemented.
- Annual reviews conducted as per NASP M&E framework completed.

4.5 Seed Imports and Exports (movements)

Seed security system in PNG seems to minimal control over uncertified seed sold on the streets. If seeds from Brian Bell or Firmest have poor germination, farmer raise their concern and they attend to it. This is not possible with seeds sold on the streets and farmer are cheated.

This possess biosecurity risks to agriculture sector where foreign weeds, pest and disease can be introduced easily. There is not regional quarantine stations in the four regions of PNG to carry out testing before releasing to the community. These are key challenges that PNG is encountering and needs mitigating strategies to de-risk them.

Strategic Objective: Seed imports and exports certification standards and compliances established and enforced.

Outcome 1 National seed Standards and Certifications Systems Institutionalized.

Output 1 Four national seed testing and certification centers established.

- Develop a state-of-the-art facility for seed testing and certification completed.
- Build the capacity of NAQIA for testing and certification completed.
- International quality standards for seed testing and certification introduced.

Output 2 Diversity seed varieties completed.

- Collaborate with international seed companies to introduce new suitable for PNG completed.
- Promote the breeding of local seed varieties to meet specific regional needs completed.
- Capacity of commercial seed farmers program /projects for upscaling and out scaling completed.

Output 3 Partnership with research and development partners completed.

- Allocate funds for agricultural research institutions, universities and NAQIA to conduct seed-related research completed.
- Develop partnerships with universities, research institutions, NGOs and development partners to support R&D initiatives completed.
- Partners with international research organization and development partners enhanced.
- Partners foster innovation in seed technology and farming practices coordinated.

Outcome 2 Seed distribution and accessibility improved.

Output 1.0 Seed storage and handling facilities established.

- Upgrade and expand seed storage facilities of seed farmers to meet standards completed.
- Proper handling and storage techniques to reduce seed spoilage and damage implemented.

Output 2.0 Promote efficient seed distribution network completed.

- Develop logistics for seed distribution reaching remote and rural areas completed.
- Tracking and traceability systems to monitor seed distribution implemented.

Output 3.0 Capacity building seed growers/farmers for export achieved.

- Training manual on local seed production for export delivered.
- Provided training programs for seed farmers, distributors, and extension workers completed.
- Technical capacity building and training on the use of equipment and tools.
- Seed production and marketing based on crop cycle provided.
- Seed testing and packaging according to standards completed.
- Seed certification by accreditation body secured.
- Seed dispatch to client enhanced.

Outcome 3 Seed Imports and Exports Systems Established and Operationalized

Output 1 Market research and promotion completed.

- market research to identify export opportunities for PNG seed products.
- Develop marketing strategies to promote PNG seeds in international markets completed.

Output 2 Trade agreement and partnerships achieved.

- Negotiate trade agreements and partnerships with seed-importing countries completed.
- NAQIA to facilitate the export of PNG seeds to destined country completed.
- Collaborate with international agricultural organizations and trade associations facilitated.

Output 3 Sustainable seed industry growth achieved.

- Promote sustainable farming and protect the environment practices implemented.
- Encourage the use of certified seeds and best agricultural practices in PNG achieved.

Output 4 Regulatory framework and compliances completed.

- Establish seed regulatory authority under NAQIA achieved.
- Quality assurance and quality monitoring implemented.
- Capacity building and training of staff and farmers completed.

Outputs 5 Monitoring and Evaluation implemented.

- Monthly report based on the reporting format submitted and verified.
- Quarterly reviews conducted and recommendations on slack performances completed.
- Abuse and unethical instances identified in the review for action implemented.
- Annual reviews conducted as per NASP M&E framework completed.

NATIONAL FOOD SECURITY



5 NATIONAL FOOD SECURITY (DIP 9.6)

Creating a strategic plan for National Food Security is a complex task that involves addressing several key components, including income security, nutrition security, and food security. Food security context has engineered a notion that people in PNG need to grow a variety of food crops in an integrated farming system or subsistence farming. The reality is that PNG has malnutrition and higher goal is to be financially secured to have a balanced meals consisting of proteins, protective (fruits & nuts) and energy foods. Abundance of one food group is food insecurity and nutritionally insecure. Vision 2050 goal of healthy nation will materialize through National Food Security program. It is achievable through a systematic approach to accessibility, availability and affordability of the three food groups, of which food affordability or financial security is critical element.

5.1 Financial Security

Regular income earning and financially secured families will be able to afford nutritious foods that comprises the mixtures of energy, proteins and protective foods for a balanced meal. Economic empowerment engagement and taking farming a business will rescue impoverished families and households and gives the family financial security, nutritional security and food security.

Strategic Objective: Affordability of nutritious food supply in rural households secured.

Outcome: Financial barriers to accessing food and nutrition removed.

Output 1 Increase income opportunities for farming communities achieved.

- Regular income generates from consistent farming business completed.
- Facilitate access to financial credit facilities for up-scaling farm production completed.
- Efficient and effective farming enterprise created and operates on daily basis enhanced.

Output 2 Improved financial literacy enhanced.

- Training manuals on financial literacy delivered.
- Financial literacy trainings completed.
- Business skills training for MSMI/MSMEs completed.

Output 3 Mindset change trainings completed.

- Saemul Undong (SMU) intervention into the communities introduced.
- Family farm training completed.
- Personal viability trainings completed.

5.2 Nutrition Security

Strategic Objective: Households accessibility and affordability of nutritiously balanced foods secured.

Outcome 1 Empower people in the 326 LLGs to know how to access, process/cook and eat diverse and nutritious food available in the communities.

- Output 1. Implementation of nutrition education program in schools of 326 LLGs.
 - Training manuals, posters and leaflets on nutritious tradition food and introduced food crops with respective cooking recipes provided.
 - Hire experts and or train extension officers on cooking targeted crops/.
 - Demonstration of cooking and food testing program conducted in schools.
 - Mass media production and dissemination on traditional and introduce food's, nutritional value and health benefits.
- Output 2. Expansion of food cooking program, teaching beneficiaries (farmers, MSME/MSMI)
 - Facilitate food cooking programs for smallholder farmers and MSMEs/MSMI/
 - Provide school like school meals, food banks, and subsidizing nutritious foods for communities under severe malnutrition.
 - Collaborate with health department to develop programs for pregnant women, infants, and elderly citizens on food nutrition.
- Output 3. Support provided to x number of farmer's diversification farming systems.
 - Identify and select farmer who have integrated farming and interested in food nutritional program.
 - Support them to produce and supply variety of nutritious food (food crops, vegetables, fruits, spices, herbs, and indigenous edible plants).
 - Facilitate markets for integrated crop farmer
 - Train the farmer/MSME on sustainable farming systems, climate smart agriculture, organic farming and postharvest processing.

5.3 Food Security

Food security implies having access to sufficient supply of the mixtures of energy, proteins, fruits, nuts, greens and vegetables. Absence of one food group or inadequately supply of each of the food group is food insecurity. Commercial agriculture will supply abundance of one or two of the food groups while the money earned will purchase the food not produced.

Strategic Objective: Domestic food distribution, accessibility and availability of all food groups secured and sustained.

Outcome 1 Improves people's resilience and enjoy sustainable food supply system from both traditional and modern food sources to be healthy and strong.

Output 1. Development of food supply chain resilience and sustainability

- Facilitate information on cool chain logistics, and transportations (air, sea & land) to smallholder farmers, MSME/MSMIs and value chain players to transport their products.
- Create contingency plans for natural disasters and pandemics.
- Create food network system through a central information and management system.

Output 2. Food safety regulation and standard.

- Implement and enforce food safety regulations to ensure the availability of safe and high-quality food products (Codex, HACCP, and private standards).
- Promote the use of sustainable farming systems, climate smart agriculture practices and organic farming practices implemented.
- Establishment network and partnerships with humanitarian organizations, Health Department, national disaster office, NGOs, etc. for food related emergency.

Outputs 3 Monitoring and Evaluation effected.

- Monthly report based on the reporting format submitted and verified.
- Quarterly reviews conducted and recommendations on slack performances completed.
- Abuse and unethical instances identified in the review for action implemented.
- Annual reviews conducted as per NASP M&E framework completed.



6 AGRICULTURE RESEARCH AND INNOVATIONS (DIP 9.3)

Agricultural Research and Innovation is critical development and economic growth. Agricultural R&D with transforms the agriculture sector through innovations and improved technologies. Research will not only address food security, but the technology has to be commercialized for economic benefits.

The effective growth of the PNG's agricultural industry depends on cooperation between governmental organizations (research institution, commodity boards. Agencies and extension services), universities (academic institutions), foreign research partners, development partners, and foreign investment partners. Agriculture R&D played a vital role in developing new crop varieties, improving agricultural techniques, and addressing pest and disease management. These efforts aim to enhance crop yields, improve food security, reduce the vulnerability of rural communities and private sector to invest in research technology for commercial purpose.

Challenges faced by agriculture R&D institutions that impedes from contributing effectively to the governments agenda for development are:

- Funding constraints.
- Human resource capacity (attracting and retaining talent staff)
- Infrastructures and facilities of the institution in dilapidating stage
- Limited access to data and information
- Transportation and logistics
- Language and cultural diversity
- Climate change and environmental challenges.

To mitigate these challenges, the agriculture R&D in PNG often require sustained government funding support, international collaboration, and a focus on capacity building. These efforts can help overcome above challenges.

Therefore, NASP has strategic plans for agriculture R&D to step into the Marape-Rosso government's thinking for agriculture downstream processing and commercialization on key crops and livestock. The research and development priority and discipline-oriented research must shift to provide innovation and solutions to the government's focus.

Agriculture research institutions: CIC/CRI, NARI, CCB/CCI, KIK, LDC, Spice Board, FPDA Universities: UoT (Applied Sci Dept, Agric Dept), UOG, UNRE, UPNG, PAU. Farmers: subsistence farmers, semi-commercial farmers, commercial farmers

6.1 Production and Productivity Improvement of Crops and Livestock

Crops covers food crops, tree crops, fruits, vegetables, spice, herbs, pastures, grains, cereal, and other plants. **Livestock covers** all farm animals (cattle, pig, goat, sheep, deer, etc.) and poultry (chickens, ducks, goose, etc.).

Strategic Objective: Capacity of research organizations to improve crops and livestock productivity achieved.

Outcome 1: Agricultural production and productivity for crops increased.

Outputs 1 New crop varieties and farming techniques introduced.

- Research on introduce crop species/varieties required by existing industries completed.
- Adaptive research trials on targeted crops, clones and livestock conducted.
- Innovative techniques on precision agriculture developed.

- Innovative techniques on use of farm machinery and technologies developed.
- Innovative techniques on water irrigation systems and technologies developed.
- Innovative techniques for hydroponics and farming guides developed.

Output 2 Pest and disease management of crops for downstream processing/commercialization completed.

- 4x Quarantine facilities for import of live plants and new seeds established.
- Monitor surveillance established.
- Identification and diagnosis completed.
- Research and innovation on IPM (Integrated Pest Management) conducted.
- Research on biological control practices conducted.
- Research on cultural Practices conducted.
- Research on chemical control practices conducted.
- Genetic resistance and diseases tolerant varieties developed/introduced.
- Educational and training materials developed.
- Quarantine measures established.
- Early warning systems established.
- Government regulations and support on guarantine control measure enhanced.
- Community engagement implemented.
- Record keeping and data management completed.
- Continual evaluation and monitoring implemented.

Output 3: Partnership with extension service providers established.

- Research institution establish partnership with extension agents completed.
- Develop and distribute training manuals/ guides on conventional farming practices and innovative technology applications completed.
- Organize training session for farmers (modern agricultural techniques and farm technologies) completed.

Outcome 2: Increase livestock production and productivity accomplished.

Output 1: Introduction of new breeds of livestock and artificial insemination completed.

- Livestock species (homogenous, growth vigor and gain in muscles) required by industries imported.
- Adaptive research trials on targeted livestock listed in NASP conducted.
- Adaptive research trials on pasture improvement and management conducted.
- Develop innovative techniques on precision agriculture for pasture and livestock completed.
- Develop innovative techniques on use of farm machinery and technologies completed.
- Develop innovative techniques on water irrigation systems and technologies completed.
- Develop innovative techniques for feed supplement for cattle, goat and sheep completed.
- Develop innovative feed formulation and feeding trial for targeted livestock completed.
- Import artificial insemination (AI) to bulk gene banks to improve productivity and performance implemented.

Output 2: Improve pest and disease management for livestock enhanced.

- Quarantine facilities established.
- Flock monitor surveillance established.
- Identification and diagnosis of suspected animal pest and disease completed.
- IPM (Integrated Pest Management) research trial on animals conducted.

- Conduct research on biological control techniques implemented.
- Research on cultural practices implemented.
- Research on chemical control techniques implemented.
- Genetic resistance and diseases tolerant breeds are developed/introduced.
- Educational and training completed.
- Quarantine measures established.
- Early warning systems established.
- Government regulations and support enhanced.
- Community engagement implemented.
- Record keeping and data management completed.
- Continual evaluation and monitoring implemented.

Output 3: Establish partnership with livestock extension service providers/agencies enhanced.

- Research institution establish partnership with extension agents completed.
- Develop and distribute training manuals/ guides on conventional farming practices completed.
- Develop and distribute training manuals on innovative technology applications completed.
- Organize training session for farmers (modern agricultural techniques and farm technologies) completed.
- Follow up extension visits completed.

6.2 Socioeconomics Research

Strategic Objective: Better understanding of the social and economic factors affecting smallholder farmers, MSMI, MSMEs and value chain players in agricultural commercialization and downstream processing enhanced.

Outcome 1 Better understanding of the social and economic factors affecting the agricultural commercialization and downstream processing completed.

Output 1 Research reports on socioeconomic factors affecting agriculture commercialization and downstream processing completed.

- Conduct surveys and studies on the economic conditions of farmers, MSMEs/MSMI, and other value chain players completed.
- Survey on local communities and farmers for farm production challenges conducted.
- Knowledge, attitude and practice (KAP) study conducted.
- Program/Project impact assessment in the project sites conducted and reported.

Output 2 Policy recommendations for addressing socioeconomic challenges.

- Analyze the impact of on agricultural commercialization and downstream processing completed.
- Analyses data and develop agricultural commercialization and downstream processing policies completed.

6.3 Downstream Processing Research and Product Development

Strategic Objective: Capacity of research institutions, universities and development partners to do research into develop downstream value added products and technologies enhanced.

Outcome 1: Development of new agricultural value-added products and technologies completed.

Output 1 Development of new processed agricultural products

• Research trial conducted on food processing techniques and technologies.

- Pilot the production of new processed products and new technologies.
- Conduct workshops, seminars, conferences, online platforms to sell the new product and technology for MSMEs/MSMIs.

Output 2. Establishment of processing units completed.

- Provide training and support to entrepreneurs interested in downstream processing completed.
- Create network of food processors to conduct field survey and identify challenges and opportunities completed.
- Research collaboration and partnership with research institutions, universities (UoT, UNRE, UPNG, UOG, PAU) on downstream and processing creates.

6.4 Market Intelligence and Research

Strategic Objective: Capacity of responsible institution (per crop or product and livestock) to develop market

intelligence research for domestic and export markets completed.

Outcome: Understanding of market dynamics and trend in PNG, region and the world enhanced.

Output 1 Market Intelligence reports delivered.

- Relationships and networks with domestic, regional (Melanesia, Pacific, Asia Pacific) and international commodity bodies (WTO, Commodity Organizations, Agricultural Biggest Markets, Certification Markets, etc.) established.
- Conduct research and gather data on market demand, supply and trend completed.
- Analyze market data for challenges, opportunities and mitigating strategies completed.
- Submit reports to the authorities for distribution on timely basis enhanced.

Output 2 Market oriented agricultural commercialization and downstream processing strategies developed and communicated.

- Develop marketing strategies at national level based on the market reports completed.
- Provide training and support to commercial farmers/MSMEs and MSMIs completed.
- Conduct workshops, seminars, conferences, online platforms for commercial farmers, MSME/MSMI completed.

6.5 Appropriate Technology Innovations

Strategic Objective: Capacity of research institutions, universities and entrepreneurs (MSME/MSMIs) to develop appropriate technology innovation facilitated.

Outcome 1 Development and adoption of suitable and sustainable agricultural technologies for farming and value addition enhanced.

Output 1 New agricultural technologies introduced.

- Identification of areas to use technology in agricultural production and downstream processing completed.
- Collaborate with research institutions, partners and MSME/MSMI to develop new technologies completed.

Output 2 Farmer training and adoption of new technologies completed.

Organize training programs and demonstrations for new technologies conducted.

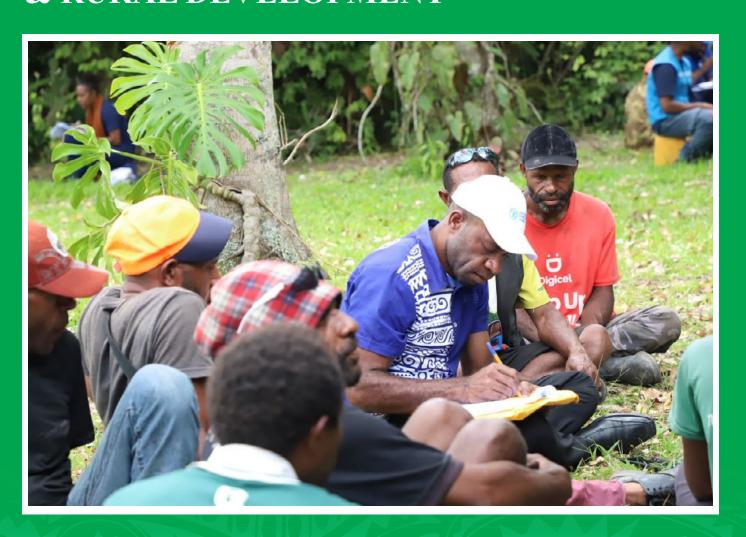
- Identify and select farmers and MSMI/MSMEs on-farm trial and adoption of these technologies completed.
- Monitor the adoption and effectiveness of these technologies and make improvements achieved.

Outputs 5 Monitoring and evaluation completed.

- Monthly report based on the reporting format submitted and verified.
- Quarterly reviews conducted and recommendations on slack performances completed.
- Abuse and unethical instances identified in the review for action implemented.
- Annual reviews conducted as per NASP M&E framework completed.



