

Driving Modernisation in Agro-food

Strategy Paper

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For further information refer to:

Director General
Economic Planning Unit
Prime Minister's Department
Block B5 & B6
Federal Government Administrative Centre
62502 Putrajaya
MALAYSIA

<http://www.epu.gov.my>

Tel.: 603-8000 8000

Fax.: 603-8888 3755

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I. INTRODUCTION

20.1 Food security, income of farmers and sustainability will continue to be the objectives of agro-food subsector development, in line with the National Agrofood Policy (NAP), 2011-2020. The policy aims to meet the growing demand for nutritional and affordable food as well as to ensure consistent supply of raw materials for resource-based industries. Amidst this, the farming community faces greater challenges with escalating food production cost and the need to push for higher productivity gains. Lower private investments as compared to other economic sectors and dwindling interest among the younger work force in agriculture has further exacerbated the situation. In addressing these challenges, the sector needs to shift its focus from the traditional factors of production to the use of modern technologies, market-driven innovation and knowledge as growth drivers.

20.2 Moving forward, in addition to ensuring food security and safety, the agro-food subsector will be modernised to provide employment opportunities, generate higher income and ensure sustainable development. Emphasis will be given to improve productivity, strengthen the food supply chain, improve the support system and services, increase knowledgeable and skills of farmers as well as ensure market compliance. The agro-food industry will gradually progress from being associated with low income and unskilled jobs to higher income and professions of choice.

II. TENTH MALAYSIA PLAN, 2011-2015: PROGRESS

20.3 During the Tenth Malaysia Plan period, the agriculture sector achieved an overall improved performance in production, value added and the self-sufficiency level (SSL). Better agronomic practices, quality inputs, modern farming technologies, improved infrastructure and skills training programmes were the main contributors to productivity gains. However, the sector continues to depend on foreign workers for unskilled and semi-skilled jobs.

Agro-food Value Added

20.4 The agriculture sector recorded an average growth of 2.4% in the Plan period as shown in *Exhibit 20-1*. The sector remained as an important supplier of raw materials to resource-based industries, and is estimated to contribute 19.6% of the total manufacturing value added in 2015. The agro-food subsector is estimated to contribute 38.8% to total agriculture value added, while the industrial commodities subsector is estimated to contribute 60.5%. The average annual growth rate of the agro-food subsector is estimated to reach 3.4%. Among the industries that recorded the strongest average annual growth rate were vegetables at 9.7%, fruits at 9%, and livestock at 8.1%. These achievements are in tandem with the NAP target to increase contributions of the agro-food subsector to the agriculture value added.

Exhibit 20-1

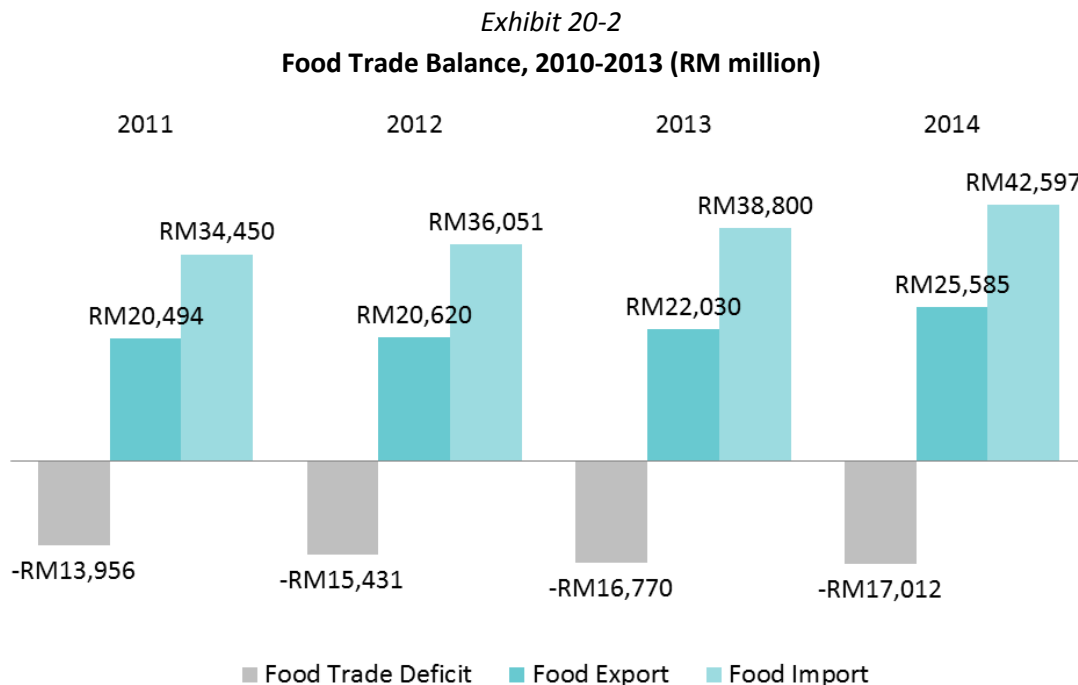
Value Added of Agriculture and Agro-Based Industry, 2010-2020

Sector	RM Million (in 2010 prices)			% of Total GDP			Average Annual Growth Rate (%)	
	2010	2015	2020	2010	2015	2020	Tenth Plan	Eleventh Plan
							Achieved	Target
Agriculture	82,881	93,184	110,707	100	100	100	2.4	3.5
Industrial Commodities	55,646	56,407	63,096	67.1	60.5	57.0	0.3	2.3
Rubber	8,823	5,658	8,154	10.6	6.1	7.4	-8.5	7.6
Oil Palm	37,467	42,532	48,925	45.2	45.6	44.2	2.6	2.8
Forestry and Logging	8,493	7,144	4,349	10.2	7.7	3.9	-3.4	-9.5
Cocoa	104	28	63	0.1	0.0	0.1	-23.2	17.7
Pepper	759	1,044	1,605	0.9	1.1	1.4	6.6	9.0
Agro-food	26,595	36,200	46,979	32.1	38.8	42.4	6.4	5.4
Paddy	1,550	1,956	2,495	1.9	2.1	2.3	4.8	5.0
Fruits	2,670	4,117	5,208	3.2	4.4	4.7	9.0	4.8
Vegetables	4,963	7,871	11,505	6.0	8.4	10.4	9.7	7.9
Fisheries	9,036	10,218	12,962	10.9	11.0	11.7	2.5	4.9
Livestock	6,962	10,272	12,773	8.4	11.0	11.5	8.1	4.5
Others	1,414	1,766	2,036	1.7	1.9	1.8	4.5	2.9
Contribution of Agriculture to GDP (%)	10.1	8.8	7.8		
Agro-based Industry	39,042	47,688	57,047	100	100	100	4.1	3.7
Vegetable and Animal Oil & Fats	7,009	8,915	11,422	18.0	18.7	20.0	3.7	3.7
Other Food Processing, Beverages & Tobacco	17,171	21,039	25,171	44.0	44.1	44.1	8.9	8.3
Wood Products including Furniture	7,115	7,867	8,614	18.2	16.5	15.1	3.3	3.0
Paper & Paper Products	2,644	3,140	3,878	6.8	6.6	6.8	1.3	1.3
Rubber Processing & Products	5,103	6,727	7,961	13.1	14.1	14.0	2.8	2.7
Total Agriculture and Agro-based Industry	121,923	140,872	167,754					
Contribution of Total Agriculture and Agro-based Industry to GDP (%)				14.8	13.3	11.9		
Contribution of Total Agro-based Industry to Manufacturing Value Added (%)				20.3	19.6	18.3		

Source: Department of Statistics Malaysia and Economic Planning Unit

Food Trade Balance

20.5 The export of food increased at an average annual growth rate of 9% from RM20.5 billion in 2011 to RM25.6 billion in 2014 as shown in *Exhibit 20-2*. However, food imports also grew at an average rate of 9% per annum from RM34.5 billion to RM42.6 billion. The main contributors to food exports were coffee, cocoa, tea, spices and manufactures at 26.4%, miscellaneous edible products and preparations at 25.8%, fish, crustaceans, molluscs and preparations at 10.9%, and cereals and cereal preparations at 9.4%. Food trade balance showed an increasing deficit at an average rate of 8.9% from 2011-2014. The main contributors to the deficit were animals feed at 34.4%, followed by sugars, sugar preparation and honey at 17.1%, meat and meat preparation at 14.7% and vegetables at 13.8%.



