

The Development of Youth Agropreneur Policy and Framework for Food Security, Sustainability and Poverty Reduction

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MASA POLICY DEVELOPMENT PROGRAMME

POLICY BRIEF 20

The Development of Youth Agropreneur Policy and Framework for Food Security, Sustainability and Poverty Reduction

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PREFACE

Institut Masa Depan Malaysia (MASA) is an independent think tank that brings together experts in government and academia to provide quality research, policy recommendations, and analysis on the full range of public policy issues guided by the shared prosperity values.

Since its inception, MASA has been actively involved in shaping national policies and frameworks. MASA Policy Development Programme (MPDP) was introduced as a pioneering initiative aimed at promoting policy research among researchers from public and private universities across the country, in alignment with the Shared Prosperity Vision 2030 and the Sustainable Development Goals, which are integrated with the 12th Malaysia Plan.

Through the MPDP 1.0 initiative, 30 Policy Briefs have been successfully produced, encompassing policy input and recommendations across sectors such as economics, social issues, education, and sustainable development.

MASA expresses its gratitude to Associate Professor Dr. Sylvia @ Nabila Azwa Ambad and her team for the production of this policy brief. The commitment of the MPDP grant recipients, along with close cooperation with relevant stakeholders, is highly appreciated and is hoped to continue making a positive impact on national policy development.

Azril Mohd Amin

Chief Executive Officer

Institut Masa Depan Malaysia

ABOUT MASA

Institut Masa Depan Malaysia (MASA) is an independent think tank that brings together experts in government and academia to provide quality research, policy recommendations, and analysis on the full range of public policy issues guided by the shared prosperity values.

MASA was established in January 2019. The formation of the organisation was inspired and mandated by the Seventh Prime Minister, YABhg. Tun Dr Mahathir Mohamad and the Eighth Prime Minister, YB Tan Sri Dato' Haji Muhyiddin Bin Haji Md Yassin. It was founded out of a passion to forward the philosophy of shared prosperity in Malaysia and this region.

MASA also was commissioned by the government of Malaysia to author and develop the Shared Prosperity Vision 2030 plan as the new socioeconomic plan for Malaysia.

Our Vision

To be a thought leader on policy ideas and analysis guided by shared prosperity values.

Our Mission

To create a world where no one is left behind by influencing policymakers to develop data-driven policies that ensure equitable wealth distribution and continuous improvement of people's well-being.

ABOUT MPDP

MASA Policy Development Programme (MPDP) is a pioneering effort in promoting policy research that has become part of MASA's flagship project, in line with the 12th Malaysia Plan which is aligned with the Shared Prosperity Vision and the Sustainable Development Goals.

The research grant, introduced for the first time in 2021, received an encouraging response public and private institutions of higher learning as well as non-governmental organizations.

MPDP researchers have produced studies across various strategic areas, including multidimensional poverty, education for the B40 group, sustainable urban planning for low-income communities, regional inclusivity in Sabah and Sarawak, social enterprise models for Micro, Small and Medium Enterprises (MSMEs), green economy potential and food security.

Other strategic areas of studies include empowerment of the ecotourism sector, climate change, health preparedness and crisis resilience, addressing learning loss, business acceleration, affordable housing and social protection.

All these are reflections of the initiatives and aspirations, inspired by the 8th Prime Minister and Chairman of MASA, Tan Sri Dato' Haji Muhyiddin bin Hj. Md. Yassin.

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BIOGRAPHY

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Sylvia @ Nabila Azwa Ambad is a Senior Lecturer in the Faculty of Business & Management at UiTM Cawangan Sabah. She also serves as an Associate Lecturer at the Arshad Ayub Graduate Business School and is the Founder of SIG-RISE from 2016 to 2020. Her roles include Program Coordinator for postgraduate programs, and she's actively engaged in teaching, learning, supervision, and various activities. Sylvia has won several awards, including the 2021 Award Incentive Winner for Q1 Publication and the 2020 Special Innovation Award for her work on Teaching and Learning Innovation. She is a prolific author and active reviewer and article editor, receiving the 2021 Best Paper Award at IBBC & BizFame.