AGRICULTURE EXTENSION & RURAL DEVELOPMENT



7 ARICULTURE EXTENSION AND RURAL DEVELOPMENT (DIP 9.3)

The current government priorities are agriculture commercialization, downstream processing and value adding of products of agriculture commodities. The shift in government focus is to ensure subsistence farmers, agriculture MSMEs/MSMIs are economically empowered to achieve the Prime Minister James Marape's mantra of "Richest Christian Black Nation" in which "No One is Left Behind." The 85% of the population who depends on agriculture for their sustenance need to align with the government and shift the mindset to grow the rural economy. Agriculture extension services provides the conduit for mentoring, coaching, learning, transfer of information, application of skills and technology in developing a subsistence farmer into a businessmen/women. Three important principles will guide agriculture extension and rural development;

- a) Art of Farming,
- b) Science of Farming, and
- c) Economics of Farming.

Subsistence farmer is an expert and knows the trade - art of farming. He/she doesn't need coaching to cultivate the land, where he/she did for his/her entire life. The art of farming can only be lectured to someone who has never done farming. However, the subsistence farmer or the budding farmer need to learn the science of farming and the economics (business) of farming to achieve agriculture commercialization and downstream processing. The extension and rural development agency play a significant role to ensure a subsistence or budding farmer is transformed into a true *Farmer*, by definition, by understanding and applying the three principles. A true *Farmer* by definition fits all of the following;

- a) A farmer is a specialist or professional, he/she takes farming as a profession and specializes in one or two agriculture commodities,
- b) A farmer supplies raw materials in larger volumes for downstream processing and industrialization,
- c) A farmer feeds and cloths the entire nation,
- d) A farmer is a millionaire, his/her account balance is healthy, and
- e) A farmer is an employer and builds the economy.

Agriculture extension and rural development function is to build as many FARMERS as possible in this country.

7.1 Agriculture Information, Skills and Technology Transfer

Agriculture technical information, technology and skills are investigated, tested and packaged by Universities (eg.UNITECH) and research institutions (eg. NARI) for improving productivity, increasing yield, improving efficiency of resources use, reducing cost and increasing profitability. Extension and development agencies (FPDA, DPI) role is to translate, simplify technical information and disseminate to the farmers. Development agencies will also transfer new agricultural technologies and agribusiness skills produced by researchers. Farmer to farmers learning and exchanges also involve agriculture information, skills and technology transfer.

Strategic Objective: Agriculture information, skills and technology effectively transferred.

Output 1 Agriculture production and downstream processing information is packaged and validated.

- Production and downstream processing information and technology developed.
- Production and downstream technology and skills tested.
- Production and downstream processing information packaged.
- Production and downstream processing information, skills and technology validated.

Output 2 Validated agriculture production and downstream processing information, skills and technology delivered.

Development agencies responsible for delivery of information, skills and technology adequately resourced.

- Development agencies personnel responsible for delivery of information, skills and technology adequately skilled
- Agriculture production skills, information and technology delivery methodology determined and selected.
- Agriculture production skills, information and technology delivery capacity developed.
- Agriculture production and downstream processing skills, information and technology delivery skills developed.
- Agriculture production and downstream processing information, skills and technology delivered.

Output 3 Validated agriculture value chain and marketing information, skills and technology accessed.

- Agriculture value chain skills, information and technology packaged.
- Agriculture value chain players capacity developed and enhanced.
- Agriculture marketing intelligence and information accessed.
- Agriculture marketing skills developed.
- Agriculture value chain and marketing information and technology shared.
- Agriculture value chain and marketing information and technology utilized.

7.2 Agriculture Information, Skills and Technology Adoption

The farmer need to make a decision whether or not to accept the new information, skills and technologies after receiving them. Application and adoption of information, skills and technology by the farmer depends on delivery methods, socioeconomic status, age, literacy levels, cultural settings, gender, costs and benefits, and environmental conditions. It has to be realized that only few farmers will be adopters and early adopters while majority are either late adopters or laggards who see to believe. Intended transformation becomes noticeable when adoption of information, skills and technology takes place in the farming communities.

Strategic Objective Agriculture information, skills and technology tested and adopted.

Output 1 Field validation of agriculture information, skills and technology achieved.

- On-farm testing and evaluation of agriculture information, skills and technology conducted.
- Farmer participation in agriculture technology enhanced.
- Facilitated learning and adoption of farmers demonstrated.
- Information, skills and technology transfer centers established.

Output 2 Tested agriculture information, skills and technology adopted.

- Agriculture information, skills and technology adoption categorized.
- Agriculture information, skills and technology adoption monitored and evaluated.
- Agriculture information, skills and technology commercialized.
- Socioeconomic benefits of agriculture technology application achieved.

Output 3 Agriculture information, skills and technology improved and validated.

- Continuous validation of agriculture information, skills and technology achieved.
- Agriculture information, communication and skills improvement documented.
- Agriculture information, communication and skills improvement institutionalized.

7.3 Information Communication Technology (ICT) in Agriculture

Farming information and technology are available and easily accessible with the use ICT. Younger generation of farmers have the advantage of ICT use such as smart phones and they can advance quickly in farming and agribusiness. Older farmers who use mobile phones also have the advantage of doing business transactions, seeking and receiving updated information through phones. ICT connects the world with the farmer. It embraces, enhances and adds value to the work done by agriculture commodities, service providers, value chain players, markets, consumers and farmers.

Strategic Objective Information communication technology (ICT) in agriculture accessed.

Output 1 Information communication technology in agriculture policy developed

- Agriculture information communication technology in agriculture evaluated.
- Agriculture information communication technology in agriculture developed.
- Agriculture information communication technology in agriculture policy implemented.

Output 2 Information communication technology in agriculture applications accessed.

- Agriculture information communication technology accessibility enhanced.
- Agriculture online marketing established and accessed.
- Agriculture commodities online sales flat form developed and utilized.
- Online purchase of agricultural input supplies enhanced.

Output 3 Information communication technology in agriculture institutionalized.

- Agriculture information communication technology user policy developed.
- Agriculture information communication technology capacity building enhanced.
- Agriculture information communication technology service providers network connection developed.
- Agriculture Sector networking and information sharing established.
- DAL and commodity boards websites developed and maintained.

AGRICULTURE BIOSECURITY AND TRADE



8 AGRICULTURE BIOSECURITY AND TRADE

Agricultural Industries are constantly under threat from invasive and exotic pests and diseases. There is greater danger in introducing and spreading pests and diseases into the farming systems where producers and value chain players are incapacitated to handle a catastrophe. Biosecurity systems and biosafety measures are critical in protecting agriculture industries and the economy. It is in the best interest of the economy and food security of citizens that biosecurity systems are observed and implemented with due diligence.

Agriculture biosecurity safeguard export and import of agricultural products. Importing countries have strict biosecurity systems to protect their domestic and wild plants and animals. PNG is not operating in isolation and is exposed to threats of pests and diseases that needs to be managed carefully and diligently too. Biosecurity compliance and protocols are supported by legal framework exist in every country to protect not only agriculture but the people and the biodiversity.

NAQIA has the mandate and performs the critical role of biosecurity and trade. NASP support NAQIA to fulfill its mandate to serve the agriculture sector and the national biosecurity. NAQIA need be adequately resourced and supported to achieve agriculture commercialization and downstream processing to create agriculture-based industries and accurate economic growth.

8.1 Plant Biosecurity and Quarantine

Plant biosecurity concerns with incursions, infections and epidemic of pests and diseases of plants generally and crops in particular. Exotic pests and diseases need to be prevented from entry. Some pests and diseases present within the country need to be contained or eradicated. Farmers, food industries and importers are required by Plant Biosecurity and Quarantine Act 1953, PNG Quarantine (Amendment) Act 2020 to follow plant biosecurity and quarantine requirements and protocols.

Strategic Objective 1 Biological and Economical Value of Agricultural Crops Protected.

Strategic Objective 2 Biological, Traditional and Hereditary Value of Wild Plant Species Protected.

Outcome 1 Invasive crops pests and diseases free status for PNG achieved.

Output 1 Phytosanitary systems developed and maintained.

- Phytosanitary facilities developed.
- Phytosanitary facilities inspected, certified and accredited.
- Phytosanitary facilities maintained.

Output 2 Quarantine pests and diseases prevented and isolated.

- Plant health and hygiene recognized and promoted.
- Quarantine pests and diseases identified and recorded.
- Quarantine pests and diseases risk analysis conducted and evaluated.
- Plant material handling and movement improved.
- Planting material preparation, packaging and storage improved and facilitated.

Output 3 Agriculture Quarantine Standards Implemented and Enforced.

- Plant quarantine procedures developed.
- Exotic pest surveillance action plan developed.
- Surveillance tools and equipment sourced and utilized.
- Plant pest surveillance training conducted.
- Plant pest surveillance conducted.
- Plant pest and disease containment achieved.

- Plant quarantine implemented.
- Plant quarantine capacity developed.
- Plant Pests and diseases incursions managed and contained.

Outcome 2 Increased exports of high value agricultural crops of primary and tertiary products facilitated.

Output 1 International accreditation of import and export facilities achieved.

- Import and export facilities for agricultural products standardized and modernized.
- Import and export capacities improved and supported.
- Import and export inspections and certification systems established.
- Import and export requirements awareness conducted.

Output 2 Regulatory and Compliance Standards Implemented.

- Regulatory and compliance standards monitored and evaluated.
- Invasive pests and diseases data base created and catalogued.
- Invasive pest and diseases management strategies developed and adopted.
- Plant quarantine regulations implemented.
- Biosecurity imported permits issued, reviewed and renewed.
- Biosecurity export permits issued, reviewed and renewed.

8.2 Animal Biosecurity and Quarantine

Animal biosecurity concerns with incursions, infections and epidemic of diseases and parasites of animals generally and livestock in particular. Exotic diseases and parasites need to be prevented from entry. Some diseases and parasites present within the country need to be contained or eradicated. Livestock farmers, the livestock industries and meat importers are required by Animal Biosecurity and Quarantine Act 1953, PNG Quarantine (Amendment) Act 2020 to follow animal biosecurity and quarantine requirements and protocols.

Strategic Objective 1 Domestic livestock Industry protected and safeguarded.

Strategic Objective 2 Domestic fauna, wild animal and bird species protected and safeguarded.

Outcome 1 Quarantined diseases entry prevention for PNG achieved.

Output 1 Animal containment facilities improved.

- Fencing and containment facilities developed and maintained.
- Appropriate housing, feeding and drinking facilities provided.
- Animal welfare improved and sustained.
- Sanitation and isolation facilities developed and maintained.

Output 2 Animal health and welfare systems improved and administered.

- Animal health and welfare recognized and protected.
- Animal safety and security enhanced.
- Animal housing and feeding and drinking facilities and welfare improved.
- Animal handling and movement improved.
- Sick animal treatment improved.
- Animal health and welfare regulations implemented.
- Quarantine animal diseases identified and monitored.

Output 3 Modernized abattoir certified and operationalized.

- Operating procedures developed and implemented.
- Abattoir facilities developed and maintained.
- Abattoir facilities inspected and certified.
- Food safety and health standards practiced.
- Slaughtering facilities and equipment hygienically maintained.
- Occupational health and safety standards practiced.

Outcome 2 Post entry quarantine for live animals and specimen modernized and operationalized.

Output 1 Post entry quarantine (PEQ) established and operationalized.

- Post entry guarantine regulations and standards formulated.
- Four (Central, Morobe, WP, ESP) post entry quarantine facilities established and operationalized.
- Post entry guarantine facilities inspected and monitored.
- Post entry quarantine regulations and standards implemented.
- Post entry quarantine compliance maintained.
- Animal products and specimen imports standards maintained.

Output 2 Veterinary services modernized and sustained.

- Veterinary facilities and services modernized.
- Veterinary talent gap analysis conducted.
- Veterinary specialization enhanced and developed.
- International accreditation of veterinary services achieved.
- One veterinarian per province achieved.
- Veterinary services capacity improved.

8.3 Emergency Response

Strategic Objective Disaster risks and management systems developed and actioned

Output 1 Natural disaster preparedness planned and packaged

- Natural disaster prone areas identified and mapped.
- Vulnerable community's needs identified and packaged.
- Emergency and contingency plans and strategies developed.
- Natural disaster information packaged and disseminated.
- Evacuation plan developed and approved.

Output 2 Emergency response capacity developed and strengthened

- Emergency response capacity developed.
- Emergency response training conduced.
- Emergency response team assembled.
- Emergency response resources identified and assembled.
- Emergency response teams established.

8.4 Food Safety and Health Standards

Consumers are the end users of agriculture and livestock production, downstream processing and food manufacturing process. The government establishes Food Safety Regulations and Standards to protect the consumers from the risks and hazards of illness related to contaminated food products, unsafe food products and unhygienic practices of handling and preparing food. Producers and suppliers of food products are required to produce and supply food safe for human consumption.

Strategic Objective Food Safety and Health Standards Developed and Implemented

Output 1 Health and Hygiene Practices Monitored and Enforced.

- Health and hygiene standards developed and approved.
- Healthy and hygienic practices monitored and promoted.
- Food safety and health hazards identified and managed.
- Tools, equipment and utensils cleanliness maintained.
- Food contamination practices discouraged and eliminated.

Output 2 Food Safety Standards Implemented.

- Hazard analysis and critical control points (HACCP) principles implemented
- Food handling and processing and supply systems inspected and monitored.
- Food storage facilities standardized and monitored.
- Food allergies management systems developed and applied.
- Hygiene and sanitation practices maintained.
- Food waste disposal systems developed and practiced.
- Food safety policy, procedures and safety practices implemented.
- Nutritional benefits properly labelled and traded.

Output 3 Compliance and Auditing Systems Enforced.

- Food processing and manufacturing process prescribed and approved.
- Food processing and manufacturing businesses inspected and audited.
- Food safety regulations complied.
- Food safety practices reviewed and updated.
- New food products tested and approved.

CLIMATE CHANGE



9 CLIMATE CHANGE (DIP 10.1)

Worldwide agriculture practices contribute 20-58 % greenhouse gases (GHG) emissions toward global warming and climate change while impacts of climate change threaten agriculture productivity and food supply. Increased prevalence of extreme temperatures and increased unpredictability of weather patterns disrupt physiology and biological cycle of crops and livestock. Consequently, this may lead to reductions in production and lower incomes in vulnerable farming communities. Hence, agriculture practices that may increase GHG emissions need to be minimized and increase adaptation of agriculture practices that increases carbon sinks to maintain ecosystem balance. Unbalanced ecosystem is detrimental to survival of living organisms.

Climate change may provide conducive environment for pests and diseases of crops and livestock to thrive. Invasive weed species may also threaten the crops and livestock production.

9.1 Climate Smart Agriculture

Enhancing agriculture productivity while contributing to climate change mitigation and preserving the natural resource base and vital ecosystem services requires transition from conventional to climate smart agriculture. This implies that farming practices are more efficient with less emissions of GHG and improves stability in the production. Making this shift requires policy changes, financial mechanisms, careful use of resources and talent capital pool to ensure climate smart agriculture is achievable and beneficial. The aim is to increase carbon sinks, reduce GHG emissions and mitigate climate change.

Strategic Objective: Climate smart agriculture production systems achieved.

Output 1 Agriculture productivity improved.

- Production resource efficiency increased.
- Soil carbon stocks increased.
- Agriculture biodiversity and ecosystem balance achieved.

Output 2 Climate smart agriculture practices adapted and promoted.

- Soil conservation practices improved.
- Inter-cropping practices improved.
- Buffer zone management enhanced.
- Capacity improved.

Output 3 Climate change mitigation enhanced.

- Slash and burning reduced.
- Greenhouse gases emission reduced.
- Soil conservation practices improved and enhanced.
- Catchment conservation improved.

Output 4 Knowledge and skills improved.

- Manual on climate smart agriculture developed and applied.
- Agribusiness farm management delivered.
- Phenology of different enterprises documented.
- Economics of different enterprises delivered.
- ToT training on production and agribusiness delivered.
- Farmer trainings on climate smart agriculture conducted and learned.
- Capacity building of production and productivity of growers improved.

9.2 Precision Agriculture

Precision Agriculture (PA) is a technology-based farm management approach. It involves the use of satellite and Automated Systems, GIS Technology and Computer Software for site specific observations, measurements, data collections, data analysis and interpretation. The technology is available for precise management decision and need based farm inputs for individual fields or crops. Precision agriculture ensures increased efficiency and productivity, prevents wastage of farm inputs, reduces production costs and improves environmental sustainability.

Strategic Objective Precision agriculture technology adopted.

Output 1 Precision agriculture technical capacity developed.

- PA tools and technology sourced and assembled.
- PA software sourced and installed.
- PA expertise and skills sourced and developed.
- Staff capacity up-skilled and trained.
- PA training manual developed.
- PA training and exposure coordinated and conducted.
- PA information packaged and disseminated.

Output 2 Commercial farm planning and management improved and enhanced.

- Farm planning and budgeting improved.
- Crop performance monitoring achieved.
- Crop surveys and maps delivered.
- Crop management software utilized.
- Crop losses recorded and accounted.
- Agrochemical application determined and optimized.
- Crop calendar developed.
- Farm management reports improved.

Output 3 Commercial farming productivity and yields improved and enhanced.

- Soil health and productivity improved.
- Irrigation and water efficiency and effectiveness enhanced.
- Crop yields and livestock performance improved and maximized.
- Labor efficiency and productivity improved.
- Farm machinery efficiency and productivity improved.

9.3 Agricultural Carbon Commercialization

Both wild and cultivated plants provide carbon sinks. The contribution of cultivated crops as carbon sinks are considered and given attention for trading and commercial benefits. Quantification and valuation of carbon in various plants will be determined to assess the costs and benefits of individual crops and ensure commercial value is determined.

Strategic Objective: Agricultural carbon sinks commercialized and traded.

Output 1 Agriculture carbon commercialization achieved.

- Carbon commercialization formalized.
- Carbon credit facility negotiated and accessed.
- Carbon measurement tools and instruments sourced.
- Carbon farms developed and established.
- Carbon sinks and credits increased.

Output 2 Carbon trading agreement secured and traded.

- Carbon trading agreement and accreditation secured.
- Carbon credits farmers profiled.
- Carbon sinks quantified and accounted.
- Carbon trading achieved.
- Carbon credits benefits maximized.

Output 3 Carbon commercialization technical capacity developed.

- Technical capacity developed.
- Carbon farming courses attended.
- Workshops and short courses facilitated.
- Staff skills and expertise developed.
- Training manual and materials developed.
- Farmer training conducted.

