



THIRD SABAH AGRICULTURAL POLICY 2015-2024



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Foreword by the Minister

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Deputy Chief Minister

Minister of Agriculture & Food Industry, Sabah



Sabah First Agricultural Policy (SAP1) (1992-2010) and Sabah Second Agricultural Policy (SAP2) (1999-2010) were formulated in the same spirit as the previous National Agricultural Policies and the National Agro-Food Policy, which were to address fluctuating commodities' prices as well as to ensure food security for the people of Sabah. In many ways, both policies have successfully enhanced the development of Sabah's agriculture industry and turned it into the second engine of growth for the State, with earnings coming from various commodities, fisheries and aquaculture as well as other food crops.

Drawing from the experience and successes of the previous policies, the Third Sabah Agricultural Policy (SAP3) (2015-2024) has been formulated with key emphasis on sustainable food production while increasing farmers' income. The policy has identified key issues and challenges faced by the sector, and accordingly formulated strategic goals and core enablers to address them. The State will prioritise land for food-based production purposes given the scarcity of suitable land for agriculture activities. Other enablers of the policy will be improved and strengthened and these include basic infrastructure such as roads and electricity; processing centres, agriculture R&D, farm mechanisation and technology, planting materials, extension services, skilled labour, as well as special investment incentives for large scale ventures and biosecurity. This can be achieved through strategic collaboration between key stakeholders in and outside the State.

I believe that our enormous natural resources coupled with the right enablers and agriculture innovation, can create the competitiveness and achieve the sustainability that our agriculture sector needs. I therefore congratulate my Ministry for coming up with the Third Sabah Agricultural Policy.

Thank you.



Message from the Permanent Secretary

YBhg Ahmad Hj. Awg. Hashim
Ministry of Agriculture & Food Industry, Sabah

Over the years, I have the opportunity to witness the development and growth of our agriculture sector and how it has brought major economic improvement as well as social transformation to the people and the State of Sabah. To-date, the agriculture sector remains the second largest contributor to the State's economy after services. This is made possible through the achievements of our First and the Second Agricultural Policies implemented by the various Departments and Agencies under our Ministry.

However, the development of the agricultural sector will continue to be undermined by several key fundamental issues. Although the State has bountiful natural resources, I believe that a strategic direction and innovative initiatives are necessary in order to sustainably explore and optimise the benefits that they can bring. And taking cognizance of these problems as well as opportunities, the Third Sabah Agricultural Policy (SAP3) has been strategically planned and innovatively designed to address these very key issues and challenges in order to ensure its successful implementation.

SAP3 encompasses the formulation of several key agriculture sub-sectors and their subsequent development as the driver of the policy. Parallel to these endeavours, a strategic collaboration with all direct and relevant stakeholders – both public and private as well as federal and state will also be pursued. I sincerely hope that we can use SAP3 to our greatest advantage in order to position our agricultural sector competitively and sustainably over the next decade.

Thank you.

List of Abbreviation

General Abbreviation

AIZ	Aquaculture Industrial Zone
AVTC	Agriculture Vocational Training Centre
BOD	Biochemical Oxygen Demand
BOS	Blue Ocean Strategy
BoT	Balance of Trade
BSR	Basal Stem Rot
CPO	Crude Palm Oil
CPUE	Catch per Unit Effort
EAFM	Ecosystem Approach to Fisheries Management
EEZ	Exclusive Economic Zone
EMS	Early Mortality Syndrome
EPP	Entry Point Project
ETP	Economic Transformation Programme
EU	European Union
FDI	Foreign Direct Investment
FFB	Fresh Fruit Bunches
FMD	Foot and Mouth Disease
FVA	Fisheries Vocational Academy
GAHP	Good Animal Husbandry Practices
GAP	Good Agricultural Practices
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GLC	Government-Linked Company
GM	Genetically Modified
GMP	Good Manufacturing Practices
GNI	Gross National Income
HACCP	Hazard Analysis Critical Control Point
ICT	Information and Communication Technology
IUU	Illegal, Unreported and Unregulated
KPI	Key Performance Indicator
LRFFT	Live Reef Food Fish Trade
M&E	Monitoring and Evaluation
MCC	Milk Collecting Centre
MCS	Monitoring, Control and Surveillance
MMS	Multimedia Messaging Service

MOU	Memorandum of Understanding
NGOs	Non-Governmental Organization
OER	Oil Extraction Rate
PK	Palm Kernel
POIC	Palm Oil Industrial Cluster
R&D	Research and Development
ROI	Return of Investment
RRC	Rice Research Council
RSPO	Roundtable on Sustainable Palm Oil
SCC	Swiftlet Commercial Centre
SCEP	Salmonella Control and Eradication Programme
SIZ	Seaweed Industrial Zones
SMS	Short Messages Service
SOP	Standard Operating Procedures
SPS	Sanitary and Phytosanitary
SQF	Safe Quality Food
SSL	Self-Sufficiency Level
STL	Soil Testing Laboratory
TEKUN	<i>Tabung Ekonomi Kumpulan Usaha Niaga</i>
TEMAN	<i>Terminal Agribisnes Negara</i>
TKPM	<i>Taman Kekal Pengeluaran Makanan</i>
TOL	Temporary Occupation Licence
UiTM	<i>Universiti Teknologi MARA</i>
VHM	Veterinary Health Mark
VSD	Vascular-Streak Dieback

Federal Abbreviation

AIM	<i>Amanah Ikhtiar Malaysia</i>
CMDV	Centre for Molecular Marker Discovery and Validation
DID	Department of Irrigation and Drainage
DOA	Department of Agriculture
FAMA	Federal Agricultural Marketing Authority
FELCRA	Federal Land Consolidation and Rehabilitation Authority
FELDA	Federal Land Development Authority
GTP	Government Transformation Programme
MARDI	Malaysian Agricultural Research and Development Institute
MCB	Malaysian Cocoa Board
MICC	Ministry of Information, Communication and Culture
MITI	Ministry of International Trade and Industry
MMEA	Malaysian Maritime Enforcement Agency
MPIC	Malaysian Ministry of Plantation Industries and Commodities
MPOB	Malaysian Palm Oil Board
MRRD	Ministry of Rural and Regional Development
MSPO	Malaysian Sustainable Palm Oil
myGAP	Malaysian Good Agricultural Practices
NATC	National Agriculture Training Centre
NCP	National Commodity Policy
NKEA	National Key Economic Area
NRE	Ministry of Natural Resource and Environment
RISDA	Rubber Industry Smallholders Development Authority
SBN	<i>Skim Bantuan Nelayan</i>

State Abbreviation

DVSAI	Department of Veterinary Services and Animal Industry
ESSCOM	Eastern Sabah Security Command
IADA	Integrated Agricultural Development Area
JHEAINS	<i>Jabatan Hal Ehwal Agama Islam Negeri Sabah</i>
JKR	<i>Jabatan Kerja Raya</i>
KKIA	Kota Kinabalu International Airport
KKIP	Kota Kinabalu Industrial Park
KKK	<i>Kursus Kemahiran Keusahawanan</i>
KKPB	<i>Kursus Kemahiran Bersepadu</i>
KUYS	<i>Kolej Universiti Yayasan Sabah</i>
MAFI	Ministry of Agriculture and Food Industry Sabah
SADEC	State Agricultural Development Committee
SAFMA	Sabah Fish Marketing Sdn Bhd
SAIP	Sabah Agro Industrial Precinct
SAP	Sabah Agricultural Policy
SAP1	First Sabah Agricultural Policy
SAP2	Second Sabah Agricultural Policy
SAP3	Third Sabah Agricultural Policy
SASA	Sabah Agricultural Scientist Association
SDC	Sabah Development Corridor
SFD	Sabah Forestry Department
SIA	Sabah Institute of Agriculture
SRIB	Sabah Rubber Industry Board
YUMS	<i>Yayasan Usaha Maju Sabah</i>

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1. INTRODUCTION

1.01 As Malaysia strives towards Vision 2020 and achieving the status of a developed nation with a high-income economy by the year 2020, formulation of the Third Sabah Agricultural Policy (SAP3) is being developed in tandem with the National Agro-Food Policy (2011-2020), the National Commodity Policy (NCP) (2011-2020), the Government Transformation Programmes (GTPs) and the Economic Transformation Programmes (ETPs), as well as the strategic “*Halatuju*” of the state, as the government aspires to achieve balanced socio-economic development for its populace.

1.02 Despite rapid growth in major economic sectors such as industrial, manufacturing and services, the agricultural sector is still crucial at both the national and state levels. Specifically, in Sabah, it remains a key economic sector that contributes to the state’s rapid development, especially in alleviating rural poverty and ensuring food security. Hence, with its great potential to be a main driver of growth for the state economy, the agricultural sector is given leverage through appropriate policies and strategies to accelerate its growth and enhance its development in the state.

1.03 This document outlines the SAP3, which sets the strategic direction for development of the agricultural sector in the state of Sabah until the year 2024. The new policy builds on specific key issues and challenges that occurred in the Second Sabah Agricultural Policy (SAP2) to ensure accelerated growth and sustainability of this sector in the state.



REVIEW OF AGRICULTURAL SECTOR IN SABAH

2.01 The review of agricultural performance in the state during the 9th and 10th Malaysia Plans, it is clear that the agricultural sector has made tremendous contributions to both the national and state economy.

2.02 In 2001-2012, the agricultural sector remained the second highest contributor to Sabah's gross domestic product (GDP). Nonetheless, the agricultural sector's contribution to the state's GDP remained substantial. To further exemplify its importance, based on the percentage share by states in Malaysia, the agricultural sector in Sabah contributed 16.9 percent to the national agriculture sector in 2012.

2.03 As a labour-intensive sector, the agricultural sector also plays a crucial role in providing employment in the state, accounting for 26 percent of total employment in the state in 2012, particularly in rural areas.

2.04 Based on the prevailing socio-economic situation in Sabah, the agricultural sector is expected to continue as one of the main sectors driving the economic growth and development in the state until 2024. With its high impacts on the rural economy, commercial and sustainable agriculture in the state has been the primary thrust and strategy for alleviating rural poverty, ensuring self-sufficiency in the food supply and overall improvement in the socio-economic status of people in Sabah. In fact, the state government has successfully reduced the poverty level in Sabah from 58.3 percent in 2001 to 7.8 percent in 2014 through various programmes carried out by agencies under the purview of the Ministry of Agriculture and Food Industry (MAFI) Sabah and other related government agencies. The efforts to reduce the poverty level, especially targeting the hardcore poor, through implementation of a wide range of agricultural programmes in the rural areas will continue to be intensified as

poverty eradication remains a great challenge and a complex issue in the state.

2.05 In terms of land use, 1.62 million hectares of land in the state had been developed for agricultural purposes by 2011. Of this, oil palm is the most widely cultivated crop, covering a total area of 1,435,320 hectares (88.6 percent), followed by rubber (87,480 hectares; 5.4 percent), paddy (45,360 hectares; 2.8 percent), coconut (16,686 hectares; 1.03 percent), cocoa (6,966 hectares; 0.43 percent) and others (28,188 hectares; 1.74 percent).

2.06 In terms of industrial crops, the state has made tremendous achievements in industrial crops, including oil palm, rubber and cocoa. Given the suitability of the soil, most of the agriculture areas in the state have been planted with these industrial crops. However, oil palm is the most extensively grown crop and has developed remarkably well, while rubber and cocoa continue to experience slow growth due to their price fluctuation in the world market and also because they are hampered by stiff competition between various crops for land use.

2.07 With regards to agro-based food crops, generally, their productivity has been relatively low and very much lagging behind the industrial crops. In fact, in terms of the self-sufficiency level (SSL), the state reported a declining trend for paddy (rice), vegetables and fruits during SAP2. Particularly, the average SSL for rice for the state was 32.23 percent, well below the SAP2 SSL minimum target of 60 percent. In fact, the SSL experienced a decline from 34 percent in 2000 to only 26 percent in 2012. Several underlying factors have been identified as affecting rice production in the state, including drainage and irrigation facilities, traditional practices, lack of high-quality seeds and competition for land use. With an expected increase in the state's population, which has been extrapolated to increase to about 8.08 million by 2025, drastic measures will be taken to ensure that rice production can be significantly improved to meet its domestic demand.

2.08 SSL for vegetables also shows a similar trend and declined to 50 percent in 2012, which is slightly lower than the national rate of 54 percent. Being dominated by small farms (80 percent), its areas of cultivation seemed to be highly inconsistent over the years. The main vegetable growing areas are in the West Coast and interior divisions, with the Kundasang highland accounting for about 45 percent of the total area. At the same time and given its export potential, the state

has also given serious attention to mushroom production and more intensified efforts will continue in SAP3.

2.09 Fruits' average SSL recorded a fairly good level of around 90.19 percent during part of SAP2 (2006-2011). However, the total export for fruits has declined while its import has increased over the years, mainly due to an increased demand for temperate fruits. In 2012 alone, the state's import bill for fruits amounted to RM65 million. Therefore, the state needs to improve the production of local fruits and vegetables during SAP3. Currently, the growth of these sub-sectors has been affected by marketing and related infrastructure inadequacies.

2.10 With respect to the fisheries and aquaculture industry, the state also did remarkably well during SAP2 as this industry became one of the biggest contributors to state export earnings. In fact, Sabah is self-sufficient in the production of fish and contributed significantly to the state's GDP during SAP2 with steady growth in export value from RM100 million in 1999 to around RM700 million in 2010. In 2012, the contribution of fisheries and aquaculture amounted to RM872 million, or about 7.3 percent of the total value of the agricultural sector. In particular, Sabah contributed about 16.2 percent and 15.7 percent to the coastal capture fishery landings of Malaysia in 2011 and 2012, respectively. Capture fisheries from Sabah also contributed some 176.945 metric tonnes worth RM753 million and 178.063 metric tonnes worth RM801 million in 2011 and 2012, respectively. However, the production of fish was mostly derived from capture fisheries and aquaculture, a sector which has been projected to grow at the rate of 2 percent annually. Hence, it is crucial to manage fisheries resources' sustainably for the sector's long-term development.

2.11 In addition, the state's seaweed production is another fast-growing industry with potential. Its annual growth rate is projected to increase at 11.3 percent per year from 2011 to 2025. Its production is forecasted to achieve 780,000 tonnes in 2020 and 1,332,000 tonnes by 2025. Therefore, when fully developed, seaweed production has the economic potential to become a major source of income for fisheries and seaweed producers in the state.

2.12 Likewise, the livestock sector has experienced varying degrees of success in Sabah. In terms of SSL for poultry eggs and milk production, the state achieved 100 percent for poultry eggs and within 90 percent to 95 percent SSL for milk during SAP2. There has

been an increase in the chicken broilers and layers population, while the production of duck broilers and layers has declined.

2.13 For ruminants, although showing an upward trend in terms of number of cows, cattle, buffalo, sheep and goats, the growth for cows and sheep has decreased over the past five years due to reduced importation of live animals. Therefore, in terms of output, beef and cattle production has shown a downward trend and, as result, since 2003, the balance of trade (BoT) for animals and animal products has shown a deficit. The deficit continues to grow, especially for the cattle, goat and sheep sectors, due to low local production, while the local demand for beef, mutton, and chevon remains relatively high.

2.14 However, growth in the ruminant sector has not been significant when compared to poultry and swine. In particular, poultry meat and pork production were fairly stable and able to meet the domestic demand, while the export earnings for swine and eggs have been consistent since 2004. In fact, livestock products such as eggs and milk have shown a significant upward trend in production. Notably, establishment of the Milk Collecting Centre (MCC) has boosted the dairy sector in the state, while a few private investors and government-linked companies (GLCs) such as Sabah International Dairies and DESA Sdn. Bhd. have invested in the downstream activities for milk in Sabah.

2.15 Overall, the performance of the agricultural sector in the state of Sabah under the 10th Malaysia Plan (2011-2015) has been encouraging, with remarkable achievements amongst the various sub-sectors. Indeed, the sector consistently recorded an average annual growth rate of 2.9 percent during the 9th and 10th Malaysia Plans. With the new SAP3 and its strategic enablers in place, the sector's performance is targeted to grow at the rate of 3.7% annually until 2024.



SUMMARY OF KEY ISSUES AND CHALLENGES

3.01 While recognising the emerging issues of intense globalisation and climate change, the review of agricultural-sector performance during SAP2 (1999 – 2010) identified several key issues and challenges as hindrances to the sector’s growth and development in Sabah. These key issues and challenges are highlighted below.

3.1 Inadequate Infrastructures and Facilities

3.02 Adequate basic facilities and good infrastructures state-wide are important pre-requisites to accelerate development of the state’s agricultural sector. Currently, the basic facilities and infrastructures are inadequately provided if not still lacking, particularly in rural areas. These include farm roads, water resources, power supply, ports, fish landing complexes, storage and other processing facilities. In addition, good farm roads are needed to open up new areas for crop cultivation in rural areas. Poor road networks and basic facilities have affected not only the marketing of agricultural products, but also the delivery of farm inputs and other services. In addition, inadequate drainage and irrigation facilities in potential paddy areas remain critical problems for growth of the paddy and rice industry. Out of the total paddy area of 36,510.46 hectares, only 11,649.95 hectares (or 32 percent) have good irrigation and drainage facilities and are under the K1 category, while another 11,933.34 hectares (33 percent) with basic irrigation and drainage facilities are under K2, and 12,927.17 hectares (35 percent) are just rain-fed areas under K3.