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Hendry Joseph, an expert in tropical crop production and protection, holds a PhD in Plant Pathology and plays a key role at Universiti Teknologi MARA Sabah. With leadership experience at UiTM and significant industry recognition, he serves as a Technical Advisor, Professional Technologist, and Consultant. His ongoing research projects encompass beetle infestation detection, agromining, and flora conservation. Hendry supervises postgraduate students and contributes to innovation, winning multiple awards for his work. As an educator, he imparts knowledge in courses related to agriculture, plant pathology, and crop management.

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Jasmine Vivienne Andrew is an accomplished academic professional with over a decade of teaching experience at UiTM Sabah and UiTM Sarawak. She holds an MSc. in Business Management and a Bachelor's Degree in Business Administration (Hons.) with a focus on Marketing. Her research expertise spans areas like Services Marketing, Service Quality, and Relationship Marketing. She has received several awards, including medals for eContent development and Best Paper awards at international conferences. Jasmine is committed to contributing to education and research in marketing and business management.

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FAIQAH MAWARDI

Faiqah is a seasoned Senior Lecturer at Universiti Teknologi MARA (UiTM) Sabah, specializing in Operations Management. Armed with an MBA and a wealth of teaching experience, she imparts knowledge in areas ranging from Operations Management to Human Resource Management. Faiqah stands as an award-winning innovator, with accolades for projects like the SMART Hygiene Kit and the i-dompet app. Her research focuses on understanding the attitudes of non-Muslim consumers towards Halal products and extends to contributions in Islamic marketing and logistics publications.

Executive Summary

Agriculture is essential to reduce poverty among the rural population, sustain food security and reduce unemployment. Moreover, given the current condition of the global economy, in which global food prices have soared due to rising prices of fertilizer and fuel, it is crucial to focus on the agricultural sector especially the food crops.

The Food Prices Index introduced by the Food and Agriculture Organization (FAO) has also indicated that the food price is currently at the highest level since the index first put into place in 1990 (Barua, 2022). As food prices rise, those at the lowest income category are the hardest hit as they spend the bulk of their income more on food rather than anything else.

As the global concerns on food security are mounting, with rising concerns over the impact of rapid climate change on agriculture aggravating the issue, it is only proper that Malaysia takes prompt actions to address the same issue by, first and foremost, reviving the agricultural sector to preserve food security and lessening its heavy dependence on imported food

These are important so as to secure Malaysia's food supplies and to reduce the local food price, among other things. However, despite all efforts to elevate the agricultural sector, Malaysia still faces a host of issues and challenges.

The disinterestedness of the youth in agricultural sector, hence the lack of their participation therein, is one of those challenges. A recent report states that only 15 percent of the youth participate in the agriculture sector in Malaysia with the age-majority of the current agricultural workforce is 50 years old and above (Abdul Kadir, 2014; Ahmad, 2020).

As far as the age group of the workforce is concerned, this appears to be untenable because agricultural sustainability and productivity, as a matter of fact, are considerably influenced by the increased involvement of youth (agropreneur) in the sector.

This paper aims to propose a policy brief on youth agropreneur. In preparing this policy brief, it interviewed 26 agropreneurs, two academicians from the Faculty of Agriculture, four representatives from government agencies, and five leaders from agriculture associations (NGO).

The findings indicate a number of challenges faced by the youth agropreneurs. They include, but not limited to: i) high cost of agricultural input, ii) lack of market access and weak distribution channels, iii) low adoption of modern technology, iv) issues related to government assistance and implementing agencies v) inadequate infrastructures and facilities, vi) lack of capital and resources, vii) climate change and natural causes, and viii) lack of knowledge and skills in agriculture.

In consideration of the aforementioned challenges, this policy brief recommends the following: i) price control on agricultural input, ii) strengthened market access and distribution network, iii) effective talent development strategies, iv) adoption of modern technology and smart agriculture, v) financial and non-financial assistance, vi) provision of basic infrastructure and agricultural facilities, and vii) strengthened effectiveness and efficiencies of related agencies.