Source: Ministry of Agriculture & Agro-based Industry

Employment and Productivity Per Worker

20.6 Total employment in agriculture registered an upward trend with an average annual growth rate of 0.1%. The average annual growth of productivity per worker in the agro-food was at RM57,539 in 2014, an increase of 2.7% from RM51,672 in 2010. The increase in productivity was attributed to continuous skills training, better planting materials, adoption of modern technologies and improved farming techniques. In 2013, the agro-food subsector employed 35.2% of total agricultural workforce and the productivity per worker was at RM57,054.

Income of Farmers

20.7 The average monthly gross income received by farmers varied based on the type of agro-food activities, scale and price as shown in *Exhibit 20-3*. In the food crop activities, income ranged from RM1,200 to RM2,700 per month in 2013. Paddy farmers with an average land holding size of 2 hectares received an average of RM1,550 per month in granary areas as compared to RM835 in non-granary areas. The differences in income were mainly attributed to planting intensity and availability of drainage and irrigation infrastructure which affected level of productivity. Income of vegetable farmers was higher as compared to fruit farmers due to shorter crop cycles in vegetable farming with year round production. In the fisheries activities, commercial fishermen obtained higher income with the use of advanced technologies and bigger vessels as compared to traditional fishermen who are confined to fishing activities in the coastal areas. In the ruminant livestock activities, farmers of dairy cattle rearing received the highest income. However, income received by dairy farmers varied with the level of productivity in milk yield and number of lactating animals.

Exhibit 20-3

Average Monthly Gross Income of Farmers, 2013

Agro-food Activities	RM
Food Crops	
Paddy (Granaries & Non-granaries)	835 - 1,550
Vegetables	2,756
Fruits	1,232
Fisheries	
Captured Fisheries	
Fisheries (Traditional: Zone A)	2,320
Fisheries (Commercial: Zone B, C & C2)	4,420 - 9,500
Aquaculture Fisheries	
Freshwater System	1,000 - 3,000
Marine Culture System	1,000 - 8,000
Ornamental Fish	5,000 - 10,000
Ruminant Livestock	
Beef Cattle*	800 - 9,000
Dairy Cattle*	2,790 - 32,450
Buffalo*	900 - 10,000
Goats/Sheep**	1,250 - 12,000

Note: * 20-200 heads

** 50-500 heads

Source: Ministry of Agriculture & Agro-based Industry

Agricultural Land Use

20.8 Total agricultural land is expected to increase by 1.9% in the Tenth Plan period as shown in *Exhibit 20-4*. This is largely due to the expansion of oil palm and rubber plantations. Land use for agro-food activities is at 781,845 hectares in 2014 which comprises 10.7% of the total agricultural land. Paddy areas and fruit farms made up more than 70% of the total land use for agro-food. Farm land for agro-food is estimated to increase by 1.2% contributed mainly by an increase in vegetables and fisheries particularly in aquaculture. However, paddy areas are estimated to decrease by 1.4% in 2020.

Exhibit 20-4

Agricultural Land Use, 2010-2020

Commodities	'000 Hectare			Average Annual Growth Rate (%)		
	2010	2015	2020	10MP		11MP ¹
				Target ¹	Achieved	
Industrial Commodities						
Rubber	1,020.4	1,087.6	1,197.6	2.2	1.3	1.9
Oil Palm	4,853.8	5,480.0	5,672.0	1.9	2.5	0.7
Cocoa	20.1	18.2	23.4	8.4	1.4	5.2
Pepper	14.2	16.3	18.3	4.0	2.8	2.3
Subtotal Industrial Commodities	5,908.5	6,602.1	6,911.3	2.0	2.2	0.9
Agro-food						
Paddy	444.3	394.2	368.2	-2.4	-2.4	-1.4
Vegetables	39.3	38.4	45.7	2.4	-0.4	3.5
Fruits	239.4	203.1	206.9	-0.5	-3.2	0.4
Coconut	105.7	85.8	77.6	-3.4	-4.1	-2.0
Fisheries ²	33.8	46.8	116.6	4.0	6.8	20.0
Others ³	7.1	9.6	10.2	5.2	6.4	1.1
Subtotal Agro-food	869.6	777.9	825.2	-1.4	-2.2	1.2
Total Land Use	6,778.1	7,380.0	7,736.5	1.4	1.9	0.7

Note: ¹ Targets in National Agrofood Policy and National Commodities Policy, 2011-2020

² Fisheries include aquaculture, ornamental fish and seaweed

³ Others include herbs and spices and floriculture

Source: Ministry of Agriculture & Agro-based Industry and Ministry of Plantation Industries & Commodities

Self-Sufficiency Level

20.9 The SSL of the majority of agro-food commodities recorded positive increments supported by programmes to increase food production under the food security initiatives in the Tenth Plan period as shown in *Exhibit 20-5*. SSL for all commodities increased during this period except for pork. The increase in SSL was mainly contributed by increased productivity with the use of quality seeds, breeds and fries, wider adoption of technologies among farmers, establishment of new large-scale food production areas, improved extension services and better agronomic practices. The SSL for pork decreased with the closure of

unregulated pig farming areas and policies to relocate the farms to designated pig farming areas.

Exhibit 20-5

Self-Sufficiency Level of Food Commodities, 2010-2020 (%)

	2010	2015	2020 ¹
Crops			
Rice	63.1	71.4	100
Fruits ¹	103.3	101.6	106.5
Vegetables ²	89.8	91.8	95.1
Livestock			
Beef	30.1	27.2	50
Mutton	12.2	17.3	24.6
Poultry	105.6	104.6	103.7
Pork	94.7	88.7	83.1
Eggs	114.6	122.1	130
Milk	8.5	13	13.6
Fish³	93.9	92.6	95.8

Note: ¹ Excludes temperate fruits

² Excludes temperate vegetables

³ Includes seaweed

SSL = Production / (Production+Import±Stock-Export) x 100

Source: Ministry of Agriculture & Agro-based Industry

Investments and Financing

20.10 Approved investments in agro-food for the period 2011-2014 recorded a total of 242 projects worth RM1.7 billion. These investments comprised 89% from domestic direct investment and 11% from foreign direct investment. As at end of December 2014, total loans from financial institutions to primary agriculture involving upstream activities recorded RM39.2 billion and to agro-based industries, RM28.5 billion. The overall agriculture and agro-based financing from Agrobank, established to support the development of the agriculture sector, accounted for 10.1% as at end December 2014.