3.2 Unstable Electricity Supply and Expensive Diesel Fuel

3.03 An unstable electricity supply has frequently disrupted the operations of various processing plants, fishery complexes and other

business premises throughout the state. Frequent interruption of the power supply has increased the production costs and deteriorated the quality of products. This phenomenon has affected the delivery of products to the buyers as the quantity ordered cannot be fulfilled according to the agreed time schedule.

3.3 Lack of Skilled Manpower and Heavy Reliance on Foreign Labour

3.04 Generally, the agricultural sector in Sabah continues to experience labour shortages, particularly in terms of skilled workers. The locals do not seem to be really keen to work in the farms and plantations. For this reason, rapid development of the palm oil industry has led to heavy reliance on foreign labour (MPOB, 2013b). The number is increasing and, currently, more than 150,800 foreign workers are working as field hands and harvesters in the state. Similar problems also prevail in the livestock and fisheries sectors, especially in the capture fisheries and aquaculture sector. In turn, this may pose a real threat to the state because any major reduction in foreign workers due to changing immigration policies of the source countries will severely affect the sector. Moreover, most of these workers do not appear to have received appropriate training from their employers and thus lack appropriate skills and aptitude in certain tasks, which may affect their productivity.

3.4 Lack of Emphasis on High-Impact R&D Initiatives

3.05 Few research and development (R&D) initiatives have been undertaken in any of the sectors. However, as the state seeks to enhance its innovativeness and competitiveness, it must strengthen and intensify its R&D efforts in various sectors. These efforts are essential to encourage new product development, generate new technologies and produce high-quality planting materials and breeding stocks to improve productivity; in addition, information technology and capabilities must be enhanced. In fact, inadequate R&D on high-value species, preservation techniques, fish biomass, fishing quotas and new technologies has deterred the development

and expansion of capture fisheries. Although R&D activities are presently carried out by some local universities and research institutes, inter-agency coordination and collaboration as it pertains to aquaculture development in the state has been minimal.

3.5 Lack of Strategic Marketing and Effective Distribution Networks

3.06 Efficient marketing and effective distribution networks are essential elements in the commercialisation of agriculture outputs in the state. Presently, the necessary logistics and supporting facilities, such as efficient transportation systems, collection centres and warehouses for handling, storage and packaging are still lacking throughout the state. In addition, landing facilities, such as jetties and fully equipped fishery complexes/storage systems, are still inadequate, which has affected the quality of fish upon arrival at ports. The problems are compounded by the absence of good connectivity such as roads and highways between landing sites and distribution centres. Another shortcoming is that some of the fishing vessels have also failed to comply with European Union (EU) standards for the export of fish, which disqualifies them from entering the EU market.

3.6 Limited Funding for R&D and other Forms of Assistance

3.07 The government funding for R&D and human capital development, as well as other forms of assistance, has been rather limited for crops, fisheries and the livestock industry. As a result, the state experiences a range of shortfalls, including inadequate R&D officers, lack of advanced R&D facilities, non-existence of strategic research collaboration among government agencies and the private sector and the absence of research on priority projects. Consequently, the ability to produce high-quality breeding stocks and high-yielding varieties/planting materials has been compromised.

3.08 There is also limited funding from both the state and federal government for relevant agriculture-based agencies to implement

their respective extension and training programmes and to carry out the necessary regulatory enforcement and monitoring throughout the state.

3.09 With respect to fisheries, the government funding has been mainly for the development of capture fisheries and selected marine aquaculture like cage culture, hatcheries and seaweed. However, funding for the development of freshwater aquaculture and ornamental fish over the years has been minimal. Particularly for deep-sea fishing, obtaining high amounts of capital investment for the ventures from financial institutions can be highly problematic for many entrepreneurs.

3.7 Lack of Adoption of Technology and Limited Mechanisation

3.10 Poor adoption of technology has been attributed to an inadequate number of extension officers of the respective agencies to serve the large number of smallholders and producers, who are widely scattered throughout the state. For example, the current ratio of extension officer to total rice growing area is 1:700-1,200 acres, while for fisheries, the ratio is 1:6,000, both of which are grossly inadequate. At the same time, the use of farm machinery and mechanisation is also rather limited for a number of reasons, including the high cost of farm machinery, high maintenance costs due to the present ground conditions and uneconomic holdings. Particularly for paddy production, there has been little use of relevant technologies among farmers and the number of tractors available for land preparation and harvesting is also grossly inadequate. Likewise, with respect to fisheries, most fishing vessels are not well equipped with the latest fishing technologies or modern equipment, especially for deep-sea fishing.

3.8 Lack of Coordination and Collaboration among Implementing Agencies

3.11 Several key agencies are providing the necessary assistance to smallholders and producers throughout the state. However, inter-

agency coordination amongst these implementing agencies is not only unclear, but also lacks strategic collaboration for effective implementation of development programmes. In addition, agencies involved with various development programmes do not only receive limited funding, but also have insufficient numbers of extension and technical staff members to support the needs of smallholders, livestock producers and fishers throughout the state. Adequate extension and technical staffs are needed not only to disseminate essential information, but also to deal with monitoring, licensing and providing technical knowledge and advisory services to farmers and producers.

3.9 Environmental Sustainability

3.12 Population pressures coupled with climate change and its adverse impacts on the environment have become crucial factors in ensuring sustainability in the agricultural sector in the state. Moreover, concern for the environment also means meeting the stringent environmental requirements and standards of global markets, as well as the rising expectations of the general public. In fact, the oil palm industry is facing anti-palm oil campaigns from environmental and consumer advocacy groups in Europe and the US. Hence, there is a need to address the sustainability of palm oil production to further develop the sector, while protecting the interests of its stakeholders, particularly smallholders. In addition, another concern is focused on the depletion of resources due to environmental pollution and trans-boundary problems, including improper aquaculture practices such as an outright removal of mangrove forests and obtaining live coral reef fish fries caught using illegal fishing methods.

3.10 Inadequate Private Sector Investment

3.13 To date, growth in the agricultural sector has been largely driven by public sector initiatives. Apart from oil palm, fisheries and aquaculture in particular, which have great potential for export, private sector investment in the agricultural sector has been generally lackadaisical, particularly in food crops and upstream activities.

Inadequate infrastructure and facilities in the state have, to a certain extent, discouraged private investments in various economic and agriculture activities in the state.

3.11 Increasing Scarcity of Agricultural Land

3.14 Agricultural land covers only 2.12 million hectares (or 28.8 percent) of the total area in Sabah (7.362 million hectares). As of 2011, about 1.65 million hectares were being utilised for planting of major crops in Sabah and, thus, only 0.52 million hectares may be available for further agriculture development. Most of these areas, or about 98 percent, have been planted with industrial crops, particularly oil palm (1.44 million hectares or 89 percent), rubber (108,083.5 hectares), cocoa (6,486.1 hectares), while the remaining 65,116.7 hectares are for other crops, including paddy crops. However, only a small percentage of available agriculture land is suitable for paddy cultivation.

3.15 In view of this, suitable agriculture land will be increasingly limited in the state, and competition for land use continues to increase due to emerging economic activities, especially in Penampang. This has meant that suitable land available for wet paddy cultivation and other agro-food production has been considerably reduced over the years. Hence, despite the growth in oil palm and its contribution to the state's GDP, further expansion must be limited unless other categories of land are made available for its cultivation.

3.12 Lack of Water Resources for Agricultural Production

3.16 A sufficient supply of good-quality water is critical not only for domestic consumption and industrial uses, but also for various agricultural productions, including for paddies, fisheries and livestock. In fact, competition with other sectors for water, coupled with emerging water shortages in some districts throughout the state, has jeopardised the achievement of higher food production.

3.13 Taxation and Cabotage Policy

3.17 Another issue that affects the agricultural sector in the state is the imposition of higher levies and taxes, particularly for oil palm, which has been taxed since 1999. This has caused the cost of doing business in Sabah to be relatively higher compared to Peninsular Malaysia.

3.14 High Cost of Production

3.18 The cost of farm inputs has increased over the years, particularly for fertilisers and animal/fish feeds. This has become a major concern in the production of crops, livestock and fisheries. As most of the inputs are imported, an increase in the prices of imported farm inputs would correspondingly affect the cost of production. In fact, the high cost of farm inputs is a major factor that contributes to the high costs for agriculture production in the state. For instance, the cost of fish feeds is approximately 50 percent to 70 percent of the total operational costs. In addition, an initiative to turn local raw feed materials into feed ingredients has not been fully explored. Likewise, feed costs for various livestock account for between 40 percent and 75 percent of the total production costs due to the high dependence on imported raw feed materials such as corn and soy beans.

3.15 Biosecurity Issues

3.19 Biosecurity is a real concern for the agricultural sector in Sabah, especially in the importation of new species, breeding stocks and planting materials, as well as in the production of hybrids. The introduction of new species into a natural body of water can cause the outbreak of an exotic fish disease and threaten indigenous species, which eventually can lead to extinction of the latter in Sabah waters. Similarly, some of the new planting materials for crops obtained from unregulated sources can be invasive and may have negative and unintended effects on existing varieties in the state.

3.20 With respect to livestock, biosecurity supported by good sanitary and phytosanitary (SPS) standards is vital in animal trading and animal movement within countries and across borders. Even

though Sabah is, to date, free from major animal diseases, such as foot and mouth disease (FMD), *nipah*, avian influenza, brucellosis, anthrax, rabies and many other major diseases of importance, the risks of infection with these major diseases are real if there is no proper control in the importation of livestock animals and their products. Therefore, all these potential risks should be strictly guarded against with the enforcement of relevant rules and quarantine regulations. The Department of Veterinary Services and Animal Industry (DVSAI) Sabah is empowered under the Animals Ordinance 1962 (Sabah No. 16 of 1962) and its various by-laws to regulate the importation and exportation of animals, birds and their products. However, both Department of Agriculture (DOA) and DVSAI are under-staffed.



4. PROSPECTS FOR AGRICULTURAL DEVELOPMENT

4.01 Notwithstanding the various issues and challenges facing the agricultural sector in the state, there are great potentials and prospects for its further development.

4.1 Prospects for Paddy and Rice Production

4.02 Even though the planted area for rice in Sabah reached 40,314 hectares and produced 92,727 tonnes of rice in 2012, the SSL for the same year was 25.66 percent of the state's total rice consumption, while the remaining 74.34 percent was imported rice. This suggests that because rice is a staple food, rice consumption will always remain high, especially with rapid growth in the state's population. At the same time, the issues of food security, unstable food prices and the uncertainty of climate change have become main drivers for the state government to consider production of rice in the state as its top priority. Hence, given the need to achieve 60 percent in terms of SSL, the prospects for paddy and rice production in Sabah have become a key agenda item for the state government. To achieve this, an additional of 66,000 ha of suitable land is needed for food production. Given this, the state government will consider to develop any suitable land including any land that has been allocated for oil palm plantation purposes.

4.2 Prospects for Fisheries and Aquaculture Products

4.03 Future prospects of the industry in Sabah, particularly in the forthcoming SAP3, will very much depend on the state's ability to address the impending issues and challenges, as well as the demand for fishery products in the next 10 years.

4.04 Based on the National Agro-Food Policy, fishery demand in the next 10 years is expected to increase from 1.3 million tonnes in 2010 to 1.9 million tonnes in 2020 with 3.8 percent growth per year. The marine capture fisheries in particular are expected to be the highest contributor, moving from 1.32 million tonnes in 2010 to 1.76 million tonnes in 2020 with 2.9 percent growth per year. Coastal fisheries are also expected to contribute to 65 percent of the total marine capture fisheries in 2020. Marine fish landing is targeted to increase from 381,000 tonnes to 620,000 tonnes in 2020.

4.05 In Sabah, the live reef food fish trade (LRFFT) has been one of the highest contributors to the fisheries industry in the state. Traditionally, most live reef food caught in Sabah has been exported to Hong Kong and mainland China. LRFFT has an estimated annual retail value of USD1 billion in the Asia-Pacific region in which Sabah exported a total of RM6.7 million worth of live fish in 2007. In addition, the trade has also extended to other markets in the region, including Singapore, West Malaysia and even within Sabah. The contribution from the LRFFT is not only injecting return on investment (ROI) to the local fishers and live reef fish exporters, but it has also positioned Sabah as the “*Little Hong Kong of Borneo*”.

4.06 Another prospect for the fisheries sector is the downstream processing for its captured fishery products. Making commercial factories for fish processing available would be a steppingstone for the fisheries industry in the state to diversify into high-quality products from frozen and fermented fish products to canned foods, pharmaceutical products and processed fish products like fish sauce, fish oil and surimi. In addition, the total national marine aquaculture production, including from freshwater aquaculture, is expected to increase to 790,000 tonnes (41 percent) of the national total demand for fish in 2020. The sub-sector is also expected to contribute to the export value, including fillet, from RM1.4 billion in 2010 to RM3.2 billion in 2020.

4.07 Production of brackish water aquaculture, which consists of white shrimp, tiger shrimp, fish and shellfish, is also expected to increase due to contributions by mega projects under Entry Point Project (EPP) 4 and EPP 6. Sabah’s contribution at approximately 11 percent to the national aquaculture production in 2012 shows the significant role the state plays as an important aquaculture hub. The introduction of EPP 4 National Key Economic Area (NKEA) focusing on integrated fish cage farming in 2013 succeeded in producing some 319

metric tonnes from a single company. The single output contributed approximately 18.5 percent of total production of marine fish aquaculture by small-scale fish farmers in Sabah. In addition to fish farms, shrimp farms are another good prospect in aquaculture, with an estimated value of RM150 million and 12,070 metric tonnes production.

4.08 The optimistic outlook for seaweed reflects another high-impact sub-sector with an estimated incremental production of 19.7 percent from 149,000 tonnes in 2010 to 900,000 tonnes in 2020 with export potential value estimated to increase from RM235 million in 2010 to RM1.4 billion in 2020. Seaweed, which is solely produced in Sabah, enjoys an estimated increase in the carrageenan market between 10 percent and 15 percent per year with an estimated value of USD3.3 billion. Seaweed has been included as a high-impact commodity project under the NKEA and EPP 3. EPP 3 NKEA's value of RM46.07 million is expected to fund the development of an area of 2,000 hectares in the Aquaculture Industry Zone (AIZ) with a projected production of 8,000 metric tonnes yearly. Small-scale seaweed projects which are also in operation are further strengthened by the Seaweed Cluster Project to increase production by 50 percent to 70 percent to some 1,000 metric tonnes of seaweed production yearly. The wholesale value of seaweed is also very encouraging with a hike of some RM6.44 million in 2012 (RM72.61 million in 2012 and RM66.17 million in 2011). This indicates positive prospects for a steady increase in terms of value and quantity of seaweed production in Sabah in the future.

4.09 Fish and shrimp fry production also has prospects in SAP3 as production of white shrimp, marine fish and freshwater fish fry is expected to increase due to continuous demand by fish farmers, especially for marine fish fry. Freshwater fish fry also shows similar prospects, with an increase of 2.7 percent in 2012, due to strong market demand for freshwater fish. The production of white shrimp fry is also expected to grow in the coming years although disease outbreak due to early mortality syndrome (EMS) decreased production of fry in 2012 with only 1.079 million fry.

4.10 Ornamental fish, a non-edible fisheries product (arowana and goldfish), also has promising prospects in SAP3. Its production is expected to increase by 12 percent per year from 860 million tails to 2.7 billion tails with an increase in export value from RM688 million in 2010 to RM2.1 billion in 2020. At the moment, potential markets for

ornamental fish are Singapore, the US, Japan, Australia, China, Taiwan, Hong Kong and the EU. This sub-sector has great potential to be developed further as Sabah has high biodiversity in ornamental fish.

4.3 Prospects for Livestock

4.11 The future prospects for the livestock industry in Sabah remains bright due to the availability of land for expansion and effective improvement in key strategic enablers that will enhance the value chain systems of the entire industry. By 2024, the population of buffalo and cattle will be 58.8 thousand head and 79.2 thousand head, respectively. Also, the SSL for beef is projected to increase throughout the period until it reaches 5.7 percent by 2024.

4.12 Based on the average growth rate for the past five years, the poultry population is projected to achieve 2.88 million birds by 2024, while the duck population will reach 11,989 head. On average, the consumption of broiler meat is projected to grow at 1.46 percent per year throughout SAP3. Based on this projection, the SSL for broiler meat will grow at 0.49 percent per annum and by the end of SAP3, the sector will achieve its full SSL (i.e. 99 percent).

4.13 In the absence of disease outbreak, and with the provision of appropriate technology and capability, a positive growth trend will also be recorded for egg production in the state, which will continue to increase until it reaches 636 million units by 2024.

4.14 In terms of pork meat, Sabah has successfully achieved 100 percent SSL over the years. Given the relationship between the supply of pigs, the change in market price and the pig population, the average annual growth rate of pigs slaughtered in the period of SAP3 is projected to be 2.51 percent per annum.

4.15 Livestock products such as milk have also shown a significant upward trend in production, particularly with establishment of MCC, where Sabah International Dairies remains one of the national suppliers for the “1 Malaysia School Milk Programme”. A few other private investors and GLCs, such as Sabah International Dairies and DESA Sdn. Bhd., have also invested in promoting livestock’s downstream activities, which boost the dairy sector. In fact, a preliminary review of the sector indicates that more specialised sub-

sectors that focus on downstream processing for milk powder and cheese have the potential to be the next essential industry to be developed in the state.