Overall, policies related to food crop planting and youth participation must be strengthened, and the existing policies must be revisited and further enhanced. Since the trend of food crop production per capita in Malaysia is declining, inevitably there is an increased import of fruits, vegetables, and rice. In other words, food production in the country simply could not match the population's demand (Jomo & Tan, 2019).

Introduction

Although Malaysia is ranked 39th in the 2021 Global Food Security Index, there is much to improve. Specifically, in Sabah, the reliance on food imports is prevalent due to industrial crops' domination (Suffian et al., 2022). Even though industrial crops are a significant source of revenue for the country, dependence on food imports leaves it vulnerable to threats to its food supply and rising food prices.

Furthermore, the ongoing conflict between Russia and Ukraine has escalated food prices by folds. As one of Malaysia's poorest states, Sabahans in general feel the effects more as opposed to the rest of the country. Accordingly, Sabah needs a comprehensive food security policy that addresses affordability, accessibility, availability, safety, nutrition, and emergency and supply disruptions.

Despite all the efforts to elevate the agricultural sector, food production growth in Malaysia remains slow (Jomo & Tan, 2019). Agricultural sector faces many issues and challenges such as: i) changes in food consumption patterns, ii) low productivity, and less participation of youths (Dardak, 2020).

The majority of individuals involved in farming were aged 50 years and above (Ahmad, 2020). This needs to be addressed. Hence, more youths should be involved in agricultural sector as younger farmers are usually more productive and therefore capable to achieve higher profitability, more versatile, adaptive, inclined to adopt technology, and tend to promote diverse agricultural activities (Akrong & Kotu, 2022).

However, this appears to be not the case in Malaysia. Therefore, a study on agroprenuer barriers and success factors that focus on the youth is critically important. Apparently, this is part of the succession plan in the agricultural sector to ensure food security and increase the productivity of the agroprenuer. The fact of the matter is that youth agroprenuer can and will serves as one of the key agents of change for the industry and the communities.

Key Messages and Recommendations

Recommendation 1

- To implement price control on agricultural input.

Recommendation 2

- To strengthen market access and distribution network.

Recommendation 3

- To develop effective talent development strategies.

Critiques of Current Policy Option

There are three existing policies directly related to food security, namely the National Agrofood Policy 2021-2030, the Third Sabah Agricultural Policy 2015-2024, and the Sabah Maju Jaya Development Plan 1.0: 2021-2025.

(1) National Agrofood Policy 2021-2030

National Agrofood Policy 2021-2030 (NAP 2.0) seeks to transform the Agrofood industry into a sustainable, competitive, and high-tech sector and increase economic growth. NAP 2.0 is a continuation of the National Agrofood Policy 2011-2020 (NAP).

The objective of NAP 2.0 coincides with the current situation where the use of agricultural technology needs to be emphasized not only to increase agricultural productivity, but also to attract more youth to be involved in the agricultural sector.

However, NAP 2.0 does not take into account the major constraints in Sabah, which include logistical challenges, insufficient infrastructure, out-of-date agricultural technology and a lack of agricultural talent and skills.

Another factor that also makes Sabah need to have its own policy is that the relocation of the Indonesian capital from Jakarta to Kalimantan is likely to attract Indonesian workers, who form a large part of the state's agricultural workforce, to return in droves to their home country.

(2) Third Sabah Agricultural Policy 2015-2024

The Sabah Ministry of Agriculture and Food Industry has launched the Third Sabah Agricultural Policy (SAP3) 2015-2024, which is an extension of SAP2. It has three strategic goals: i) to increase food security and income among farmers and producers, ii) to strengthen productivity growth and competitiveness, and; iii) to enhance sustainable agriculture in the state.

However, after almost three decades of the SAP introduction, the state of Sabah has yet to reach the self-sufficiency (SSL) level for most food items such as rice, chili, coconut, and others. Obviously, it is facing a food crisis, especially in the event of export restrictions or shortages of food products in the producing countries. In addition, SAP3 also does not state clearly how to attract the youths to get involved in the agricultural sector. Since they are the successor of the ageing population of farmers, taking into account the heavy dependence on foreign workers as well, the government urgently needs to intensify efforts to increase the participation of the youths in the farming sector.