III. ISSUES AND CHALLENGES

20.11 The agro-food subsector faces several issues and challenges to meet the rising demand for affordable, healthy and safe food. The main issues are low productivity, high post-harvest loss, non-optimal land use, unorganised marketing, ineffective institutional support as well as inadequate and low skilled workers. Furthermore, ineffective knowledge transfer and lack of focus on priority research areas, unfavourable terms of financing and

ineffective broad-based incentive have affected the potential growth of agro-food subsector. In addition, the industry also faces challenges such as climate change, competition from low cost producing countries and stricter market requirements from importing countries.

Low Productivity

20.12 Increasing demands for food as well as scarcity of suitable agricultural land and resources underpin the need for higher productivity. A major concern for productivity is the inherent gap between actual and potential yields. The issues, among others, are supply of quality seeds, breeds and fries, compliance to standards, use of technologies, adequacy of infrastructure as well as biosecurity measures.

20.13 **Supply of Quality Seeds, Breeds and Fries.** Inadequate local supply, use of uncertified seeds, high cost and dependency on imported quality seeds, breeds and fries have hampered the growth of the agro-food subsector. The use of uncertified seeds, except for paddy, has undermined the level of productivity as currently, the seed industry is not regulated. The certification of seeds is undertaken on a voluntary basis through special certification schemes by the Department of Agriculture (DOA). In the ruminant industry, most breeder animals are imported from Australia and New Zealand. Increasing demand from other importing countries and limited supply of quality breeder animals have resulted in higher import costs. In addition, the imported breeder animals are prone to diseases and do not adapt well to the local environment, contributing to low productivity. Ruminant production for beef, mutton and milk is a challenge given the availability of limited land and grazing areas for cattle and goat rearing as well as high feeding costs. In the aquaculture industry, inconsistent supply and the availability of cheaper fries have led local farmers to source from other countries. Most of the imported fries are uncertified and inconsistent in terms of quality.

20.14 **Compliance to Standards.** The lack of awareness among farmers and buyers and low premium prices have led to the low rate of compliance to the Malaysian Good Agricultural Practices (MyGAP), which emphasises good agronomic and sustainable practices. The high initial capital investment required to attain compliance coupled with low domestic demands for quality produce remain major deterrents. In 2014, 3,585 farms or 4.6% of the total 77,191 farms complied to MyGAP. The certified farms comprised of livestock at 59%, food crops, 38% and aquaculture, 3%.

20.15 **Use of Technologies.** The rate of adoption of new technologies is not prevalent except in the poultry industry. Among the main contributing factors include accessibility and adoption of cost effective farming technologies due to farm size, location and geographical constraints; dependency on foreign labour and lack of dedicated funds for farmers to adapt

and upscale on developed technologies. In addition, the multi-step process of technology transfer from research and development (R&D) agencies, such as the Malaysian Agricultural Research and Development Institute (MARDI), through other agricultural agencies to farmers has caused delays in technology adoption.

20.16 Agricultural Infrastructure. Inadequate, dilapidated and poorly maintained agricultural infrastructure have affected production efficiency. In paddy planting areas, insufficient drainage and irrigation infrastructure have resulted in low canal density, which affected supply of water to paddy parcels. Currently, only four out of the eight granary areas achieved 30 metres per hectare of canal density as compared to the optimum density of 50 metres per hectare, which has led to low paddy yield. In fruit and vegetable farming, poor maintenance and inadequate farm roads also affected accessibility of machineries, timely delivery of inputs to farms and transportation of farm produce to markets. In the fishery industry, poor conditions and maintenance of jetties as well as inadequate facilities, such as cold rooms and ice block production at the jetties, have affected fish landings.

20.17 Biosecurity Measures. Outbreak of diseases due to a lack of biosecurity measures, including poor pest and disease management as well as absence of early detection and warning systems, have affected the agro-food subsector. In the fruit industry, the papaya dieback disease has led to a significant drop in production from 45,990 metric tonnes in 2008 to 35,630 metric tonnes in 2012. In addition, the Early Mortality Syndrome among white shrimps in the aquaculture industry, caused by uncertified fries brought in illegally by unregistered farms, has affected shrimp production.

High Post-Harvest Loss

20.18 High post-harvest loss is prevalent especially in the paddy, fruits and vegetables industries. In 2013, the average post-harvest loss along the supply chain in agro-food was at 30%. The high losses were mainly due to lack of good agricultural practices, inefficient harvesting machineries and technologies, poor storage facilities and logistics as well as lack of knowledge on post-harvest handling. Post-harvest loss has affected production, quality of produce, income of farmers and optimal use of resources.

Non-optimal Land Use

20.19 Limited arable land for food production has been one of the major constraining factors in achieving targets of food security initiatives. Despite this, it is estimated that a total of 120,000 hectares of agricultural land, including government-owned land, remains undeveloped. In addition, challenges faced in utilising idle land include difficulty in identifying land owners as well as scattered and uneconomic land size holdings.

Unorganised Marketing and Dependence on Middlemen

20.20 Marketing of agro-food has been a persistent issue among small farmers who are mainly unorganised and lack knowledge on market driven practices as compared to commercial farmers. As a consequence, small farmers mainly rely on middlemen in the marketing of their produce.

20.21 *Marketing and Distribution System.* Production of agro-food are often uncoordinated with market demand resulting in mismatch and inability to absorb excess from bumper harvests. The non-conformity of produce to market requirements have also restricted access to markets. In addition, exporters of agricultural products have to bear additional cost due to poor air network, long cargo clearance time, insufficient cold room facilities and high transportation charges. The inefficient supply chain also affects the marketability of perishable products leading to lower farm gate prices.

20.22 *Multiple Tiers of Middlemen.* Middlemen play a significant role in the marketing of agro-food produce as farmers lack financial capability and know-how in marketing. The existence of multiple tiers of middlemen in the supply chain has also contributed to low farm gate and high consumer prices. On the average, fruit and vegetable farmers in Malaysia received between 41% and 45% of the retail price as compared to 65% in South Korea.

Ineffective Institutional Support

20.23 Lack of comprehensive institutional support by agricultural cooperatives and extension agencies in providing agricultural related services has affected the productivity and agility of the industry to respond to current market requirements. The role of the agricultural cooperatives is largely confined to selected activities within the supply chain, thus limiting income-generating opportunities. In addition, extension agencies need to address issues related to quality of extension services.

20.24 **Extension Services.** Small and dispersed production areas, lack of expertise and know-how on latest farming technology among extension officers have limited the effectiveness of their services, particularly the rate of technological transfer to farmers. In addition, emerging issues in climate change, pests and diseases as well as higher operational cost have posed more challenges to effective service delivery. A low ratio of extension officers to farmers as well as low adherence of the agencies to the MS ISO 9001:2008 Quality Management Systems on Agriculture Extension Service and Training have also affected the quality of advisory services.

20.25 Role of Agricultural Cooperatives and Associations. Agricultural cooperatives and associations were established to enable farmers to maximise economic benefits by pooling resources in procurement of inputs, facilitating marketing and distribution as well as providing technical advice, machinery and financing. However, most cooperatives and associations are poorly managed, have limited capital and lack business expertise. Hence, the involvement of such cooperatives and associations is limited to upstream activities such as distribution of inputs and sale of produce.

Uncompetitive Workforce

20.26 Agricultural workforce comprised 1.6 million workers or 11.6% of the total workforce in 2014. However, the sector is in need of skilled workers to boost productivity and modernise the sector. Currently, 98.3% of the workforce comprises semi-skilled and unskilled workers due to lack of demand for qualified and trained workers as a result of the low level of mechanisation and adoption of technology, small scale ventures and easy access to cheap foreign labour. In addition, lack of awareness and negative perception on the opportunities in agriculture, unconducive working environment, limited career advancement opportunities as well as low wages have caused locals, particularly the youth, to shun away from the sector. This further aggravates the issue of aging farmers in the sector. In 2013, 29.3% of the agricultural workforce was above 50 years old as compared to 27.3% in 2005.