4.4 Prospects for Fruits and Vegetables

4.16 Based on the average of 3.5 percent growth per annum of fruit production in the past 5 years, fruit production in Sabah is forecasted to increase to 265,875 tonnes by 2024. This increase in the production of fruit will correspondingly improve the farmers' income and reduce the deficit in the BoT for fruits. For vegetables, based on the trend projection of 1.2 percent growth per annum, production is expected to increase from 41,698 tonnes in 2013 to 47,495 tonnes by 2024. However, all these projections depend on the availability of land and, therefore, the existing areas for fruit production will need to be expanded. Other contributing factors include high demand for temperate fruits and vegetables, completion of infrastructure in *Taman Kekal Pengeluaran Makanan* (TKPM) areas, more private investors going into downstream processing activities, better R&D facilities, more effective and efficient farm management, better market efficiency and more farms being mechanised.

4.5 Prospects for Mushrooms

4.17 The mushroom industry in Malaysia has the potential to be developed due to high demand from local and global consumers (Haimid et al., 2013). The demand for mushrooms in Malaysia has been estimated at 50 tonnes per day, while its current production is only 24 tonnes per day (Mat Amin et al., 2014). Given this, the government has categorised mushrooms as a high-value crop that will be commercially grown in Sabah and, therefore, has included it as one of the EPPs.

4.18 Based on the Malaysian climate, 17 varieties of mushroom can be grown locally, but only a few are cultivated commercially. The demand for mushrooms is increasing in line with the increased awareness of consumers towards health and the promotion by government agencies and non-governmental organisations (NGOs) concerning their many benefits. Mushrooms rank the highest among

vegetables for protein content, making them the first choice as an alternative protein source to livestock and fish. In fact, vegetarian community has taken mushroom as a main source of protein.

4.19 Based on Sabah's historical Shiitake mushroom production, producers of Shiitake mushrooms are projected to increase from 173 participants in 2014 to 560 participants by the end of 2024. Therefore, production of Shiitake mushrooms is expected to increase by approximately 19 percent per annum, i.e., from 42 tonnes in 2014 to 230 tonnes by 2024. The completion of the Rural Development Corporation's new substrate processing centre is expected to further attract more participants to venture into the project.

4.6 Prospects for Other Economic Crops

4.20 The prospects for other economic crops, which include coconut, coffee, maize, sago, sugarcane, floriculture, apiculture and specialty natural products, remain high. In fact, Sabah is now an importer of maize (RM112 million), sugar (RM80 million), and coffee (RM3.8 million). On the other hand, the state remains as net exporter of coconut (RM34 million). Hence, strategic initiatives will be implemented to reduce the state's import bills.

4.21 The increase in the livestock population and growth in the livestock industry will result in a higher demand for maize in the next few years.

4.22 An increase in demand for natural products such as herbs for use in health-related products or as alternative medicinal treatments to alleviate several illnesses suggests that production of value-added herb products in the state will also increase the price of herbs as well as the growth of agrotourism in the state. Therefore, given its natural resources, Sabah can be the next major herb and spice producer in the region. However, there is still limited information on major conservation activities conducted on local herbs and spices, which may hinder the efforts to preserve and manage biological diversity through appropriate legislation.

4.23 The establishment of the Sabah Agro Industrial Precinct (SAIP) under the Sabah Development Corridor (SDC) project, which served as a test bed for biotech-driven research and development and biotech-

driven businesses, will propel the industry further. SAIP's main role is to carry out research and development on other potential herbs like the Sabah Snake Grass (*Clinacanthus nutans*) or also known as Belalai Gajah, which is highly publicised as a cure for cancer with many reported testimonies from cancer patients. In addition, research and development on the effectiveness of local aromatic and non-aromatic herbal plants as insecticides should be pursued in SAP3.

4.24 The initiative by the state government to formulate strategies to make Sabah the biggest producer of ginger in the country also will spur the growth of other related industries in the state. Subsequently, the DOA's innovative use of in-vitro technology in 2012 to produce 500 plantlets from one ginger plant in six months through tissue culture protocol will likely produce quality ginger and help to overcome food shortages. Eventually, the ginger produced from this technology is expected to fulfil Sabah's high ginger demand of 24,000 kg per month.

4.25 The floriculture industry is expected to grow in the near future with changing lifestyles and increases in the purchasing power of the middle class and younger generations, and the production of honey bee products is expected to increase with the increasing number of registered contract farming participants through programmes such as *Program Akhiri Zaman Miskin (1AZAM) Tani*, *Peruntukan Khas Pembasmian Kemiskinan (FEDERAL)* and State Development Fund.

4.7 Prospects for Oil Palm

4.26 The oil palm industry in Sabah will continue to have good prospects in the next few years due to huge planting areas to provide sufficient raw materials for upstream to downstream activities, while the establishment of Palm Oil Industrial Cluster (POIC) in Lahad Datu and Sandakan by the state government is expected to offer huge business opportunities locally and internationally. Downstream prospects may include manufacturing of transfat-free food products, biomass processing, manufacturing of nutraceuticals/phytonutrients, manufacturing of oleochemical products and fuel and power supply.

4.27 In addition, the rapid growth of the oil palm industry in Sabah has and will continue to be boosted by the development of 126 oil palm mills, 14 palm kernel crusher factories, 14 palm oil refinery plants, 3 biodiesel plants, 7 bulking installation plants, 102 fresh fruit

bunch (FFB) dealers and 57 nurseries located throughout the state (MPOB, 2014c), even though the yields for FFB seem to be stagnant, oil extraction rate (OER) and crude palm oil (CPO) over the past 13 years have been largely attributed to adverse weather conditions, poor agronomic inputs, low replanting rates of uneconomical old palms and, most importantly, a shortage of labour which has reduced harvesting intervals and activities, leaving ripe fruit bunches rotting in-situ.

4.28 Oil palm cultivation continues to expand from 941,332 hectares in 1999 to 1.48 million hectares in 2013 with an average growth rate of 3.27 percent annually, but this figure is likely to fluctuate around 1.58 million hectares up to 2014. Based on the international market price and increase in harvested area, the FFB production is projected to increase from 27.8 million tonnes in 2013 to 35.2 million tonnes by 2024. The average growth rate of the Sabah's FFB production from 2014 to 2024 is projected at 2.48 percent per annum. The yield of FFB is also projected to increase from 21.09 tonne per hectare in 2013 to 24 tonne per hectare in 2024. This indicates that the palm oil industry in Sabah can expect to achieve a maximum FFB yield in SAP3.

4.29 In terms of OER, the state is estimated to have a positive trend and growth at 0.04 percent per annum, while CPO production is estimated to show stable positive growth of 5.86 million tonnes in 2013 until it achieves 7.55 million tonnes in 2024. This is mainly due to the limitation of land for future oil palm cultivation with steady growth of FFB production in that period. In addition, based on the FFB production, the production of palm kernel (PK) recorded about 1.24 million tonnes in 2010. Its PK production continued to increase to about 1.3 million tonnes (2013) and 1.4 million tonnes (2014) and it is projected to increase up to 1.7 million tonnes by 2024. Therefore, overall, the palm oil industry in Sabah will continue to play an important role in the state's agriculture GDP contribution.

4.8 Prospects for Other Industrial Crops

4.8.1 Rubber

4.30 Malaysia has been contributing about 65 percent of the rubber glove supply in the world and this figure is expected to grow up to RM25 billion by the year 2020. Recognising this, the Rubber NKEA intends to plant about 1.2 million hectares of rubber that will produce about 2 million tonnes of rubber annually by the year 2020. This will further support the development of downstream activities and eventually contribute around RM3,244 million of the country's gross national income (GNI). Given this, the sustainability of rubber production in Sabah will be further strengthened through the EPP under the ETP, where Sabah Rubber Industry Board (SRIB) and Rubber Industry Smallholders Development Authority (RISDA) will be involved directly in replanting and new planting programmes of rubber in the state. In addition, the fact that Malaysia is well known as a leading exporter of quality furniture made from rubber wood will also lead to an increase in demand for rubber wood furniture from countries like Japan, the US and West Asia. Given this situation, the state is potential to become a major producer of rubber wood in the country. Overall, natural rubber production by smallholders is projected to achieve 74,000 tonnes in 2020 and 94,000 tonnes in 2024. At the same time, the natural rubber yield by smallholders is expected to reach 1.8 tonnes per hectare in 2020 and that figure will increase to 3.15 tonnes per hectare by 2024.

4.8.2 Cocoa

4.31 Cocoa produced in Malaysia has good demand from major chocolate producers due to its high melting point. However, cocoa cultivation remains less popular as compared to other industrial crops such as oil palm and rubber. Even so, given its market potential with rising world demand and the steady price of cocoa beans, the government through the Malaysian Cocoa Board (MCB) under the Malaysian Ministry of Plantation Industries and Commodities (MPIC) aims to expand cocoa cultivation to 40,000 hectares to ensure continuous supply of cocoa beans in order to meet demand from domestic cocoa millers. Therefore, cocoa cultivation will be encouraged in Sabah to take advantage of the rising world demand

and steady price of cocoa beans. Given this, cocoa production is projected to increase at an average growth rate of 26.11 percent per annum from 2015 to 2024 with expected yield of 0.38 tonnes per hectare by 2024 (see Table 8-9, Overview and Performance of Agricultural Sector in Sabah).

4.8.3 Pepper

4.32 The global consumption of pepper grew an average of 4.8 percent per annum in 2001-2013. The global demand for pepper in 2014 was estimated at 387,000 tonnes, while its production was at 333,500 tonnes, resulting in a shortfall in supply of 53,500 tonnes (International Pepper Community, 2014). To date, Malaysia has ranked fifth as a pepper-producing country after Indonesia, Vietnam, Brazil and India, and the Malaysian Pepper Board has a target of more than RM216 million worth of pepper exports by 2020. Notably, about 60 percent of the pepper consumed in Japan comes from Malaysia. Malaysia is striving to become one of Asia's foremost *Halal* food hubs, and with strict food safety and quality standards of Malaysian pepper, this will provide a huge opportunity for the sector to expand in Sabah.



5. STRATEGIC GOALS AND OBJECTIVES OF SAP3

5.01 The main thrusts of SAP2 (1999-2010) were to modernise the agricultural sector by creating market-driven efficient agribusiness and farm processes into a commercialised, dynamic and competitive sector and engine of economic growth and to raise the standard of living of the farming, livestock and fishing communities in Sabah through maximisation of income and optimal utilisation of resources. Figure 1 below depicts the strategic goals of SAP3.

Figure 1: SAP3 Strategic Goals



5.02 While recognising the accomplishments of SAP2, parts of its strategic direction are still relevant and hence will be continued in SAP3. Therefore, in line with Vision 2020 and the various government transformation programmes, the overriding strategic goals of SAP3 as depicted in Figure 1 will be to increase food security and income among farmers and producers, strengthen productivity growth and competitiveness and enhance sustainable agriculture in the state.

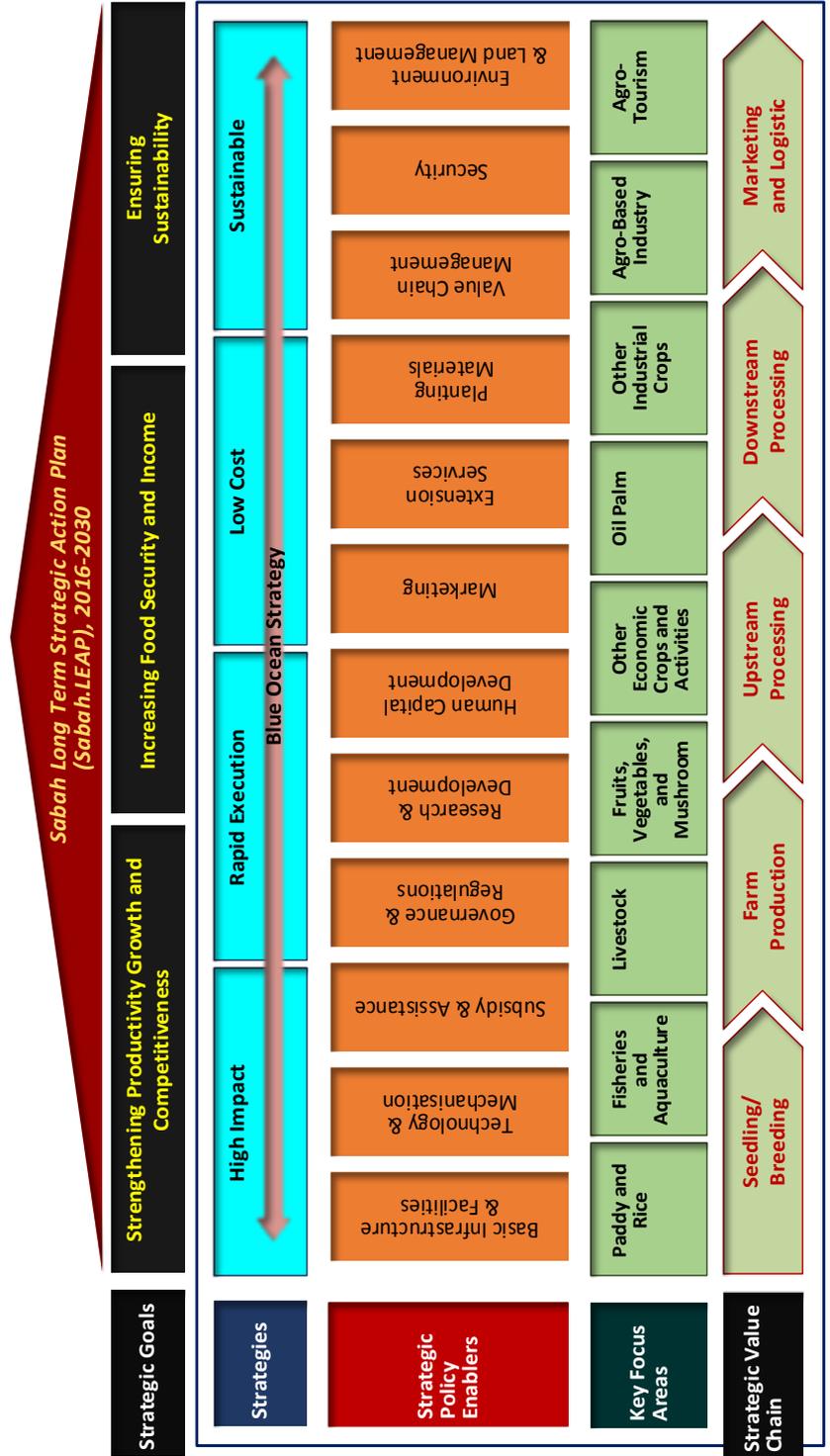
5.03 To achieve the strategic goals, the key strategic objectives of the policy are:

- To enhance food security by achieving a minimum production growth rate of 3 percent SSL annually for food crops, livestock and fisheries products, thus increasing farmers'/producers' income to RM4,000 per month per household;
- To strengthen productivity growth and competitiveness for nine Key Focus Agricultural Areas; and
- To ensure long-term economic resources and environmental sustainability of food crops, fisheries, livestock, industrial and other economic crops including agrotourism.

5.04 For this purpose, the SAP3 shall emphasise on the following strategies, policy enablers, key focus areas, and strategic value chain (see Figure 2).

5.05 To drive the agriculture sector forward, 14 key strategic enablers have been identified. Each of these enablers will act as a transforming force that facilitates the 9 key agricultural focus areas in the state. These enablers include development and improvement of infrastructure and facilities, technology and mechanisation, subsidy and assistance, governance and regulations, research and development, extension services, human capital, security, environmental and land management, value chain management, planting materials, marketing, private sector participation and inter-agency collaboration.

Figure 2: Third Sabah Agricultural Policy Framework





6. STRATEGIC POLICY ENABLERS FOR AGRICULTURAL SECTOR

6.01 Over the years, agriculture development in the state has been influenced by availability, effectiveness and efficiency of key strategic enablers. In order to be a transforming force of agriculture sector in the next 10 years, specific and strategic policies that will address the existing effectiveness and efficiency of these strategic enablers are necessary to ensure an increase in food security and farmers' income, strengthening productivity and growth while ensuring sustainable agriculture sector in Sabah.

6.02 Some of the above key issues have long been outstanding due to the financial constraints and other development priorities of the state. Nonetheless, the government is committed to address all these pertinent issues and challenges in order to achieve the strategic goals and objectives of SAP3. The main focus will be directed towards improving and strengthening the following key strategic enablers built on the Blue Ocean Strategy (BOS) and driven by effective inter-agency collaboration and greater participation from the private sector (see Figure 3):

- Provision of adequate and effective basic infrastructures and facilities;
- Intensify R&D across the agriculture sector;
- Application of appropriate and modern technology and mechanisation;
- Development of human capital;
- Strengthen the governance and regulations;
- Development of effective marketing;
- Provision of subsidy and other assistance;
- Effective environmental and land management;
- Effective inter-agency collaboration;

- Encourage private sector investment and management;
- Effective extension services;
- Quality planting materials;
- Effective value chain management; and
- Security.