(3) Sabah Maju Jaya Development Plan 1.0: 2021-2025

The Sabah Maju Jaya Direction (Sabah Maju Jaya Development 1.0: Plan 2021-2025), launched on 29 March 2021, outlines three (3) core areas: i) agriculture, industry, and tourism, as a focus on economic growth, ii) human capital and well-being of the people, and iii) infrastructure network and green sustainability.

The development plan also emphasizes the involvement of youth in the agriculture sector. Yet, the SMJ implementation is still at an early stage, hence devoid of any effectiveness evaluation.

Furthermore, the repercussion of the COVID-19 pandemic that afflicted the nation, followed by a series of global economic crises and the Ukraine-Russia conflict, have all but noticeably affected the economy of Sabah.

In more ways than one, the abovementioned issues have created an observable and noticeable impact, especially in the agricultural sector, which affects the supply and the surge of agricultural product prices. Hence the need to revisit the relevant policies in place.

Policy Implications

Based on the research problems and three policies related to food safety, namely NAP 2.0, SAP3, and the SMJ Development Plan, the suggested improvements of policies related to food security is in order as there may be a policy void that needs to be strengthened. The three previous policies were put in place either before or during the Covid-19 pandemic.

Ideally, as the current socio-economic situation particularly in the post-COVID-19 era changes rapidly, it is timely to revisit existing policies. In addition, there are a series of issues related to the Sabah agricultural sector, including the lack of food supply and the sudden increase in the cost of agricultural inputs.

Thus, farmers prefer industrial crops over food crops since the former are more profitable and easier to grow than the later. Consequently, the self-sufficiency level is decreasing, and so is food security. Another pressing issue in the agricultural sector is the 'succession plan' whereby most farmers are aged 55 and above.

The youth's involvement in agriculture is a growing concern because not only do they serve as a conduit for the practice of agriculture to be passed on to future generations, but they also act as an agent of change for the industry and the community.

The primary focus of this policy brief to highlight the challenges faced by youth in the agro-food sector. A decrease in the labour force in the agricultural industry will certainly affect food security matters and increase dependence on foreign labour.

Presently, the foreign labour force in the Sabah agriculture sector is resourced from the Philippines and Indonesia. Thus, the current challenges faced by the youth need to be identified to ensure effective and efficient policy implementation.

Result and Discussion

Data collection was done in three phases between 14 May and 28 June 2022. The sample of this study consists of youth agropreneurs in Sabah that had been agropreneur for at least three years (planting the food crops such as vegetables and fruits).

The first phase was conducted among youth agropreneurs in all five divisions in Sabah. In this first phase, Focus Group Interviews were conducted with 5–6 youth agropreneurs in every division.

A total of 26 participants were involved in the data collection. The second phase was the interview with five representatives of government agencies related to agriculture.

The third phase of the data collection was the focus group discussion with eleven representatives from government agencies, NGOs, academicians, leaders from agricultural-related bodies, and agropreneurs.

During the final phase, the results from the previous interviews were presented to the expert, who commented, verified the fact and proposes policy options and recommendations.

Challenges Faced by Agropreneurs

(1) High Cost of Agricultural Input

Agricultural inputs have increased over the years, particularly for fertilizers, pesticides, agricultural equipment, and labour costs. The Ukraine-Russia conflict has worsened the world economy especially at the time when food markets are already dealing with skyrocketing prices and difficulties due to the COVID-19 outbreak.

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 contributing to the high costs of agriculture production in Sabah.

At the same time, the agricultural input price in Sabah is far more expensive compared to that in Peninsular Malaysia. This is one of the contributing factors to low income in Sabah as well.

Among the effect of high production costs in agriculture is that many farmers decided to reduce the size of their agricultural area due to them unable to cover the cost. Some of them had even left the sector altogether.

(2) Lack of Market Access and Weak Distribution Channels

Reliable and efficient market access is the key to boosting the agricultural sector. The advantages of having access to dependable markets include increased productivity, higher earnings, and greater food security.