Ineffective Knowledge Transfer and Lack of Priority Research

20.27 The lengthy transfer process of research findings, by research agencies such as MARDI via agricultural departments, coupled with extension officers who lack knowledge on new technology and farm techniques, have contributed to the ineffectiveness of knowledge transfer to farmers. R&D in agriculture, which is largely undertaken by public agencies and universities, have low take up rates due to lack of market demand and insufficient promotion. Focus on priority research areas, particularly on pests and diseases, quality seeds, breeds and fries as well as animal feed, are needed to address disease outbreaks and high dependency on imported seeds and feeds.

Unfavourable Terms of Financing

20.28 Financial support for agricultural ventures is crucial, as they require high initial investments. Financial institutions offer limited products and unfavourable terms for agribusinesses. Conventional financing, consisting of term financing and collaterals, is unsuitable, particularly in cases where income from farming is dependent on seasonal

harvesting. In addition, operators in the agro-food subsector face difficulties in acquiring loans due to uncertainty in income and higher risks as compared to industrial commodities.

Ineffective Broad-based and Input Driven Assistance

20.29 Currently, most agricultural assistance provided is broad-based and input driven. Subsidies for paddy cultivation including certified paddy seeds, fertilisers, herbicides and pesticides are provided annually based on hectareage, which amounted to RM2.2 billion in 2014. This form of assistance is ineffective as the same amount of inputs is provided irrespective of soil conditions, pests and diseases. In the fisheries sector, for instance, RM1.1 billion was allocated for fuel subsidy as compared to RM91.2 million as incentives for fish landing in 2014. Despite the huge allocation for fuel subsidy, fish landing only increased marginally at an average of 2.9% per annum from 2011 to 2014.

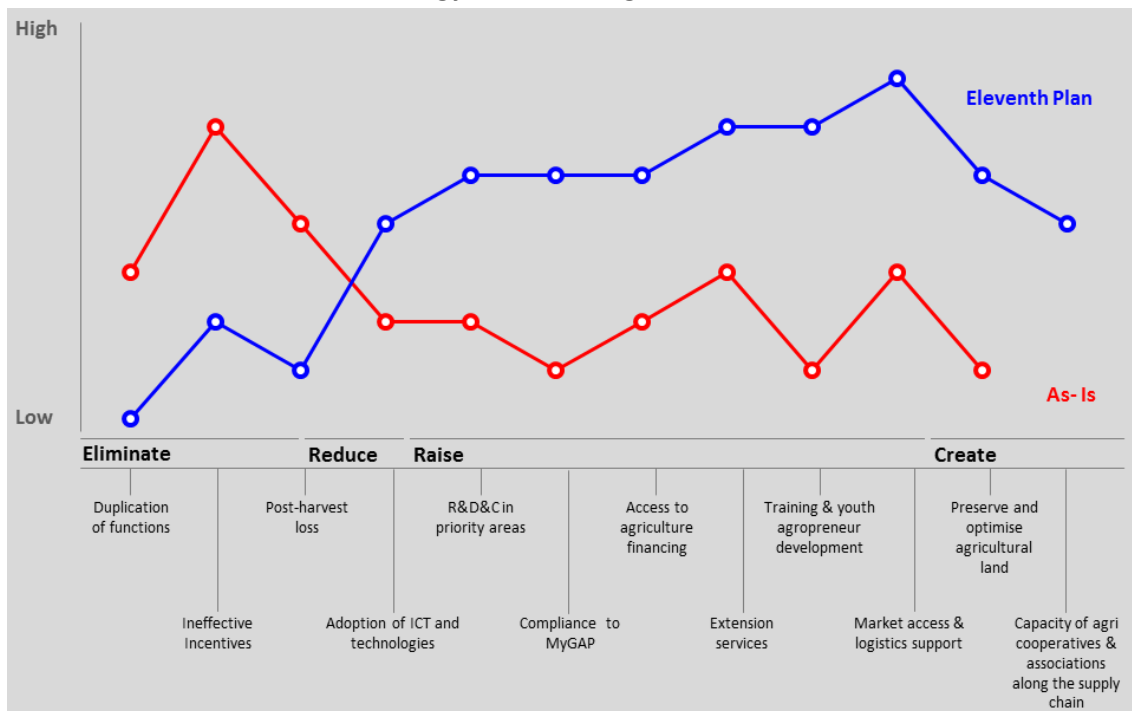
IV. ELEVENTH MALAYSIA PLAN, 2016-2020: WAY FORWARD

20.30 In the Eleventh Malaysia Plan, the agriculture sector is expected to grow at 3.5% per annum, contributing 8.2% to total GDP. The agro-food subsector is expected to grow at 5.4% per annum with livestock, aquaculture and vegetable as the main contributors, while demand for food is expected to reach 14.8 million metric tonnes in 2020. The share of agro-food to agriculture value-added is projected to reach 42.2% and industrial commodity at 57%. The agro-based industry is expected to contribute 18.3% of total manufacturing value added by 2020.

20.31 During the Plan period, the agro-food subsector will be transformed into a high income and sustainable industry through innovative R&D and modernisation initiatives. Emphasis will be given in ensuring food security and safety, increasing income of farmers and boosting productivity, particularly food commodities with low SSL. The targeted industries in the Plan period are paddy and rice, fruits and vegetables, ruminant and fisheries. Eleven factors have been identified as the focus areas in driving modernisation in the agro-food subsector as shown in *Exhibit 20-6*. Common issues faced by the agro-food subsector are addressed under macro strategies, while specific issues, under industry-specific strategies.

Exhibit 20-6

Strategy Canvas for Agro-food Subsector



Macro Strategies

20.32 The macro strategies identified across the agro-food subsector will address common issues that hinder development and improvement in the productivity of the industry. In addition, these strategies will focus on improving the income of farmers, fishermen and livestock rearers, particularly the bottom 40% of the income group and drive modernisation in the agro-food subsector. These strategies are as follows:

- Improving productivity and income of farmers, fishermen and rearers;
- Building capacity of agricultural cooperatives and associations along the supply chain;
- Promoting training and youth agropreneur development;
- Strengthening institutional support and extension services;
- Improving market access and logistics support; and
- Scaling up access to agricultural financing.

Improving Productivity and Income of Farmers, Fishermen and Rearers

Accelerating Adoption of Modern Farming Technology and Information and Communication Technology

20.33 The use of modern technology and information and communication technology (ICT) in farm management will be intensified to improve efficiency and reduce labour dependency. ICT-based applications such as wireless sensor networks, smartphone applications for mobile farm management solutions and precision farming will be further deployed. Various media such as mobile phones and websites will be used to disseminate market information on prices, demand and supply of produce between agencies, extension officers and farmers. In addition, the Agriculture Flagship (AgF), which is an integrated platform for effective delivery of information among stakeholders along the agro-food supply chain will be operationalised during the Plan period. This system will facilitate effective planning and decision-making.

Preserving and Optimising Agricultural Land

20.34 State governments will be encouraged to gazette granary areas and permanent food production parks to ensure that designated agricultural land alienated by state governments are used for agriculture. In addition, incentives in the form of adequate infrastructure including farm roads and grants will be provided to retain existing agricultural land and encourage state governments to allocate more land for food production. Undeveloped land belonging to the Federal Government will be leased for short cycle food crops or high value farming activities, pending plans for development.