AGRICULTURE INPUT SUPPLIES ACCESSIBILITY AND AFFORDABILITY



10 AGRICULTURAL INPUT SUPPLIES ACCESSIBILITY AND AFFORDABILITY

Large scale commercial farming and downstream processing will require consistent supply of agriculture input supplies. The input supplies need to be accessible and affordable for farmers, MSMEs and MSMIs. PNG is an import dependent country for more than 90% of the farm inputs and ingredients for food and stock feed production. These supplies include;

- Agrochemicals (insecticides, fungicides, herbicides, detergents, etc)
- Fertilizers inorganic, organic
- Seeds crops and floriculture
- Farm Machinery tractor, implements (plough, harrow, rotovator, bed former, planter, harvester, sprayer), gensat, pulpers, mills,
- Farm tools and equipment spades, bush knives, axes, knapsack sprayers, ...etc
- Ingredients food processing, stock feed production.
- Irrigation Supplies pipes, joineries, pumps, ...etc.
- Nursery supplies nets, sprinklers, watering cans, pipes, hoses, ... etc
- Technology Drones and accessories, GPS, GIS,etc
- Fencing and building materials
- Field and laboratory equipment and wares.
- Field survey tools and equipment.

10.1 Agricultural Input Supplies

PNG is an importer of all agriculture input supplies and food processing ingredients from abroad. Commercial farming and downstream processing program will depend on consistent and adequate supply of the farm inputs, processing machinery, tools, equipment and technology. The importers, shippers, freighters, customs and IRC are important partners and players in ensuring agriculture commercialization and downstream processing aspirations of the Government, MTDP IV and NASP for the Agriculture Sector to contribute K30 billion toward the K200 billion economy target by 2030 are achieved.

Strategic Objective: Agriculture production and downstream processing input supplies improved and accessed.

Output 1 Public private partnership (PPP) developed and strengthened.

- Partnership arrangement formalized.
- Partnership agreement implemented.
- Partnership and collaboration achieved.

Output 2 Tax assessments and concessions implemented.

- Import policy reviews and exemptions implemented.
- Tax concessions and reviews conducted.
- Tax concessions monitoring carried out.

Output 3 Adequate and consistent supply of agriculture inputs and downstream equipment achieved.

- Import and export office established.
- Import and export of materials negotiated and purchase agreement formalized.
- Consistency and adequacy of agriculture input supplies achieved.
- Agriculture input supplies accessibility improved.
- Agriculture input supplies affordability enhanced.

- Processing machines and equipment supplies accessibility improved.
- Processing machines and equipment affordability enhanced.
- Transportation of materials improved.

10.2 Agriculture Price Support and Freight Subsidy

Price Support: Commodity price influences production and marketing of agricultural crops and livestock. Government will support farmers with a total of K150 million price support through MTDP IV. NASP will coordinate and ensure that price support benefit primary producers, who shall be motivated to consistently produce and deliver the volumes for downstream processing and export.

Price support is a temporary relief for growers. Downstream processing industries has potential to absorb price shocks and pay growers reasonable price for their produce. Grower cooperatives and industry levy system are sustainable and will be explored in NASP.

Freight Subsidy: The Government will subsidize freight costs for rural farmers with a total of K165 million. The subsidy program is also temporary relief for farmers. Fully developed and profitable industry will be able to freight the raw materials from production sites to the markets for downstream and value adding. Commodities for fresh markets will also be self-sustainable where markets pick up the freight costs.

Strategic Objective: Agriculture commodity price support and freight subsidy institutionalized and operationalized.

Output 1 Agriculture Commodity Price Support Policy Implemented.

- Agriculture commodity price support policy reviewed and approved.
- Agriculture commodity price support policy institutionalized.
- Agriculture commodity price policy implemented.

Output 2 Agriculture Freight Subsidy Policy Implemented.

- Agriculture commodity freight subsidy policy reviewed and approved.
- Agriculture commodity freight subsidy institutionalized.
- Engagement of dedicated freighters and transporters for supporting the agriculture sector achieved.
- Freighters agreements formalized.
- Agriculture commodity freight subsidy policy implemented.

10.3 Agriculture Sector Supply Chain and Logistics Development

Cool chain facilities and freezer containers are owned and operated by private companies, and they are unaffordable for majority of rural primary producers. Provincial and District markets further limits cool chain facilities for storage of fresh fruits, nuts, vegetables and fresh meats, resulting in low volume trading, deterioration of quality, wastages, losses of business and income for the growers, traders, vendors, MSMEs, MSMIs, provincial governments and LLGs. Accessible transport systems and transport infrastructures serve general purposes and they are unfavorable for serving the agriculture sector. The compound limitations result in 50-100% losses in the supply chain and trading of fruits, nuts, vegetables and fresh meat for village farmers, traders and vendors in the country.

NASP will develop a supply chain policy in collaboration with DoT, CAA, PNG Ports for development of dedicated transportation system (road, air, sea) to support the supply chain in the agriculture sector. NASP will strengthen and support cool chains and supply chain development to ensure goods and services reach the markets and consumers in satisfactory conditions. This will reduce income losses to the growers, traders, vendors and value chain players while consumers and customers receives value for money. Ultimately the economy will flourish and sustain.

Strategic Objective 1 Agriculture Sector Supply Chain Systems and Logistics Developed and Entrenched.

Strategic Objective 2 Agriculture Sector Supply Chain Players Developed, Supported and Benefitted.

Output 1 Agriculture sector supply chain and logistics policy implemented.

- Consultations for agriculture products supply chain and logistics policy eventuated.
- Agriculture sector supply chain development policy formulated and delivered.
- Private sector participation enhanced and supported.
- Ministerial and cabinet endorsements on sector supply chain policy formalized and approved.
- Agriculture sector supply chain and logistics policy implemented.

Output 2 Agriculture supply chain logistics and transportation systems developed.

- Dedicated road transport, logistics and cooler systems developed and operationalized.
- Dedicated air transport, logistics and cooler systems and facilities developed and operationalized.
- Dedicated sea transport, logistics and cooler systems and facilities developed and operationalized.
- Dedicated freighter systems developed and operationalized.
- Training, learning and capacity building in agriculture supply chain and logistics facilitated and achieved.

Output 3 Agriculture products of acceptable quality, freshness and volume distributed, traded and consumed.

- Postharvest management of fresh produce improved.
- Cool chain facilities in provincial and district markets developed and accessed.
- Safe and fresh delivery of agricultural produce achieved.
- Losses reduction of less than 10% in fresh produce supply chain achieved.
- Growers and value chain players income increased and maximized.
- Provincial and district markets accessibility and management improved.
- Provincial and district markets trading volume increased.
- Customers and vendors satisfactory improvements and fair trading achieved.

Output 4 Consistent production and supply of crops and livestock enhanced and achieved.

- Farm implements and irrigation materials accessibility and affordability improved.
- Irrigation systems established and operated.
- Farm mechanization achieved and sustained.

10.4 Irrigation and Farm Mechanization

Irrigation and farm mechanization are necessary for commercial production of crops and livestock all year round. PNG has two distinct seasons, wet months from October to March and dry months from April to September. Despite PNG receiving high rainfall up to 10,000ml per annum during the wet months of December and January, water deficit occur during drier months of April, May, June and July. The farm will require constant supply of water during droughts and drier months to mitigate water deficiency that will affect production of crops and livestock. Additional benefits of irrigation is reliable drinkable water source for livestock and other farm operations usage. Integration of irrigation systems into commercial agriculture is not only necessary but a requirement for agriculture commercialization in PNG.

Farm mechanization will enable production of larger volume of crops and livestock. Farm implements and equipment will have to be sourced and made available for farmers to access. Tractor is the most common machinery for provision of power and veracity. Tractors are indispensable machine for all commercial farms. Common implements on farms include ploughs, harrows, cultivators, mowers, balers, seeders, spreaders, and sprayers. Farm mechanization greatly enhance production of crops and livestock in commercial agriculture.

Strategic Objective 1. Effective and efficient irrigation systems established and operated.

Strategic Objective 2: Increased volume of farm produce achieved.

Outcome 1: Technical capacity developed.

Output Skills and technical capacity in commercial agriculture developed.

- Staff exposure organized and conducted.
- Specialized training sourced, organized and received.
- Skilled personnel mobilized and utilized.
- Technical capacity and commercial agriculture developed.

Outcome 2: Reliable irrigation systems developed.

Output 1. Establishment of irrigation systems determined.

- Commercial agriculture establishments identified.
- Irrigation requirements assessed.
- Irrigation systems designed and costed.
- Irrigations systems funds secured.

Output 2. Reliable irrigation system established.

- Irrigation equipment and supplies procured.
- Reliable irrigation systems established on commercial farms.
- Irrigation systems operated and maintained.
- Return on investment determined and improved.

Outcome 3: Farm mechanization achieved

- Production efficiency increased.
- Crops and livestock volume outputs increased.
- Skills and talents and specialization on crops and livestock developed and maintained.
- Unit cost of production on larger farms reduced.
- Economization of large scale farm operations achieved.
- Technical capacity developed and sustained.

PNG ECONOMIC GROWTH



11 AGRICULTURE STATISTICS BUREAU, INFORMATION AND PUBLICATION

NASP will establish a central data base, information management and publication bureau. The center will be responsible for administration, coordination and dissemination of agriculture statistics and diligently published information. NASP requires accurate data on agriculture and livestock production, marketing and income to inform the government of the performance of the agriculture sector. A systematic collection, compilation, computation, analysis, retrieval of agricultural statistics for the sector is paramount. NASP seeks to provide accurate agriculture statistics to the government, stakeholders and development partners while prudent management of agriculture information and publications of the sectors performance are readily available. Date provides the basis for the sectors performance monitoring, evaluation and feedback as well as decision making, planning and reporting purposes. The Bureau will also publish NASP newsletter, information booklets, NASP performance reviews, commodities information, marketing information, imports and exports and statistical reports.

11.1 Agriculture Statistics Bureau

NASP will create a central data base for the sector data collection, computation, storage and use. AAA and AIC will require all agricultural and socioeconomic data and centralized at the Bureau through the PMCU. Agricultural data and information will be made available to all stakeholders.

Strategic Objective: Agriculture Sector Statistics and Industries Information are accurately presented.

Output 1 Agriculture Statistics Bureau Created.

- Agriculture statistics administration and governance organized.
- Agriculture Statistics Bureau established.
- Agriculture statistics operational procedures approved.
- Agriculture Statistics Bureau operationalized.

Output 2 Agriculture Statistics Management Systems Institutionalized.

- Agriculture statistics and information management policy approved.
- Data management systems institutionalized.
- Data collection and entry procedures developed and approved.
- Database creation approved.
- Data utilization and accessibility systems institutionalized.

Output 3 Agriculture statistical reports presented.

- Agriculture statistical data systematically collected.
- Agriculture statistical data processed.
- Agriculture statistical reports prepared.
- Agriculture statistical reports approved.
- Agriculture statistical data utilized confidently.

11.2 Agriculture Information Management Systems.

Strategic Objective: Agriculture Information Management Systems Centralized.

Output 1 Agriculture information management policy developed and approved.

- Agriculture information management policy developed.
- Agriculture information management policy approved.

- Agriculture information management systems operationalized.
- Continuous improvement of information management and utilization achieved.
- Agriculture sector information sharing and coordination achieved.

Output 2 Agriculture Publications Achieved

- Agriculture publications committee established.
- Agriculture publications guidelines developed.
- Agriculture information publications achieved.
- Both electronically and manually published information approved and accessed.
- Agriculture library operationalized.

GRADUATE DEVELOPMENT & AGRIPRENEURSHIP



12 GRADUATE DEVELOPMENT AND AGRIPRENEURSHIP

MTDP IV supports Marape-Rosso's government commitment to create 1,000,000 new jobs by 2027. NASP can deliver the employment target projection of the government. Graduate development aims to provide professional career development pathway for university/college graduates by attaining on-the-job skills training and exposure in farming and agribusiness. The graduate will be provided with the opportunity to continue with an agriculture industry as an employee or take up farming as an educated and professional farmer creating employment. On the other hand, and agripreneurship allows new farming skills learning and commercial farming exposure for subsistence farmers and MSMEs/MSMIs.

One of the key performance indicators of the Commodity Boards and agriculture industries operating in PNG is to institutionalize graduate development and agripreneurship program for the graduates. A graduate who desires to take farming as a career will be supported under NASP in the chosen specialization of crop or livestock commodity. Agriculture commercialization and downstream processing increases opportunities for graduate development while labor mobility program allows agripreneurship program to flourish.

12.1 Cadetship Program

Commodity Boards and agriculture industries recruit fresh graduates as cadets. These cadets receive technical and professional mentoring in the agribusiness industry operations on a 1-2 years program. After successful completion of the program, the cadet will get the opportunity to remain as employee and develop his/her professional career as employee.

Strategic Objective: Employment of graduates and job security created and secured.

Output 1 Skilled professional workers in the agriculture sector developed

- Agriculture sector cadetship policy developed.
- Cadetship program formalized.
- Cadetship training and mentoring program developed.
- Cadetship program implemented.
- Cadetship program institutionalized.
- Skilled agricultural workers developed.
- Career development of graduates materialized.

Output 2 Graduates development fellowships established.

- Graduates development fellowships program formalized.
- Graduates development funding secured.
- Graduates development fellowships implemented.
- Graduates development fellowships institutionalized.

Output 3 Graduate employment creation achieved.

- Employability of graduates improved and secured.
- Graduate employment positions created.
- Employment succession plan developed.
- Graduate employment implemented.
- Graduates job security achieved.
- Graduates unemployment reduced.

12.2 Graduate Farmer Development

Less than 5% of agriculture graduates take up farming as a profession. Many agriculture graduates changed profession or careers as agriculture industries cannot taken in all the graduate. Graduate farmer development is the change the perception from employee to self-employment and employer in the sector. Graduates of other profession who wish to take farming as a profession and business will participate. Commodity Boards and agriculture industries shall engage fresh graduates as graduate farmer. These graduate farmers receive technical and business skills training in the agribusiness industry for 12-18 months. After successful apprenticeship the graduate farmer will get the opportunity to start a micro enterprise or micro industry under NASP. NASP-PMCU shall facilitate, mentor and develop the apprentice into an educated farmer.

Strategic Objective: Development of graduates into farmers, employers and millionaires achieved.

Output 1 Graduate farmers development pathway created.

- Graduate farmers development policy developed.
- Graduate farmers development formalized.
- Graduate farmers training packaged developed.
- Graduate farmers development institutionalized.

Output 2 Graduate farmers scholarships established.

- Graduate farmers scholarships program formalized.
- Graduate farmers scholarships funding secured.
- Graduate farmers scholarships implemented.
- Graduate farmers scholarships institutionalized.

Output 3 Graduate farmers in the agriculture sector achieved.

- Graduate farmer recruitment commenced.
- Graduate farmers engaged.
- Graduate farmers developed and skilled.
- Graduate farmers program implemented.

Output 4 Creation of employers and millionaires in the agriculture sector achieved.

- Agribusiness startup package developed.
- Agribusiness creation formalized.
- Employment in the agriculture sector increased.
- Millionaires in the agriculture sectors created.
- Rural economy improved and sustained.

12.3 Agriprenuership Development

Agripreneurship is the process of adopting new methods, processes, techniques in agriculture and livestock for better outputs and economic returns from agricultural activities. **Agripreneurship** converts subsistence farming activities or MSMEs/MSMIs into large scale commercial operations of agribusiness industries.

NASP policies and legal framework support large scale agricultural industries. These industries will provide environment for up-skilling, learning and exposures for subsistent farmers, MSMEs and MSMIs as agripreneurs. These agripreneurs receive exposure and up-skilling in commercial farming and agribusiness skills in large industries

for 3-6 months training, mentoring and supervision. After successful agripreneurship, the agripreneurs returns with vigor, new agribusiness skills, new agriculture technology and knowledge to improve and expand his/her MSME/MSMI operations. NASP-PMCU shall facilitate, mentor and develop the agripreneurs into commercial farmers and large-scale agribusiness operators. Ultimately, fulfilling the government's aspirations of creating 1,000,000 jobs by 2027 and beyond.

Strategic Objective: Development of agripreneurs into commercial farmers and agribusiness operators achieved.

Output 1 Agripreneurs development path way created.

- Agripreneur development policy developed.
- Agripreneur development policy approved.
- Accelerated learning pathway for agripreneurs created.
- Agripreneurs development formalized.
- Accelerated learning of agripreneurs institutionalized.

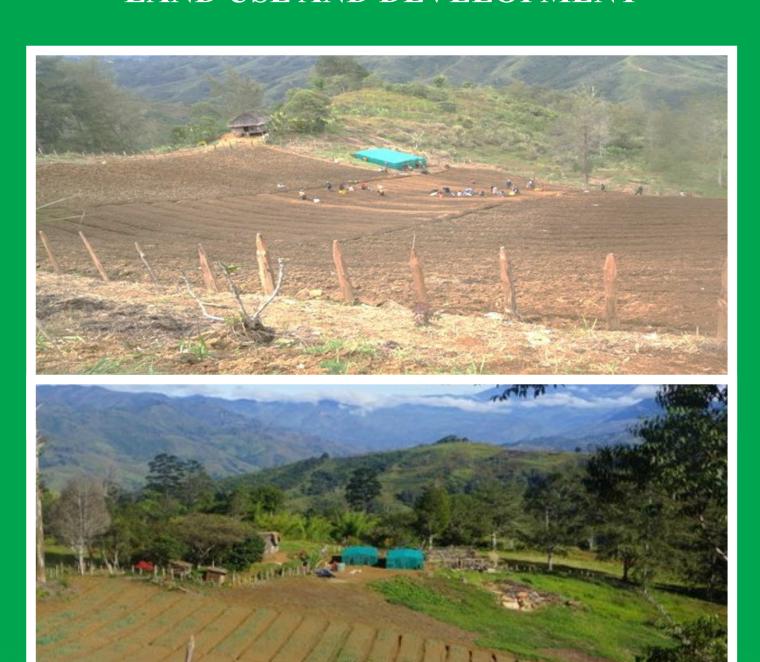
Output 2 Agripreneurs exposure and learning accelerated.

- Agripreneurs training package developed.
- Exposures and learning of agripreneurs facilitated.
- Exposure and learning of agripreneurs materialized.
- Productivity improvement and transformation achieved.
- Development of commercial farmers, MSMEs (entrepreneurs) and MSMI operators accelerated.
- Up-scaling and out-scaling of commercial farms, MSMEs (enterprises) and MSMI operations accelerated.

Output 3 Incorporation and return on investment of labor mobility program achieved.

- Agripreneurship incorporation into labor mobility program formalized.
- Agripreneurship and labor mobility program incorporated.
- Agripreneurs incorporation with labor mobility program implemented.
- Return on investment in agripreneurship and labor mobility program realized.

LAND USE AND DEVELOPMENT





13 LAND USE AND DEVELOPMENT

PNG occupies 462,840 km² of land area. About 95% of the land are held by customary tenure while 5% is own by state. Current agriculture production utilizes less than 5% of the land while larger proportion of agricultural land remains unused. The customary land holders are the key drivers and partners in the large-scale commercial agriculture development program. A systematic approach to customary land development is critical for land holder to participate in economic development on their land. The unused state land under the custody of the Department of Agriculture and Livestock needs to be mobilized quickly to drive the agriculture commercialization and downstream program in partnership with development partners or investors.