Figure 3: Strategic Enablers of SAP3



6.1 Provision of Adequate and Effective Basic Infrastructure and Facilities

6.03 In an effort to enhance the value-added activities of the agricultural sector, the state has identified the need to improve her current logistics and infrastructures for transporting agricultural goods from rural to urban areas. The state will focus on upgrading social infrastructure within the rural areas with an emphasis on improvement of farm roads and bridges, better drainage and irrigation systems, electricity and water supply. This will be implemented in tandem with the GTPs under the Rural Development and Key Result Area. With improved road systems and better social infrastructures, private sector investment is expected to increase in the rural areas.

6.04 To further enhance agricultural activities, the state will adopt an effective logistics system that will ensure the freshness and quality of agricultural products transported directly from farms to consumers. The state, through various agencies such as DOA, Federal Agricultural Marketing Authority (FAMA) and others, will work to improve logistics infrastructures by increasing the number of collection centres strategically located in major divisions throughout the state with proper packaging, handling and refrigerated storage facilities. There is also a need to improve and invest in systematic distribution centres, which are not only for storing products, but also for fulfilling orders systematically from wholesalers, retailers and consumers. In addition to that, the transportation vehicles used will also be equipped with a refrigeration system to ensure freshness and the shelf life of the product.

6.05 In addition, the state will improve sea and air logistics capacities to accommodate higher cargo load and cargo volume discharge and further provide the ability to handle full cargos. This includes the expansion of existing airports such as the Kota Kinabalu International Airport (KKIA) and two smaller airports located in Sandakan and Lahad Datu, ports, wharfs and jetties. Greater storage and handling capacity is expected to smooth the process of transporting agricultural products from the farm to end users. The improvements that the state will make in the logistics infrastructure will not only ensure product safety and freshness but also will likely reduce high post-harvest losses. Therefore, the provision of good and

effective infrastructures, such as roads, drainage and irrigation systems, water resources, uninterrupted power supply and processing facilities/collection centres, is crucial to drive the sector over the next 10 years.

6.2 Intensify R&D across the Agricultural Sector

6.06 To increase the productivity of farmers and producers while improving the quality of agricultural products, the state has identified the need to develop crops, livestock and fishes that can produce high yield that is resistant to disease and withstand changing weather patterns. For this purpose, the state will devote her full support to effective and high-impact R&D with related agencies such as the Centre for Molecular Marker Discovery and Validation (CMDV) under the Malaysian Agricultural Research and Development Institute (MARDI). At the same time, efforts to encourage private sector organisations in R&D will be further enhanced through various means including incentives and subsidies.

6.07 At the same time, there is a need to increase the value-added processing and post-harvest activities in the state. Given this, R&D for post-harvest activities to improve the post-harvest system and technology which comprises of a chain of processing activities from harvesting, storing and packaging to marketing will be intensified. These activities will ensure quality in terms of appearance, texture, flavour and nutritive value that meets the international standards for food safety. At the same time, this will lead to minimisation of losses along the supply chain between harvest and consumption. All these efforts are expected to boost the income of farmers and producers.

6.08 Creativity and innovation will be promoted aggressively across the sub-sectors to ensure the sectors become more competitive and resilient.

6.3 Application of Appropriate and Modern Technology and Mechanisation

6.09 To increase agricultural yields, the state has recognised the need to transform traditional agricultural practices into systematic and mechanised practices by encouraging the use of appropriate technologies and mechanisation at both the farm level and in upstream processing activities. The use of technology will take into account various cost-effective elements, such as size of land owned by farmers, human capital and maintenance costs. For these reasons, priority will be given to integrated agricultural projects and export-oriented products. Also, emphasis will be given to easy maintenance machinery and equipment, with appropriate training programmes for the target groups. In the long term, the state will let the private sector take the lead in bringing in new technologies and mechanisation services to ensure that agricultural activities in Sabah become more competitive and sustainable.

6.4 Development of Human Capital

6.10 Strengthening human capital will ensure that the state has a sufficient and capable labour force to support the growth of the sector throughout SAP3. Realising the importance of competent human capital in agricultural development, the state will establish additional institutions for training and capacity building of staff, farmers, processors, marketers and agropreneurs. The state human resource development in the agricultural sector can be better achieved through strategic collaboration among agencies, the private sector and educational/skills institutions, such as the Agricultural Institute of Sabah, Agriculture Vocational Training Centre (AVTC), Integrated Agricultural Training Centre (IATC) and the farmers training centres at Kota Marudu, Tenom and Sandakan.

6.11 In particular, capacity building of farmers/producers will be carried out by providing sufficient training to them as they constitute a significant proportion of the rural population and are still based on a small scale relying on uneconomical agricultural activities. Training for these farmers/producers will focus on achieving high productivity by acquiring new skills and knowledge to implement effective and

efficient agricultural practices, including key activities such as fertilisation, mechanisation, integrated pest management and environmental controlled production systems. In addition, the state through agencies under the Ministry of Agriculture and Agro-based Industry will continue to provide training programmes such as *Kursus Kemahiran Bersepadu (KKPB)*, *Kursus Kemahiran Keusahawanan (KKK)* and *Kursus Keusahawanan Pemprosesan Makanan Pusat Bimbingan Usahawan* to processors and agropreneurs. These will help them develop more varieties of processed agricultural products from various raw materials from crops, animals and fishes. In turn, it will enable them to have wider market opportunities while providing local consumers with more food options.

6.5 Strengthen the Governance and Regulations (Biosecurity)

6.12 Sabah has a rich diversity of flora and fauna, much of which is unique to the world. Sabah's economy depends heavily on primary agricultural production (non-food and food crops, animals and livestock and fisheries and aquaculture). To date, the state has done a very good job in controlling and preventing any type of agricultural pest or disease from entering/spreading to the state due to unregulated importation or exportation of agricultural products and other means. Therefore, it is essential to manage biosecurity risk to protect the economy, environment and people's health from the risks posed by unwanted agricultural exotic pests and diseases to enter the state while keeping the endemic pests and diseases away from Sabah.

6.13 In the state, the Department of Agriculture (DOA Sabah), Department of Fisheries (DOF Sabah) and Department of Veterinary Services and Animal Industry (DVSAI) are the agencies directly responsible for the quarantine of plants, fisheries and animals, respectively. Currently, the Sabah prevention against potentially devastating pests and diseases is vested under the Plant Quarantine Act 1976, Plant Quarantine Regulations 1981, Animal Ordinance 1962 (Sabah No. 16 of 1962), Fisheries Act 1985 (Amendment in 2011) and various other related acts and regulations.

6.14 In particular, biosecurity hazards of various types exist in each sector and they have high potential to move between sectors and,

thus, the suggested strategic integrated approaches on biosecurity for SAP3 will cover cross-sectoral of biosecurity as follows:

- Protection of agricultural production and food industries;
- Protection of the environment and biodiversity conservation; and
- Protection of public health.

6.6 Effective Marketing

6.15 Effective marketing and distribution are crucial in supply chain management practices because they enable all sub-sectors to develop, grow and become competitive. To produce agricultural products that have high selling rates, the state must improve the marketing and logistics of the agricultural sector. To achieve this, the state will collaborate with FAMA to monitor and provide technical assistance to agropreneurs in their product development through strategic inter-agency coordination. Product development will be geared towards meeting the needs and expectations of consumers. This is critical in terms of retaining and gaining market share in the agricultural industry. For this reason, the state will intensify her efforts to improve the existing marketing strategies of agricultural products along the value chain, in both vertical and horizontal integrations, especially those related to freight and logistics and handling systems at ports and airports for perishable products. This will be done with careful consideration of the economic costs, efficiency and sustainability. To help the small-scale farmers, the state will establish facilities at strategic locations to serve as collection centres and provide other related supporting services. This will enable effective and efficient distribution of agricultural products from agropreneurs and farmers to consumers.

6.16 On the retail side, the state through various related agencies will play the role in marketing access. Special attention will be devoted to build better networks between farmers and the downstream business sector, such as contract farming. The state will also provide effective and efficient media channels for the sector to ensure that

related information reaches the targeted group through local and international promotion. In addition, the state will also set general pricing strategy guidelines which aim to maximise profits without harming the welfare of consumers. The state will account for several factors, including the costs, competition, targeted group and willingness to pay before designing a pricing strategy to ensure a win-win situation between sellers and buyers.

6.17 To ensure that agricultural products can be accepted and exported internationally, the state through agencies such as FAMA will supervise, coordinate, regulate and develop the marketing of products in both domestic and international markets. It will ensure all the products sold by producers in both markets follow the Federal Agricultural Marketing Authority Act 1965 [Act 141]. Products to be sold in both markets are required to follow grades or standards specified for agricultural produce and also to fulfil requirements for packaging and labelling to ensure the exported products are internationally accepted.

6.18 Recognising that the marketability of agricultural products depends on various criteria set under national and international standards and requirements, the state will continue to encourage every potential crop and non-crop products to be properly certified, for product safety purposes. Particular attention will be given to products with export potential. The product certification involves, amongst others, Global GAP, PrimusGFS, Safe Quality Food (SQF) and International Featured Standards. This is necessary as agricultural products with international certifications will have better demand from both domestic and international markets.

6.19 In addition, to increase the production of *Halal* products, the state will help to improve the coordination between *Jabatan Hal Ehwal Agama Islam Negeri Sabah* (JHEAINS) and other agriculture-related agencies to increase the number of *Halal*-certified downstream products. *Jawatankuasa Makanan dan Bahan Gunaan Islam Negeri Sabah* under JHEAINS will constantly oversee the *Halal* certification process in terms of restructuring general requirements and the workflow of application procedures. In addition, the state will strengthen the enforcement regarding misuse of the *Halal* logo and will adopt a zero tolerance attitude towards agropreneurs that violate the *Halal* law. This is important to maintain market trust. With that, agropreneurs with a *Halal* certificate on their products are expected to have a special market in SAP3.

6.7 Provision of Subsidy and Other Assistance

6.20 As part of the government efforts to enhance productivity of the agricultural sector, the state government will continue to support farmers in strategic sub-sectors with better farm inputs and supports, including direct financing on high-value-added activities. The provision of subsidies will focus not only on the farm level, but also on post-harvest downstream processing. The objective is to intensify every stage and activity within the agricultural value chain. Given this, every input injected by the government will be measured for efficiency based on ROI. This will be made as the Key Performance Indicator (KPI) for the respective agencies responsible for giving out the subsidy.

6.21 To support this, the current SOP on the provision and distribution of incentives and subsidies will be revised and restructured. The type of subsidy and incentive will also be reviewed and focused only on critical activities that support every player along the agricultural sector value chain, such as better access to higher quality planting materials, breeds, machinery and equipment. In addition, assistance in the form of technical support will also be provided together with the subsidy, such as in farm management, food processing, logistics and marketing, to nurture agropreneurs. In this regard, special credit assistance and incentives such as low-interest grants for upstream and downstream activities will be provided to encourage farmers' and producers' involvement in agro-based industry while part or full exemption may be considered on a case-by-case basis.

6.22 In addition, an effective subsidy management system will be implemented and all types of credit assistance will be reviewed and restructured to avoid financial mismanagement among the target groups, especially farmers and producers. For this reason, every direct credit facility offered will be packaged together with a relevant training programme and monitoring process. On the other hand, credit facilities for agropreneurs will be provided for them to pursue strategic agro-based activities through various federal and state government agencies such as *Tabung Ekonomi Kumpulan Usaha Niaga* (TEKUN), *Yayasan Usaha Maju Sabah* (YUMS) and *Amanah Ikhtiar Malaysia* (AIM) for small-scale activities.

6.8 Effective Environmental and Land Management

6.23 Development and expansion into undeveloped lands through large-scale agricultural activities have led to environmental change and degradation. For this reason, the state will, at her best, oversee sustainable use of agricultural resources, promote adoption of an integrated approach for conservation, reduce habitat fragmentation and prevent pollution from related agricultural activities. This will be implemented through the enforcement of existing rules and regulations in the country and state, such as the Environmental Quality Act 1974 and Environment Protection (Amendment) Enactment 2001 and their subsidiary rules and regulations. At the same time, enforcement to ensure adherence to Global Good Agricultural Practices (GAP), Malaysian Good Agricultural Practices (myGAP) and Roundtable on Sustainable Palm Oil (RSPO) will continue.

6.24 As a preventive measure, environmental requirements for big plantations will be further tightened to ensure their operations comply fully with the national and international standards on environmental protection. Hence, the state will increase the accountability and responsibility of key stakeholders pertaining to issues on pollution and correct methods of land use. Agricultural land use will be decided based on sustainable development principles and optimal utilisation of available resources. This is to ensure minimum impacts on the environment, such as deforestation, erosion and siltation as well as degradation of ridges and mountains.

6.25 The implementing agencies in the state will continue to actively promote environmentally friendly production systems among farmers and commercial producers, alongside providing necessary incentives to support the private sector and also to encourage the adoption of GAP in the state for long-term development.

6.26 To further engage in effective management of the environment and land use, the state will regulate the type and intensity of land use through proper zoning and gazettement on critical food and industrial crops for environmental protection purposes. The state will review and adopt the best agricultural zoning practices. The purpose is to protect farmland from inappropriate uses that would adversely affect the long-term economic viability of agricultural areas, while maintaining the vitality of the agricultural

sector by retaining a critical mass of agricultural land. With proper zoning, necessary infrastructures and basic facilities, as well as support systems, can be emplaced to enhance farm productivity.

6.9 Effective Inter-Agency Collaboration

6.27 Strategic inter-agency collaboration and coordination is a key factor to move forward in SAP3. Therefore, there is an urgent need to improve and strengthen the existing collaboration/coordination between implementing agencies in the state built on the principles and systematic approach of the Blue Ocean Strategy (BOS). Hence, coordination among the federal and state institutions will be reviewed and a better coordination system will be introduced to make sure that every stage along the supply chain is properly addressed.

6.28 At the same time, every key agency will have to align its goals to the strategic goals and objectives of SAP3. To improve coordination, every agency will be required to review its current standard operating procedures (SOPs) to ensure that every work process relating to development of the agricultural sector along the supply chain can be synergised. For the purpose of quality assurance for services provided by these agencies, the state will enhance the current auditing system.

6.29 As the ministry entrusted with the agriculture development portfolio, MAFI Sabah will continue to play a leading role in the coordination and oversight of the planning and implementation of agriculture programmes and activities amongst the state agencies. At the same time, strategic partnerships with other ministries and agencies will be strengthened and, for this purpose, the following will be considered:

6.30 MAFI Sabah with assistance of the State Land and Survey Department is to be given full authority to determine the use of land for agricultural development and ensure its sustainable utilisation.

6.31 MAFI will chair the State Agriculture Development Committee (SADEC) to improve agricultural land utilisation and enhance inter-agency coordination and communication between the ministry with other federal agencies such as Malaysian Palm Oil Board (MPOB), MCB, Federal Land Development Authority (FELDA), RISDA and other

state agencies, as well as with other players (GLCs, private companies and smallholders) in the state.

6.32 In this connection, the state will identify the potential land and areas to be gazetted as agricultural zones under the permanent food industry park, including zoning of areas for livestock and fisheries. Simultaneously, effort will be made to identify and develop marginal land through various government agencies, particularly, Land and Survey Department, DOA and Department of Irrigation and Drainage (DID). The DID will incorporate advanced irrigation, water conservation and distribution systems to increase crop and land productivity.

6.33 Active participation of all relevant government agencies will be enhanced and closely monitored through a series of regular meetings and programmes to ensure effective implementation of all agricultural development programmes. This is crucial as it will facilitate development of the agriculture sector in the state in terms of obtaining approval for land development. Most importantly, this will enhance the delivery of quality services and provide effective control of any pest and disease problems that may affect the industry. At the same time, activities such as production, R&D, marketing and development of infrastructures, certification, training and logistics in various sectors will be monitored properly. Overall, in view of financial and personnel constraints of the various implementing agencies, the main goal is effective implementation of programmes and projects with optimal use of available resources.

6.10 Encourage Private Sector Investment and Management

6.34 Currently, the private sector investment in the state agricultural sector is confined mainly to oil palm plantations, fisheries and certain livestock sectors, and they are fast growing. To further enhance and attract private sector participation and foreign direct investment (FDI) in the state, particularly in food production, downstream processing and value-added activities, the state government will actively promote private sector investment through various measures and incentives, such as tax rebates, financial grants,

subsidies and provision of adequate facilities. Specifically, the measures include the following:

- **Improve the transportation and communication network in line with the strategic blueprint of the Sabah Development Corridor (SDC).** In addition, more farm roads with minimum *Jabatan Kerja Raya* (JKR) standards will be constructed in rural areas to improve the transportation and marketing networks to urban centres;
- **Improve cargo handling capacity at all major airports.** The existing cargo handling capacity at KKIA and Sandakan will be expanded to meet the industry demand. A new airport at Lahad Datu should be able to accommodate the Airbus 320 to support agriculture activities of POIC Sabah Sdn Bhd, aquaculture and the growing tourism development in the East Coast of Sabah (SEDIA, 2014);
- **Attract major shipping liners.** There is a need to attract major shipping liners to come and berth at Sabah's ports. The Sabah Ports Authority should proactively attract these shipping liners and foreign port operators to build strategic alliances and foster better sea connectivity to and from Sabah (SEDIA, 2014);
- **Investment tax incentives.** The state through the Ministry of International Trade and Industry (MITI) will provide tax incentives to private companies with pioneer status for investing in promoted agro-based activities and for producing promoted agricultural products endorsed by MAFI. Granting tax exemption to private companies will further attract their interest in investing in the upstream and downstream agro-based activities, which, in turn, will further increase the SSL of agro-based products in the state; and
- **Establish a legal framework for joint-venture enterprises.** As a precautionary measure, some legal frameworks will be formulated to encourage the setting up of joint-venture enterprises with

the private sector, especially the corporate sector, with either the state statutory bodies or the landowners themselves. Proper procedures and processes will intensify the synergetic relationships among the private investors, entrepreneurs and smallholders for the benefit of all parties. The government agencies will act as facilitators to this initiative, while the catalyst for accelerated development of the sector will be largely driven by private sector.