Youth agropreneurs frequently face significant challenges in accessing markets to sell agricultural products. They are restricted by the remote location, and high transportation costs.

Moreover, Sabah lacks the necessary logistics and supporting facilities, such as efficient transportation systems, collection centres, and warehouses for handling, storage, and packaging. Due to the limited market, competition from other farmers who grow the same crop from the same district or other districts or import of agricultural products from neighbouring countries such as Indonesia, there is an oversupply of agricultural products (such as bananas and watermelons) in some districts.

For instance, three tonnes of tomatoes from Nunukan, Indonesia, and one tonne of cabbage from Keningau district are both delivered to the already overflowed market in Tawau.

The lack of good connectivity, such as roads and highways between landing sites and distribution centres intensifies the market issues. Another barrier to effective marketing and distribution is price wars among the marketing intermediaries in the agricultural supply chain. Unlike industrial commodities, food commodities have no ceiling price enforced by the government. Thus, the price of food commodities fluctuates.

For example, the prices of chili, vegetables, and others are set by the intermediaries at the farmer's market. Another example is the chili market in Sandakan that depends on the price of chilies from outside the district, for example, Kundasang chilies, although the quality of both differs. In addition, the lack of a database for agropreneurs in Sabah makes it difficult to monitor and implement appropriate marketing strategies suitable for their products.

(3) Low Adoption of Modern Technology

Although modern technology in farming has a positive impact on agricultural productivity growth, it seems that agriculture in Sabah is lagging compared to other states in Malaysia. Farmers' low level of agricultural technology adoption leads to low productivity and income.

Most farmers in Sabah continue to use labour-intensive traditional farming techniques due to the high cost of farm machinery and high maintenance costs.

This is one of the reasons why the youth is not interested in agriculture. Moreover, farmers face several challenges when adopting modern technology, such as the unavailability of technology, lack of technical knowledge, information fragmentation, higher implementation costs, and poor network connectivity to support smart technologies.

Although the agriculture sector is the oldest industry, it has been the slowest to innovate and remains the least digitized industry in the world despite the fact that the global population needs to be fed and is expected to reach 9.7 billion by 2050 (Subramaniam, 2021).

Sabah's agropreneurs are generally slow in implementing technology and too dependent on the Peninsular Malaysia to supply agricultural inputs such as mushroom seed and others. Seeds take a longer time to be received and are often damaged due to heat exposure (impaired quality), hence high costs to buy another seed.

(4) Issues Related to Government Assistancess and Implementing Agencies

More than twelve government departments and agencies provide the necessary assistance to farmers throughout Sabah. Since there are numerous agencies with separate federal and state jurisdictions, interagency coordination among these implementing agencies is unclear.

More importantly, it lacks strategic collaboration to implement development programs efficiently. Besides, the youth agropreneurs appear to be unaware of the function of each of these agencies and the type of funding available.

On top of that, some district agency staff are also not knowledgeable about the types of services and assistance offered. In many cases, this leads to the failure to promote the aids available. Obviously, communication plays a critical role in the government and agencies' strategies to boost the agricultural sector.

In addition, there are insufficient numbers of technical staff familiar with or experts in agriculture to support the needs of smallholders and producers, widely scattered throughout Sabah.

In the initial stage, farmers' challenge is finding a 'tune' of a suitable agricultural method such as the right type of fertilizer, suitable seeds, and others. Various problems arise during this process, such as planted crops not growing and withering. Barring the help from the experts, it becomes time-consuming and very costly become a successful agropreneur.

Meanwhile, some agricultural fund assistances are inappropriate or unsuitable. For example, grass machines and water pumps are less used compared to machinery for ploughing the soil. Furthermore, the terms and conditions or funding eligibility are rather tight and unreasonable.

Many applicants could not comply with the requirement, and some had submitted incomplete paperwork. The screening and approval process also takes too long. For example, the Agropreneur Muda grants take more than a year before the grant is disbursed.

(5) Inadequate Infrastructures and Facilities

Sabah still lacks basic facilities and infrastructure such as proper roads, electricity, water resources, machinery, drainage system, irrigation facilities, and other processing agricultural facilities. Good infrastructures and adequate facilities are prerequisites to accelerate the development of the state's agricultural sector.