13.1 State Land Mobilization and Development

Agriculture commercialization and downstream processing will eventuate quickly on unused arable state land. NASP will identify unused state land for commercial development in partnership with provincial governments and development partners. The land can be allotted for single commodity or multiple commodity use based on land suitability and climatic conditions. Commercial agriculture on state land is manageable and achievable,

Strategic Objective: State land resources for commercial agriculture development mobilized and developed.

Output 1 State owned agricultural lands audited and profiled.

- State land resources for commercial scale agriculture development identified.
- State land resources for commercial scale agriculture development profiled.
- State land resources for commercial scale agriculture development audited.
- State land resources for commercial agricultural development zoned.

Output 2 State agricultural lands mobilized.

- State land use for commercial agriculture development negotiated.
- Acquisition of state land resources for commercial agricultural development formalized.
- State land resources for commercial agricultural development zoned.
- 50,000 ha of state land mobilized for agriculture development.
- State land resources legal framework implemented.

Output 3 State land commercial development achieved.

- Commercial land development partners identified.
- State land use partnership deeds and administration formalized.
- State land use granted.
- Commercial agricultural development facilitated.
- Commercial agricultural development on state land achieved.
- State land resources legal framework implemented.

13.2 Customary Land Mobilization and Development.

Unused customary land is a sleeping giant for economic development. Despite the complexity and sensitivity of customary land, the people want development to take place on their land. Customary land tenure and mobilization for large scale commercial developments require careful planning, transparent negotiations and equal participation among land holders at the start. It is considerably significant for all parties – land holders, government authorities and developers, to reach a win-win situation for commercial agriculture to materialize. Inclusive approach to use of customary land is the way forward.

Strategic Objective: Commercial agriculture development on customary land achieved.

Outcome 1 Customary land resources mobilized and developed.

Output 1 Customary land resources for commercial and industrial agricultural development mobilized.

- Customary land resources holders identified.
- Customary land resources holders mobilized.
- Customary land resources holders profiling finalized.
- Customary land resources incorporation (ILG) formalized.
- Customary land resources holders legal framework accomplished.
- 100,000 ha of customary land mobilized.

Output 2 Customary agricultural land resources developed.

- Customary land resources for commercial scale agriculture development identified.
- Customary land resources user rights agreements formalized.
- Customary land resources for commercial agricultural development zoned.
- Customary land resources for commercial agricultural development achieved.
- Customary land resources legal framework implemented.

Output 3 Customary land resources administered .

- Dispute resolutions mechanisms established.
- Commercial agriculture industries development plan completed.
- Commercial center plan developed.
- Land use development plan completed.
- Development partnership strategy formulated.
- Business operational systems established.
- Commercial centers development plan accomplished.
- Economic enabling environment created.
- Customary land resources administered.

RURAL FINANCE AND INVESTMENT



14 RURAL FINANCE AND INVESTMENT

Rural economy is based on agriculture, forestry and fisheries. The main source of rural cash flow is generated from agricultural activities, MSMEs and MSMIs. Inaccessibility to financial markets, financial services, minimal economic activities and increased costs of obtaining goods and services in urban centers depleted the limited cash flow and impedes rural investments. Large scale agricultural investments and other profitable commercial interventions in rural areas will boost the economy. The financial service providers such as commercial banks operating in urban centers and in districts are yet to provide farmer friendly products and incentives for rural investments in enterprising farmers and MSME/MSMI operators. The commercial banks and financial service providers consider financing agriculture and other business activities in rural area as high risks, high transaction costs and historically low returns on investment at present but this change with commercial agriculture developments. Insurance premiums do not exist to cover agriculture and agriculture supply chains due to fear of frequent events of natural calamities. Consequently, poor rural farmers and traders make painful financial losses without being compensated.

The bankers views and other narrow perceptions of rural financing can be changed to improve the rural economy. Rural finance and investments are NASP interventions that will provide financial support and opportunities for rural financing and financial access for the rural farmers, MSME and MSMI operators. The products will be farmer insurance, farmer savings and loans, super farmer savings, rural investments and rural business centers. These facilities will encourage rural cash flow circulation and increase rural cash flow, increases investments and ultimately growing the rural economy into industrial hubs.

14.1 Farmers Insurance

Agriculture and livestock producers and traders have suffered unfortunate financial losses caused by extreme climate calamities, exotic pests and diseases outbreak (CBB, CPB), natural disasters and market forces in the absence of an insurer. Some examples include; coffee berry borer, cocoa pod borer, frost damage to potato, etc. Large scale commercial agriculture development, commercialization and downstream processing investments will need insurance protection against unplanned eventualities. Therefore, NASP seeks to establish farmer insurance facility under an **Agricultural Wealth Fund**. The insurance facility will insure MSME/MSMI operators, commercial farmer and registered supplier take out insurance premiums. The insurance policy shall apply to natural occurring events that destroys crop and livestock damages.

Strategic Objective 1: Farmers insurance facility formalized and operationalized. Strategic Objective 2: Insurance financing sources identified and established.

Output 1 Farmers insurance policy developed.

- Farmers insurance policy consultations and awareness conducted.
- Farmers insurance policy developed and evaluated.
- Farmers insurance policy examined and approved.
- Farmers insurance policy implemented.

Output 2 Administration, governance and management systems of farmers insurance facility formalized.

- Organization and formalization of farmer insurance achieved.
- Administration, governance and management systems established.
- Insurance policy structure developed and approved.
- Insurance facility is adequately resourced and supported.
- Farmers insurance policy operationalized.
- Farmer insurance policy implementation evaluated and improved.

Output 3 The benefits of insurance premiums materialized.

- Farmers insurance premiums payment systems established.
- Farmers insurance premiums benefits promoted.
- Farmers insurance premiums benefits materialized.
- Farmers insurance policy objectives achieved.

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Output 4 Agriculture wealth fund for financing insurance established.

- Agriculture wealth fund policy developed.
- Agriculture wealth fund policy reviewed and approved.
- Agriculture wealth fund governance and management systems vetted and approved.
- Agriculture wealth fund establishment approved.
- Agriculture wealth fund policy implemented and operationalized.
- Performance monitoring and evaluation consistently performed.

14.2 Rural Savings and Loan Society

Savings and Loan Societies Act 2015 provide for establishment and operation of savings and loan societies. The strict operational requirements of commercial banks in the country prohibits accessibility of banking services to the 80% of population, majority of whom are farmers. Rural Savings and Loan Society provide the opportunity for farmers, MSMEs, MSMIs, agriculture supply chain players, rural dwellers to save portion of their earnings and also have access to loan products for investments. Operational nature of Savings and Loan Societies improves the rural cash flow and will accelerate agriculture commercialization and downstream processing priorities of the government and increase other commercial activities in the rural communities. Therefore, NASP supports the establishment of savings and loans societies in rural communities where good governance and management are achievable.

Strategic Objective: Rural Savings and Loans Societies formalized and operationalized.

Output 1 Rural savings and loans society policy developed.

- Rural savings and loans society policy consultations and awareness conducted.
- Rural savings and loans society policy developed and evaluated.
- Rural savings and loans society policy examined and approved.
- Rural savings and loans society policy implemented.

Output 2 Administration, governance and management systems of Rural Savings and Loan Societies formalized.

- Organization and formalization of Rural Savings and Loan Societies achieved.
- Administration, governance and management systems established.
- Rural Savings and Loan Societies operational license granted.
- Rural Savings and Loan Societies policy structure developed and approved.
- Rural Savings and Loan Societies are adequately resourced and supported.
- Rural Savings and Loan Societies policy operationalized.
- Rural Savings and Loan Societies policy implementation evaluated and improved.

Output 3 The benefits of Rural Savings and Loan Societies materialized.

- Rural Savings and Loan Societies membership formalized.
- Rural Savings and Loan Societies beneficiaries increased.
- Rural Savings and Loan Societies members investments increased.
- Rural Savings and Loan Societies business portfolios increased.
- Number of MSMEs and MSMIs and their operations up-scaled and out-scaled.

- Accessibility of financial services in rural communities achieved.
- Rural cash flow circulation increased.

14.3 Super Farmer Superannuation

Superannuation (General Provision) Act 2000 make provision for the licensing, regulation and supervision of superannuation funds, trustees, investment managers and fund administrators and the imposition of mandatory contributions to superannuation funds. The existing licensed superannuation funds (eg. NASFUND, National Provident Funds, etc) manage only public or private employees' funds. The farmers and agriculture MSMEs and MSMIs operators have none or limited access to long term savings with commercial banks. There is no financial security for retiring farmers, MSMEs and MSMIs. The establishment and operations of *Super Farmer* superannuation is compliant with the provisions of the Superannuation Act 2000 and fulfills the visions of the Prime Minister, James Marape to have PNG become a "Richest Christian Black Nation" in which "No one is left behind."

NASP supports the establishment of superannuation scheme under **Super Farmer**. The farmers, MSMEs and MSMIs are eligible for membership by deduction of agreeable portion of the farmers earnings at the point of sale straight for his superannuation savings. This fund becomes easily accessible on retirement or death of farmer. The **Super Farmer** superannuation scheme will require less proof of identity of members and less processing time as the establishment would be localized and local knowledge will improve efficiency of operations.

Establishing a superannuation fund for *Super Farmer* ensures more than 80% of population participate in the financial transactions and investments in the country. Superannuation compliments Farmer Savings and Loans Society and provide a pathway for Farmers Bank to eventuate in the near future. It will become mandatory for farmers to save portions of their earnings from agriculture commercialization and downstream processing. Therefore, NASP will facilitate the establishment of *Super Farmer* superannuation scheme in the communities where law and order is favorable, good governance and management are achievable.

Strategic Objective: **Super Farmer** superannuation scheme formalized and operationalized.

Output 1 Super Farmer savings scheme policy developed.

- Super Farmer savings scheme policy consultations and awareness conducted.
- Super Farmer savings scheme policy developed and evaluated.
- Super Farmer savings scheme policy examined and approved.
- Super Farmer savings scheme policy implemented.

Output 2 Administration, governance and management systems of Super Farmer savings scheme formalized.

- Organization and formalization of Super Farmer savings scheme achieved.
- Administration, governance and management systems established.
- Super Farmer savings scheme operational license granted.
- Super Farmer savings scheme structure developed and approved.
- Super Farmer savings scheme adequately resourced and supported.
- Super Farmer savings scheme policy operationalized.
- Super Farmer savings scheme policy implementation evaluated and improved.

Output 3 The benefits of Super Farmer savings scheme materialized.

- Super Farmer savings scheme membership formalized.
- Super Farmer savings scheme membership processed.

- Super Farmer savings scheme business portfolios increased.
- Rural cash flow circulation appropriately managed.
- Savings of members increased.
- Accessibility of membership accounts effectively facilitated.
- Financial security of members materialized.

14.4 Agriculture Industrial and Commercial Park

The imbalance of investments and cash flow in the rural communities can be improved with Agriculture commercialization and downstream processing program. Commercial agriculture commercial development is a catalyst for Agriculture Industrial and Commercial Parks. Ramu Agri Industries Ltd is a classic model for replication in all the LLGs. Agriculture commodity of strength for commercial development in each province are specified in NASP and MTDP IV. The NASP seeks to facilitate agriculture industrial and commercial park development under PPP arrangement. The subsistence farmers, MSMEs and MSMIs operators will have the opportunity to trade their goods and services at the industrial center. Urban migration and unemployment will be reduced while cash flow and investment improve.

Strategic Objective: Agriculture industrial and commercial park establishment materialized and operated.

Outcome 1 Agriculture commodity specialization at LLG level achieved.

- Agriculture commodity of strength and competitive advantage identified.
- Land mobilization for commercial agriculture development achieved.
- Land use agreement between land holders and users formalized.
- Commercial agriculture development plan (NASP) implemented.

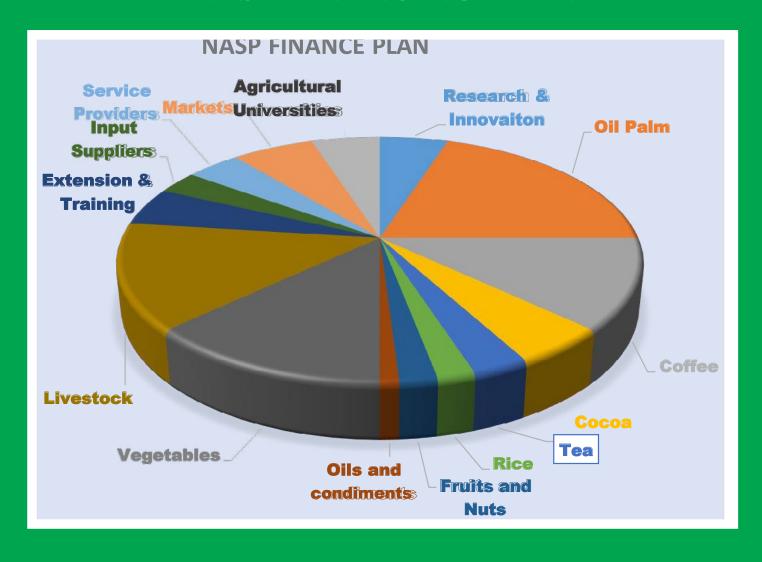
Outcome 2 Industrial and commercial park development plan achieved.

- Development partners and financiers identified and negotiated.
- Investment and partnership formalities facilitated and achieved.
- Industrial and commercial park development plan prepared.
- Industrial and commercial park development formalities completed.
- Industrial and commercial park legal framework approved.

Outcome 3 Agriculture commercial park development achieved and operationalized.

- Business operations and trading of goods and services formalities developed.
- Goods and services tax options determined.
- Good and services tax exemptions negotiated and granted.
- Local MSME/MSMI operators supported and promoted.
- Industrial and commercial park development completed and operated.
- Improvement in rural cash flow realized.

NASP FINANCING PLAN



15 NASP FINANCING PLAN

Marape-Rosso government's priorities is domestic downstream processing of primary products into tertiary products and increase production of crops and livestock. The government also tasked the Agriculture Sector to generate K30 billion by 2030 and increase the GDP from 14% to 42%. In order to achieve these goals, the government will finance the sector with a total package of K15.115 billion for 10 years from two funding sources, as shown in Table H15.1. The financials and cash flows are attached in the Annex 2.

Table H15.1 Agriculture Sector Funding for 10 years (2024-2033)

Funding Source	2024-2028 (MTDP IV)	2029-2033 (MTDP V)	Total (K)	Purpose
Concessional				
Loan	4,000,000,000	4,000,000,000	8,000,000,000	Downstream Processing Investments
				Increased Commercial Production and
GoPNG	3,491,000,000	3,624,000,000	7,115,000,000	Capacity Building
Total (K)	7,491,000,000	7,624,000,000	15,115,000,000	

The Government of PNG funding to the sector of an average K700 million per annum is for the Commodity Boards (Annex 2.2a) to use on capacity building and development of farmers, MSMIs, MSMEs and value chain players, and further perform their regulatory functions in support of NASP. This is to increase production volume for domestic downstream processing and value adding and increase exports. The national planning and monitoring Authority will monitor the use of the funds.

Soft Concessional Loan that the GoPNG seek for NASP is K1 billion per annum for 10 years (NASP2024-2033). This money envelop will finance capital assets in downstream processing, particularly establishments of factories, machineries and equipment, talents and skills as well as farm machineries and implements, irrigations systems and cool chain supply facilities with active participation of the private sector. This is to stimulate the growth of agriculture industries and increase the value of agriculture products. The use of these funds will be guided by Agriculture Administration Act (AAA), through Agriculture Investment Corporation (AIC). The Program Management Coordination Unit (PMCU) will coordinate, project manage and monitor through the Department of Agriculture, all programs and projects funded by the loan component.

The loan will fund three components of NASP, 50% on capital assets, 40% on working capital and operational expenses while 10% on NASP management and coordination. Financial expenditure will follow Public Finance Management guideline and according to approved budget and performance monitoring to done routinely by NASP. Challenges for agriculture sector is generic. Funding is the key resources to unlock agriculture potential.

Strategic Objective 1 Diversified downstream products of crops and livestock achieved.

Strategic Objective 2 Production volume targets of crops and livestock achieved.

Strategic Objective 3 Agriculture Sector GDP target of 32% and revenue target of K30 billion by 2030 achieved.

Outcome 1: Establishment of domestic downstream processing plants adequately funded.

Output 1: Factories funded and established.

- Land titles secured.
- Technical feasibilities completed.
- Landscaping and constructions completed.
- One factory per province achieved.

Output 2: Processing plants funded and operated.

- Plants for processing sourced and funded.
- Technical expertise sourced and funded.
- Procumbent of equipment completed.
- Plants established and tested and certified.
- Manufacturing plants operationalized.

Output 3 Diversified downstream processing products manufactured and traded.

- Product development achieved.
- Downstream processing standards and certification achieved.
- Downstream processing achieved.
- MSMI production capacity increased and funded.

Outcome 2 Production capital assets adequately supported and funded.

Output 1 Farm technologies, machineries, implements and equipment funded and supported.

- Farming technology sourced and supplied.
- Farm machineries and implements sourced and supplied.
- Farm equipment sourced and supplied.

Output 2 Seed and planting materials for commercial production funded and supported.

- Seed systems established.
- Seed certifications and standards achieved,
- Commercial seed production and distributions funded and supported.
- Establishment of central nurseries for crops funded and established.
- Central screen housed for multiplication of tissue cultured clean planting materials achieved.
- Seed production and vegetable material multiplication on commercial basis achieved.
- Laboratory facilities and equipment for in-vitro seed biotechnology supported and funded.
- MSME capacity and skills improved.

Output 3 Working capital for operations of commercial farming supported.

- PG, private sector and FDI collaborate to develop large downstream processing achieved.
- Farm assets, direct operational items and other general items established.
- Dedicated transport for each crop provided and sustained.
- Introduce 5x new crops, restocking of livestock, Al and breeding implemented.

Output 4 Supply and value chain facilities adequately funded.

- Cool chain facilities funded and established.
- Refrigerated containers accessed and funded.
- Storage facilities developed and funded.
- Value chain players capacity and skills improved.

Outcome 3 Farmers MSMEs MSMIs and Value Chain Players capacity building amply funded.

Output 1 Capacity development achieved.

- Training on business skills for MSMIs, MSMEs, farmers and private sector players satisfactorily funded.
- Extension and trainings on crops and livestock adequately funded.
- Periodical review of NASP 2024-2033 policy and Legal Framework conducted and funded.
- Graduate program supported and funded.
- Graduate farmer program supported and funded.
- Farmer exposure program facilitated and funded.

Output 2 Filed production increased.