Intensifying Research & Development and Commercialisation in Priority Areas

20.35 Research & Development and Commercialisation (R&D&C) in the development of quality seeds, breeds, fries and animal feed, integrated pest and disease management as well as product improvement and presentation will be given focus as priority research areas. A research management agency will collaborate with MARDI to spearhead collaborative efforts among public research institutes, universities and private research centres to ensure research is participatory and market driven as well as to promote the uptake of solutions among industry and farmers. In addition, MARDI will be involved directly with extension officers in the dissemination of knowledge and training of farmers to ensure effective transfer of technology.

Increasing Farm Compliance to MyGAP

20.36 Farms will be incentivised to increase compliance to MyGAP certification to ensure sustainable production and safe fresh produce. Farms with MyGAP certification will be given priority for grants or soft loans. The MyGAP certification will be a prerequisite for all farms in the permanent food production parks (TKPM). The MyGAP will be aligned to the Global GAP requirements criteria to increase market access, particularly to the European Union. The benefits of MyGAP certified products will be promoted to consumers through campaigns and awareness programmes.

Reducing Post-Harvest Loss

20.37 Post-harvest handling mechanisms will be strengthened to reduce agricultural produce loss along the supply chain and to ensure farmers receive higher income. These include upgrading and building more collection and distribution centres, improving logistics particularly cold trucks and storage facilities, turnaround time at airports and ports as well as intensifying R&D in food handling. In addition, farmers will be updated in new post-harvest management and harvesting techniques by relevant agricultural agencies.

Building Capacity of Agricultural Cooperatives and Associations along the Supply Chain

20.38 Programmes will be implemented to empower and strengthen the capacity of cooperatives and associations in the area of management, finance, investment and marketing as well as to create new business opportunities along the supply chain. To realise this, a cluster-based approach integrating production, quality control, processing and marketing will be further promoted. This will ensure sustainable income for farmers through secured demand contracts, better farm gate prices and profit sharing from processing activities. For example, Area Farmers Organisations (PPK) will be assisted to venture into leasing of farm machineries, providing credit services, supplying of certified seeds and processing activities. The involvement of Area Fishermen Associations in fish cage farming, production of fish fries and fish meal as well as processing of fish-based products will be further promoted. In addition, dairy cooperatives will be linked up with milk collection centres under the Department of Veterinary Services (DVS) to undertake collection, processing and marketing activities of dairy products. To enhance professionalism, MyAgrosis participants, trained in agribusiness, will be engaged to assist cooperatives and associations in the area of management and business development.

20.39 Cooperatives and associations will be assisted to participate in various local and international events to showcase and market their products. In addition, dedicated outlets

in airports and tourist destinations will be established to promote local agricultural products. Assistance in the form of matching grants and soft loans will be provided for product testing, packaging, rental space, promotion and advertising to secure better business opportunities.

Promoting Training and Youth Agropreneur Development

20.40 Skills and entrepreneurship development among farmers will be strengthened in tandem with the objective to modernise the sector. During the Plan period, a total of 69,000 skilled workers and 10,000 agropreneurs are expected to be trained in the agro-food subsector by 2020 to meet the requirements of the industry. The National Agriculture Training Council (NATC) in collaboration with institutions of higher learning and the industry will review the training curriculum regularly to produce skilled and knowledgeable workers. The National Occupational Skills Standard (NOSS) for agriculture will be strengthened to develop skilled human capital to address pertinent issues such as climate change, supply chain and standard compliance. Familiarisation and attachment programmes for potential farmers will be encouraged through collaboration with international bodies such as the Food and Agriculture Organisation (FAO) and ASEAN counterparts.

20.41 Programmes will be implemented to promote farm mechanisation and automation to increase productivity and to further reduce labour requirement particularly of foreign workers. To support this initiative, skills training on the use and maintenance of farm machinery and equipment will be provided to accelerate farm mechanisation.

20.42 The success of the pilot collaboration programme between Kolej Pertanian Malaysia and the industry at Bukit Tangga, Kedah, will be rolled out to other agricultural training institutes. This programme involves the leasing out of unutilised land at the training centres to agribusinesses which in return, provides on the job training to the students. Special focus will be given to strengthen the capacity of young agropreneurs in modern farming techniques and market opportunities through hand-holding, incubator and mentor-mentee programmes. The MyAgrosis programme, a joint collaborative effort between the Ministry of Agriculture and Agro-Based Industry (MOA) and the Ministry of Education will be further promoted to encourage participation of students from education and training institutes under both ministries in agribusinesses. Participants of this programme will be given priority in obtaining start-up grants and soft loans in agribusiness ventures.

20.43 The role of the NATC, as a central planning body for agro-food and agro-based related training, will be strengthened to identify future skills and manpower requirements to meet industry demand. In this regard, NATC will be tasked to formulate training content, accredit training institutions and coordinate training programmes among various agencies

under the MOA. The Ministry will centrally coordinate the development of training facilities under agencies to optimise the use of resources.

Strengthening Institutional Support and Extension Services

20.44 Compliance to the MS ISO 9001:2008 Quality Management Systems on Agriculture Extension Service and Training will be extensively promoted to enhance the quality of extension services. Extension services provided by various agencies will be reviewed based on location, agricultural activities and relevance of services provided. Extension officers will be trained in multiple fields, such as in livestock, aquaculture, oil palm and rubber as well as the use of modern technologies, sustainable practices and in managing impacts of climate change. Through this approach, the establishment of different extension agencies in one area will be avoided and existing officers will be redeployed to optimise their services. The use of remote sensing and drones by extension officers will be promoted for planning, surveillance and monitoring agricultural activities mainly in paddy areas. The private sector, universities and farmer associations will be encouraged to provide advisory and technical services as well as knowledge sharing. In addition, the private sector will be facilitated to undertake the upgrading of skills among farmers and apprenticeship programmes in the field of farm management and new technology applications.

Improving Market Access and Logistics Support

20.45 Marketing of agricultural products will be improved through the establishment of more market outlets, market compliance products, online marketing, promotion and branding. In addition, the Malaysia External Trade Development Corporation (MATRADE) will intensify the promotion of agricultural products in the global market through trade and food exhibitions with the collaboration of the agriculture attaché under MOA. Direct involvement of the Federal Agricultural Marketing Authority (FAMA) in the marketing of agricultural produce through contract farming will be reviewed to focus on facilitating arrangements between farmers and consumers, industries as well as exporters. The revision is to ensure secure market, timely delivery of products to the market and to meet buyer specifications in terms of quality and safety. In addition, to widen market access of agricultural products, AgroBazaar.com.my, an existing online trading portal will be upgraded to facilitate sales, payment and delivery transactions.

20.46 The logistics support for collection, distribution and marketing of agricultural produce will be improved to ensure quality of produce, minimise post-harvest loss and reduce marketing cost. In addition, collection and distribution centres will be provided in new production areas and upgraded in existing areas while cold storage and handling facilities will be provided or upgraded in fishery complexes, ports and airports to facilitate

exports of perishable products. The use of halal and green logistics will be promoted to increase marketability of agricultural exports.

Scaling Up Access to Agricultural Financing

20.47 Government funding through Agrobank will be restructured from fixed-term to flexible repayment based on harvest cycles of agro-food commodities. The current practice of loan repayments by paddy farmers based on harvesting cycles will be extended to other agro-food commodities such as aquaculture and vegetables. In addition, these loans will have more flexibility by allowing credit insurance in place of collateral requirements.

