Encouraging comparative advantages of export-oriented Indonesian agriculture products

Amran Sulaiman¹, M. Saleh S. Ali², and Ahfandi Ahmad³

¹The Andi Amran Sulaiman Foundation (AAS Foundation), South Sulawesi, Indonesia
²Department of Agricultural Socio-Economics, Faculty of Agriculture, Hasanuddin University, Makassar, South Sulawesi, Indonesia
³Muhammadiyah Agriculture Sciences High School, Sinjai, South Sulawesi, Indonesia

E-mail: saleh.assofie@gmail.com

Abstract. Indonesia has the second-largest diversity of plants in the world after Brazil. This condition opens opportunities for Indonesia to produce a variety of crops, which cannot be planted or produced in other regions, such as in the subtropics or the four seasons in the northern or southern regions of the world. This study aims to analyze how to encourage the comparative advantage of export-oriented Indonesian agricultural products. To achieve this, it is necessary to strengthen the export policy of agricultural products; increasing productivity and production based on innovation and strengthening institutional exports of agricultural products. These efforts not only enhance the diversity of goods exported by Indonesia but also expand the markets of Indonesian products. Competition with countries that are in the top five exporters of world agricultural products, such as the United States and China, can be achieved by selling products that cannot be produced by other countries and increasing the competitiveness of products produced by Indonesia. Related to domestic regulations, the government needs to continue to build a business climate that facilitates and promotes export orientation, in addition to the various incentives provided.

1. Introduction

Indonesia's strategic position in the tropics, with high rainfall and abundance of sunshine throughout the year, is a gift that needs to be explored and developed optimally. Related to the development of agricultural commodities, one of the advantages associated with this position is the diversity of production of various crops [1,2]. Data shows that Indonesia has the second largest biodiversity in the world after Brazil. This condition provides an opportunity for Indonesia to produce various crops, which cannot be planted or produced in other regions, such as in the subtropics or areas with four seasons in the northern or southern regions of the world [3].

Some tropical plants that cannot be produced in other areas include several types of fruits, vegetables, plantation crops, and various spices [4]. Vegetable crops that are ready to be exported, include shallots, chilies, spinach, mustard greens and cabbage [5]. Various tuber crops such as potatoes and porang are also ready to be exported. In terms of plantation crops, traditionally Indonesia is a major exporter of palm oil, rubber, coffee, tea, cocoa, and tobacco. Exported coffee consists of Robusta and Arabica coffee. In 2017, Indonesia exported 63,237.6 tons of coffee to the United States and 44,739.6 tons to Germany. Meanwhile, exports of cocoa beans reached 55,299.4 tons. The export
volume of crude palm oil (CPO) and its derivatives in 2018 reached 32.02 million tons, an increase of 3.1% from 2017 which reached 31.05 million tons. Additionally, several countries such as the United States, Belgium, Sri Lanka, the Dominican Republic, and the Netherlands accept Indonesian tobacco. In 2017, Sri Lanka received 1,086 tons of Indonesian tobacco exports, the Netherlands 871.8 tons, the Dominican Republic 753.3 tons, and the United States 2,827.3 tons [6].

Other export commodities include various spices such as black pepper, cloves, and cinnamon. Some of Indonesia's black pepper export destinations include France, the United States, India, Vietnam, Germany, Singapore, the Netherlands, and Sri Lanka. European countries such as the Netherlands, Germany, and France are also very dependent on several Indonesian spices products.

Based on these conditions, efforts to make sovereign farmers better develop and manage their farms need to be made by making farming activities more attractive through various policies [1,2,7,8]. In general, the main problem in agricultural development, especially in efforts to improve the quality of agricultural products, is that the existing policies are not fully in favor of farmers [9,10]. This can be seen from the neglect of efforts to strengthen farmers [4,9–12] as the main actors in agricultural development [13,14]. For rice farmers, for example, irrigation that does not work [15], the difficulty of finding agricultural workers and the system of managing trade in unhealthy agricultural products are all very real issues [16]. These conditions cause farmers to not optimally utilize their land, which is characterized by a low cropping index [11].

There have been many activities that have been carried out by the government in improving the quality and quantity of agricultural products including, improving existing irrigation networks, providing agricultural machinery as a substitute for labor scarcity, and efforts to develop a healthy trade system. During 2015, tertiary irrigation rehabilitation was carried out over an area of 2.1 million hectares or 70 percent of the target for improvement by 2019, and procurement of agricultural machinery consisted of 26,100 tractors, and 5,563 rice transplanters. During 2015-2019, the main targets of agricultural infrastructure development included: 1) expansion of 1 million hectares of new paddy fields, 2) expansion of 1 million hectares of dryland agriculture outside Java, 3) improvements and 4) construction of irrigation for irrigation needs of 3 million hectares of paddy fields [6].