6.35 Private sector to form more organised farming activities.

Overall, the agricultural sector in Sabah is still predominantly dominated by unorganised smallholders, who are often scattered with uneconomical-sized holdings coupled with poor basic infrastructures. As a result, the smallholders are beset with problems of low productivity and low returns on their labour and investment. In consonance with the effort to encourage private sector participation, the smallholders in the state will be organised through integrated, block and cluster farming to ensure their competitiveness. This is crucial to nurture and develop agricultural entrepreneurs among the smallholders. Apart from being agropreneurs themselves, the farmers and producers in the state will be directly involved in both the upstream and downstream production activities, such as through joint-venture business and contract farming. Block and cluster farming with economies of scale will, therefore, be encouraged, especially for certain crops and industries with higher potential, and based on comparative advantages of particular areas. This will serve as a means of commercialising agriculture in the state, thereby making agriculture a more lucrative and attractive venture.

6.36 With proper advice and guidance from relevant government agencies in the state driven by private sector management principles, it is expected that more farmers and producers will become either anchor farmers or out-growers. Hence, the focus will be directed to the critical and particular needs of specific target groups along the value chain to ensure their participation, competitiveness and the economic viability of their activities. The growth will be further enhanced with the establishment of more collection centres and marketing outlets throughout the state, such as food parks and a network of food collection centres. This will not only ensure sustainable agriculture and food security, but also improve the

income and socio-economic status of the smallholder farmers in the state.

6.37 Farming in the state will be more integrated, encompassing both upstream production activities and downstream processing and value-added activities. It is expected that within the SAP3 period the development of the agricultural sector will be dominated by large-scale estate plantations and block/mini estates on a commercial scale to benefit from the economies of scale. With a sufficient and consistent supply of outputs, this will encourage the growth of various integrated processing and value-added activities throughout the state. Most importantly, there will be zero or minimal waste from farming activities as the so-called “waste” from the various stages of production can become valuable resources and be further utilised and processed locally for other value-added products, as in the case of oil palm production processes. Directly or indirectly, such form of agricultural production will promote the conservation and sustainable use of natural resources for agricultural sustainability. In the long run, combined efforts among the smallholder farmers and producers together with the private sector will ensure that the agricultural sector in the state is more productive and competitive in both local and global markets.

6.38 Overall, the ability of the state to improve, upgrade and strengthen the key agricultural enablers will accelerate the growth and development of the sector to be more modern, progressive, commercialised, dynamic, innovative and competitive in local and global markets. Specific policy enablers will be further elaborated in the respective policies for crops, livestock and fisheries, as well as the agro-based and agrotourism industries.

6.11 Effective Extension Services

6.39 The state realises that the underlying cause for the low productivity in the agricultural sector in the state is partly due to insufficient extension support services, constraints in terms of effective knowledge transfer and enforcement initiatives by implementing agencies. As a result of insufficient extension officers, close guidance and monitoring of farmers’ and producers’ performance, including promotion of good agriculture practices,

could not be carried out effectively, especially at the farm level and in upstream activities. This is crucial as the price competitiveness and quality of final products very much depend on these factors. Realising this, the state has identified the need to strengthen extension services across the sector.

6.40 Therefore, several implementing agencies will be restructured in terms of internal processes to provide effective support delivery to farmers/producers and additional personnel will be recruited to improve the performance of extension support services and to carry out effective enforcement services in the state. In addition, all agriculture stations including livestock and fisheries and aquaculture will be upgraded and equipped with relevant technology and facilities. These stations will be led by an officer supported by key relevant supporting staff. At the same time, relevant and timely information on the supply and demand of certain crops/animals, including weather conditions and market information will be channelled to specific target groups in various divisions and districts to assist these officers and farmers with better decision making.

6.12 Quality Planting Materials

6.41 In search of higher production and productivity, having access to good quality seed and planting material is one of the most important elements for successful agricultural production and development. In fact, this is one of the measures taken to assure food security and livelihood enhancement in developed countries. However, this improvement can only be realised if subsistence farmers in particular have access to quality planting materials. Recognising this, there is a need for the state to upgrade a reliable seed and planting material development centre as part of the strategies to produce good quality seeds locally and used by small scale farmers throughout the state. The centre will produce basic seed and planting material including distribution of certified seed to contract growers, manage the Government's seed farms, develop and coordinate seed industry, maintain buffer seed stocks and coordinate supply programme of seed and planting material in the state.

6.13 Effective Value Chain Management

6.42 The extent to which farmers and breeders will increase their income and become more competitive lies on effective management of the entire value chain of the industry. This includes value addition, horizontal and vertical chain-network structure and value chain governance mechanisms applied/operated within the industry. At the moment, apart from large producers of industrial crops and government driven and managed schemes/projects, most farmers and producers have little control over production, trade and distribution due to several constraints. On the other hand, small producers have less expertise to guarantee the quality and value added of their products and to operate in a cost-effective way. In particular small-scale farmers/producers are at a disadvantage because they have little capital to invest, use traditional techniques, and depend highly on family labour and lack contact with market players inside and outside the state. Given this, there is a need to ensure effective and efficient value chain management be established across the industry. The communication and cooperation/coordination between production chain members will be strengthened for efficient delivery, reduce inventories and middlemen and increase customer satisfaction.

6.14 Security

6.43 Despite the establishment of the Eastern Sabah Security Command (ESSCOM), tight security at the border, and curfew in the Eastern Sabah Security Zone (ESSZONE), the security situation in the state remains a concern. In particular, the intrusion by the Royal Security Forces of the Sultanate of Sulu and North Borneo in Lahad Datu in 2013 and the cross-border kidnapping occurred in the East Coast region of the state have led to insecurity among the local people, tourists and traders/investors/fishers who live, own and operate their businesses in the East Coast of Sabah. Recognising this, drastic measures are necessary. Strategic efforts and initiatives including acquisition of more sophisticated vessels, aircrafts and weapons, capable of operating over longer distances and wider ranges than the earlier models will be implemented. This includes the use of technologies such as drones and human radar detection system to detect illegal activities at the border area.



7. SECTORAL POLICY ENABLERS

7.01 Taking into consideration the overall key issues and challenges, prospects, and the formulated policy's strategic goals and objectives, the specific sectoral policies for the key focus areas of the SAP3 are summarized in Figure 4.

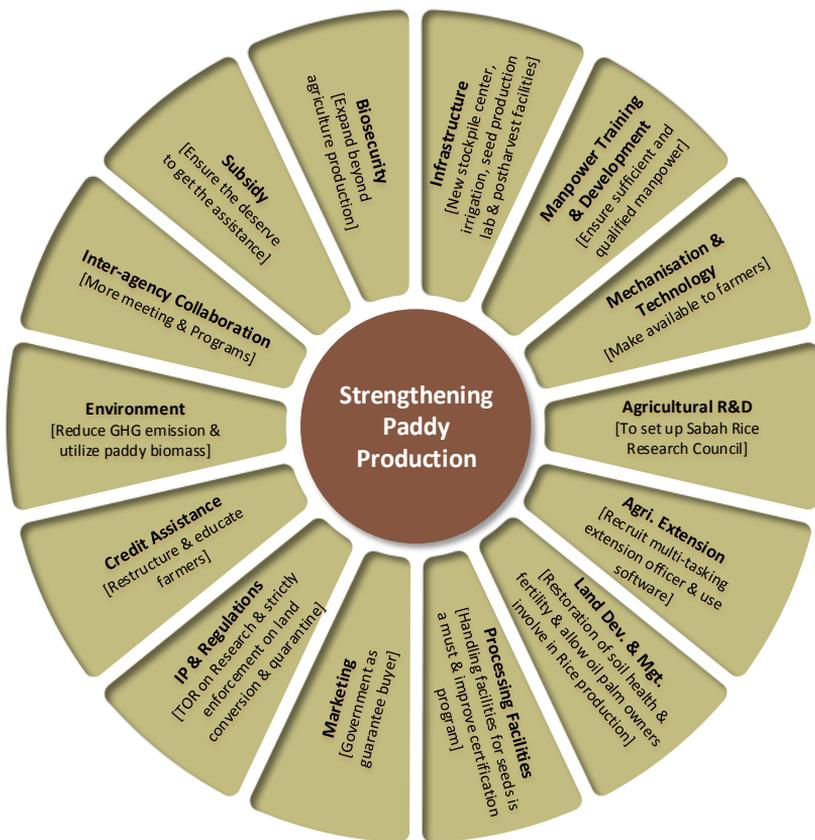
Figure 4: Key Focus of Agricultural Sector



7.1 Sectoral Policy Enablers for Paddy and Rice Industry

7.02 Given the priority to increase food production to meet local demand, it is crucial for the state to continue its efforts to increase domestic production of rice to 60 percent SSL. The sectoral policy enablers to increase paddy production in the state under SAP3 have been identified and are depicted in Figure 5.

Figure 5: Policy Enablers for Paddy and Rice



(a) Infrastructure and Facilities

7.03 To increase land productivity for paddy cultivation and increase paddy yield, the state government will develop, upgrade and maintain irrigation and drainage infrastructures and to develop and manage water resource in the major paddy producing area in the district of Kota Belud, Beluran (Trusan Sapi), Keningau, Kota Marudu and Tambunan.

7.04 Given the state's existing rice stockpile, a new stockpiling centre with a minimum facility of storing rice stockpiles for four months will be established. This will increase the food security level for the state. At the same time, warehouses will be built in major producing areas to cater for all government subsidies (fertilizers and insecticides), storage for seed and offices.

7.05 An integrated centre namely Seed and Planting Material Development Centre (SPMDC) for producing high-quality seeds for rice will be established to boost the sector's productivity. Keeping other inputs of production constant, high-quality seeds alone can increase production by nearly 20 percent.

7.06 Current government infrastructure such as office and lab buildings and auxiliary facilities (e.g. transport, farm machines, testing equipment and electrical items) in all 45 agriculture stations throughout the state will be maintained and continuously upgraded. There is also a need to establish a local agriculture information centre by linking it to the state agriculture database to support effective value chain management of the industry in the state,

7.07 To ensure that small farmers have quality grain prior to long storage, a drying facility for communal use will be established in major rice-producing areas.

7.08 All rice mills and other downstream rice-related industries are required to comply with all the expectations and criteria for food processing facilities. Regulatory compliance such as daily lab testing will be closely monitored with a clear recall plan and procedures for emergency action.

(b) Manpower Training and Development

7.09 Paddy and rice industry in the state has suffered from the lack of interest and motivation among the local farmers. Therefore, to ensure the food security in the state, there is a need to encourage and promote the growth of the industry by attracting more local farmers to venture into rice cultivation as a business in the next 10 years. At the same time, the industry also experiences lack of skills and knowledge amongst farmers in tackling various pests and diseases due to insufficient of extension officers to serve the farming community. Given this, the industry will train more agropreneurs, as well as a workforce with core agriculture skills such as agronomy, engineering and extension services related to rice production, to ensure the success of this industry. Therefore, strategic collaboration between the state government and local institutions such as with *Universiti Malaysia Sabah (UMS)*, *Universiti Teknologi MARA (UiTM)*, *Kolej Universiti Yayasan Sabah (KUYS)* and other established agriculture based organisations/institutes in and outside the state is crucial and will be fostered to ensure sufficient and qualified manpower to join the industry.

(c) Technology and Mechanisation

7.10 Most paddy lands in the state are owned by smallholder farmers (80 percent) with a production area of less than 1.2 hectares, which is uneconomical to cultivate using farm machinery. In the existing circumstances, land consolidation or the sharing concept among groups of smallholders will be promoted to enable an economically viable use of farm machinery. Given this, farm machinery, tractors and harvesters in particular, will be used and made available to farmers, especially at all wetlands rice production areas. A mechanisation programme will be integrated and include training to attract the younger generation to invest in rice farming project. Special packages will be introduced to encourage more graduate students to become involved in rice production.

7.11 Programmes such as MyAgrosis will be extended to local farmers' training centres. This mechanisation is expected to increase efficiency in rice production as it reduces the drudgery in all rice production in terms of land levelling, irrigation, sowing and planting, use of fertilizer, plant protection, harvesting and threshing. In addition, maintenance services and the availability of machine spare parts is also crucial to ensure sustainability and efficient service of

farm machinery. Thus, the development of farm machinery workshops will be promoted among private entrepreneurs.

(d) Research & Development

7.12 Meanwhile, R&D activity related to rice production is far from expectations due to various constraints. These include lack of high quality of rice varieties, deterioration of soil fertility, extreme weather condition, application of traditional practices, inefficient application of machinery in granary areas, and post-harvest loss. Given the importance of R&D for this crop, R&D will receive serious attention in SAP3 to ensure better production of rice in the state. Hence, research activities on rice related issues will be enhanced and strengthened. The outcomes of successful research on rice will be disseminated through publications, public talks, seminars, workshops and conferences and other media communications.

(e) Extension Services

7.13 Effective agricultural extension services have remained one of the prime movers in agriculture development and rural development. Well-trained and well-equipped extension officers are expected to play crucial roles (as implementers, information disseminators, linkpins between agencies and farmers and solution providers) in development of the paddy sector in Sabah. Even though the number of extension officers at the moment is limited, the state government is determined to improve agricultural extension services for paddies in SAP3. In particular, new recruitment of additional extension officers with multi-tasking ability will be initiated. These officers will be equipped with proper training and skills to ensure that the transfer of knowledge to farmers can take place effectively. Application of new software/technology will be used to enable online monitoring by experts. Other initiatives include the establishment of a platform for both the federal and the state agencies to collaborate on agricultural extension programmes and sharing of resources/expertise.

(f) Land Development and Management

7.14 Suitable land is a limiting factor for agricultural development in Sabah. Most of the suitable lands in the state have already been developed and planted with industrial crops, mainly oil palm, rubber

and cocoa, leaving land suitable for rice cultivation gradually shrinking due to competition for land use for a variety of development purposes. Given this scenario, the state government will take appropriate steps to regulate land use to prevent the conversion of land meant for rice production to other purposes. Rules and/or incentives will be devised for major oil palm planters to set aside suitable land for food production activities.

7.15 In addition, existing lands owned by smallholders will be consolidated for the purposes of economies of scale. This consolidation or merger will ensure that the area is managed to the optimum to increase productivity. The ongoing amalgamation model under EPP 11 will be closely monitored and analysed for future improvement; and

7.16 Given the importance of soil fertility, initiatives to restore soil health and fertility will be implemented across the agriculture sub-sectors.

(g) Marketing

7.17 Marketing of rice is carried out through the existing business model practiced between the local farmers and the millers. The millers provide all the inputs and, in return, farmers are expected to sell their harvest to the millers. This arrangement has, apart from mutual trust and providing initial capital outlay for small farmers, certain negative aspects in cases where the millers buy the rice at a much discounted price. To improve the marketing and commercialisation aspects of the sector, the government will assist in buying the rice at higher than the minimum guarantee price and promotes the recommended high-quality rice varieties (Sabah Rice). At the same time, relevant branding and promotion activities on high quality rice will be intensified.

(h) Intellectual Property

7.18 For questions of ownership of intellectual property arise from the outcome of research collaboration, ownership will be decided between the researchers and donors before any research project is started. Standard terms of reference on signing a new research contract will be created to accommodate the interests of both researchers and donors.

(i) Governance & Regulations

7.19 Existing regulations related to state efforts to increase rice production will be redefined to enhance the performance of the industry. Besides strict enforcement to control conversion of paddy land to other uses, other soft enforcement approaches will be used to address the shortage of land for paddy cultivation. For instance, incentives will be given to land owners who cultivate their farmland every season either by themselves or by outsourcing it to others. Withdrawing all or some incentives and/or subsidy assistance from the government may be used to implement the enforcement.

7.20 At the same time, existing quarantine regulations will be extended to include strict enforcement on any non-recommended rice variety. A systematic awareness campaign on the negative effects of unregistered varieties to the industry will be intensified.

(j) Subsidy Management

7.21 The mechanism for administering subsidies will be revised to ensure that only deserving smallholder farmers receive the assistance. Likewise, subsidies for mechanisation services will be revamped to ensure maximum utilisation of machinery. In particular, the diesel subsidy for tractors and harvesters will be based on the quantity of diesel used for ploughing and harvesting rather than on the prices of diesel since the diesel price is affected by the market price. The new quantity limit will be decided according to the duration of operating the machine per day.

7.22 In addition, several subsidy packages will be created to offer more options to farmers. Subsidy based on productivity will be encouraged with attractive minimum prices. Farmers who produce rice without any assistance from the government may be given a higher price (e.g. 50 percent higher than the market price).

7.23 Establishment of a subsidiary company involved in the entire value chain for rice from seed supply to processing and wholesaling will be considered. Appropriate institutional frameworks will be created to ensure that a minimum income for farmers who joined the scheme is paid by the subsidiary company. Monetary incentives to encourage landowners to outsource management of their land will also be promoted.