Currently, in rural areas, the basic facilities and infrastructures are inadequately provided or non-existent. Farmers depend on rainwater during drought season, the plants lack water, and the output is less or does not survive.

As most of the farms are located far away from the main road, and there is an unavailability of farm roads, it is difficult to send out their agricultural products for sale and delivery of farm inputs and other services.

Furthermore, bad and non-existent farm roads hamper the expansion of crop cultivation areas. Due to the unavailability of machinery, soil loosening work is done manually, causing it to be less effective in ensuring soil fertility. Overall, poor infrastructure and lack of facilities affect agricultural productivity impede or slow down the agricultural sector. Hence, compromised food security and economic growth in many ways.

(6) Lack of Capital and Resources

It is difficult for youth to start a career as an agropreneur or to further develop their farm due to a lack of capital, as nowadays, the cost of setting up farms is high.

Meanwhile, the existing youth agropreneurs have difficulty extending and developing their farms due to their limited land. Some rent other people's land or use the government reserve land. They also face issues with the landlord when there is no proper agreement between them.

Consequently, they are uncertain about the rental period, causing them to be in doubt whether to plant more crops or otherwise. They also have difficulty obtaining government assistance because there is no agreement with the landlord or government. They had even a lower profit margin because they had to pay land rent.

(7) Climate Change and Natural Causes

Climate change plays a significant role in determining food availability, reducing access to food, and affecting food quality. Crop production varies from year to year due to climatic factors, such as rainfall, sunshine hours, temperature, relative humidity, and the duration of the drought period (Siwar et al., 2009).

The changes in the weather pattern over the last five years have reduced the yield and incurred higher costs to address the effects of prolonged dry weather and unusually heavy rains. This is due to new disease-causing pests, which require more capital to buy pesticides.

Farmers are in particular unable to grow vegetables during the rainy season. The flood that occurred from December 2021 until May 2022 caused a big loss to agropreneurs when their crops were washed away by the flood. They suffered a great loss and needed to start all over again. Consequently, there was a food shortage such as vegetables and fruits.

Since farms are typically located in remote areas, the farmers also have to deal with wild animals like monkeys or squirrels that eat their crops like bananas, mango and coconuts. It just so happens that the forest is decreasing because a lot of lands is used for oil palm plantations or other deforestation activities. Crops damages by wildlife can cause significant economic loss, and non-human primates can be nuisances to farmers as well following their ingenuity in crop-raiding strategies.

(8) Lack of Knowledge and Skills in Agriculture

Youth farmers often lack the knowledge and skills in farming. They mostly rely heavily on traditional methods passed on from generation to generation.

Traditional agricultural practices only can supply the family's needs. Youth in remote areas typically lack information regarding the government assistances. Although the agricultural sector is involved with science, technology, biology, chemistry, physics, and others, the labour force in the agricultural sector is generally dominated by the less educated. Hence, slowed agricultural development process compared to other countries where knowledgeable individuals fill the void in this field.

Policy Options and Recommendations

In order to address the challenges faced by the agropreneurs especially the youth, urgent measures should be implemented to ensure food security, sustainability of the agricultural industry and reduce poverty incidence in Sabah. The policy for youth agropreneur is highly needed to make the agricultural sector more attractive to the youth, to make it a more promising sector, and to be more profitable. There are seven policy options and recommendations outlined in the next subsections.

(1) To implement price control on agricultural input

In contrast to countries like the United States of America, with agricultural output prices are currently higher across the board, the Sabah market of agricultural output prices has not increased significantly. Agricultural input costs continue to increase dramatically over time, unevenly reduce the farmers' profit margin.

This could substantially affect the farmers as it increases the costs of inputs in agriculture. Additionally, many farmers face challenges in maintaining their operations as they involve higher costs. Consequently, they spend more on their working capital, especially their inputs, while earning less profit from their businesses. Therefore, there is a call for immediate action to be taken.