The government also began to provide Agricultural Insurance for farmers (Sulaiman, 2017; Syafri., 2017) to anticipate losses in case of crop failure [6,17]. In conditions of limited capital in production, especially for food commodities, global climate change is characterized by increasingly frequent floods, droughts, and pests of diseases on crops that often lead to crop failure which can reduce the enthusiasm of farmers to produce [18–21]. From the marketing side, in order for the margin portion enjoyed by farmers to be greater, efforts should be made to shorten the existing marketing chain, in addition to efforts to stabilize prices through market operations and fixing the Cost of Goods Sold (HPP) [22–26]. Import controls and efforts to boost exports are carried out in conjunction with the development of the Indonesian Farmers Shop. The procurement of cattle transport vessels is another form of shortening the trade chain. Within the foreseeable future, it is expected that the largest share of these trading margins will be enjoyed by farmers.

All of these efforts need to involve ongoing cooperation and support from all parties [1,16,27–29], and it begins by uniting perspectives on the importance of independent, united and sovereign farmers in the development of the agricultural sector.

Based on the background of the above, this paper will analyze in-depth how to manage the comparative advantage of export-oriented agricultural products from the perspective of 3 (three) important aspects, namely strengthening the export policy of agricultural products; increasing productivity and production based on innovation and strengthening institutional exports of agricultural products. This analysis is based on the experience of the first author in managing Indonesia's agricultural development as Minister of Agriculture for the 2014-2019 period.
2. Strengthening the Export Policy of Agricultural Products

The policy of strengthening and increasing exports is one of the important factors in agricultural development [12,16,30], which is reflected in the magnitude of trade balance transactions [31]. At present, there is still a surplus in the overall trade balance due to the large surplus in plantation commodities, while in other commodities a deficit exists. The content of national food and agriculture problems is the magnitude of imports and exports that are closely related to the pattern of world trade which is increasingly leading to barter patterns, especially in bilateral trade. It is difficult to avoid importing as long as the recipient country exports Indonesian agricultural commodities and also requires the local market to receive products from trading partner countries [6].

Attention to food imports to protect domestic production activities, as well as to mitigate the thick interests of a handful of parties who utilize economic rent from import activities are important. Uncontrolled imports are a threat to the lives of farmers and the existence of domestic farming. Cheap food imports, for example, will continue to depress prices at the farm level. Low selling prices only entangle farmers further in poverty and negatively impact the motivation to keep producing. In the context of nationalism, food imports undermine the dignity of farmers.

Another worrying condition is if food imports are controlled by certain mafia groups. The food mafia is proven to have undermined the country's food sovereignty. Food self-sufficiency is the best way to eradicate imported food mafia. This should equate to no more food imports after sustainable self-sufficiency is realized. This in itself dampens and eliminates the fraudulent practice of mafia importing food. Indonesia requires food in large quantities, a substantial risk exists if it depends on food supply from the world market. For example, rice imports are the main food for the Indonesian population. However, rice is also the staple food of four billion people or 56 percent of the world's population.

IRRI data (2019) shows that rice is cultivated by around 144 million farm households, or a quarter of the world's total farmers, on an area of 166 million hectares. Of that total area, each year no less than 750 million tons of rice is produced or 500 million tons of milled rice, 90 percent of which is produced by farmers in Asia. Until now, China, India, and Indonesia have been the three main rice-producing countries, with a contribution of around 58 percent of world production.

Rice producing countries are generally at the same time consumer countries. Of the 500 million tons of milled world rice production, only around 45 million tons are traded. India, Thailand, and Vietnam are the main exporting countries. These conditions illustrate the complexity of the world rice trade system if Indonesia imports all of its rice needs. Indonesia must import around 30 million tons of rice every year because domestic consumption needs are estimated at 2.5 million tons per month. That figure is equal to two-thirds of the amount of rice traded on world markets.

Such an amount of imports will not only increase the price of rice trade but will also trigger worldwide scarcity of rice because producing countries tend to secure their needs first. Rice will become a luxury item and obtaining 30 million tons of rice will not be feasible with Rp 133 trillion when referring to the current price of rice.

Several policies have been implemented by the government to increase exports of agricultural commodities, namely through: 1) Development of export-oriented food granaries in rural areas; 2) Development of corporate-based agricultural commodity clusters; 3) Developing quarantine systems; 4) Development of cold storage and silos for strategic commodities; 5) Acceleration of export and investment licensing; and 6) Increasing efficiency, added value, and trade system (Indonesian Ministry of Agriculture, 2017). Export activities are directed at efforts to diversify exported products and expand destination countries. Some Indonesian exotic fruit commodities, such as mangosteen, have become prima donna exports to various countries and it is hoped that these efforts will continue to spur increased exports.