(k) Credit Assistance

7.24 Apart from the subsidy, the state government will also work closely with established credit providers to enable potential farmers to obtain additional credit assistance to finance the rice cultivation activities in the state.

(l) Environment

7.25 To minimize the impact on environment, a mechanism will be created to ensure that mitigation of greenhouse gas (GHG) emissions is implemented, especially the methane emissions from rice fields. In addition, biomass from rice fields will be collected and processed and turned into compost.

(m) Inter-Agency Collaboration

7.26 Inter-agency collaboration will be strengthened. Active participation of all relevant government agencies is needed to ensure continuous and adequate production of rice in the state. This will be enhanced through a series of meetings and programmes to discuss the relevant and pertinent issues/challenges that have affected the industry.

7.2 Sectoral Policy Enablers for Fisheries and Aquaculture Sector

7.27 Production in the fisheries and aquaculture sector increased significantly during SAP2. In fact, the sector is predicted to have a positive impact on the state agriculture GDP with a projection of about 212,100 tonnes by 2024. Given its potential, the state government will continue to ensure its sustainability through effective fisheries management practices by key stakeholders in the next 10 years (2015-2024). Figure 6 below depicts the strategic enablers to enhance the sustainable development of fisheries and aquaculture in the state.

Figure 6: Policy Enablers for Fisheries and Aquaculture



(a) Governance and Regulations

7.28 Existing regulations will be reviewed to cater to current issues for effective enforcement of fisheries laws in SAP3, as well as to ensure that fishery resources are sustainably exploited to meet the growing demand. Hence, regulations related to small-scale and commercial fishers will be reviewed and reorganised for the benefit of both sub-sectors.

7.29 At the same time, the Fisheries monitoring, control and surveillance (MCS) will be a key component of the fisheries management process to minimise the potential depletion of key fish stocks. Therefore, there is a need for the government to seek more effective controls over fishing activities and the movement of fish

products. Hence, MCS will be enforced as a requirement for all commercial vessels to carry a vessel monitoring system (VMS) on board.

7.30 Existing practices regarding the issuance of licenses (i.e. trawler licenses) will be reviewed to prevent illegal transfer of licences to new owners without the approval of the state as a cutoff strategy to manage the trawler fishing industry.

7.31 Public involvement including *palauh* in IUU fishing will be closely monitored to combat IUU. The purchase of bombed fish will be banned to discourage perpetrators from continuing illegal fishing activities.

7.32 To support further development of fisheries sector in the state, the existing fisheries zoning will be revisited and restructured to ensure sustainable fisheries in each respective zone, while the Ecosystem Approach to Fisheries Management (EAFM) will be incorporated to manage fisheries resources and related fisheries and aquaculture activities.

7.33 To ensure effective deployment of resources, co-management mechanism of fisheries resources by stakeholders will be adopted to overcome duplication and/or overlapping of roles and responsibilities amongst key implementing agencies.

7.34 In particular, the biosecurity of fisheries sector in the state will be strengthened through close monitoring initiatives to ensure Sabah water is free from exotic marine species and other new organisms which can cause the outbreak of an exotic fish disease, threaten native species, upset ecosystem balance, thereby, reduce biodiversity.

(b) Infrastructure and Facilities

7.35 Adequate infrastructures such as fish landing jetties and fishery complexes, ice factories, fuel station, containers, cargo, seaports, airports, good access roads, electricity, water and fish storage in strategic locations like Tawau, Sandakan and other major potential locations will be upgraded and/or provided. In particular, facilities at 26 fisheries stations, 16 aquaculture centres, and 4 sub-based enforcement units will be upgraded and equipped accordingly.

7.36 A one-stop centre equipped with relevant database for fisheries management will also be established at these strategic locations to facilitate licensing, export and import, including monitoring and evaluation of capture fisheries as well as to facilitate sharing of strategic information amongst fishers. In addition, a one-stop centre for seaweed management will be established by DOF in Semporna to facilitate licensing, export and import and, at the same time, to serve as a collection and drying centre for seaweed.

(c) Human Resource Development

7.37 To ensure the sustainability of the sector, having skilled manpower is paramount. Therefore, the capacity and capability of its human capital will be enhanced through the establishment of a Fisheries Vocational Academy (FVA) to train and produce skilled and knowledgeable technicians in capture fisheries. Efforts will also be made to align the curriculums of polytechnics and university colleges in the state to ensure the needs of the sector will be fulfilled.

7.38 In particular, the integrated development of human resources will be continued and upgraded through formal and non-formal training programmes. This is necessary for capacity building for extension staffs involved in capture fisheries, aquaculture and related sub-sectors. Courses in fisheries will also be offered in various agriculture training centres to motivate the younger generation to venture into the fisheries sector. At the same time, the number of extension staff members will be increased to handle the respective extension tasks in capture fisheries. The government will also ensure that extension services be synchronised and cross-managed through inter-agency coordination and/or collaboration to ensure non-duplication of tasks and optimal deployment of extension staffs.

(d) R&D on Capture Fisheries and Technologies

7.39 Given the importance of R&D on fishery technologies, suitable fishing nets, effects of harvesting undersized fish and seasonal harvesting for sustainable fisheries will be strengthened as a strategy to improve the Catch Per Unit Effort (CPUE) for fishers. This includes close monitoring of modifications of fishing net structures (i.e. purse seines) and other fishing facilities to ensure standardisation of technology in capture fisheries.

7.40 To facilitate R&D activity, a database gathering of fisheries resources, population dynamics, biomass, capture quotas, species composition and effects of closed seasons will be undertaken to obtain the latest information on the fisheries population in an ecosystem as an approach to fisheries management. In addition, information with regards to sea level rise and change in temperature will be monitored as precautionary measures for adaptation to climate change. Such information will be used to address underestimated fish resources, distinguish species composition, identify potential new fishing areas within the Exclusive Economic Zone (EEZ) of Sabah waters and suggest fishing quota limits, including allowable sizes.

7.41 The Sabah Agricultural Scientist Association (SASA) under the MAFI will be established as Sabah's epicentre for researchers in the agriculture cluster. This will complement MAFI's role as the lead agency in the agricultural cluster, responsible for setting up policies, future directions, research collaboration and resource sharing.

(e) Provide Adequate Security

7.42 The Federal government will continue to provide and ensure adequate security for fishery activities along the East Coast of Sabah. Safety of the sea will be the responsibility of MARITIM, while matters pertaining to fishers will be handled by the marine police force.

7.43 Hence, security measures will be coordinated via the roles of Eastern Sabah Security Command (ESSCOM) with armed forces, police, the Malaysian Maritime Enforcement Agency (MMEA) and other relevant agencies to safeguard the fishing areas. This will ensure that the lucrative fisheries industry in the state is well protected from external intrusions.

(f) Subsidy Management

7.44 Subsidies for the fisheries industry are important incentives to ensure continuous development of the fisheries sector in Sabah. The diesel subsidy, in particular for deserving fishers, will be reviewed to eliminate misuse of diesel subsidies. New and more effective subsidy management will be developed to further promote the development of the sector amongst small fishers.

(g) Marketing Mechanisms

7.45 Due to increasing trade in live fish, a sustainable LRFFT will be continued as a high-value niche market for the fisheries industry in the state that adheres to an Ecosystem Approach to Fisheries Management (EAFM). In addition, a comprehensive market survey with respect to the existing marketing effectiveness of fisheries products will be conducted to identify potential buyers in and outside the state. Established fishers will be required to acquire accreditation for their fishing activities and products so that recognition of product quality can be enhanced in international markets.

(h) Women's Involvement in Capture Fisheries

7.46 Given the potential of capture fisheries, the involvement of women in the state will be encouraged with special provision of financial assistance or other forms of grant to help them get started.

(i) Private Sector Participation

7.47 Capture fisheries have become the largest contributor to the state's total fisheries production and the estimated production will continue to increase in the next few years. Although attracting more than 22,000 fishers into the sector, however, to ensure greater production during SAP3, the industry needs to be driven by capable private companies, investors and entrepreneurs, while the state government's role will focus on regulation and coordination to further facilitate growth of the industry.

7.2.1 Specific Policy Enablers for Aquaculture (Marine and Freshwater)

7.48 The policy on land and water body/sea space utilisation for aquaculture development will be given due emphasis in Sabah's coastal zone management. In particular, the policy enablers for aquaculture in SAP3 will aim to mitigate the risks of environmental degradation and to enhance the sustainability of the aquaculture sector in the state.

(a) Research & Development

7.49 R&D on formulated feeds, broodstocks for quality gene pools, hatchery propagation technologies and culture techniques will be accelerated to obtain quality fish. Studies on the impacts of introducing potentially invasive species for aquaculture on the environment will be conducted to avoid shifts in species composition in the natural ecosystem.

7.50 Research institutions and universities will be called to align their fundamental research and applied research activities with appropriate grant that will fulfil the needs of the aquaculture sector in the state. This will be in the form of smart partnerships between government agencies and universities.

(b) Aquaculture Industrial Zone

7.51 An Aquaculture Industrial Zone (AIZ) for marine aquaculture will be acquired and provided to entrepreneurs and investors. An AIZ for freshwater aquaculture will be identified and acquired for expansion of the freshwater aquaculture sub-sector.

(c) Human Capital Development

7.52 To ensure the supply of capable manpower into the industry, the establishment of the FVA is necessary to train and produce skilled and knowledgeable technicians in aquaculture. Additional curriculums on aquaculture will be promoted to polytechnics and university colleges in the state.

7.53 At the same time, the skills and expertise of extension staffs involved in aquaculture and related sub-sectors will be enhanced through formal and informal training programmes. To improve the effectiveness of extension services, the number of extension staffs will be increased to handle the respective extension tasks in aquaculture and stationed at one-stop centres in selected strategic locations.

(d) Marketing Effectiveness

7.54 An assessment of existing marketing effectiveness in Sabah will be conducted to identify potential buyers and products of

aquaculture. At the same time, established aquaculturists will be encouraged to obtain accreditation for their aquaculture activities and products so that recognition of product quality can be enhanced in international markets.

(e) Subsidies

7.55 Special incentives and/or subsidies will continue to be given to the aquaculture sub-sector as motivation to encourage project expansion. This may include financial and non-financial grants.

(f) Women's Involvement in Aquaculture

7.56 Women participation into aquaculture industry will be encouraged and strengthened through provision of specific subsidy or grant.

(g) Private Sector Participation

7.57 The growth and development of aquaculture sector will continue to be driven by capable private companies, investors and entrepreneurs. Given this, the government will continue to be supportive of any interested investors to venture into aquaculture industry in the state.

***7.2.2 Sectoral Policy Enablers
for Seaweed***

7.58 Sabah is the only seaweed producer in the country and the state is expected to produce more than 780,000 metric tonnes by 2020. Given its export potential, specific policy enablers have been identified to spur the growth and development of seaweed in the state.

(a) Establishment of Collection Centres

7.59 Collection centres for seaweed will be established by DOF to collect and dry seaweed before selling it to buyers. A one-stop centre for seaweed management will also be established in Semporna to

facilitate licensing, export and import as well as to function as a collection centre.

(b) R&D on Seaweed

7.60 R&D on a quality gene pool of seaweed parent stocks and culture techniques will be strengthened. Research activities of institutions and universities will be asked to align their interest on seaweed industry in the state.

(c) Seaweed Industrial Zone

7.61 A Seaweed Industrial Zone (SIZ) for seaweed will be acquired and provided to entrepreneurs and investors in Semporna. The temporary occupation licence (TOL) status for seaweed in Semporna will be revised. At the same time, relevant government agencies will continue to monitor and ensure no entry of illegal immigrants into farming sites.

(d) Seaweed Mini Estate

7.62 To improve agro-tourism activities in the East Coast of Sabah, seaweed mini estates will be promoted as aqua-tourism attractions in Semporna.

(e) Women's Involvement in Seaweed Farming

7.63 To attract more involvement of the local community into seaweed farming activity, local women in Semporna will be encouraged to venture into seaweed farming with appropriate financial and non-financial assistance.

(f) Private Sector Participation

7.64 While pursuing the mini estate seaweed farming initiative, the government will continue to encourage and attract the private sector to join the industry through several incentives.

7.2.3 Sectoral Policy Enablers for Ornamental Fish, Aquatic Plants and Coral

7.65 Ornamental fish, aquatic plants and coral continue to have high potential. The following specific enablers will ensure the growth of these products in Sabah.

(a) R&D in Ornamental Fish, Aquatic Plants and Coral

7.66 As R&D on ornamental fish, aquatic plants and coral is extremely limited, both fundamental research and applied research initiatives in this sub-sector will be intensified. Inter-agencies' smart partnership, especially between industry and research institutions, will be emphasised as a strategy to strengthen R&D on ornamental fish, aquatic plants and coral in Sabah.

(b) Marketing

7.67 Proper planning based on a comprehensive study of the existing marketing effectiveness related to the industry will help to spur the growth potential of Sabah's unique ornamental fish, aquatic plants and coral into regional and international markets. Therefore, these products will be produced in hatcheries to reduce exploitation of wild ornamentals in the natural ecosystem and the production of local freshwater ornamentals will be prioritised as part of the government efforts to position Sabah as a prime producer of indigenous ornamental products.

(c) Inter-Agency Collaboration

7.68 The roles and authorities of DOF and the Natural Resource and Environment Ministry (NRE) as specified in Act 686 CITES and Fisheries Act 1985 will be reviewed to strengthen enforcement of ornamental fish exploitation from the wild. This is to ensure effective facilitation of the development of ornamental fisheries in the state.

(d) Women's Involvement

7.69 Women community will be encouraged to venture into ornamental fish, aquatic plants and coral farming with appropriate financial and non-financial assistance.

(e) Private Sector Participation

7.70 Given its investment and market potential, private sector participation will be encouraged to venture into ornamental fish, aquatic plants and coral farming projects.

7.3 Sectoral Policy Enablers for Livestock Industry

7.71 Sabah's livestock industry has expanded rapidly, especially poultry and swine (which continue to develop with increasing market demand), and been able to grow with minimum government intervention. However, the ruminant sub-sector will have to be continuously monitored, encouraged and supported. Although demands for livestock products have been escalating over the years, their production leaves much to be improved. The sectoral policy enablers for livestock industry will:

- Intensify livestock breeding and reproduction activities within the state;
- Intensify and enforce farm accreditation;
- Focus on local feed resources for animal feed; and
- Transform small-scale producers with skills and knowledge to become commercial producers.

7.72 To transform the overall livestock industry in Sabah, the policy enablers shown in Figure 7 will be adopted.

(a) Human Capital Development

7.73 Over the years, the sector has received an insufficient supply of skilled workers. Hence, human capital development and training relating to the livestock industry will be strengthened and intensified

through on-site training, technical skills certification and continuous training activities. Promoting entrepreneurship and provision of technical skills among animal breeders will be given special attention in SAP3 to ensure sustainable livestock business activities in the state.

(b) Improve Quarantine and Clinical Services

7.74 To strengthen the quarantine in the state, quarantine activities and enforcement will be intensified in all appropriate locations. This move will act as a disease control, eradication and prevention mechanism to ensure that the state will continue to have a disease-free status. Subsequently, clinical, diagnostic and laboratory services will be improved and upgraded with modern facilities.

Figure 7: Policy Enablers for Livestock



(c) Intensify R&D on Livestock

7.75 R&D on local issues, challenges and needs relating to livestock production will be intensified in SAP3 through collaboration among related agencies. The use of local resources for animal feed has been minimal. Therefore, animal feed formulation based on available local resources will be promoted and the percentage of imported compounded animal feed will be reduced gradually. Input subsidies for selected local animal feed resources will be identified and introduced to encourage sustainable local livestock production using local resources. Technology and knowledge transfer programmes via on-site training, short courses and practical farm training programmes will be given special emphasis and support to enable research findings and outcomes to be disseminated to livestock producers in the state.

(d) Eco-Farm Mechanisation

7.76 The use of farm mechanisation and technology has not been fully exploited by producers. Hence, farm mechanisation and technology adaptation will be promoted and encouraged by introducing mechanisation incentives and tax redemption schemes when purchasing new equipment. The incentive will be based on the selected livestock industry and high-impact/value activities. Use of green technology such as solar system technology and locally adaptable techniques and practices aimed to increase yields while simultaneously improving the ecosystem and environment of the farm will be supported. Such policy will encourage livestock producers to be eco-friendly as a strategy for environmental protection.

(e) Strengthening Farm Governance through Accreditation and Certification

7.77 At the moment, only established producers have or are about to have their farms accredited and certified. Therefore, producers will be encouraged to have their farms accredited and certified as a way to increase farm export values and for traceability purposes. At the same time, the accreditation and certification will eventually promote efficient and effective farm husbandry practices. Other livestock with high value by-products will also be emphasised. The certification will be based on myGap requirements as well as other requirements such as those from Veterinary Health Mark (VHM), Hazard Analysis Critical

Control Point (HACCP), Good Animal Husbandry Practices (GAHP), and Good Manufacturing Practices (GMP).

(f) Effective Value Chain Management

7.78 There has been less effort in terms of value chain management in the sector. Therefore, effective value chain management related to a particular sub-sector of livestock will be developed by the DVSAI. The aim is to integrate livestock value chain activities across the sub-sectors. Production arrangements through contract farming activities will be encouraged and intensified. At the same time, contract farming rules and regulations will be monitored to protect livestock producers in the state.