Industry-Specific Strategies

20.48 Industry-specific strategies will be implemented in the paddy and rice, fruits and vegetables, ruminant and fishery industries to further boost growth and sustainability. The strategies will focus on specific initiatives and programmes to address issues faced by the related industries.

Paddy and Rice Industry

20.49 The demand for rice is expected to increase from 2.4 million metric tonnes in 2013 to 2.6 million metric tonnes in 2020. Production of rice is expected to reach 2 million metric tonnes by 2020 with total parcel areas of 416,000 hectares. Initiatives towards achieving full self-sufficiency will focus on consolidating small farms, providing adequate irrigation and drainage infrastructure, introducing new high yielding varieties, gazetted permanent rice production areas, improving delivery services and providing performance-driven subsidies. In addition, four new granaries in Rompin and Pekan, Pahang; Batang Lupar, Sarawak; and Kota Belud, Sabah will be developed.

Consolidating Small Farms

20.50 More estates or group farming initiatives will be created to reap economies of scale and reduce cost of production. Efforts will be continued to consolidate paddy fields averaging 2.2 hectares into estates of more than 100 hectares to be managed by PPKs or private companies. Under the Agriculture NKEA, special incentives of RM2,000 per hectare per season for up to five seasons will continue to be provided for farmers who join the group farming initiative in addition to profit sharing and employment opportunity. This consolidation initiative is expected to raise the paddy yield from 5 metric tonnes per hectare to 8 metric tonnes per hectare and increase the income of farmers by 5% by 2020.

Providing Adequate and Efficient Irrigation and Drainage Infrastructure

20.51 The construction and upgrading of irrigation and drainage infrastructure in granaries and non-granaries will be undertaken in phases to increase canal density to a minimum of 30 metres per hectare. This effort is expected to increase crop intensity from an average of 188% (1.8 times per year) in 2014 to 200% (two times per year) in 2020. High density polyethylene pipes will be used as an alternative to reduce construction and maintenance costs of infrastructure in new granaries. The role of water management groups or *Kumpulan Pengguna Air* set up among the farmers will be revived to manage water resources and encourage voluntary maintenance of infrastructure in their respective areas. The use of radio telemetry and Supervisory Control and Data Acquisition as practised in the Muda Agricultural Development Authority (MADA) area will be expanded to other granaries for effective management and monitoring of water distribution.

Promoting Use of Certified High Yield and Aerobic Rice Varieties

20.52 New certified paddy varieties such as MR253, MR263 and MR269 which offer better yield and resistance to disease will be widely promoted, particularly in disease prone areas. In addition, planting of aerobic rice, a paddy variant that is heat resistant and requires less water will be promoted in areas where single season planting is carried out due to poor water supply. The short maturity period of aerobic rice enables three planting cycles a year and is expected to increase the income of farmers.

Improving Post-Harvest Handling Chain

20.53 Strategies in reducing post-harvest loss will focus on improving the post-harvest handling chain including harvesting, drying, storage, transportation and milling activities. Reducing post-harvest loss from an average rate of 30% to 15% will increase the overall production of rice thus raising the income of farmers. Research will focus on improving the efficiency of harvesting machines, drying and storage facilities as well as milling technology. In addition, more drying and storage facilities will be built to help farmers store their paddy before transporting to rice mills.

Gazetting granaries and non-granaries as permanent rice production areas

20.54 Maintaining fertile permanent land for cultivation of paddy is pertinent to ensure sufficient production of rice. As the cost of developing new areas requires huge investment, existing granaries and non-granaries must be gazetted as permanent food production zones and conversion for other uses should be strongly discouraged by state governments. A

special incentive will be provided for farmers to retain land for paddy cultivation on a permanent basis.

Enhancing Knowledge and Skills of Farmers

20.55 Training programmes aimed at equipping farmers with knowledge on sustainable agricultural practices will be disseminated via farmers' field training. In this approach, lead farmers will be trained by agencies such as MADA and NATC who will in turn train other farmers in the designated area. Training programmes on the use of fertilisers on a scheduled basis, water management, pest and disease management and managing impact of climate change will be continued to enhance knowledge of farmers.

Targeting on Performance-Driven Assistance

20.56 During the Plan period, the provision of assistance for paddy will be based on performance driven and targeted assistance focusing on increasing production. Various input assistance such as fertilisers and pesticides for paddy cultivation will be given to farmers according to soil conditions, types of pests and weeds as compared to the standard assistance provided irrespective of the needs of farmers. MARDI will assist MADA, Kemubu Agricultural Development Authority (KADA) and Integrated Agricultural Development Areas (IADAs) to determine the suitability and requirement of inputs for maximum productivity gains. Input assistance will be extended to farmers in Sabah and Sarawak to promote sustainable hill rice production in permanent areas and discourage shifting cultivation practices.

Fruits and Vegetables Industry

20.57 Production of fruits and vegetables will be increased to meet domestic and export market demand. Focus will be on non-seasonal fruits and highland vegetables. The SSL of fruits (excluding temperate fruits) is expected to reach 106.5% in 2020 as compared to 100.2% in 2014 whereas the SSL for vegetables (excluding temperate vegetables) is expected to reach 95.1% as compared to 90.9%. The implementation strategies under the Plan period will be guided by the NAP. These strategies will focus on increasing productivity through developing fruit and vegetable clusters, replanting and rehabilitation of fruit farms, strengthening contract farming arrangements and widening adoption of modern technologies.

Developing Fruit and Vegetable Clusters

20.58 Fruit and vegetable clusters, which consist of production areas, collection and distribution facilities as well as processing centres, will be developed and coordinated by the DOA with the involvement of various agencies such as FAMA, MARDI and Farmers Organisation Authority (LPP) based on an integrated approach. The cluster-based development would leverage on economies of scale, integrated support activities and marketing. In this regard, seven fruit clusters with a total area of 4,000 hectares and ten vegetable clusters totalling 3,350 hectares will be developed by DOA. The clusters will be integrated to optimise the use of existing facilities such as collection centres and distribution centres as well as packaging and storage facilities. Existing facilities including the 176 collection centres, 36 distribution centres, 515 Fresh Fruit Stalls (*Gerai Buah-buahan Segar - GBBS*) and 558 Farmers Markets (*Pasar Tani*) within the cluster areas will be upgraded to support these clusters. In addition, collection centres and distribution centres will be developed in new cluster areas. Programmes to ensure sufficient supply of certified fruit seedlings including durian, banana, jackfruit and mango for the clusters will be undertaken by MARDI and DOA. With these strategies, production of fruits is expected to increase from 1.6 million metric tonnes in 2014 to 2.1 million metric tonnes in 2020 while vegetables from 1.7 to 2.9 million metric tonnes.

Replanting and Rehabilitation of Fruit Farms

20.59 The DOA will provide replanting assistance in the form of land preparation costs and certified seedlings to PPK as well as to farmers with farm holdings of less than five hectares. Under this effort, fruit farms with non-commercial varieties and non-productive trees will be replanted in phases with high commercial value varieties such as durian, jackfruits and mangosteen. In addition, the farms will be rehabilitated to comply with MyGAP certification.