In the midst of sluggish Indonesian exports, precisely between 2014-2018, exports of agricultural products showed good performance. This can be seen from the number of exports of agricultural products which continued to increase each year. In 2013, exports of Indonesian agricultural products
still stood at 33.5 million tons, and continued to increase in subsequent years. In 2018 agricultural exports reached 42.5 million tons and increased by 26.9 percent compared to 2013.

During the 2014-2018 period, Indonesia's total agricultural exports reached 195.7 million tons, an increase of 28.3 percent compared to the 2009-2013 period which was only 152.5 million tons. The value of agricultural exports also increased sharply. During the 2014-2018 period, the total value of Indonesia's agricultural exports reached Rp 1,957.8 trillion, an increase of 26.3 percent compared to the previous period (2009-2013) which was only Rp 1,549.5 trillion. The increase in agricultural exports was still dominated by estate crops and horticulture sub-sectors, such as oil palm (23.44 percent), coconut (15.74 percent), pepper (37.09 percent), rubber (7.18 percent), durian (9.77, 82 percent), mangosteen (285.15 percent), mangoes (123.54 percent), and pineapple (18.83 percent). Some livestock products also experienced an increase in exports such as chicken meat (262.38 percent), DOC (7,581.52 percent), and veterinary medicines (34.84 percent).

3. Increased Productivity and Innovation-based Production

The competitiveness of a nation is its ability to control the strength of competencies possessed in an integrated manner to achieve prosperity and profit [12,32]. To optimize the power of competence, the role of technological innovation is more dominant [8]. Various empirical experiences from several developed countries that are members of the Organization for Economic Cooperation and Development (OECD) such as the United States, Germany, and Japan, which are among the three countries that have the best competitiveness in the world, show the creation and mastery of innovation to be the main motor in increasing power competitiveness in various fields of life.

To see the role of technological innovation (Alarcón & Sánchez, 2016) in a country's economic activities, one of the indicators used is Total Factor Productivity (TFP) [32]. In the 1971-2001 period, Indonesia's TFP was only 0.002 percent [33], far compared to other ASEAN countries such as Thailand (1.8 percent), Singapore (1.5 percent), and Malaysia (0, 9 percent). This shows that Indonesia's economic growth is more supported by capital compared to technological innovation interventions. This was confirmed by the value of Indonesia's exports from 1996 to 2009 which were dominated by-products with low technological content while Indonesia's imports were dominated by industrial products, mining, and food industry products with high technological content. The same situation can be observed in agricultural activities in Indonesia. Based on data from Fuglie and Piggott (2003) as quoted by Kasryno (2007), the TFP of Indonesian agriculture in the 1993-2000 period showed a minus 0.1 [34].

In addressing this issue, it is necessary to explore the four pillars that determine the outcome of innovation and its delivery efforts to users (Ministry of Research and Technology, 2010; Zuhal, 2010). The four pillars are (1) innovation producing institutions, in this case, the Agricultural Research Agency and other research institutions conducting agricultural research, including various parties who try to explore various new things in their environment, (2) innovation user institutions, in this case, the
industry, agribusiness actors and farmers, (3) government institutions that issue various regulations related to research activities and the delivery of research results to users, and (4) educational institutions in a general sense, which are responsible for public education.

Supporting efforts to increase productivity and agricultural production has included substantial research results in the form of innovations produced by researchers in Research Institutions, Higher Education, and Private areas. For example, the Indonesian Agency for Agricultural Research and Development regularly produces a variety of inventions that are ready for farmers to use. Regarding food crops, for example, during 2015-2018 the Agricultural Research and Development Agency produced hundreds of superior varieties of rice, maize and cereals, horticultural crops, and estate crops, as well as superior strains of livestock. Additionally, thousands of technological innovations and site-specific agricultural development policy recommendations were made and will be used in various regions. Approximately 600 innovations from the Indonesian Agency for Agricultural Research and Development have been registered with Intellectual Property Rights (IPRs), more than half of which have IPR certificates.

The availability of IAARD technology in the form of water resources management, Integrated Planting Calendar (KATAM) and Standing Crop information systems, as well as prototypes of agricultural machinery, can increase production efficiency. Other technologies include New Superior Varieties (VUB), vaccines, livestock germs, tool kits, maps, fertilizers, biopesticides, etc. that can increase production and productivity. Postharvest technology including the processing of agricultural commodities is believed to be able to improve the quality of harvested products and increase added value and reduce yield losses in pre and post-harvest. These various technology packages are constantly being developed and are expected to become appropriate technologies so that farmers can use them to increase the quantity, quality, and productivity of various agricultural products.