- Rehabilitation of one large plantation per province for export crops implemented.
- Development of new plantation, large commercial farms for crops and livestock.
- Labour mobility supported and funded.
- Production land mobilization achieved.
- Large scale planting achieved.

Output 3 Logistics and transportation in agriculture adequately funded and enhanced.

- Freight subsidy program implemented.
- Price support program implemented.
- Dedicated transportation systems funded and provided.

Outcome 4 Public Financial Management Systems Institutionalized and Operationalized.

Output 1 Diligent Financial Management and Accountability of NASP Funding achieved.

- NASP programs adequately supported and funded.
- Public finance management systems observed.
- Procurements are transparently conducted.
- Financial audit systems established and operationalized.
- Accounting systems compliance achieved.
- IRC requirements facilitated and observed.
- Governance and accountability systems institutionalized.
- Transparent financial management systems observed.

Output 2 Regulatory oversight enhanced.

- Agriculture sector governance systems established and implemented.
- The NASP secretariate formalized and safeguarded.
- Loan repayment system established and implemented.
- Project design and formulation standards aligned and harmonized.
- Project financial agreements formalized.

Output 3 Risks management established.

- Develop tools to assess risks for funded program/projects completed.
- Develop and implement a risk management strategy to mitigate financial risks completed.

Outputs 3 Monitoring and evaluation implemented.

- PMCU staff are located close to the project sites for timely update and reporting achieved.
- Monthly report of diverse based on the reporting format submitted and verified.
- Quarterly reviews conducted and recommendations on slack performances completed.
- Abuse and unethical instances identified in the review for action implemented.

- Annual reviews conducted as per NASP M&E framework completed.
- M&E framework implemented.
- Financial reviews performed.

Outcome 5 Institutional capacity building supported and funded.

Output 1 Institutional facilities upgraded and new establishment funded.

- MTDP IV funding for capacity building of R&D institutions enhanced.
- Research projects for commercialization and downstream processing supported.
- Trainings for researchers and technical staff on important skills and knowledge facilitated.
- Production of relevant information (hard and soft copy for dissemination) supported.

Output 2 Talents upgraded and new recruitments funded.

- Staff training and development supported.
- Cadetship program supported and funded.
- Farmer resource centers funded.
- Scholarship systems institutionalized.

IMPLEMENTATION OF NASP



16 IMPLEMENTATION OF NASP 2024-2033

Department of Agriculture (DAL) is the lead agency for the agriculture sector in PNG. The department will coordinate with all the commodity agencies and partners in the implementation of NASP. The department will set up a Program Management Coordination Unit (PMCU) to perform as a Secretariat in executing the directions of the Governing Council. The PMCU will be adequately resourced to monitor the implementation of NASP. It shall ensure all sector agencies perform their mandated functions in achieving the milestones and KPIs outlined in the NASP and MTDP IV.

The NASP will guide the performance of the sector. The confidence we will return to the government for prioritizing the agriculture sector is full participation from of all key stakeholders and partners at all levels (international, national, provincial, district & LLG) to grow our economy to K200 billion target, of which the sectors target is K30 billion and 1 million jobs.

Implementation of NASP will be supported by agriculture sector policy and two enabling legislative frameworks. The legal frameworks are Agriculture Administration Act (AAA) and Agriculture Industry Corporation (AIC). The Department of Agriculture and NASP will be empowered under this legal framework to coordinate and manage the funds and programs.

16.1 NASP Management and Coordination

The NASP covers four ministries (Agriculture, Livestock, Coffee, Oil Palm) and ten commodity boards (CIC, CCI, KIK, SIB, LDC, FPDA, NAQIA, RIB, OPIC, NARI) in the agriculture sector. Agriculture department is the central coordination agency for implementation of NASP. A Project Management Coordination Unit (PMCU) will be established under AAA and AIC and housed under DAL and the Prime Ministers office. PMCU will project manage and coordinate the implementation of NASP.

Strategic Objective: Coordination and Management of NASP for growing the agriculture sector achieved.

Outcome 1: NASP is effectively coordinated and managed.

Output 2 Centralized Program Management and Coordination unit established and operated.

- Government endorsement and approval of NASP 2024-2033 achieved.
- Government endorsement and approval for establishment of PMCU granted.
- Operational structure and functions of PMCU approved.
- PMCU adequately resourced and supported.
- PMCU operationalized.
- The goals and purpose of establishing PMCU achieved.

Output 3 NASP implementation effectively coordinated and managed.

- Alignment of Commodity Boards to NASP connected and visualized.
- Implementation of NASP managed and supported.
- Performance management systems established.
- Implementation of NASP well-coordinated and managed.
- Performance of NASP reviewed and evaluated.
- Governance and accountability of NASP scrutinized.

16.2 Institutional Linkages and Partnerships

NASP provides the opportunity for institutional linkages and strengthening partnerships between and among the commodity boards and partners. Possible partners and implementing agencies are identified in NASP. The import

partners in NASP are PGs, DDAs, DP, FDI, NGOs, universities and private sectors. By working together, the sectors performance can be improved. The opportunity is presented by NASP for collaboration, partnership and resource sharing in achieving the sector goal of K30 billion by 2030.

Strategic Objective: Institutional linkages and partnerships strengthened and improved.

Output 1 Institutional linkages strengthened.

- Commodity Boards mandates strengthened.
- Institutional capacity building supported and improved.
- Institutional dialogues improved and strengthened.
- Inter-departmental linkages strengthened.

Output 2 Partnerships and collaboration developed and strengthened

- Stakeholders participation promoted and supported.
- Agricultural and rural development partnerships and enhanced.
- Resources sharing and collaboration improved.

16.3 Monitoring, Evaluation and Learning

Strategic Objective: MTDP IV deliverables for the agriculture sector achieved.

Output 1 Monitoring and evaluation of NASP conducted.

- Monitoring and evaluation framework for NASP developed.
- Monitoring of NASP performed.
- Review and evaluation of NASP conducted.

Output 2 Performance of NASP measured and reported.

- Annual auditing of NASP conducted.
- Audited and performance reports of NASP submitted.
- Achievements and failures of MTDP IV and NASP deliverables reported.
- Learning experiences in implementing NASP shared.

16.4 Risk Management

Milestones and deliverables of MTDP IV captured in NASP are achievable theoretically. However, in reality natural and man-made events may arise during the course of implementation of NASP that may affect performance of the agriculture sector. Crop failures, price fluctuations and calamities are some evens beyond the control of implementing agencies but mitigation strategies are considered and outlined in the risk management matrix (Table H16.1).

Table H16.1 Risk management matrix of NASP 2024-2033

No	Perceived Risks	Consequences	Probability	Risk Matrix	Management Strategy
1	Political Influence	4	3	12	Solicit PG & DDA support
2	Corruption	4	4	16	Strengthen governance system and regulatory framework.
3	Poor Coordination	3	3	9	Project managed with PMCU. Implement policy and regulatory framework
4	Land issues	3	3	9	Secure state land, clear benefit sharing arrangement with ILG
5	Natural Calamities	4	3	12	Smart Agriculture, adopt precision agriculture technology,
6	Pest and Diseases	3	3	9	Implement biosecurity policy, PEQ and quick response systems
7	Law and Order	4	2	6	Employment to locals, improve community policing, support village courts
8	Commodity Boards Functional Separation by an Act	3	3	9	Effective coordination, alignment to AAA & AIC
9	Technical Capacity	3	2	6	Graduate program, localization program, collaboration and partnership.

IMPLEMENTING PARTNERS



17 IMPLEMENTING PARTNERS

The Department of Agriculture is central government agency for the agriculture sector. It will have the oversight responsibility to ensure NASP in serving the sector as intended. The PMCU will work with all key partners, drivers and actors in achieving the sector goal. This will lead to sustainable growth in the agriculture sector, improved wellbeing of all involved and harness economic growth. Provincial Governments, Commodity Boards, Development Partners, Investors, MSMEs, MSMIs and Farmers are notable partners in the NASP 2024-2033.

17.1 National Department of Agriculture and Livestock

Strategic Objective: Agricultural sector's productivity, sustainability; and economic contribution to NASP under DAL's oversight enhanced.

Outcome 1: Improve the capacity of DAL to be effective and efficient in implementing NASP achieved.

Output 1 Agricultural policy and regulatory framework strengthened.

- Enhanced and update agricultural policies covering all subsectors completed.
- Update policy review and analysis to ensure NASP operates smoothly completed.
- Develop and updated agriculture policies implemented.
- Improve regulatory compliances and enforcements completed.
- Regulatory bodies diligent without fear, favors, corruption and abuse of office achieved.
- Monitoring and enforcement mechanisms to combat corruption and deliver project results enhanced.
- Amending decentralization of laws on agriculture extension services back to DAL completed.
- Conduct policy review and request government to repeal the section alluding to decentralization of agriculture extension service completed.
- Develop and design smooth transfer of staff, properties and resources back to DAL achieved.
- Develop new structure to accommodate nationwide extension under DAL completed.

Outcome 2 Capacity building and extension service delivery achieved.

Output 1 Capacity of DAL improved and productivity enhanced.

- Restructure of the DAL completed.
- New Agriculture extension field services division created.
- Staff relocated and recruited to manage field services completed.
- Make amendments in the Provincial and Local level government Act to move all extension services back to DAL completed.
- Effective and efficient extension services delivery and information feedback for NASP facilitated.

Output 2 Improve extension services for each commodity enhanced.

- Training extension officers for deployment completed.
- Develop and distribute extension materials completed.
- Use appropriate extension modalities per commodity or projects to reach out completed.

Output 3 Extension services working environment and use of technology improved.

- Model farm for seed or vegetative material collection and multiplication for distribution established.
- Model farm for farmer demonstration (farm mechanization, irrigation, new crops, Al improved livestock, new innovation and technologies recommended by research) completed.

- Subject matter specialists (agronomy, postharvest, plant protectionist, animal nutritionist, etc.)
 employed.
- Cadet development scheme established.
- Partnership created with university of Goroka for agriculture extension training courses facilitated.
- Establish collaboration with external extension organization and agencies completed.

17.2 Provincial Governments

The provincial governments are key players in NASP 2024-2033. The corporate plans and economic/agriculture development will have to be aligned to NASP to full participate in commercialization and downstream processing of crops and livestock. The strength and competitive advantage have been identified and crops and livestock specified in both MTDP IV and NASP for deliberate investments. NASP will facilitate development of these projects.

Strategic Objective: Commodity specialization and downstream processing one agriculture commodity per province achieved.

Outcome 1: Capacity of provincial government for implementing targeted program/projects completed.

Output 1 Efficient resource allocation and coordination completed.

- Develop and implement provincial agriculture plans completed.
- Identify key agricultural priorities for each province based on their strength completed.
- Allocate resources in alignment with the NASP and MTDP IV completed.
- Foster inter-governmental cooperation completed.
- Regular coordination meeting established.
- Share best practices and resources among provinces completed.

Output 2 Land ownership secured.

- Provincial Government to liaise with NDAL for land ownership transfer communicated.
- Provincial Government secured land ownership documents to commence investment.

Output 3 Annual counter funding (PSIP) for agriculture economic development implemented.

- Provincial governments allocate counter funding for existing projects established.
- Provincial Governments to venture into potentials new crops and livestock with smallholder farmer's strength achieved.

17.3 Commodity Boards and Research Institutions

Commodity Boards play critical role in NASP deliverables and support towards commercial production of crops and livestock, and support domestic downstream processing priorities of the government. Progressive proportion of the export commodity volumes will have to be retained for domestic downstream processing. Eventually, commodity boards will ensure export of raw materials reduced and domestic downstream processing increased to 100%.

Research institutions will lead in product research and development and food processing research space. Technology innovation is also the function of research. Research has to target the industry problem and provide solutions.

Strategic Objective 1: Regulatory support for large scale production of crops and livestock and downstream processing achieved.

Strategic Objective 2: Progressive volume proportion allocation for domestic downstream processing achieved.

Outcome 1 Commodity organizations and research institutions to effectively deliver targeted programs/projects empowered.

Output 1 Capacity of commodity organizations improved.

- Provide training and technical support to commodity organizations facilitated.
- Networking working and sharing knowledge and information facilitated.

Output 2 Capacity of research institutions improved.

- Provide training and technical support to commodity organizations facilitated.
- Networking working and sharing knowledge and information facilitated.

17.4 Development Partners

NASP encourages participation of development partners in the agriculture sector. Collaboration and partnership through PPP arrangement will have greater impact in the farming community. NASP seeks to partner with DP with commercial farming and downstream processing skills and technology to achieve the government priorities in the sector.

Strategic Objective: Participation of development partners in NASP supported and strengthened.

Outcome 1: Collaborate with development partners for agricultural development and sustainability achieved.

Output 1 Development partners engaged.

- Identify and reach out to potential development partners (international organizations, NGOs, and donor agencies) achieved.
- Partnerships and agreements with DPs to secure financial, technical, and logistical support established.
- Regularly communicate and coordinate with development partners to align their contributions with the NASP completed.

Output 2 Financial resources mobilized.

- Develop proposals and applications for financial support from DP completed.
- Monitor and report on funds received and allocated to specific agricultural projects and initiatives completed.
- Compliance with financial reporting and auditing requirements set by development partners completed.

17.5 Investors

NASP focus is on investors to invest in large scale commercial production of crops and livestock and undertake downstream processing. NASP will facilitate state land acquisition for investors to invest. The investment policy is 60/40 share holding, majority share with the provincial government. Tax concessions and other government support will be facilitated through NASP PMCU.

Outcome 1: Favorable business enabling environment for investors created and enhanced.

Outcome 2: Increased investment in commercial agriculture and downstream processing achieved.

Output 1 Promote investment and entrepreneurship in agriculture (Farmers, MSMIs, MSMEs)

- Organize farmer and private sector forums and consultations for targeted crops and livestock enhanced.
- Development of platforms for farmers to voice their concerns and ideas completed.

Output 2 Attract private sector investment achieved.

- Create investment promotion campaigns, expo, shows, and workshops completed.
- Provide incentives for private firms to invest in the agricultural sector completed.

Output 3 Support Farmers, MSMEs and MSMIs in agriculture enhanced.

- Offer training and capacity building programs for farmers and MSME/MSMI.
- Facilitate access to financial support and business development services.

Outputs 5 Monitoring and evaluation effected.

- Monthly report based on the reporting format submitted and verified.
- Quarterly reviews conducted and recommendations on slack performances completed.
- Abuse and unethical instances identified in the review for action implemented.
- Annual reviews conducted as per NASP M&E framework completed.

17.6 Bilateral and Multilateral Partners

Development Treaties between GoPNG and Development Partners are established to promote cooperation, knowledge and skills sharing, and resources development and wealth creation between countries. They are often formed to address specific project goals or to leverage each other's strength.

Bilateral partnerships are often established to address complex issues or projects that require a broader range of expertise, resources, or regional cooperation. They allow for a more comprehensive approach to problem solving.

In both bilateral and multilateral partnerships, effective project management is crucial to ensuring that objectives are met, resources are allocated efficiently, and communication flows smoothly among the involved parties. These partnership structures can enhance collaboration and the likelihood of project success by combining the strengths and resources of multiple entities.

Strategic Objective: Promote international cooperation in the agriculture sector and facilitate investment, knowledge and skills sharing enhanced.

Outcome: 1 Strengthening international partnerships and the exchange of agricultural best practices in downstream processing, commercialization and value chain development achieved.

Output 1 Bilateral and Multilateral partnerships developed and sustained.

- Identify potential bilateral and trilateral partners (country, and international organizations) completed.
- Partnership agreements (MOU, MOA, etc.) established.
- Scope of collaboration and focus of agricultural sector intervention completed.

Output 2 Bilateral and Multilateral established.

- Organize conferences, seminars, and workshops to share knowledge and expertise in agriculture achieved.
- Facilitate technical exchange and capacity building programs between partner countries completed.
- Facilitate farmer or MSMI/MSME exchange program between partner countries completed.
- Facilitate labor mobility program tied to agricultural development focus enhanced.
- Facilitate agriculture aviation to open agricultural trade between partner countries completed.

- Facilitate young agriculture entrepreneur and innovation program between partner countries.
- Foster research and innovation between partner countries.

17.7 Private Sector

Private sector is key partner in the implementation of NASP. Some private sectors serving the agriculture sector for many decades include Brian Bell, Farmset, Agmark, Chemica, NBPOL, WR Companies, Ramu Agri Industries, Mainland Holdings, NGTB, Zenag, Rumion, Pelgens, Stop and Shop, to name few. Their participation in sourcing agricultural supplies and farming will be supported. Developing commercial agriculture and downstream processing into value adding products will be the focus area. Hence, business partnership arrangement will be facilitated and engaged.

Strategic Objective 1 Increased PPP collaboration in the development of agriculture commercialization and

downstream processing achieved.

Strategic Objective 2 increased Private sector participation growing the economy through agriculture and

harnessed and supported.

Outcome 1 Increase private sector involvement leading to economic growth and innovation in the agriculture sector enhanced.

Output 1 Engagement of private sector completed.

- Engage with agricultural companies, agribusinesses, and MSMI/MSMEs to promote investments and partnerships facilitated.
- Policy reforms, business incentives, and other enabling environment created
- For specific project, creation of PPP is facilitated.

Output 2 Innovation and technology transfer completed.

- Encourage adoption of modern technologies and practices promoted.
- Collaboration between private sector and research institution facilitated.
- Promote and support agripreneurs and startups with innovation concept drive innovation and efficiency in agriculture sector.

17.8 Regulators

Agriculture Commodity Boards are primary regulators of each commodity in the sector. Their capacities and functions will be strengthened to achieve the government's priorities in downstream processing and agriculture commercialization. These regulators will ensure the proportion of commodity for domestic downstream processing is supported through its legal framework. Biosafety systems will also be strengthened to make agriculture products are safe for human consumption. Imports and exports are also conducted under international standards so trading is adequately supported. Existing Commodity boards include;

Oil Palm Industry Corporation Coffee Industry Corporation Cocoa Board Kokonas Indastri Koperesen Spice Industry Board
Livestock Development Corporation
National Agriculture Quarantine Inspection Authority
Fresh Produce Development Agency
National Agriculture Research Institute

Regulatory functions of these commodity boards and other government organizations such as Customs, NISIT, DoF, Labour, CEPA will help in the implementation of NASP. One of the most important contributions is to regulate the quota for domestic downstream processing to be progressively achieved until PNG is able to fully manufacture its agriculture produce locally. Providing incentives and good policies will attract more investors to invest in agriculture production and downstream processing to help grow the PNG economy.

Strategic Objective: Sustainable and responsible agricultural practices achieved.

Outcome 1: Regulatory frameworks and compliance for the agriculture sector achieved.

Output 1 Regulatory frameworks engaged.