Strengthening Contract Farming Arrangements

20.60 Contract farming arrangements for fruits and vegetables will be strengthened through long term contract arrangements by linking farmers to direct buyers to increase marketability and reduce dependency on middlemen. In addition, FAMA will be tasked to facilitate contract farming arrangements between all players from producers to buyers and to secure markets for agricultural produce as well as to ensure quality and safety specifications are met. Participants of the contract farming arrangements will be provided with technical advice, systematic farm management and input assistance. More contract farming arrangements will be established through existing marketing linkages under the corridor authorities such as the Northern Corridor Implementation Authority and the Eastern Corridor Economic Council to widen market access of agricultural produce. *Program Pengukuhan Bekalan Ladang Kontrak Ke Pasaran* (KUKUH) will also be expanded to

encourage the direct involvement of farmers in marketing through local outlets such as *Pasar Tani* and GBBS. The Food Agro Council for Export (FACE) under the MOA will serve as a platform to coordinate and promote agro-food exports as well as facilitate contract farming arrangements between local producers and exporters.

Widening Adoption of Modern Technologies and Farm Automation

20.61 MARDI, DOA and the Malaysia Pineapple Industry Board will extensively promote the adoption of modern farm technology such as rain house shelters, fertigation system as well as farm automation through the use of ICT and mechanisation. The use of rain house shelters and fertigation will increase the number of production cycles, ensure efficient use of inputs as well as improve quality and quantity of produce. Soft loans and matching grants will be made available to encourage the adoption of these technologies, particularly in the identified clusters and TKPM areas. The use of vertical farming technologies, developed by MARDI for the growing of vegetables, will also be promoted in urban areas and areas with limited and less fertile agricultural land. Rain water harvesting will be implemented to mitigate the occurrence of flash floods due to extensive use of rain shelters.

Ruminant Industry

20.62 Specific strategies will be implemented to increase local production and reduce imports of beef, mutton and milk. Focus will be given on intensifying research in genetic enhancement, improving breeding techniques, ensuring sufficient supply of quality animal feed, strengthening dairy facilities, establishing traceability through Radio Frequency Identification Tagging (RFID) as well as transforming small-scale farms. These initiatives are expected to improve the SSL of beef from 27.7% in 2014 to 50% in 2020, mutton from 16.1% to 24.6% and milk from 12.8% to 13.6%.

Intensifying Research in Genetic Enhancement

20.63 Research on genetic enhancement will be undertaken by MARDI in developing resilient genetic quality of indigenous breeds of cattle and goats focusing on the Kedah-Kelantan cattle and the Katjang goat for improved productivity. Genetic improvement of the Kedah-Kelantan cattle breed is expected to increase lean meat growth rate, enhance meat quality, improve fertility and increase cost efficiency. MARDI will intensify research on the breedlot, an intensive cattle breeding system, to increase the supply of locally produced good quality breeds. This system will address the lack of land for breeding and production to gradually reduce dependence on imported breeds. In addition, efforts will be undertaken to develop a national database on genetic characterisation of cattle and goat breeds for genetic and breeding improvement programmes.

Improving Breeding Techniques of Cattle and Goats

20.64 More breeding programmes based on a two-tier structure consisting of a nucleus farm and multiplier tiers will be encouraged among local breeders to increase animal stock. In this program, the nucleus farm will be operated by private breeders with the collaboration of MARDI and DVS to focus on genetic improvement of the breeder cattle and goats through latest breeding techniques such as artificial insemination and embryo transplant. The breeds from the nucleus farms will be distributed to multiplier farms for commercial breeding. This will ensure increased supply of quality breeds with higher calving rate, weight gain and milk production. Nucleus farms for the breeding of the Kedah-Kelantan cattle and their crosses will be established at cattle breeding centres in Tersat and Kemaman, Terengganu; Tanah Merah, Kelantan; and Jelai Gemas, Negeri Sembilan while the Brahman cattle in Ulu Lepar, Pahang. The Temudok livestock station in Sri Aman, Sarawak will be upgraded with the two-tier structure for the purpose of breeding and conditioning of local and existing imported breeds. These centres will supply quality breeder cattle to multiplier tier farms throughout the country.

20.65 DVS will focus on the Mafriwal breed, which has high milk production and is adaptable to tropical climate, under its dairy cattle breeding programmes. MARDI will develop cattle breeds for milk and meat at its Muadzam Shah Cattle Research and Innovation Centre and is expected to contribute 1%-2% of beef SSL. MARDI will upscale its National Animal Embryo Centre in Kluang, Johor to improve breeding techniques for high productivity of dairy cattle. Breeding of goats will focus on Boer, Katjang and their crosses, while for sheep, Dorper, Damara and their crosses, through two-tier breeding programmes by engaging local breeders as multiplier breeding farms.

Ensuring Sufficient Supply of Quality Animal Feed

20.66 The following measures will be undertaken to ensure a sustainable supply of quality animal feed, which forms 60% of ruminant production cost.

- DVS will collaborate with government linked companies (GLCs) to supply local resources such as palm kernel expeller and palm kernel cake to the ruminant industry;
- DVS will gazette 22,000 hectares as grazing and fodder areas to reduce cost of imported animal feed. In addition, MARDI will focus on feed formulation and the development of pellets or cubes based on local fodder such as Napier, Brachiaria decumbens, kenaf and corns as a complete and balanced diet;
- DVS will conduct training in feed efficiency management to educate rearers to defray rising feeding cost;
- MARDI will develop a precision ruminant feeding system to enhance feed utilisation and reduce production cost; and

- A web-based system containing information on feed ingredients at current cost as well as advisories will be developed by MARDI to assist rearers to improve the efficiency of feeding ruminants.

Upgrading Dairy Facilities at Milk Collection Centres

20.67 Efforts to upgrade the facilities at milk collection centres will be continued towards enhancing milk collection, processing and distribution. In addition, these centres will also operate as incubators to build the capacity of cooperative members in the processing of dairy-based products. The operation in marketing and distribution of milk at these centres will be leased gradually to local dairy cooperatives.

Establishing Ruminant Traceability Through Radio Frequency Identification Tagging

20.68 A ruminant traceability system and a national ruminant database will be established for effective planning and monitoring of animal movement and for disease control. The traceability system developed by MARDI using sub-dermal radio frequency identification, will capture information such as animal profile, history and health conditions, entry point and farm locations, unique to an individual animal. A coordinated data sharing system will be developed and monitored by DVS as a disease control mechanism in cases of disease outbreaks as well as support zoning of disease-free areas.

Transforming Small-Scale Ruminant Farms

20.69 Currently, small-scale ruminant farms constitute about 57% of the total 80,577 ruminant farms. During the Plan period, small-scale ruminant farms will be transformed into viable commercial-scale farms through the provision of suitable incentives such as soft loans with appropriate repayment grace periods, technical assistance, long term forward contracts and buy-back schemes. In addition, small-scale ruminant farmers will be grouped together into clusters and managed by cooperatives with the objective of integrating production, processing and marketing of beef, mutton and dairy products.

Fisheries Industry

20.70 The fisheries industry, which consists of capture fisheries and aquaculture, is expected to achieve an average annual growth of 3.7% during the Plan period. Demand for fish is expected to increase from 1.3 million metric tonnes in 2010 to 1.9 million metric tonnes by 2020 with a growth of 3.8% per annum. Fish consumption per capita is expected

to increase from 46 to 55 kilograms per year at a rate of 1.9% per annum in the same period due to increased demand for healthier source of protein.

20.71 In line with the Aquaculture Blueprint by MOA, the contribution of aquaculture is expected to increase to 50% or 1.76 million metric tonnes of the total fish production by 2020. The export value of aquaculture, including fish products is expected to increase from RM1.4 billion in 2010 to RM3.2 billion in 2020. During the Plan period, the development strategies in the fisheries industry will focus on the following:

- Increasing supply of quality high value fries;
- Transforming small-scale aquaculture farmers;
- Increasing production of high value aquaculture;
- Ensuring supply of affordable and quality fish feed;
- Enhancing sustainable fish resource management; and
- Strengthening capacity of coastal fishermen and deep sea fishing.