Several initiatives to resolve these issues are as follows:

- Initiate price controls on agricultural inputs, such as fertilizers and other chemicals.
- Setting the ceiling price of agricultural inputs to avoid the intermediaries from taking advantage of the local farmers concerning the volatility of the price of agricultural inputs.
- Setting up '*Kedai Rakyat*' that offers affordable prices for agricultural input.
- Strengthening the implementation of the Good Agricultural Practices among the local farmers that encourage pesticide-free practice.
- To fully utilize the potential of using locally organic fertilizers. For example, local farmers can go the extra mile by collecting the leftovers from their harvesting crops and converting them into usable organic fertilizers. This could help reduce the cost of agricultural input and add value to the produces.

(2) Strengthening market access and distribution network

Better access to domestic and international markets allows smallholders to reliably sell more products, leading to sustainable increases in agropreneurs' income. Therefore, the following are the recommendations to strengthen market access and distribution network.

- To develop an online database (profiling) for all agropreneurs in Sabah. Establishing a database for agricultural entrepreneurial activities is necessary to facilitate information seeking and help these agropreneur market their products. This is one of the efforts to establish Big Data for Sabah agriculture.
- Limiting the entry of imported food crops and giving local produce priority.
- To create an online business platform that focus on the agricultural products produced in Sabah. Since the youth is more preferred to do online business, this is appropriate in the current situation.
- To provide more functioning collection centres in each district and other supporting services. This will allow for effective and efficient distribution of agricultural products from agropreneurs to consumers. Currently, some of the collection centres are operating at half or less than their full capacity.
- Set a price ceiling for agricultural output to regulate food crop prices.

- Strengthen and improve the supply chain through collaboration with private and foreign entrepreneurs.
- Expanding farmers' participation in contract farming to improve agricultural output, boost incomes of contract farmers, improve access to resources and services, and open new market opportunities.
- To assist agropreneurs in marketing their products at the international level to generate more revenue to ensure the sustainability of the agricultural sector.

(3) To develop effective talent development strategies

In order to ensure the sustainability and high productivity of the agricultural sector, a sufficient and competent labour force must be in place.

The competent labour force is more innovative, more inclined towards technology adoption, better at marketing their products, and focuses on achieving high productivity by implementing effective and efficient agricultural practices, such as fertilization, automation, integrated pest management, and environmentally controlled production systems.

Among the efforts that can be implemented are:

- To re-evaluate and transform the country's education structure to help develop agricultural science. Currently, there are limited schools that offer agricultural science programs. Agriculture needs to be taught using real examples at the farm. Besides, the agricultural subject should be embedded in the pre-school program to ensure early exposure and awareness of food security.
- To provide scholarships to study abroad in agricultural courses to produce skilled and competent human resources that will help the country add value to the agriculture sector.
- To revise the syllabus and content delivery of agricultural courses that are more appropriate with the modern technology and able to attract the participants, such as interactive and infographics.
- To encourage life-long learning by adding more agricultural training centres that can help agropreneurs and farmers to acquire skills and knowledge to increase their productivity or launch a career as an agropreneur. This continuous support will ensure the sustainability of the agriculture sector.
- Strategic cooperation between government, the business sector, and educational or skill-building institutions can better the endeavour to develop talent among agropreneurs.

- To recognize the competent and innovative talents in agropreneurship by giving the award and recognition. They will become agropreneur icons that inspire others to innovate and be involved in agropreneurship.
- To organize Innovation, Invention, and Design (IID) competition for agropreneurs. This will produce more talented agropreneurs.

(4) To encourage the adoption of modern technology and smart agriculture

The use of modern technology and smart farming can address the problems faced by the agricultural sector, such as limited use of land for agricultural activities, low productivity, disease, and pest infestation and lack of labour (Rozhan, 2016). Furthermore, the younger generation prefers using technology, such as smartphones, to monitor and manage farms. Therefore, the following strategies are recommended to fully utilize modern technology and smart agriculture:

- More research and development should be done to produce high-quality food crop seeds that can boost yield and grow more quickly, as the younger generation prefers results that come quickly and pay off financially.
- To conduct more training and exposure to new technologies by inviting overseas and local experts.
- To offer more targeted subsidies for technological equipment.