- Review and update agricultural policies and regulations to align with current needs and international standards on agricultural production, processing and trade completed.
- Establish clear guidelines for land use, environmental conservation, downstream processing and quality standards achieved.
- Monitor and enforce regulation with agricultural regulations facilitated.

Output 2 Capacity building for regulators completed.

- Provide training and capacity building programs for regulatory agencies and personnel implemented.
- Foster inter-agency collaboration for efficient and consistent regulatory enforcement completed.
- Periodically evaluate the impact and effectiveness of regulatory measures completed.

Output 3 Commodity bards as regulators control volume of export for downstream processing implemented.

- Legislation and policy development for each commodity export volume implemented.
- Legislation drafted for each commodity boards NEC submission completed.
- Collaborate with relevant government agencies to pass the necessary laws and regulations completed.
- Develop clear policies outlining the responsibilities and authority of the commodity board in controlling exports volumes enhanced.

Output 4 Allocation of commodity volume for export and withholding for domestic downstream processing implemented.

- Establish a fair and transparent mechanism for allocating export volumes to private industry implemented.
- Define the criteria and application process for private sector export permits/licenses implemented.
- Volume allocation process is non-discriminatory and competitive established.
- Export regulation rules (starting 2024) implemented.
- Implement a progressive export regulation policy, starting in 2024, for downstream processing and value addition achieved.
- Regulated volume (provided here) for export and withholding for downstream processing implemented.

Output 5 M&E for each commodity volume export regulations completed.

- Regulatory body within the commodity board responsible for monitoring and enforcing compliance supported.
- Tracking and reporting system for export volume established.
- Regular audits and inspections of private industry players for adherence to regulations implemented.
- Review and adaption of the export regulation implemented.
- Periodically review of export regulation rules and policies to assess on timely basis achieved.

- Make adjustments to the regulation (PNG interest first) on the outcomes with evolving market conditions implemented.
- Engaged with private sector to get their interest implemented.
- Public awareness and education to stakeholders on the export regulation implemented.
- Transparency and accountability for implementing export regulation policy implemented.
- Maintain transparency in the allocation process, export regulations, and enforcement achieved.
- Regular publication NASP reports and newsletter accomplished.

SECTION 1

ANNEXURES

SECTION **ANNEXURES**

Annex 1: **ACRONYMS**

AAA Agriculture Administration Act

ACIAR Australia Centre of International Agriculture Research

ADB Asian Development Bank artificial insemination ΑI

AIC Agriculture Industry Corporation **APEC** Asia Pacific Economic Cooperation AROB Autonomous Region of Bougainville ASEAN Association of South East Asian Nations

BB Brian Bell

Civil Aviation Authority CAA CBB coffee berry borer

Community Based Organization CBO

CPB cocoa pod borer

CCI Cocoa and Coconut Institute

Cocoa and Coconut Research Institute CCRI

Coffee Industry Corporation CIC CIS Correctional Institutional Services

CRI Coffee Research Institute **CKPO** Crude Kernel Palm Oil

Codex Codex Alimentarius Commission CRI Coffee Research Institute

CSA Climate Smart Agriculture,

Department of Agriculture and Livestock DAL

DDA **District Development Authority**

District Division of Agriculture and Livestock DDAL DNPM Department of National Planning and Monitoring

DoE Department of Education DoF Department of Finance DoH Department of Health Department of Treasury DoT **Development Partners** DP DPI Division of Primary Industry Department of Trade and Industry DTI **EHP** Eastern Highlands Province East New Britain Province **ENBP ESP** East Sepik Province EU European Union

Food and Agriculture Organization FAO FDA Food and Drug Administration

Fresh Produce Development Authority **FPDA**

GAP good agronomic practices, **Growth Domestic Product GDP** green house gases GHG

GIS Geographical Information Systems

GNP Growth National Product

GoPNG Government of Papua New Guinea

GPP good postharvest practices, HACCP Hazard analysis and critical control points

ICCC Independent Consumer and Competition Commission

ICT Information & Communication Technologies

IFAD International Fund for Agriculture ILG Incorporated Land Group IMF International Monetary Fund INA Institute of National Affairs IPA Investment Promotion Authority IPM integrated pest management

IPPC International Plant Protection Convention

IRC Internal Revenue Commission

JICA Japan International Cooperation Agency

JWK Jiwaka Province

KAP knowledge attitude practice
KIK Kokonas Indastri Koperesen
LDC Livestock Development Corporation

LLG Local Level Government MBP Milne Bay Province

MDG Millennium Development Goals MSG Melanesian Spearhead Group

MSME Micro Small Medium Enterprise/Entrepreneur

MSMI Micro Small Medium Industries (Downstream Processor)

MTDS Medium Term Development Strategy

NAC National Agriculture Council

NASP National Agriculture Development Plan

NASPS NASP Secretariat

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

NBPOL New Britain Palm Oil Limited

NDAL National Department of Agriculture and Livestock

NGO Non-Government Organization

NGTB New Guinea Table Birds
NIP New Ireland Province
NAR National Research Institute

NSIT National Institute of Standards and Industrial Technology

NUSFUND National Superannuation Fund

NZAID New Zealand Aid

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

PEQ post entry quarantine PG Provincial Government

PMCU Program Management Coordination Unit

PNG Papua New Guinea

PNGCCI Papua New Guinea Cocoa and Coconut Institute

POPA Palm Oil Producers Association

Annex 2: FINANCIAL ANALYSIS

2.1 Funding Breakup

(a) Loan funds allocation to commodities per annum

No	Commodity Activity	Allocation (K)
1	DAL.NASP PMCU	100,000,000
2	Agriculture MSME and MSMI Financing	100,000,000
3	Coffee Downstream Processing	177,000,000
4	Cocoa Downstream Processing	85,000,000
5	Fresh Produce Commercialization & Downstream	70,000,000
6	Rice Commercialization & Downstream Processing	40,000,000
7	Oil Palm Downstream Processing	155,000,000
8	Livestock Downstream Processing	45,000,000
9	Rubber Downstream Processing	40,000,000
10	Coconut Downstream Processing	148,000,000
11	Spice Downstream Processing	40,000,000
	Total (K)	1,000,000,000

(b) MTDP IV funds allocation to commodities and revenue projection

No	Commodity	Allocation (K)	Revenue (K)
1	Oil Palm	384,000,000	13,600,000,000
2	Coffee	548,000,000	4,700,000,000
3	Cocoa	329,000,000	2,500,000,000
4	Coconut	316,000,000	4,500,000,000
5	Spice	87,000,000	1,200,000,000
6	Rubber	157,000,000	123,500,000
7	Rice & Grain	360,000,000	547,200,000
8	Vegetables, Fruits & Nuts	278,000,000	2,100,000,000
9	Livestock	340,000,000	1,220,000,000
10	Tea	60,000,000	100,000,000
11	Price Support	150,000,000	
12	Freight Subsidy	165,000,000	
13	Industrial Hub & Market Access	50,000,000	
14	Spice Development	14,000,000	
15	National Agriculture Development	80,000,000	
16	Agriculture and Livestock Biosecurity	20,000,000	
17	NAQIA Lab and Office Infrastructures	90,000,000	
18	Agriculture Research and Food Security	23,000,000	
19	Food Security and nutrition Program	40,000,000	
	Total (K' billion)	3,491,000,000	30,590,700,000

Source: MTDP IV 2023 - 2027

2.2 Commodity Financial Analysis

(a) Agriculture Sector Allocation in MTDP IV 2023-2027

	OIL PALM (MILLION)						
No	Program	2023	2024	2025	2026	2027	MTDP IV TOTAL
1	Oil Palm Development Program	K30	K30	K30	K30	K30	K150
2	Oil Palm downstream processing and industrial hub development	КО	K30	K30	K30	K30	K120
3	Customary land mobilized to develop additional large scale Oil Palm Plant'n	КО	K10	K10	K10	K10	K40
4	Smallholder Oil Palm Commodity Access Roads upgrade and sealing	K10	K10	K10	K10	K10	K50
5	Oil Palm Research and Development	K4	K5	K5	K5	K5	K24
	Subtotal	K44	K85	K85	K85	K85	K384
	COFFEE (MILLION)						
No	Program	2023	2024	2025	2026	2027	TOTAL MTDP IV
1	Large Plantations Rehabilation Program	КО	K25	K25	K25	K25	K100
2	Price Stabilization Program	КО	K10	K10	K10	K10	K40
3	National Coffee Developt Program	K30	K30	K30	K30	K30	K150
4	Coffee Freight Subsidy	K5	K5	K5	K5	K5	K25
5	Downstream Processing and Exports Support Program	КО	K30	K40	K40	K50	K160
6	Development of Coffee Export Office	K5	K5	КО	КО	КО	K10
7	Coffee Commodity Roads; and	К8	K10	K10	K10	K10	K48
8	Coffee Research and Development	К3	К3	К3	К3	К3	K15
	Subtotal	K51	K118	K123	K123	K133	K548
	COCOA (MILLION)						
No		2023	2024	2025	2026	2027	TOTAL MTDP IV
1	National Cocoa Development Plan	K2	K15	K15	K15	K15	K62
2	Cocoa Freight Subsidy	K5	K5	K5	K5	K5	K25
3	Regional, Prov and Dist Nurseries	K5	K20	K20	K20	K20	K85
4	Cocoa Downstream Processing and Value Adding Initiates	КО	K30	K30	K30	K30	K120
5	Cocoa Access Road Upgrading and Sealing	K5	K5	K5	K5	K5	K25
6	Research and Development	КО	К3	К3	К3	К3	K12
	Subtotal	K17	K78	K78	K78	K78	К329
	COCONUT (MILLION)						
No	Program	2023	2024	2025	2026	2027	TOTAL MTDP IV
1	Coconut Plantation Seed Distribution Program	K5	K20	K20	K20	K20	K85

2	Coconut Freight Subsidy	KO	K5	K5	K5	K5	K20
3	Coconut Downstream Processing and value adding initiates	КО	K10	K10	K10	K10	K40
4	Market Development and Trade Program	K5	K50	K50	K20	K10	K135
5	Coconut Access Road upgrade	K0	K5	K5	K5	K5	K20
6	Coconut Research and Development	K2	K5	K5	K2	K2	K16
	Subtotal	K12	K95	K95	K62	K52	К316
	RUBBER (MILLION)						
No	Program	2023	2024	2025	2026	2027	TOTAL MTDP IV
1	Rubber Plantation Rehabilitation and Nursery Program	K2	K20	K20	K20	K20	K82
2	Rubber Downstream Processing	КО	K15	K20	K20	K20	K75
	Subtotal	К2	K35	K40	K40	K40	K157
	TEA (MILLION)						1
No	Program	2023	2024	2025	2026	2027	TOTAL MTDP IV
1	Tea Plantation Rehabilitation program	КО	K5	K5	K5	K5	K20
2	Additional customary land mobilised for new tea plantations	КО	K5	K5	K5	K5	K20
3	Downstream processing of tea	K0	K5	K5	K5	K5	K20
	Subtotal	ко	K15	K15	K15	K15	K60
	RICE (MILLION)						
No	Program	2023	2024	2025	2026	2027	TOTAL MTDP IV
1	Large Scale Commercial Rice and Grains Farming Program	КО	K50	K50	K50	K50	K200
2	Smallholder Rice Program Support Program	KO	K10	K10	K10	K10	K40
3	Rice Milling and Downstream Processing Support Program	КО	K30	K30	K30	K30	K120
	Subtotal	КО	K90	К90	К90	К90	К360
N.	LIVESTOCK (MILLION)	2022	2024	2025	2026	2027	TOTAL MATERINA
No	Program National Livestock Development	2023	2024	2025	2026	2027	TOTAL MTDP IV
1	Program	K30	K50	K50	K50	K50	K230
2	Rehabilitation and new abattoirs	КО	K10	K20	K20	K10	K60
	I Fatablish was not of Camana and all and made		1/45	K20	K10	K5	K50
3	Establishment of Commercial animal feed farm	KO	K15				
		K0 K30	K15 K75	К90	K80	K65	K340
	feed farm				К80	К65	K340
	feed farm Subtotal				K80 2026	K65	K340 TOTAL MTDP IV
3	feed farm Subtotal	K30	K75	К90			

	FRESH PRODUCE (MILLION)						
No	Program	2023	2024	2025	2026	2027	TOTAL MTDP IV
1	Fresh Produce Development Program	КО	K20	K20	K20	K20	K80
2	Market for Village Farmers Program (capacity building, market access)	К3	K20	K20	K20	K20	K83
3	Value Chain Development (storage and cool room facilities, PH, PH)	K5	K30	K30	K30	K20	K115
	Subtotal	К8	K70	K70	K70	К60	K278
	NAQIA						
No	Program	2023	2024	2025	2026	2027	Total MTDP IV
1	AGRICULTURE & L/STOCK BIOSECURITY	КО	K5	K5	K5	K5	K20
2	NAQIA LAB & OFFICE BUILDINGS	K5	K10	K25	K25	K25	K90
<u> </u>	Sub total	К5	K15	К30	К30	К30	K110
	NARI						
No							
140	Program	2023	2024	2025	2026	2027	TOTAL MTDP IV
1	AGRICULTURE AND FOOD SECURITY RESEARCH PROGRAM SUPPORT	2023 K3	2024 K5	2025 K5	2026 K5	2027 K5	K23
	AGRICULTURE AND FOOD SECURITY		-				-
1	AGRICULTURE AND FOOD SECURITY RESEARCH PROGRAM SUPPORT FOOD SECURITY AND NUTRITION	К3	K5	K5	K5	K5	K23
1	AGRICULTURE AND FOOD SECURITY RESEARCH PROGRAM SUPPORT FOOD SECURITY AND NUTRITION PROGRAM	K3 K0	K5 K10	K5 K10	K5 K10	K5 K10	K23 K40
1	AGRICULTURE AND FOOD SECURITY RESEARCH PROGRAM SUPPORT FOOD SECURITY AND NUTRITION PROGRAM Subtotal	K3 K0	K5 K10	K5 K10	K5 K10	K5 K10	K23 K40
2	AGRICULTURE AND FOOD SECURITY RESEARCH PROGRAM SUPPORT FOOD SECURITY AND NUTRITION PROGRAM Subtotal INVESTMENTS (MILLION)	к3 ко к3	K5 K10 K15	K5 K10 <i>K15</i>	K5 K10 K15	K5 K10 K15	K23 K40 K63
1 2 No	AGRICULTURE AND FOOD SECURITY RESEARCH PROGRAM SUPPORT FOOD SECURITY AND NUTRITION PROGRAM Subtotal INVESTMENTS (MILLION) Program NATIONAL AGRICULTURE	к3 ко к3 2023	K5 K10 K15	K5 K10 K15	K5 K10 K15	K5 K10 <i>K</i> 15	K23 K40 K63 TOTAL MTDP IV
1 2 No 1	AGRICULTURE AND FOOD SECURITY RESEARCH PROGRAM SUPPORT FOOD SECURITY AND NUTRITION PROGRAM Subtotal INVESTMENTS (MILLION) Program NATIONAL AGRICULTURE DEVELOPMENT PROGRAM	K3 K0 K3 2023 K20	K5 K10 K15 2024 K20	K5 K10 K15 2025 K20	K5 K10 K15 2026 K10	K5 K10 K15 2027 K10	K23 K40 K63 TOTAL MTDP IV K80
1 2 No 1 2	AGRICULTURE AND FOOD SECURITY RESEARCH PROGRAM SUPPORT FOOD SECURITY AND NUTRITION PROGRAM Subtotal INVESTMENTS (MILLION) Program NATIONAL AGRICULTURE DEVELOPMENT PROGRAM SPICE DEVELOPMENT PROGRAM NATIONAL FREIGHTSUBIDY	K3 K0 K3 2023 K20 K2	K5 K10 K15 2024 K20 K3	K5 K10 K15 2025 K20 K3	K5 K10 K15 2026 K10 K3	K5 K10 K15 2027 K10 K3	K23 K40 K63 TOTAL MTDP IV K80 K14
1 2 No 1 2 3	AGRICULTURE AND FOOD SECURITY RESEARCH PROGRAM SUPPORT FOOD SECURITY AND NUTRITION PROGRAM Subtotal INVESTMENTS (MILLION) Program NATIONAL AGRICULTURE DEVELOPMENT PROGRAM SPICE DEVELOPMENT PROGRAM NATIONAL FREIGHTSUBIDY PROGRAM COMMODITY PRICE SUPPORT	K3 K0 K3 2023 K20 K2 K20	K5 K10 K15 2024 K20 K3 K30	K5 K10 K15 2025 K20 K3 K35	K5 K10 K15 2026 K10 K3 K35	K5 K10 K15 2027 K10 K3 K45	K23 K40 K63 TOTAL MTDP IV K80 K14 K165
1 2 No 1 2 3 4	AGRICULTURE AND FOOD SECURITY RESEARCH PROGRAM SUPPORT FOOD SECURITY AND NUTRITION PROGRAM Subtotal INVESTMENTS (MILLION) Program NATIONAL AGRICULTURE DEVELOPMENT PROGRAM SPICE DEVELOPMENT PROGRAM NATIONAL FREIGHTSUBIDY PROGRAM COMMODITY PRICE SUPPORT PROGRAM INDUSTRIAL HUB AND MARKET	K3 K0 K3 2023 K20 K2 K20 K30	K10 K15 2024 K20 K3 K30 K30	K5 K10 K15 2025 K20 K3 K35 K30	K5 K10 K15 2026 K10 K3 K35 K30	K5 K10 K15 2027 K10 K3 K45 K30	K23 K40 K63 TOTAL MTDP IV K80 K14 K165 K150