Increasing Supply of Quality High Value Fries

20.72 The warm climate throughout the year provides an excellent breeding ground for the production of high value fish such as the hybrid grouper and tiger grouper. The supply of quality fish and shrimp fries, and spats for oyster and mussels will be encouraged through joint collaboration between the Fisheries Research Institute and hatchery operators. Incentives will be given to hatchery operators to increase the production of fish and shrimp fries from 16 billion in 2013 to a target of 30.6 billion in 2020. Breeding centres to produce tilapia, sea bass and grouper fries and molluscs will be developed in collaboration with the private sector in Kuching, Lake Kenyir, Rompin and Semporna. In addition, research on new fish varieties that are resistant to climate change and disease will be intensified with the cooperation between universities and hatchery operators.

Transforming Small-Scale Aquaculture Farms

20.73 Clustering of small farmers into enterprises will be implemented by the DOF to improve their productivity and income. This clustering system will take into account among others, geographical distance, farm size and aquaculture production technology, which will enable the sharing of facilities such as hatcheries, storage and processing centres as well as the provision of technical advisories and marketing services. In addition, the Synergy Aquaculture Farming Model, where an anchor company supports a group of small farmers, will be widely promoted through the provision of matching grants to the anchor companies and assistance to small farmers. This model will consolidate the value chain vertically to provide fish fry, fish feed, growth techniques, processing and marketing under established product brands with a buy-back scheme by participating anchor companies.

Increasing Production of High Value Aquaculture

20.74 A total area of 82,900 hectares of land and water bodies suitable for aquaculture development has been identified to achieve the target set in the Aquaculture Blueprint. During the Plan period, strategies will focus on improvement of production technologies, expansion of fish cage farming and development of new aquaculture zones particularly in Sabah and Sarawak. Production technologies such as multilevel aquaculture, recirculating aquaculture system and flexi-float high density polyethylene cage farming will be promoted to increase the production of high value aquaculture. These products, which include tilapia, grouper, sea bass, oyster and marine shrimp, will be exported to the European Union and People's Republic of China.

Increasing Supply of Affordable and Quality Fish Feed

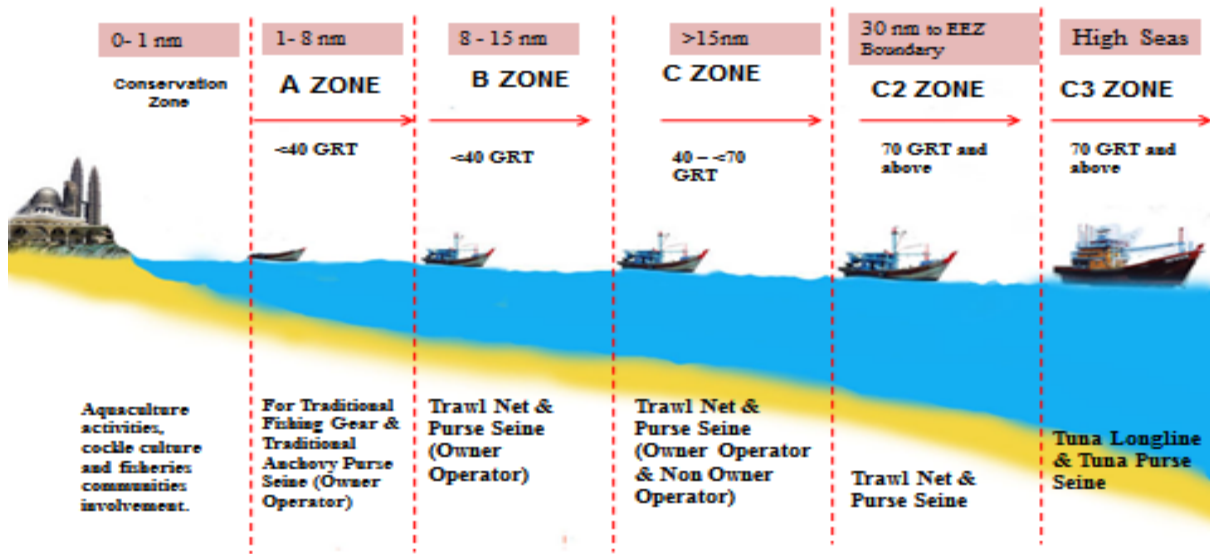
20.75 The rapid expansion of aquaculture, including cultured marine fish requires sufficient supply of fish feed. During the Plan period, research on fish feed will be intensified to improve feed formulation using alternative and safe raw materials, such as poultry-based, palm kernel and soy meals as well as algae as a source of protein, to ensure affordable and quality supply of feed. Fishermen associations will be incentivised to produce fish feed, thus reducing dependency on imported fish feed.

Enhancing Sustainable Fish Resource Management

20.76 Sustainable management of marine fishery resources and conservation efforts will be intensified through ecosystem-based resource management, which comprises usage of environmental-friendly hauling gears, artificial reefs, introduction of fish aggregating device and refugia development. In ensuring sustainable aquaculture farming practices, proper discharge of waste and organic matter as well as the responsible use of chemicals and feed will be regulated. In addition, effective from 2016, the use of trawler nets will be prohibited in Zone B fishing area, an important fish breeding ground. Fishing zones for the north-west coast of Peninsular Malaysia are as shown in *Exhibit 20-6*. The Automatic Identification System developed by the DOF will be enforced to ensure the safety of fishermen at sea and monitor activities of vessels in Zone B and Zone C.

Exhibit 20-6

Fishing Zones for North-West Coast of Peninsular Malaysia



* There is no restriction for vessels operating in the inner zones to fish in the zones further up e.g. vessels in Zone A are allowed to fish in Zone B, C and C2.

Source: Department of Fisheries

Strengthening Capacity of Coastal Fishermen and Deep Sea Fishing

20.77 Coastal fishermen will be given basic input assistance and training programmes to enable them to participate in aquaculture activities to provide them with an alternative source of income, especially during the monsoon season. These programmes include training in aquaculture technologies, farm management and disease control to enhance the capacity of fishermen. The participation in aquaculture activities is expected to provide an additional income of at least RM500 monthly to the fishermen.

20.78 A transformation programme for coastal fishermen will be undertaken to enable them to be involved in deep-sea fishing. Fishermen associations will be incentivised to assist members to purchase deep-sea vessels equipped with modern technologies through special schemes. The Fisheries School under the NATC will provide training courses for school leavers who aspire to be boat captains and deckhands in deep-sea fishing. The training programmes will include, among others, fish capture technologies, navigation, repairing of gear and fishing equipment, marine engineering and weather forecasting. A total of 250 fishing skippers and 1,250 skilled deckhands will be trained by 2020 to support the deep-sea fishing industry.

V. CONCLUSION

20.79 During the Eleventh Plan period, the agro-food subsector will be transformed and modernised towards achieving food security, providing employment opportunities and generating higher income for farmers, fishermen and rearers. Initiatives will be undertaken to improve productivity, strengthen the food supply chain, improve support and delivery services, enhance knowledge and skills of farmers, fishermen and rearers as well as ensure compliance to standards and good agricultural practices. In achieving these objectives, it is imperative that effective planning, coordination and implementation of agricultural programmes are carried out by all stakeholders.