- To facilitate the process of transforming raw agricultural products into a more durable form, easier to sell, or can be marketed online. This adds value to agricultural products as not only it will produce more agropreneurs, but it will also increase their income. Agropreneurs can use technology to transform agricultural output into more valuable products instead of only producing perishable vegetables with a short shelf life. For instance, lemongrass can be converted into an insect repellent and sold overseas.
- Provide more financial and non-financial assistance for developing alternative agriculture, such as greenhouses and urban agriculture, to optimize the use of limited space and to overcome the dramatic climate change.
- Encourage and cultivate an innovative culture among agropreneurs. For instance, encourage them to use recycled goods and existing resources to be used in the farm.

(5) To revise and add more appropriate financial and non-financial assistance

The government and its agencies have provided various financial and non-financial aids. However, existing policies need reviewing and improvement, as follows:

- Revise the grant amount due to the increase in agricultural input prices.

- Examine the appropriateness of the type of assistance, such as providing assistance in the form of monetary rather than agricultural equipment that is not required by the agropreneurs.
- To lessen the dependence on the intermediaries or contractors to deliver the assistance as sometimes it is not effective and efficient.
- Review the application requirements because there is some assistance only for heads of households, mostly the elderly. In addition, application requirements such as land ownership and proof of land rental also need to be reviewed.
- Simplify and shorten the application procedure because applicants in Sabah for grants provided by the federal government have to go through a long process that takes more than a year.
- Online applications and reviews for all types of grants also need to be more efficient.
- Provide relevant short courses on guidelines to prepare grant application documents such as cash flow and business plans.
- Provide consulting experts in each area to check application documents so that errors and incomplete forms can be detected early, corrected and completed.

- A more transparent screening for all types of aid.
- Creating more zero-interest or low-interest rate loans for young agropreneurs to start or expand their businesses.

(6) Facilitate the provision of basic infrastructure and agricultural facilities

In order to increase the value-added of the agricultural output and its marketability, Sabah needs to improve the current infrastructures and agricultural facilities. Thus, to bring the agricultural industry up to speed with technological advancements is crucial. Private sector investment is anticipated to rise in rural areas with better social infrastructure and road systems. As such, the following are recommended.

- The state should focus on improving the social infrastructure in rural areas, farm roads and bridges, furthering drainage and irrigation systems, and the availability of electricity and water.
- Initiative to create a food estate around Sabah. The ones who will work on this food estate are the youths placed in one place, given an agricultural area and a suitable house to live in, and implement technology and mechanisms. Kalimantan has already taken the initiative to ensure food security by creating sufficient food estate.

- To provide a centre to place agricultural facilities for rent at reasonable rates. All agricultural facilities are placed in the one-stop centre.
- Establish crop processing facilities in each district to add value to the agricultural produce.

(7) Strengthening the effectiveness and efficiencies of related agencies

The effectiveness and efficiencies of government and its agencies are the key factors to moving forward in the agricultural sector. Therefore, there is an urgent need to improve and strengthen the roles of implementing agencies in the state. The following are some suggestions:

- Strengthen efforts to promote the roles of agencies by holding agropreneurs open days. For example, organize programs and activities periodically to spread information widely, such as agricultural product exhibitions and talk sessions with existing agricultural experts or agropreneurs. In addition, opening booths is also necessary to convey information about the functions and assistance provided at Tamu or the farmers' market.
- To continuously train the existing staff on the function and roles of their agencies. They should understand the agropreneurs' needs so they will be able to help them. For the new recruitment, appoint staff with a background in agriculture and adequate experience.

- To strengthen the agency's role in attracting youth interest in agriculture by transforming agriculture into a prestigious profession.
- To engage with stakeholders, farmers, and agropreneurs in every policy development.
- Establish one-stop centres for agricultural activities and appoint a consultant to regulate the centres. The services provided are advisory and training services for all agriculture-related matters, such as production, marketing, logistics, ICT, and others.
- To broaden strategic partnerships and collaborations with inter-agencies and industry entities.

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