Source: MTDP IV 2023 - 2027

(b) Investment Analysis

	NASP 2024-2033 AGRICULTURE EARNINGS (PGK MILLION)											
Year	COCOA	COFFEE	LIVESTOCK	RUBB ER	SPICE	COCONUT	FPDA	RICE	Oil Palm	NASP TOTAL		
2024	K300.6	K558.6	K150.0	K14.4	K150.0	K536.5	K250.0	K64.0	K1,600.0	3,624.2		
2025	K429.9	K798.7	K214.5	K20.6	K214.5	K767.1	K357.5	K91.5	K2,288.0	5,182.6		
2026	K614.8	K1,142.2	K306.7	K29.5	K306.7	K1,097.0	K511.2	K130.8	K3,271.8	7,411.1		
2027	K879.1	K1,633.4	K438.6	K42.2	K438.6	K1,568.8	K731.0	K187.1	K4,678.7	10,597.9		
2028	K1,257.2	K2,335.8	K627.2	K60.3	K627.2	K2,243.4	K1,045.4	K267.6	K6,690.5	15,155,.0		
2029	K1,797,.8	K3,340.2	K896.9	K86.3	K896.9	K3,208.1	K1,494.9	K382.7	K9,567.5	21,671.6		
2030	2,570.9	K4,776.5	K1,282.6	123.5	1,282.6	4,587.6	2,137.7	K547.2	13,681.5	30,990.4		
2031	K3,676,394,752	K6,830.5	K1,834.1	K176. 6	1,834.1	K6,560.2	K3,056.9	K782.5	19,564.6	44,316.4		
2032	K5,257,244,495	К9,767.6	K2,622.8	K252. 5	2,622.8	K9,381.1	K4,371.4	1,119.0	27,977.4	63,372.4		
TOTA L	16,784.1	31,184.0	8,373.7	806.3	8,373.7	29,950.2	13,956.3	3,572.8	89,320.3	202,321.		
	024-2033 COMMOD LINVESTMENTS OF LION	ITY										
Year	COCOA	COFFEE	LIVESTOCK	RUBB ER	SPICE	COCONUT	FPDA	RICE	Oil Palm	NASP TOTAL		
2024	132.7	246.6	66.2	6.3	66.2	236.8	110.3	28.2	706.3	1,600.0		
2025	189.8	352.6	94.6	9.1	94.6	338.6	157.8	40.4	1,010.0	2,288.0		
2026	271.4	504.2	135.4	13.0	135.4	484.3	225.6	57.7	1,444.4	3,271.8		
2027	388.1	721.1	193.6	18.6	193.6	692.6	322.7	82.6	2,065.5	4,678.7		
2028	555.0	1,031.2	276.9	26.6	276.9	990.4	461.5	118.1	2,953.7	6,690.5		
TOTA L	1,537.1	2,855.9	766.8	73.8	766.8	2,742.9	1,278.1	327.2	8,180.1	18,529.1		
	024-2033 COMMOD I ON INVESTMENTS	ITY										
Year	COCOA	COFFEE	LIVESTOCK	RUBB ER	SPICE	COCONUT	FPDA	RICE	Oil Palm	NASP TOTAL		
2024	167.9	311.9	83.7	8.0	83.7	299.6	139.6	35,745,49 6	893,637,411 .39	2,024,201, 000.00		
2025	240.1	446.1	119.8	11.5	119.8	428.4	199.6	51.1	1,277.9	2,894.6		
2026	343.3	637.9	171.3	16.4	171.3	612.7	285.5	73.0	1,827.3	4,139.2		
2027	491.0	912.3	244.9	23.5	244.9	876.2	408.3	104.5	2,613.1	5,919.1		
2028	702.1	1,304.6	350.3	33.7	350.3	1,253.0	583.8	149.4	3,736.8	8,464.4		
TOTA L	1,944.6	3,613.0	970.2	93.4	970.2	3,470.1	1,617.0	413.9	10,348.9	23,441.7		

(c) Seven Years Projected Profit and Loss Statement

Projected Profit & Loss Statement	2024	2025	2026	2027	2028	2029	2030
					_		
	Forecast (PGK)	Forecast (PGK)	Forecast (PGK)	Forecast (PGK)	Forecast (PGK)	Forecast (PGK)	Forecast (PGK)
Sales	0	0	0	0	0	0	0
Other Income	0	0	0	0	0	0	0
	0	0	0	0	0	0	0
Proposed Income							
		5,221,93	7,415,15	10,529,5	14,951,9	21,231,7	30,149,04
Income Per Year	3,677,422,499	9,948	4,726	19,711	17,990	23,546	7,435
Other Income							
Other income	-	5,221,93	7,415,15	10,529,5	14,951,9	21,231,7	30,149,04
	3,677,422,499	9,948	4,726	19,711	17,990	23,546	7,435
TOTAL INCOME	3,677,422,499	5,221,93 9,948	7,415,15 4,726	10,529,5 19,711	14,951,9 17,990	21,231,7 23,546	30,149,04 7,435
TOTAL INCOME	3,077,422,433	3,346	4,720	13,711	17,990	23,340	7,433
(Less) Cost of		(3,185,9	(4,524,0	(6,424,16	(9,122,31	(12,953,6	(18,394,2
Sales	(2,243,632,747)	58,501)	61,071)	6,721)	6,744)	89,777)	39,483)
		2,035,98	2,891,09	4,105,35	5,829,60	8,278,03	11,754,80
GROSS PROFIT	1,433,789,752	1,447	3,655	2,990	1,246	3,769	7,952
Gross Profit	200/	200/	200/	200/	200/	200/	200/
Margin% (Less) Admin	39%	<i>39%</i> (418,726	<i>39%</i> (440,903	<i>39%</i> (464,255,	<i>39%</i> (488,844,	<i>39%</i> (514,735,	<i>39%</i> (541,997,
Expenses	(377,662,558)	,700)	,977)	843)	508)	(314,733, 478)	727)
	(011)012/000/	1,617,25	2,450,18	3,641,09	5,340,75	7,763,29	11,212,81
EBITDA	1,056,127,194	4,747	9,678	7,147	6,738	8,291	0,226
EBITDA Margin %	29%	31%	33%	35%	36%	37%	37%
		(92,074,	(85,463,	(79,760,0	(74,837,1	(70,586,1	(66,913,3
(Less) Depr/Amort	(100,388,542)	803)	667)	23)	83)	90)	32)
EBIT	955,738,652	1,525,17 9,944	2,364,72 6,011	3,561,33 7,124	5,265,91 9,554	7,692,71 2,101	11,145,89 6,894
EBIT Margin %	26%	29%	32%	34%	35%	36%	37%
(Less) Interest		(32,000,	(31,236,	(29,906,3	(28,574,1	(27,239,6	(25,902,9
Expenses	(1,738,625)	000)	345)	32)	02)	52)	78)
(Less) Tax	(200, 200, 000)	(454,272	(706,700	(1,066,43	(1,578,58	(2,307,40	(3,344,17
Expenses	(286,200,008)	,514)	,083)	4,797)	0,235)	9,025)	6,849)
Net Operating Profit /(Loss) After Tax	667,800,019	1,038,90 7,430	1,626,78 9,583	2,464,99 5,995	3,658,76 5,217	5,358,06 3,423	7,775,817 ,066
NPAT%	18%	20%	22%	23%	24%	25%	26%

Year 1 Profit after Tax is projected to be K667.8 million after all the operational expenses and 30% tax are deducted. This shows 18% Net Profit after Tax which is so healthy and very good in terms of profitability. This projection is assumed if all operations at full stream and production at maturity and the inflows in the cash flow projections realized. The projection made on the progressive net-profit shows that year 2, the net-profit will be 20%, year 3 will be 22% and year 4 will be 23% which shows are healthy growth.

Government Tax component in Year 1 will be K286.2 million, Year 2 will be K454.2 million. Total Government Tax over the 7 years will be K9.7 billion.

(d) Loan Serviceability for 7 years (2024-2030)

Loan Serviceability	2024	2025	2026	2027	2028	2029	2030
	Forecast (PGK)	Forecast (PGK)	Forecast (PGK)	Forecast (PGK)	Forecast (PGK)	Forecast (PGK)	Forecast (PGK)
EBITDA	115,811,137	165,427,019	236,181,330	336,719,977	479,555,960	682,457,924	970,657,547
Add back							
Depreciation/Am ort	20,642,394	18,932,881	17,573,466	16,400,655	15,388,396	14,514,285	13,759,054
Interest expense	357,505	6,580,000	6,422,973	6,149,490	5,875,550	5,601,154	5,326,300
Servicing capacity	136,811,036	190,939,901	260,177,770	359,270,121	500,819,905	702,573,363	989,742,901
(Less)							
Term loan repayments (proposed loan)	(33,257,505)	(14,431,329)	(20,097,169)	(19,846,475)	(19,595,364)	(19,343,834	(19,091,885)
Net surplus/(shortfall	103,553,531	176,508,571	240,080,601	339,423,646	481,224,542	683,229,529	970,651,016

The loan serviceability schedule shows that the loan repayment will be on time due to sufficient cash to maintain and sustain the repayments with a capacity to complete within 120 months instead of 240 months or 20 years.

(e) Balance Sheet Summary for 7 years

BALANCE							
SHEET	2024	2025	2026	2027	2028	2029	2030
	Forecast						
	(PGK)	Forecast (PGK)	Forecast (PGK)	Forecast (PGK)	Forecast (PGK)	Forecast (PGK)	Forecast (PGK)
Current	1,414,633,689	2,528,814,156	4,197,102,302	6,698,975,945	10,390,841,731	15,778,966,868	23,573,699,092
Assets							
Non-	859,611,458	767,536,655	682,072,989	602,312,966	527,475,783	456,889,593	389,976,261
Current							
Assets							
Total Assets	2,274,245,148	3,296,350,812	4,879,175,291	7,301,288,912	10,918,317,514	16,235,856,461	23,963,675,353
Current Liabilities	6,445,129	6,764,350	7,122,614	7,499,854	7,897,073	8,315,330	0
Non- Current	1,600,000,000	1,561,817,243	1,495,316,598	1,428,705,118	1,361,982,620	1,295,148,917	1,228,203,824
Liabilities							
Total Liabilities	1,606,445,129	1,568,581,593	1,502,439,212	1,436,204,972	1,369,879,692	1,303,464,247	1,228,203,824
NET ASSETS	667,800,019	1,727,769,218	3,376,736,079	5,865,083,940	9,548,437,822	14,932,392,214	22,735,471,529
Paid Up	0	0	0	0	0	0	0
Capital	_			_	_		_
Reserves	0	0	0	0	0	0	0
Retained Earnings	667,800,019	1,727,769,218	3,376,736,079	5,865,083,940	9,548,437,822	14,932,392,214	22,735,471,529
TOTAL EQUITY	667,800,019	1,727,769,218	3,376,736,079	5,865,083,940	9,548,437,822	14,932,392,214	22,735,471,529

The balance sheet appears to be in a health as current asset is greater than the current liability. The non-current liability which is made up of mainly the repayments which loan serviceability schedule shows this business capability of maintaining healthy repayments.

We have high current asset of K1.414 billion which are mostly cash liquidity held within the Financial Institution that will regulate the lending liquidity of the MSMEs and MSMIs borrowers and the Private Sector Operators in Agriculture and Livestock Commercialization and Downstream Processing Program.

(f) Cash Flow Summary Projection for 7 years

Cash Flows							
Projections	2024	2025	2026	2027	2028	2029	2030
		Forecast	Forecast	Forecast	Forecast		Forecast
	Forecast (PGK)	(PGK)	(PGK)	(PGK)	(PGK)	Forecast (PGK)	(PGK)
Cash Flows from Operating Activities							
		1,638,316	2,472,366	3,664,449,	5,365,345,		11,240,072,47
EBITDA	1,056,127,194	,517	,955	013	403	7,789,189,261	4
Adjust for changes in							
working capital	0	1	2	3	4	5	6
Change in accounts		(129,542,	429,200,5				
receivable	(299,657,668)	875)	44	0	0	(1,745,073,168)	1,745,073,168
Change in trade	6 445 420	240 224	250.264	277 220	207.240	440.257	(0.245.220)
creditors	6,445,129	319,221	358,264	377,239	397,219	418,257	(8,315,330)
Change in other creditors	0	0	0	0	0	0	0
							0
Change in stock	0	0	0	0	0	(1,064,686,831)	1,064,686,831
	,	(129,223,	429,558,8			(
	(293,212,539)	654)	08	377,239	397,219	(2,809,341,742)	2,801,444,669
1 T D-1-l	(206 200 000)	(454,272,	(706,700,	(1,066,434	(1,578,580	(2.207.400.025)	(3,344,176,84
Less Tax Paid	(286,200,008)	514)	083) (31,236,3	,797)	,235)	(2,307,409,025)	9)
Less interest paid/received	(1,738,625)	(32,000,0 00)	(31,236,3 45)	(29,906,33 2)	(28,574,10 2)	(27,239,652)	(25,902,978)
Total Cash Flows from	(1,730,023)	1,022,820	2,163,989	2,568,485,	3,758,588,	(27,233,032)	10,671,437,32
Operating Activities	474,976,021	,349	,337	126	288	2,645,198,846	2
Cash Flows from			·				
Financing Activities							
Debt drawdown	1,600,000,000	0	0	0	0	0	0
Insurance	,,						
drawdown	160,000,000	0	0	0	0	0	0
ODF Loan							
drawdown	0						
Debt principal		(38,182,7	(66,500,6	(66,611,48	(66,722,49		
repayment	(160,000,000)	57)	45)	0)	9)	(66,833,703)	(66,945,092)
Total Cash Flows from	4 600 000 000	(38,182,7	(66,500,6	(66,611,48	(66,722,49	(66,000,700)	(55.047.000)
Financing Activities	1,600,000,000	57)	45)	0)	9)	(66,833,703)	(66,945,092)
Cash Flows from							
Investing Activities							
Capital Expenditure	(960,000,000)	0	0	0	0	0	(960,000,000)
Total Cash Flows from	(900,000,000)	U	U	U	U	0	(900,000,000)
Investing Activities	(960,000,000)	0	0	0	0	0	(960,000,000)
Net Cash	(===,===,===)	984,637,5	2,097,488	2,501,873,	3,691,865,		(===,===,===)
Inflow/(Outflow)	1,114,976,021	93	,692	646	790	2,578,365,143	9,644,492,229
			-				
Opening Cash Balance		1 114 070	2,000,012	4 107 102	6 600 075		12 060 200 80
	0	1,114,976 ,021	2,099,613 ,614	4,197,102, 305	6,698,975, 951	10,390,841,741	12,969,206,88 4
	U	2,099,613	4,197,102	6,698,975,	10,390,84	10,330,041,741	22,613,699,11
Closing Cash Balance	1,114,976,021	,614	,305	951	1,741	12,969,206,884	22,013,099,11
c.ccg cusii balance	1,11 1,57 0,021	,017	,505	231	±,, «±	,505,200,004	3

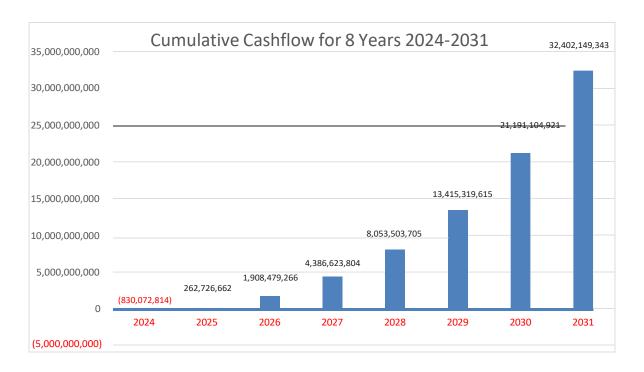
The Cash-flow summary showing the K1,600 million Agriculture Stimulus Package injection by Marape-Rosso Government. K600 million is packaged into MTDP IV 2023-2027 money envelope to cover the PIPs for the Agriculture Sector Commodities investment deliberate intervention programs while the private sector which missed out from the MTDP IV is captured by the NASP 2024-2033 annual budget allocation of K1,000 million with 10% of the K1,000 million is allocated for Technical Services and Capacity Building purposes, while 50% will be used as Capital Asset Financing for fund the downstream processing infrastructures and commercial agriculture infrastructures while the 40% will be used for the working capital investment including the operational expenses.

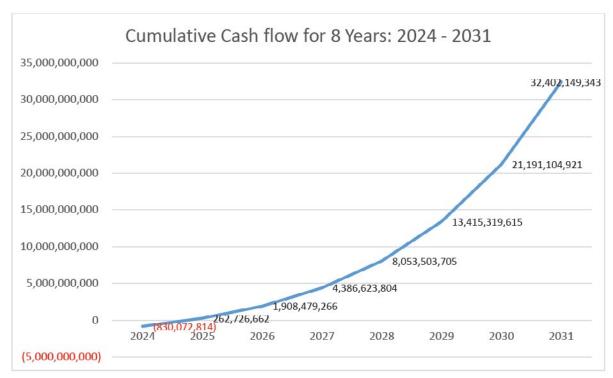
Cash flow movement showing favorable cash flow circulation appears to be in a healthy phase especially the Net-Cash Inflow which is consistent throughout the 5 years term with sufficient cash. The key economic performance of the NASP 2024-2033 is shown below. The cumulative cash flow showing the K31 billion created through the K1.6 billion NASP Stimulus package capital injection into PNG Economy.