(g) Encourage Private Sector Involvement

7.79 Generally, private sector participation in the livestock industry is still low in Sabah. Hence, private sector involvement and investment in the industry will be actively encouraged and promoted during SAP3, particularly for downstream and processing activities. Attractive investment packages will be introduced in line with SEDIA's investment schemes.

(h) Strengthen Coordination Within Agencies

7.80 To improve coordination within agencies, DVSAI will lead all coordination of livestock activities, including development funding by either the state or federal government agencies in the state. Inter-agency coordination and collaboration will be improved to ensure that activities such as production, R&D, marketing and development of infrastructures, certification, training and logistics of the livestock industry are monitored and organised properly.

(i) Effective Waste Management (Environment)

7.81 Effective waste management will be encouraged and improved to protect the environment, reduce unnecessary pollution and promote sustainable livestock farming in the state. These initiatives will benefit other sectors such as food crops, fisheries and

plantations. Existing laws and regulations on livestock will be strictly enforced to ensure effective management of wastes from livestock.

7.3.1 *Specific Policy Enablers for the Dairy Sector*

(a) Adoption of Breeding Technology

7.82 Breeding technology is still underdeveloped in Sabah. Thus, adoption of breeding technology through private sector investment will be encouraged to intensify and increase the population of productive calves and cows within the state. Specific programmes such as embryo transfer and genomic selection to boost local production and animal supply in the state will be given further emphasis.

(b) Modernised Milk Collecting Centre (MCC)

7.83 The establishment of MCC is significant to the dairy industry in the state. However, MCC in the state needs to be modernised with the latest technology and other support systems. Therefore, MCC will be equipped with internet facilities and computerised software to help manage milk-collecting activities. Data on milk produced and collected within and between MCC will be made available via online and digital apps to promote transparency and effective recording of the activity.

7.3.2 *Specific Policy Enablers for Beef (Cattle and Buffalo)*

(a) Tropical animal and high-value buffalo breeds

7.84 Local cattle and buffalo have been a major source of meat supply, while also being used as draught (buffalo). Thus, high-quality and suitable breeds need to be increased to promote tropical animal breeds adaptable to the local climate and to reduce animal importation within SAP3. At the same time, suitable multi-purpose buffalo breeds will be introduced and encouraged to provide good

economic returns to producers in terms of meat, milk and related value-added products such as cheese. Breeding for high-value buffalo breed will also be supported.

(b) Establishment of Modern Slaughterhouses

7.85 The private sector's investment in modern and hygienic slaughtering facilities will be encouraged to develop systematic value chain management and a specialised sub-sector. Modern slaughterhouses will ensure high-quality meat cuts which will support downstream activities in the state.

***7.3.3 Specific Policy Enablers
for Goat and Sheep***

(a) Subsidy and Incentive

7.86 Production of goats and sheep will be increased to cope with domestic demand. Attractive production-based incentives will be introduced to motivate and increase local production. Such incentives will be based on farm performance and productivity. Small-scale but productive farms will be assisted and/or supported to become large-scale and commercialised farms.

(b) Establish Modern Slaughterhouses

7.87 To encourage the private sector to establish modern slaughterhouses with hygienic slaughtering facilities, an attractive investment scheme will be provided. The establishment will further encourage downstream activities as well as the cold storage value chain for goat.

7.3.4 Specific Policy Enablers for Broiler and Layer

(a) Intensify Farm Biosecurity

7.88 Farm biosecurity will be emphasised and intensified to cope with sustainable production and disease prevention and precaution programs. The enabler will be in line with the farm certification requirements and Salmonella Control and Eradication Programme (SCEP). Existing rules and regulations will be enforced accordingly to ensure implementation of GAHP.

(b) Modern Poultry Farm

7.89 Modern and mechanised farms with closed-system poultry houses (for both broilers and layers) will be given high priority in SAP3 to promote sustainable and efficient farm production and productivity. Through a modern poultry house, efficiency of labour and effectiveness of production can be achieved. Producers having traditional poultry houses in the state will be encouraged to convert such facilities to closed and modern houses.

7.3.5 Specific Policy Enabler for the Swine Sector

(a) Swine Production Zone

7.90 Development and sustainability of swine production needs to be intensified to ensure that Sabah maintains its SSL while creating opportunity for export. Given the growth of the sector, a swine zoning area will be identified and implemented. The proposed gazetted swine area will be equipped with modern facilities and a zero waste management system.

7.3.6 Specific Policy Enablers for the Deer Sector

(a) Private Sector Involvement

7.91 The deer sector within the state has grown steadily over the years on a small-scale basis. The production of high-quality and *Halal* venison will be promoted to meet local demand. Large-scale and commercial deer farming will be encouraged to boost deer meat production in the state. Animal feed formulation will be intensified from local resources to ensure its economic viability and production sustainability.

7.3.7 Specific Policy Enablers for Swiftlet

(a) International Market

7.92 Swiftlet farming and high-value edible bird nest production activities will be encouraged due to high demand of swiftlet products in the international market. Hence, the systematic establishment of bird houses and production of edible bird nests will be closely monitored by the authorities to ensure high-quality edible nest production in the state. A set of rules and guidelines will be formulated and enforced to ensure steady growth of swiftlet farming in Sabah.

7.4 Sectoral Policy Enablers for Fruit, Vegetable and Mushroom Industries

7.93 Fruit, vegetable and mushroom production can be a major contributor to the state's GDP once they have become fully developed industries. During SAP2, the government only spent RM15 million for the development of these crops even though the export value for fruits and vegetables reached RM255 million while their import was valued at RM627 million. Hence, to reduce the trade deficit, there is a need to increase the local production of fruits and vegetables in the

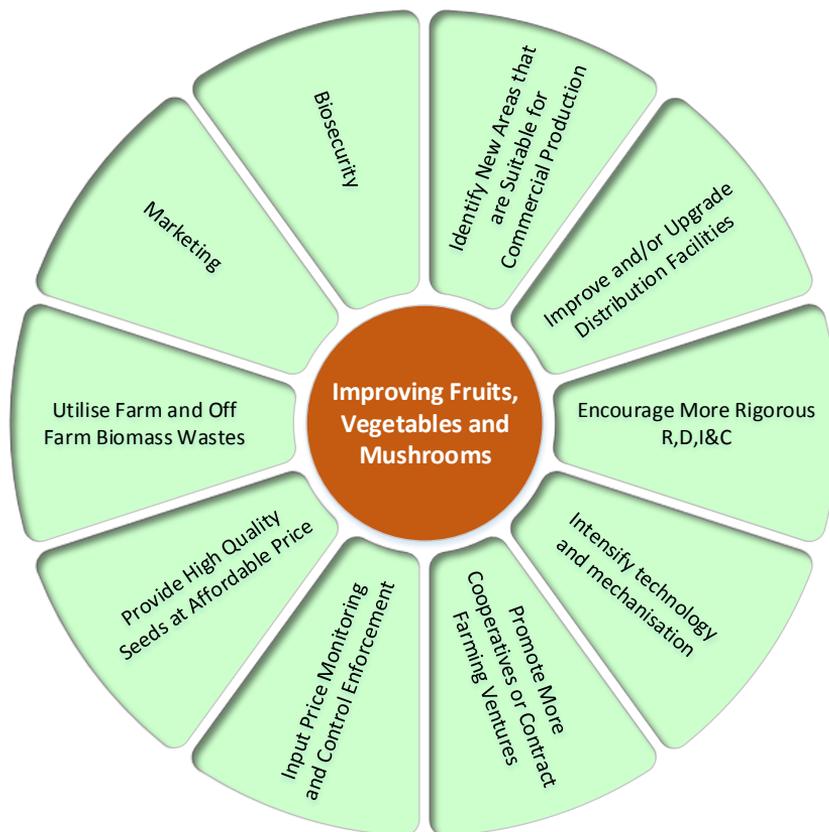
state. Therefore, high-potential crops will be given special attention in SAP3. However, this requires contributions and participation from every key stakeholder, including farmers, private investors and various government agencies.

7.94 To improve fruit, vegetable and mushroom production in the state, the following policy enablers, depicted in Figure 8, will be implemented:

(a) Develop TKPM Areas

7.95 Apart from TKPM in Tawau which has 96 hectares, the state will further develop other production areas in Kinabatangan, Sg. Lokan, Sg. Koyah, Mesilau and Putatan.

Figure 8: Policy Enablers for Fruits, Vegetables and Mushrooms



(b) Encourage Commercial Farming

7.96 Farmers including private investors will be encouraged to pursue commercial farming on any of the most productive fruits in the state. Emerging crops which have a high market demand, such as the *Saba* banana, will also be given priority through government subsidies/incentives.

(c) New Infrastructure/Facilities

7.97 To improve the production and distribution of fresh fruits, vegetables and mushrooms, existing infrastructure in the existing producing areas will be upgraded, while new infrastructure, including warehousing facilities such as pre-coolers and cold storage, will be built in all TKPM areas.

(d) Intensify R&D

7.98 R&D on fruits, vegetables and mushrooms will be pursued rigorously by related agencies in collaboration with research institutions. In particular, initiative to develop quality planting materials will be given special emphasis during SAP3.

(e) Establish Cooperative

7.99 Fruit and vegetable cultivation activities in the state have been carried out mostly by individual farming families. Therefore, there is a need to encourage smallholder farmers to establish cooperative to help them be more organised and productive due to potentials of good governance structures to be derived from the set up. In particular, contract farming will be used as one strategy to improve production of fruits, vegetables and mushrooms in the state.

(f) Affordable Farm Inputs

7.100 To generate and increase farmers' income, there is a need to keep the cost of farm inputs low but with a minimum level of standard quality. Hence, prices for specific production inputs such as seed and seedlings, fertilizers and other agrochemical components will be

monitored and controlled by relevant agencies. In addition, steps will be taken to provide high-quality inputs at affordable prices.

(g) Intensify Technology and Mechanisation

7.101 Small-scale farming among smallholders is largely carried out using manual labour. Given this, smallholders will be encouraged to use modern and appropriate technologies and mechanisation to improve their productivity and production. Relevant assistance in the form of machinery will be introduced at reasonable cost.

(h) Effective Marketing

7.102 Over the years, the state has been quite successful in terms of producing and promoting local brands such as Sabah Tea and many others. Strategic initiatives will be carried out to better promote agricultural products, including mushrooms, locally and nationally with an effective branding strategy and other form of marketing strategies.

(i) Utilise Farm and Off-Farm Biomass Waste

7.103 Intensive agricultural activities have led to a rapid increase in the volume and types of waste agriculture biomass. Recognising this, farmers will be encouraged to utilise farm and off-farm biomass waste to produce compost to improve soil fertility.

(j) Biosecurity

7.104 To improve biosecurity on fruits, vegetables and mushrooms, all imported fruits, and vegetables and mushrooms must meet the state's standards and requirements. Relevant agency/authority will help to ensure imported fresh fruits, vegetables, herbs and mushrooms are correctly labelled, safe to eat, and free from pests and harmful organisms.

7.5 Sectoral Policy Enablers for Other Economic Crops and Activities

7.105 To drive the viability, sustainability and competitiveness of the other economic crops, the policy enablers depicted in Figure 9 will be adopted during SAP3.

(a) Dedicated Production Areas

7.106 In addition to TKPM, more dedicated production areas for other economic crops are needed to improve the existing production in the state. At the same time, small farms will be encouraged to merge to achieve better farm management, monitoring and evaluation to enjoy economies of scale.

Figure 9: Policy Enablers for Others Economic Crops and Activities



(b) Incentives and Subsidies

7.107 Special grants, credit facilities and other incentives will be made available for farmers and producers to cultivate crops identified as having high potential for commercialisation. At the same time, special subsidies will be given to promote cultivation of new crops with better export potential. Specific species will be identified through effective R&D for niche and export markets.

(c) Establish Farmers Cooperative

7.108 At the moment, most farmers operate on an individual basis. Therefore, farmers and producers of other economic crops will be encouraged to establish farmers and agro-entrepreneurs cooperatives.

(d) Personnel/Manpower

7.109 Like many other agriculture sectors in the state, the other economic crops also face shortages of skilled labour. Given this, the manpower needs of the sector will be improved through relevant training/programmes at various agriculture training institutes/centres.

(e) Research and Development

7.110 R&D on other economic crops has been very minimal. Therefore, more strategic and aggressive R&D activities for the development and growth of other economic crops will be intensified through strategic collaboration with research institutions and universities.

(f) Collection Centres

7.111 Collection centres with basic facilities, especially cold storage and dryer, will be developed in strategic locations throughout the state. The establishment of collection centres will increase the marketability and improve distribution of farm produces.

(g) Effective Marketing

7.112 The marketing capabilities of farmers/producers involved with other economic crops will be enhanced with more streamlined distribution and promotion activities.

(h) Promote Private Sector Participation

7.113 Private sector participation will be encouraged through appropriate incentives or double tax benefits for pursuing certain economic food crops. This will likely increase the quantity of production in the state.

(i) Biosecurity

7.114 At the moment, the state remains as importer of several other economic crops/products such as maize, and sugar, including floriculture, apiculture and other specialty products. Given this, the state will continue to put extra emphasis on the biosecurity aspects of these crops/products.

**7.6 Sectoral Policy Enablers
for Sustainable Oil Palm
Industry**

7.115 As the backbone of the agriculture sector in the state, it is imperative that the oil palm sector remains competitive, profitable, and sustainable under SAP3. Given this, the oil palm industry aims to:

- Maximise returns from palm oil production through improvement of its productivity and efficiency;
- Ensure orderly and sustainable development of the industry, including downstream processing and related activities to produce locally manufactured higher value-added products;

- Enhance the existing marketing networks and develop and strengthen potential and new emerging markets;
- Upgrade existing infrastructure and basic amenities to encourage more investment opportunities; and
- Adopt good agricultural practices of cultivation, production and processing to minimise its negative impact on biodiversity and the environment.

7.116 An increase in demand for palm oil over the last decades has contributed significantly to the state's GDP. However, competition for land use and the increase of production costs will remain a great challenge to the industry in the state. At the same time, growth of the industry continues to have severe impacts on biodiversity and the overall environment of the state. Recognising this, the policy enablers shown in Figure 10 to ensure a sustainable oil palm industry in the state will be adopted.

Figure 10: Policy Enablers for a Sustainable Oil Palm Industry



(a) Environmental Management

7.117 The oil palm industry in the state has attracted international attention due to its vast cultivation and impacts on the environment. Therefore, there is a need to ensure that the growth of the sector will not adversely affect the environment. Hence, adherence to environmental laws and regulations will continue to be promoted to all planters.

(b) Pest Infestation and Ganoderma Threat

7.118 The oil palm trees remain vulnerable to pest infestation and other threats. To ensure sustainability of the sector, efforts to curb pest infestation and other infections on oil palm will be improved. Recognizing this, strategic initiatives to have germplasm exchange from other oil palm growing states in the country will be implemented. This inward initiative may elevate the risk of exotic

pests and diseases which may cause some negative socio-economic impacts to the state.

(c) Oil Palm Taxation and Cabotage Policies

7.119 Additional tax policies imposed on palm oil producers in the state remains a burden. In particular, effort will be initiated to review/study the existing cabotage policies.

(d) Human Resource Development

7.120 Capable manpower is important and, therefore, a new generation of skilled and semi-skilled workers and related expertise within the industry will continue to be developed. In particular, initiatives to attract, train and retain local manpower will be implemented strategically as part of the strategies to address the shortage of labour as well as reliance on foreign labour.

(e) Land for Oil Palm Expansion

7.121 Oil palm cultivation activity has occupied most of the agriculture land in the state and, therefore, further expansion of oil palm cultivation will not be encouraged. However, the oil palm productivity will be enhanced through adoption of good agronomic practices, and R&D on oil palm genomic science that focuses on the application of genome technology for crop improvement to enhance yield will be intensified. In addition, to improve food production, oil palm trees will be integrated with other food crops and livestock activities.

(f) Agency Coordination

7.122 To ensure effective and efficient performance in the industry, strategic partnerships with other ministries and agencies will be strengthened, and for this purpose the following policies will be adopted:

- MAFI Sabah assisted by the Land and Survey Department are to be given full authority to determine the use of land related to agricultural

development and to ensure sustainable utilisation of land for industrial crops;

- The SADEC will be chaired by MAFI to improve agricultural land utilisation and enhance inter-agency coordination and communication between the ministry and MPOB as well as other oil palm players (GLC, private companies and smallholders) in the state; and
- Coordination between implementing agencies and stakeholders will be improved to enhance the quality of services in land title, obtain approval of land development and control pest and disease problems.

7.7 Strengthening and Modernising Other Industrial Crops

7.123 To strengthen and modernise other industrial crops in the state, the strategic enablers stated in Figure 11 will be adopted.

7.7.1 *Specific Policy Enablers for Rubber*

(a) *Subsidy and Credit Support*

7.124 Adequate provision and support in terms of financial and non-financial grants to smallholders will be continued. At the same time, the existing subsidy and other support will be reviewed and improved whenever necessary.

(b) *Inter-agency Collaboration*

7.125 Good coordination between the implementing agencies [SRIB/RISDA/Sabah Forestry Department (SFD)/LGM] and stakeholders will be fostered. This will ensure the desired goals and objectives are achieved without any duplication of roles and responsibilities.