(g) Key Economic Performance

Key Economic Performance Cost Benefit Analysis and IRR,ROI,PBP						
Economic Performance Indicator		Comments				
Internal Rate of Return (IRR)	85.54%	For 8 Years				
Return on Investments (ROI)	492%	For 8 Years				
Payback Period (PBP)	1.8 Years	For 8 Years				
Net Present Value (NPV)	22,168,926,166 (ie	For 8 Years				
Costs Benefit Ratio	20.25	For 8 Years				
Cummulative Cashflow into PNG Economy	32,402,149,343	For 8 Years				

(h) Revenue projections for the agriculture sector for NASP 2024-2031





2.3 Agriculture Sector Performance for 10 years (2013-2022)

2.3.1 Comparative Analysis

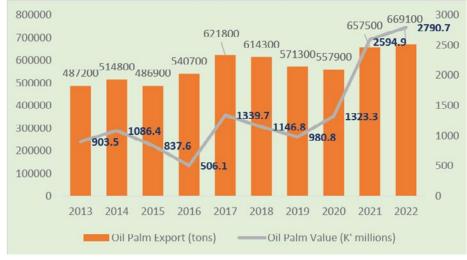
2.3.1	001111	Jarative	Allaly	510										
K'MI	LLION		NON-RENEWABLE SECTOR "A" IN PGK MILLIONS									EWABLE N PGK N	SECTOR "I	3"
			ı	MINNING	3			HYDRO	CARONS	<u> </u>				
Ye ar	PNG GDP	Gold	Copp er	Nick el	Cob alt	Total	Cru de Oil	LNG	Cond ensat e	TOTA L A	AGRIC ULTUR E	FISH ERIES	TIMBE R&LO G	TOT AL B
20 15	66,1 79	5,17 3.50	646. 50	682. 40	154. 60	6,65 7.00	913. 40	9,73 4.90	2,202 .60	12,85 0.90	2,368.4 0	397.1 0	1,029. 70	3,79 5.20
20 16	66,4 43	6,51 2.40	1,11 4.90	668. 20	195. 20	8,49 0.70	1,33 3.80	5,96 3.90	1,592 .30	8,890 .00	3,340.0 0	946.6 0	1,043. 10	5,32 9.70
20 17	72,9 31	7,61 2.20	1,96 2.20	1,17 9.00	614. 10	11,3 67.5 0	1,25 5.90	9,40 3.50	1,935 .10	12,59 4.50	4,012.1 0	1,316 .60	1,029. 20	6,35 7.90
20 18	81,6 67	8,20 7.20	1,88 9.70	1,08 7.00	575. 47	11,7 59.3 7	942. 60	10,9 72.7 0	2,111 .30	14,02 6.60	3,798.8 5	1,485 .60	1,294. 00	6,57 8.45
20 19	86,5 38	10,5 60.5 0	2,24 2.00	1,95 3.80	392. 50	15,1 48.8 0	769. 30	12,9 83.4 0	2,065 .10	15,81 7.80	3,409.6 0	1,464 .70	1,242. 00	6,11 6.30
20 20	83,1 59	9,92 4.10	1,90 0.20	1,36 3.80	269. 10	13,4 57.2 0	647. 40	9,65 8.80	1,260 .40	11,56 6.60	3,783.0 7	1,496 .10	1,088. 10	6,36 7.27
20 21	96,0 97	9,16 9.30	1,79 6.70	2,05 0.10	531. 70	13,5 47.8 0	1,35 9.00	15,0 10.9 0	2,201 .20	18,57 1.10	5,782.1 0	364.1 0	748.50	6,89 4.70
20 22	106, 799	7,03 1.70	2,34 2.20	2,87 4.80	571. 20	12,8 19.9 0	2,47 3.00	26,0 58.2 0	2,865 .50	31,39 6.70	5,332.7 0	420.9 0	1,124. 70	6,87 8.30
TO TA L		64,1 90.9 0	13,8 94.4 0	11,8 59.1 0	3,30 3.87	93,2 48.2 7	9,69 4.40	99,7 86.3 0	16,23 3.50	125,7 14.20	31,826. 82	7,891 .70	8,599. 30	48,3 17.8 2
Av e	82,4 77	8,02 3.86	1,73 6.80	1,48 2.39	412. 98	11,6 56.0 3	1,21 1.80	12,4 73.2 9	2,029 .19	15,71 4.28	3,978.3 5	986.4 6	1,074. 91	6,03 9.73

2.3.2 Agriculture exports in tons (000) for 8 years (2015-2022)

AGR	ICULTURE	соммо	DDITY EXP	ORT QUA	NTITY (TO	NS '1000)	2015 TO	2022
Year	Cocoa	Coffee	Tea	Copra	Copra	Palm Oil	Rubber	TOTAL
2015	30.9	42.8	1.3	33.6	14.6	486.9	2.2	612.3
2016	40.1	68.0	0.9	43.5	17.9	540.7	2.4	713.5
2017	31.9	47.8	1.1	50.6	16.2	621.8	2.9	772.3
2018	33.3	52.1	0.5	63.6	13.7	614.3	4.9	782.4
2019	26.4	47.2	0.4	36.6	15.6	571.3	3.4	700.9
2020	33.0	40.7	0.2	36.7	10.4	557.9	3.1	682.0
2021	36.6	25.0	0.3	35.1	11.6	657.5	2.8	768.9
2022	32.5	20.4	0.2	38.7	11.2	669.1	2.6	774.7
TOTAL	264.7	344.0	4.9	338.4	111.1	4,719.6	24.3	5,806.9
Average	33.09	43.00	0.61	42.30	13.89	589.95	3.03	725.87
% Export	4.6%	5.9%	0.1%	5.8%	1.9%	81.3%	0.4%	100.0%

Source: QEB Central Bank 2023

2.3.3 Oil Palm exports volume (tons) and value (K' millions) for 10 years (2013-2022)



2.3.4 Coffee exports volume (tons) and value (K' millions) for 10 years (2013-2022)



Source: QEB Central Bank 2023

2.3.5 Cocoa exports volume (tons) and value (K' millions) for 10 years (2013-2022)

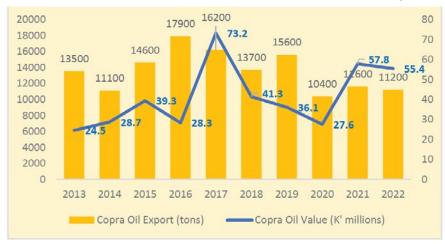


2.3.6 Copra exports volume (tons) and value (K' millions) for 10 years (2013-2022)



Source: QEB Central Bank 2023

2.3.7 Copra oil exports volume (tons) and value (K' millions) for 10 years (2013-2022)



Source: QEB Central Bank 2023

2.3.8 Rubber exports volume (tons) and value (K' millions) for 10 years (2013-2022)



2.3.9 Tea exports volume (tons) and value (K' millions) for 10 years (2013-2022)



Annex 3: COMMODITY DISTRIBUTION FOR LARGE SCALE COMMERCIAL AGRICULTURE DEVELOPMENT FOR 10 YEARS (2024-2033)

No	Commodity	Province	Land Area (ha)
1	Oil Palm	WNBP, WSP, ESP, Madang, Morobe, Gulf, MBP, ENBP	600,000
2	Coffee	EHP,WHP,JWK, SHP, Simbu, Hela, Morobe, ESP, Central, EP	50,000
3	Cocoa	Morobe, ESP, ENBP, NSP, Madang, Manus, Simbu,	50,000
4	Sweet Potato	Jiwaka, EHP, WHP,	10,000
5	Coconut	Madang, Manus, Morobe, ENBP, NIP, Gulf	100,000
6	Galip	ENBP, NSP, Manus, Morobe, Madang	50,000
7	Vanilla	ESP, WSP, Madang	10,000
8	Potato	SHP, WHP, JWK, EHP, Simbu, Enga, Hela,	10,000
9	Rubber	Central, MBP, Gulf, Manus	167,000
10	Tea	WHP, JWK, Morobe	50,000
11	Rice	Central, ESP, Morobe, Oro, WP	50,000
12	Ginger	Central, WHP, JWK	5,000
13	Round Onion	Simbu, EHP, JWK, WHP, Morobe	5,000
14	Roots & Vegetables	Oro, Gulf, Morobe, MBP	10,000

15	Grains & Legumes (corn, sorghum, peanut, soybean, peas, bean)	Morobe, ESP, WSP, MBP, Simbu, JWK, WHP	10,000
16	Fruits and Nuts (Cavendish, plantain, galip, lemon/lime, pawpaw)	ENBP, Morobe, Gulf, JWK, WHP, EHP, Simbu. Madang, NSP, NIP, Manus	10,000
17	Cattle	WP, Central, Morobe, WNBP, EHP, SHP	50,000
18	Poultry	ENGA, EHP, Central, ESP, Hela, Simbu	1,000
19	Piggery	Central, Morobe, Hela, SHP, JWK	1,000
20	Apiculture	EHP, Simbu, JWK, WHP	500
		TOTAL (HA)	1,239,500

Marage-Rosso Government Agriculture Stimulus Package to stimulate the economy for next 10 years will target 22, 96 Districts, 331 LLGs and 6,375 Wards in PNG. Each District is target for 5000 MSMEs and MSMIs and PNG target is 445,000 during first part of NASP 2024-2033 roll out period between 2024-2027 under the MTDP IV window timeframe.

Annex 4: NASP COMMENCEMENT SCHEDULE

Our tentative time frame to commence this program is scheduled below in the following table if the required funding makes available to us. We plan to commence in March 2024.

	NASP 2024-2033 F	Program Work Plan
Date	Program Phase	Task Description
November 2023	Launch of the NASP 2024- 2033	NASP Secretariat to arrange the launching program.
November 2023	NEC Submission for NASP 2024-2033	Prepare NEC submission with the Financial Package.
December 2023	NASP 2024-2033 Agriculture Stimulus packaged	Upon NEC Approval, NASP Financing Package deliver to the financiers.
December 2023	Finalizing of the AAA and AIC Bills	After the launch of the NASP 2024-2033, AAA and AIC finalized.
January 2024	Finalizing of AAA & AIC	Launch of the AAA Act and AIC 2023 Act
March 2024 – March 2027	Phase 1 of NASP 2024-2024	Full Operation of NASP 2024-2027
March 2027	Review Phase 1	Phase 1 of NASP 2024-2027 is reviewed.
April 2027 – March 2030	Phase 2 of NASP 2024-2033	Full Operation of NASP 2027-2033
March 2030	Review Phase 2	Phase 2 of NASP 2024-2033 reviewed to measure the target by 2030 is achieved.
March 2030- December 2033	Phase 3 of NASP 2024-2033	Full Operation of NASP 2024-2033
March 2033	Review of Phase 3	Phase 3 of NASP 2024-2033 reviewed to measure the target by 2033 to assess all the key indicators achieved.

Annex 5 PRIVATE SECTOR INDUSTRY PLAYERS

Existing Agri Industry Player	Location	Commodity/Product
NBPOL	WNBP, Oro, MBP, NIP	Oil Palm – Crude oil
NBPOL	WNBP	Cattle – Beef
NBPOL-RAIL	Madang, Morobe	Sugar, Beef, Oil Palm
Hargy	WNBP	Oil Palm
Rimbunan Hijau (PNG)	ENBP	Oil Palm
NGTB	Morobe	Poultry - Meat
Zenag	Morobe	Poultry – Meat & Egg
WR Companies	JWK	Tea
Paradise Foods	NCD	Chocolate
Innovative Agro Industries	NCD,	Fresh Produce
Innovative Agro Industries	Central,	Dairy Cattle - Milk
Innovative Agro Industries	SHP,	Potato - chips,
Innovative Agro Industries	Hela,	Poultry - Eggs,
Innovative Agro Industries	ESP	Poultry - Eggs
Frangipani Foods Limited	ENBP	Galip
SISAL	Madang	Galip
Coconut Products Ltd	ENBP	Coconut – Copra/copra oil
Pelgens	Morobe	Pig – pork
Rumion	Morobe	Pig – pork
James Barnes	Madang	Cattle – corned beef
Hugo Canning	NCD	Cattle – oxen palm
Kongo Coffee Ltd	Simbu	Coffee Exporter
NGHCE	EHP	Coffee Exporter
PNG Coffee Exports	EHP	Coffee Exporter
Monpi Coffee	EHP	Coffee Exporter
Coffee Connections	EHP	Coffee Exporter
Outspan	EHP	Coffee Exporter
Wapenamanda Coffee	Enga	Coffee Exporter
Nebylier Coffee	WHP	Coffee Exporter
Agmark	ENBP	Cocoa Exporter
Agmark	NGI, Momase	Farm Input Supplies
Brian Bell	Nationwide	Farm Input Supplies
Farmset	Nationwide	Farm Input Supplies
CPL	NCD	Fresh Produce Buyer

Annex 6: QUARTERLY REPORT TEMPLATE

1 KEY DELIVERABLES REPORT

		Annual		Qua	Progressive	0/2		
No.	Key Performance Indicator	Target	1	2	3	4	Progressive Results	% Achieved
1								
2								
3								
4								
5								
	Total							

2 BRIEF FINANCIAL REPORT (PROVIDE DETAILS IN FINANCIAL STATEMENTS/AQUITTALS)

	,	Amount		Quarterly E	Progressive			
No.	Expenses Category	Allocated (K)	1	2	3	4	Progressive Total (K)	% Used
1								
2								
3								
4								
5								
	Total							

3 PRODUCTION REPORT

			Quarterly Expenses (K)			Progressive		
No.	Category	Units	1	2	3	4	Total	%
1	Area Under Crop/Livestock	ha						
	Total # Plants/Livestock	Qty						
2	New Area Developed	ha						
3	New Planting/Births	Qty						
4	Total Volume Produced	tons						
5	Volume Consumed	tons						

4 MARKET REPORT

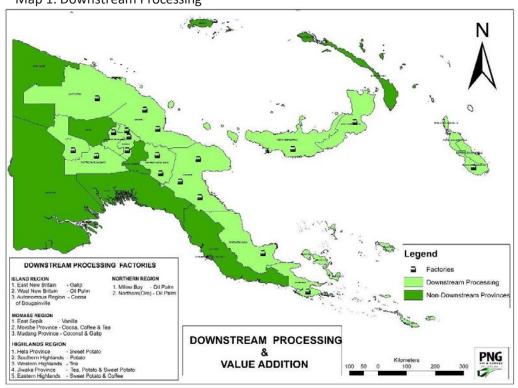
			Quarterly Expenses (K)				Progressive	
No.	Category	Units	1	2	3	4	Total	%
1	Domestic Market Volume	tons						
2	Export Market Volume	tons						
3	Total Volume	tons						
4	Domestic Sales Value	K						
5	Export Sales Value	K						
6	Total Value	K						

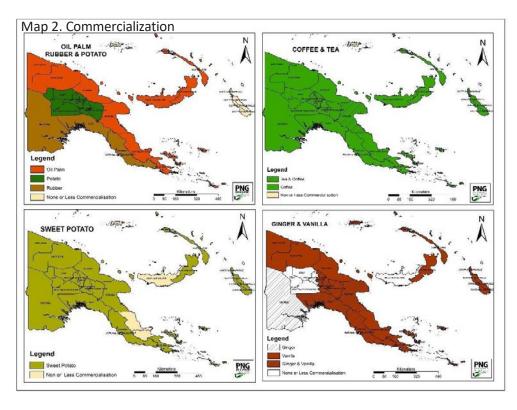
Annex 5 PRIVATE SECTOR INDUSTRY PLAYERS

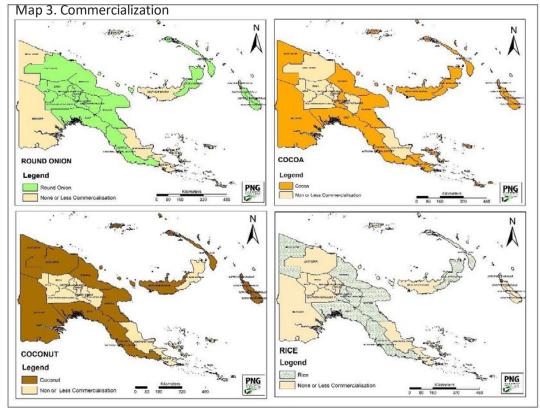
Existing Agri Industry Player	Location	Commodity/Product
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NBPOL	WNBP	Cattle – Beef
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Rimbunan Hijau (PNG)	ENBP	Oil Palm
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Innovative Agro Industries	Central,	Dairy Cattle - Milk
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SISAL	Madang	Galip
Coconut Products Ltd	ENBP	Coconut – Copra/copra oil
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Agmark	ENBP	Cocoa Exporter
Agmark	NGI, Momase	Farm Input Supplies
Brian Bell	Nationwide	Farm Input Supplies
Farmset	Nationwide	Farm Input Supplies
CPL	NCD	Fresh Produce Buyer
RH Hypermart /Supermarket	NCD & Lae	Fresh Produce Buyer
National Catering Services	Lae, POM, ,	Fresh Produce & others
IPI Catering Seriveds	Lae, POM	Same as above (NCS)
Coffee Exporters	Goroka, Simbu, Lae	Export Green Bean
Coffee Roasters	Goroka, Hg, PoM,	Export roasted coffee
E.G. Global & Doa Plantation	Western & NCD	Export Rubber
WR Carpent4ers	Jiwaka	Tea.
Israel Agro-Industry (IAI)	Pangia in SHP, PoM.	Cips and Milk
Livelave	Goroka	Wine

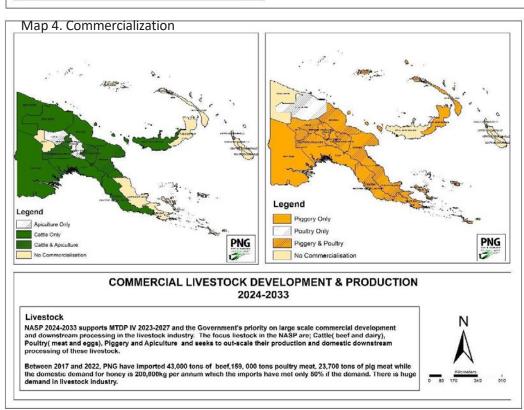
Annex 7: MAPS FOR DOWSTREAM PROCESSING, COMMERCIALISATION AND VALUE CHAIN DEVELOPMENT

Map 1. Downstream Processing

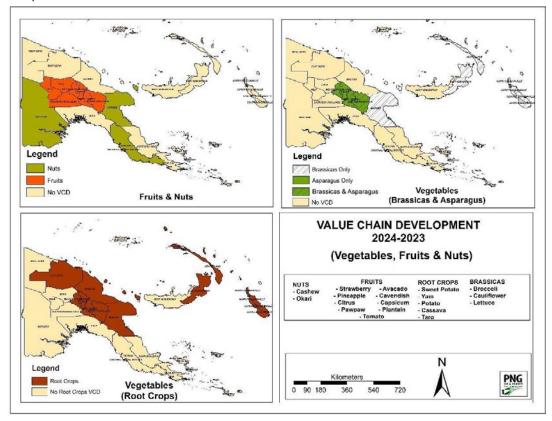




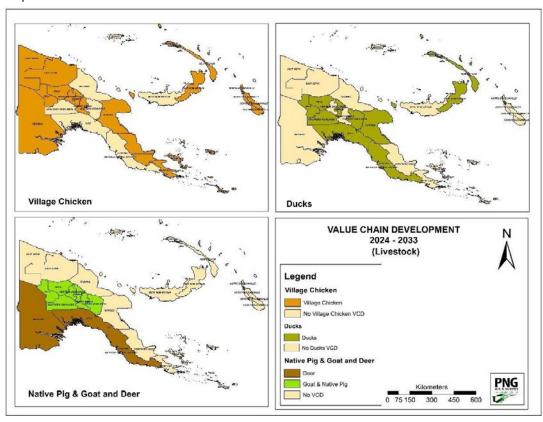


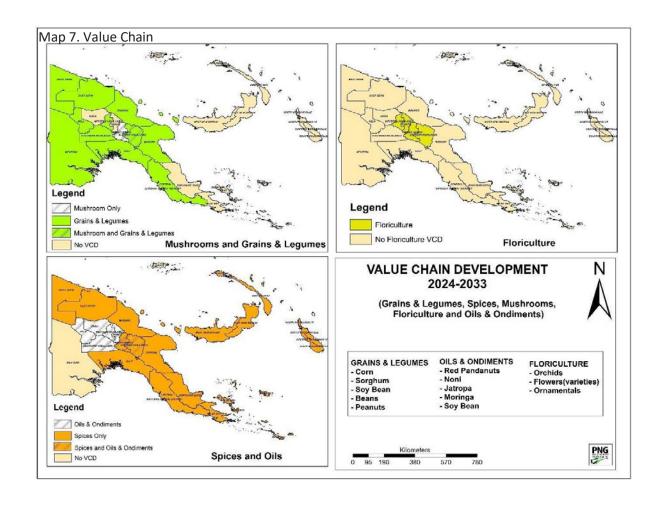


Map 5. Value Chain



Map 6. Value Chain





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