(c) In-situ Planting Programmes

7.126 Rubber community-based in-situ planting programmes will be further intensified. Hence, strategic and suitable areas for rubber planting will be developed.

Figure 11: Policy Enablers for Other Industrial Crops



(d) Development of Infrastructure

7.127 Upgrading and/or construction of roads in rubber-producing districts/divisions will be carried out gradually by working closely with relevant ministries both at federal and state levels.

(e) Technology and Mechanisation

7.128 The latest and most practical modern rubber tapping tools with minimal risk of damage to trees that are also simple, economical and locally available will be introduced to ensure better profit and productivity. Specific training will also be given as part of the initiative to improve the tapping skills of rubber tappers.

(f) Quality Planting Materials

7.129 While waiting for the establishment of the Seed and Planting Material Development Centre by the state government, SRIB (LIGS) will continue to accredit and license rubber nurseries to ensure a high quality of seedlings, especially in private nurseries.

(g) Research and Development

7.130 Extensive R&D related to growth of the rubber industry in the state will be intensified. Other aspects of R&D will be directed to improve the existing rubber's clone and disease control mechanisms.

(h) Effective Extension Services

7.131 Rubber extension officers are still insufficient and more will be recruited to ensure effective extension services. These officers will be equipped with relevant knowledge and skills.

(i) Biosecurity

7.132 Given reported pest infestation and disease infection by smallholder of rubber planters in neighbouring countries, biosecurity on rubber will be strengthened accordingly to prevent the spread of the problem into the state.

7.7.2 Specific Policy Enablers for Cocoa

(a) Environmental and Land Management

7.133 Given the potential of cocoa, more areas will be acquired and/or developed for cocoa cultivation while rehabilitating unproductive cocoa farms in the state for organised planting, as well as for agrotourism purposes. In addition, suitable areas with secured land ownership status will be zoned for cocoa production. At the same time, the involvement of cluster farming will continue to be promoted.

(b) Quality Planting Materials

7.134 To ensure higher production, quality planting material will be provided through accredited cocoa nurseries. In cases where insufficient of planting materials, initiative to order from Peninsular Malaysia or other states will be carried out. This is to ensure that smallholders and estates will use high-quality cocoa clones. During SAP3, the proposed Seed and Planting Material Development Centre is expected to produce quality planting material for cocoa.

(c) Infrastructure and Processing Facilities

7.135 To ensure the sustainability of cocoa industry in the state, a number of cocoa processing centres and drying yards will be established in major producing areas. At the same time, a sufficient supply of clean water and an uninterrupted of electricity supply with good-access farm roads will be developed in new development area(s). This will help to improve farmers' well-being in the cocoa zone communities.

(d) Extension Services

7.136 Agriculture sector including cocoa industry in Sabah continues to experience lack of extension officers to assist smallholders. Recognising this, strategic effort will be carried out to recruit additional officers with relevant knowledge, and skills.

(e) Research and Development

7.137 Strategic and high impact R&D on cocoa genomic improvement will be enhanced. In particular, superior cocoa planting material with special cocoa flavour will be developed and extensive R&D on superior and high-quality cocoa clones suitable for Sabah's climate and soil conditions will be initiated. This approach will likely avoid delays in the release of planting materials to smallholders due to stringent quarantine procedures imposed on any clones brought from Peninsular Malaysia or other states. At the same time, new methods to control pest infestation (e.g. Cocoa Pod Borer) and disease infection (Black Pod and Vascular-Streak Dieback (VSD)) will be developed in collaboration with established institutions.

(f) Biosecurity

7.138 Cocoa industry remains vulnerable in the state due to various pests and diseases. Hence, to ensure the sustainability of the sector in the next 10 years, biosecurity for cocoa will continue to be given serious attention.

7.7.3 Specific Policy Enablers for Pepper

7.139 Malaysia has become a world exporter of pepper with a total export volume of 10,588 tonnes valued at RM245 million in 2012. By 2020, the country's export earning is expected to reach RM650 million with national production of 42,000 tonnes. Hence, the government is committed to expanding pepper planting areas to 20,100 hectares. Given this prospect, the Sabah state government will continue to promote and intensify pepper planting in the state and adopt the following enablers:

(a) Quality Planting Material

7.140 Initiative to produce quality planting material for pepper will be intensified during SAP3. This will be made possible with the establishment of the Seed and Planting Material Development Centre by the state government. For the time being, improved planting materials including arrangement of proper entry from Peninsular Malaysia and Sarawak, for instance, will be carried out.

(b) Extension Services

7.141 In order to provide effective extension services to pepper growers in the state, extension officers will be equipped with relevant knowledge, skills and technology on pepper planting and processes. Relevant seminars and workshops will be organised where experts of pepper will be invited to train these officers.

(c) Inter-agency Collaboration

7.142 Strategic collaboration with relevant government agencies will be fostered. Programmes will be developed to encourage further discussion between the DOA and the Malaysian Pepper Board, agriculture institutes and other training providers.

(d) Research and Development

7.143 To ensure the sustainability of pepper production in the state, relevant R&D activities on pepper will be initiated. This includes R&D on soil suitability, data on rainfall, type of pests/diseases that may likely attack the crop and type of pepper suitable for Sabah, including R&D on downstream processing activities.

(e) Subsidy

7.144 As a new industrial crop, the state government will introduce a special subsidy scheme to encourage pepper cultivation amongst smallholders.

(f) Biosecurity

7.145 To protect the pepper industry, activities to overcome disease on pepper will be initiated and developed systematically.

(g) Private Sector Participation

7.146 To improve the production of pepper significantly, private sector participation is necessary. This will be accomplished by providing basic infrastructure in all approved areas for pepper cultivation.

(h) Land Management

7.147 The availability of agriculture land in Sabah will remain a concern in the next few years. To ensure sustainability of pepper production in the state, the government will propose that the approved areas be zoned and gazetted.

7.8 Strengthening Agro-Based Industry

7.148 Development and growth of the agricultural sector in the state will be further supported by contributions derived from agro-based and agrotourism industries. The introduction of EPPs initiated by the federal government, including the proposed National Seaweed Nucleus, TKPM for fruits and vegetables, Kudat Integrated Marine Fish Culture and the establishment of the Swiftlet Commercial Centre (SCC), coupled with the influx of tourists for sea and sport fishing-related activities and the attraction of the floriculture industry in the state, will further propel the growth of the agricultural sector in the next 10 years. The following policy enablers will be adopted to strengthen the agro-based sector in Sabah.

7.8.1 Specific Policy Enablers for Agro-Based Industry

7.149 Endowed with the state's rich natural resources, agro-based industry in Sabah has great potential to be developed further in the near future. This is largely due to the availability of local materials (palm oil, rubber and cocoa) to support the industry. The introduction of several EPPs under the ETP, which includes the food-based and non-food sectors, will provide further growth to the agro-based industry in the state. Figure 12 depicts the type of agro-based industries that will be strengthened in Sabah. This includes the food-based processing industry, fisheries-based processing industry, livestock-based processing industry and commodities and economic crops-based processing industry.

7.150 To promote agro-based industry in the state, dedicated areas will be identified and established to expedite the development of agro-based industry. Potential sites will be based on availability of

access roads, logistics and basic infrastructure, such as the Kota Kinabalu Industrial Park (KKIP) area.

7.151 To encourage the involvement of private companies in agro-based industry, strategic agro-based activities will be promoted in dedicated areas. Appropriate incentives and tax exemptions, especially during the early stage of activities, will receive the endorsement of the ministry. Tax exemptions and incentives will be given for machinery imported from selected countries to ensure that high-quality and accredited machines and equipment are used to support the industry.

7.152 To ensure sustainable development of agriculture sector, the state government will continue to develop and implement effective biosecurity mechanisms to regulate agro-based industry in the state.

7.153 Figure 12 illustrates the policy enablers for development of the agro-based industry in Sabah. To ensure a proper and well-coordinated implementation of agriculture activities in dedicated agriculture parks, a new coordination committee namely SADEC will be established and headed by MAFI. As a new working committee, it helps to identify high-impact agro-based activities and industry zones in both rural and urban areas. Development of basic infrastructure and marketing facilities will be proposed to appropriate state and federal agencies. SADEC will also strategically collaborate with the Integrated Agricultural Development Area (IADA) and SAIP to further drive the sector in the state.

7.154 In addition, credit facilities for agropreneurs will be made available so that they can pursue strategic agro-based activities through various federal and state government agencies such as TEKUN, YUMS and *Amanah Ikhtiar Malaysia (AIM)* for small-scale activities. Relevant courses related to such projects and activities will be offered and coordinated by the respective departments under MAFI.

7.155 To further spur the growth of agro-based industry, innovative research on high-impact products and projects will be initiated and collaborated with the private sector and other public institutions. The research will target key industrial needs and issues affecting the agro-based activities in the state. The outcomes of the research and effective commercialisation strategies will be extended and shared among industry players.

Figure 12: Policy Enablers for Agro-Based Industry



7.156 The agrotourism industry within the agro-based industry will be further promoted and intensified to position Sabah as the most preferred tourist destination in this region. Indirectly, it will also promote Sabah’s niche agro-based products to local and international markets.

7.8.2 Specific Policy Enablers for Food-Based Processing Industry

7.157 The food-based processing industry will be intensified by focusing on local food production and processing activities. The import of raw materials for processing will be minimised based on certain thresholds to support local producers. Such thresholds will be

determined by MAFI with the agreement of all respective departments.

7.158 Marketing elements such as labelling and packaging will be encouraged to address traceability issues, as will compliance with the Malaysia's Best logo requirements and other international standards for export purposes.

7.159 Agro-food-based areas will be identified and used as centres for agro-food processing in Sabah. A few collection centres and food terminals (TEMAN, *Terminal Agribisnes Negara*) will be identified and established at major food production areas in collaboration with federal government agencies such as FAMA.

7.160 Food production projects by TPKM and IADA, for instance, will be synchronised and coordinated. The coordination will be strengthened to ensure sustainable food supplies to the respective agro-food sub-sectors with a focus on production of organic and healthy food.

7.8.3 Specific Policy Enablers for Fisheries-Based Sub- Sectors

7.161 Fisheries-based sub-sector products such as dried shrimps, fish anchovies, fish crackers, dried fish and preserved fish are expected to grow as strategic initiatives to promote this sector will be intensified and promoted in SAP3.

7.162 Local processed fisheries-based food such as fermented fish (hinava and bosou) and seaweed products (chips, *acar* and others) will be promoted as Sabah niche foods to lure local and foreign visitors to visit Sabah.

7.163 In addition, certification of fisheries-based companies will be encouraged and monitored to ensure high-quality fish-based products for local markets and high product value for national and international markets.

7.164 To establish customer trust and company goodwill, high-quality and informative packaging will be incorporated into marketing strategies. Effective packaging strategies will be used while providing the necessary information such as date of packaging, date of expiry,

place of production and nutritional information. The packaging will be monitored by the DOF Sabah, *Ko-Nelayan* and/or Sabah Fish Marketing Sdn Bhd (SAFMA).

7.8.4 Specific Policy Enablers for Livestock by-Products

7.165 The livestock agro-based sub-sectors, such as meat balls, sausages, nuggets and burger-processing activities, are projected to grow significantly during SAP3. Given this outlook, these activities will be aggressively supported to further motivate and increase upstream production in Sabah. In particular, private sector investment for processing plants will be assisted through attractive investment packages.

7.166 Production of animal skins and high-value velvet will be intensified through processing activities that comply with animal welfare requirements and active promotion via a series of marketing techniques and awareness seminars. Livestock by-products of economic value, other than meat, obtained from livestock during slaughter and processing will be fully utilised. By converting these materials into useful products, the meat industry may reduce the environmental impact resulting from improper disposal of its by-products. Such efforts and activities will be encouraged and promoted among producers and the specialised sub-sectors.

7.167 In addition, livestock by-products such as manure for growing food and plants and methane for biogas will be encouraged to attain related accreditation and certification. The development will be monitored and registered under a marketing agency of DVSAI.

7.168 National and international symposiums, seminars and courses relating to livestock by-products will be encouraged and organised to create awareness, as well as to educate potential entrepreneurs to venture into the business. Such activities will be coordinated and promoted by a marketing agency under the jurisdiction of DVSAI in collaboration with the respective federal agencies and learning institutions.

7.8.5 Specific Policy Enablers for Commodities and Economic Crops

7.169 Downstream and by-product activities conducted by MPOB, including those by the POIC, need to be registered and monitored by MAFI through the Department of Agriculture for coordination and synchronisation purposes. The establishment of POIC in particular as a state-owned agency will further promote the growth of oil palm and palm oil-related downstream activities in the state. In addition, MAFI will continue to support and promote environmental conservation initiatives, while fostering more R&D initiatives to be carried out on downstream and by-product activities from rubber and cocoa through respective state agencies.

7.170 The use of rubber by-products, such as processed wood by the private sector, will be intensified to meet the local and international demand and standards.

7.171 With respect to cocoa value-added processing, private sector involvement in the processing of chocolate block will be encouraged and established within the state. This is to support the growing home-made chocolate demand while giving special attention to newly introduced industrial crops such as pepper to tap their economic potential to boost related agro-industry under SAP3.

7.9 Policy Enablers for Promoting Agrotourism Industry

7.172 Agrotourism in Sabah may still be in its infancy stage but it has high potential in generating lucrative income for the farmers during SAP3. As Sabah is known for its diversity in agricultural products from land to sea, the agrotourism model offers a wide range of services or products for agro-based tourists. The economic spillovers in the agrotourism business model will also benefit public-private partnerships and public and private businesses. In Sabah, agrotourism is gaining rapid popularity as it offers tourists an assortment of activities related to the agricultural sector. The potential market for agrotourism in Sabah is definitely an untapped market and has the

potential to drive an agriculture blossoming throughout the state. Profit sharing in public-private partnerships is expected to grow in line with the development of private agrotourism businesses and public institutions as service providers. Other benefits like fresh air, simplicity, warm hospitality and farm produce symbolise the “par excellence” version of agrotourism in stimulating the agro-based economy. Hence, the following policy enablers to promote agrotourism under SAP3 will be adopted:

7.173 Focus will be given to agrotourism packages that include education and research opportunities. Flexibility in creating attractive packages according to changes will be highly emphasised;

7.174 A range of tourism packages with basic necessities will be created according to consumers’ demand;

7.175 Smart partnerships will be strengthened among government, stakeholders, participating partners and farmers/fisherman associations. Linkages among farmers/restaurant managers/owners and government agencies will be established to regulate sustainable agrotourism;

7.176 Efforts will be made to improve funding, security and related laws to support the agrotourism models;

7.177 Efforts will also be given to promote Sabah as a sustainable seafood hub. Alternatives to wild-caught live reef fish like farmed fish and freshwater fish will be promoted to consumers as a strategy to encourage sustainable seafood hubs;

7.178 And, to ensure sustainability of the sector, the state government will continue to develop relevant initiatives and strategies to enhance the growth of agro-tourism activities in the state. Eco-friendly sports fishing will be promoted as a strategic catch-and-release technique to release smaller fish back into the river and/or sea. Information such as fisheries resources, population dynamics, biomass and captured quotas will be shared with the public, consumers and sport fishers as an awareness campaign for a sustainable fisheries sector;

7.179 Issuance of licenses to sport fishers will be introduced as part of the monitoring tools in managing fisheries resources in the state;

7.180 *"Buy Sabah Pearl"* will be further promoted as a tagline for gem-shoppers in Sabah. The pearl niche market will provide information such as traceability of production and quality information; and

7.181 Collaborative research related to the economics of agrotourism, demand patterns of potential tourists, impacts of agrotourism and other topics will be continued to enhance agrotourism advancement in the state.



8. CONCLUSION

8.01 The Third Sabah Agricultural Policy (SAP3) 2015 – 2024 envisions the agricultural sector in the state as a leading sector that will invigorate the state economic development to a greater level of success. Incorporating both the national and state development agendas and various development initiatives of the country, SAP3 will sustainably establish a strong foundation for the state to further enhance the development and accelerate the growth of its agricultural sector.

8.02 Apart from commercialising and modernising the sector, the overall outcomes of SAP3 will be to increase food security and income of farmers/producers and strengthen productivity, growth and competitiveness. Most importantly, the development of this sector will be based on environmentally friendly and good agricultural practices to ensure sustainable agriculture.

8.03 The policy will also be geared towards the creation of an integrated supply chain to increase productivity and enhance competitiveness in both the local and global markets. Therefore, it is expected that growth will be driven by the private sector and agro-entrepreneurs through technology and innovation in an environment that is more business-friendly.

8.04 Taking full advantage of its great potential and prospects for further development, the state government will continue to address the impending and emerging issues that are considered hindrances to proactive development, while the critical policy enablers will need to be strengthened and improved accordingly. With the necessary enablers and support together with the coordinated and conscientious efforts of all the major stakeholders, including related government agencies, farmers and private investors, the state will be able to fully realise the strategic objectives and set targets of SAP3 within the time frame for the benefits and well-being of the people in Sabah.

“Agriculture . . . is our wisest pursuit, because it will in the end contribute most to real wealth, good morals & happiness . . . The moderate & sure income of husbandry begets permanent improvement, quiet life, and orderly conduct both public and private.”

Thomas Jefferson

“I have always said there is only one thing that can bring our nation down - our dependence on foreign countries for food and energy. Agriculture is the backbone of our economy.”

John Salazar

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