4. Strengthening Institutional Export of Agricultural Products

Increased exports are only possible if there is integration from the production process to the products ready to be sent to the destination country. The various institutional supporters were put on full alert to support the acceleration of exports. Specifically, for export licensing, for example, which previously took 2 weeks and was reduced to 3 hours after the export service policy of the Minister of Agriculture.

Likewise, all customs and other processes are facilitated. The inspection process for exported goods, something that is not required by the export destination countries, was also eliminated. Various regulations that hampered the export process were cut and simplified.

Production activities in the border regions were also intensified in the hope that export activities could be enhanced. Various institutions in the border regions were asked to support efforts to move goods across countries. In addition to the above, several activities that have been carried out to support the increase in the export volume of national agricultural products are:

a. Implementation of the agricultural sector licensing system through services based on the Agricultural Licensing Management Information System electronically. Through this system, the licensing service time is shorter, more transparent and accountable. This system is an integrated online licensing system or Online Single Submission (OSS) that is already connected with the Ministry of Finance, Regional Government and BKPM;
b. Acceleration of the increase in exports of livestock products through the establishment of a Team for the Acceleration of Seed, Animal, Animal Products, Feed or Animal Feed and Medication Products.
c. Market initiation and expansion in the context of horticultural commodity export acceleration;
d. Technical assistance and guidance in the application of cultivation according to GAP, especially for export potential commodities;
e. Facilitation of assistance in means of increasing sweet potato and peanut production. Assistance includes the multiplication of source seeds and supervision and certification of seeds;
f. Acceleration of plantation registration in meeting export requirements;
g. Guidance and assistance with submission of packaging house registration (packaging house);
h. Encouragement of business partnerships between farmer institutions and exporters in supplying horticultural products that meet export quality requirements;

i. Technical guidance for controlling plant pests (OPT);

j. Facilitating the promotion of superior plantation products;

k. Improvement of quality and standardization of plantation export commodity standardization; and

l. Assistance for export acceleration for businesses ready to export livestock products.

The above efforts are not only able to stimulate export activities but also have generated diversification of exported products and export destination countries.

5. Conclusion

Increasing exports of Indonesian agricultural products can be done with a variety of approaches. These efforts not only enhance the diversity of good exported from Indonesia but also expand the niche market that receives Indonesian products. Efforts to compete with countries that are in the position of the top five exporters of world agricultural products, such as the United States and China, can be done by selling products that cannot be produced by the United States and China and by increasing the competitiveness of products produced by Indonesia. Related to domestic regulations, the government continues to build a business climate that prioritizes export orientation, in addition to the various incentives provided. Specifically, for export licensing, all processes are simplified and the Ministry of Agriculture adopts a ‘ball pick-up’ strategy, with the full support of researchers in creating innovations that can increase production and productivity, as well as mentor businesses that will export.

References

[1] Niemannee T, Kaveeta R and Potchanasin C 2015 Assessing the economic, social, and environmental condition for the sustainable agricultural system planning in Ban Phaeo District, Samut Sakhonn Province, Thailand Procedia-Social Behav. Sci. 197 2554–60

[2] Zhang Y, Zhang J, Wang C, Cao J, Liu Z and Wang L 2017 China and Trans-Pacific Partnership Agreement countries: Estimation of the virtual water trade of agricultural products J. Clean. Prod. 140 1493–503

[3] Gunawan I 2015 Analisis Strategi Pengembangan Usaha Komoditas Unggulan Pertanian Di Kabupaten Rokan Hulu J. Sungkai 3

[4] Suseno D and Suyatna H 2007 Mewujudkan kebijakan pertanian yang pro-petani J. Ilmu Sos. dan Ilmu Polit. 10 267–94

[5] Delgado C L 1995 Agricultural diversification and export promotion in sub-Saharan Africa Food Policy 20 225–43

[6] Sulaiman A A 2017 Asuransi Pengayom Petani (Jakarta: Sekretariat Jenderat kementerian Pertanian)

[7] Salmoral G, Khatun K, Llive F and Lopez C M 2018 Agricultural development in Ecuador: A compromise between water and food security? J. Clean. Prod. 202 779–91

[8] Sippel S R 2016 Breaking ground: Multi-family farm entrepreneurs in Moroccan export agriculture J. Rural Stud. 45 279–91

[9] Mishra P K and Dey K 2018 Governance of agricultural value chains: Coordination, control and safeguarding J. Rural Stud. 64 135–47

[10] Munirathinam R, Reed M R and Marchant M A 1998 Effects of the Canada-US trade agreement on US agricultural exports Int. Food Agribus. Manag. Rev. 1 403–15

[11] Aboagye A Q and Gunjal K 2000 An analysis of short-run response of export and domestic agriculture in sub-Saharan Africa Agric. Econ. 23 41–53

[12] de Piñeres S A G 1999 Externalities in the agricultural export sector and economic growth: a developing country perspective Agric. Econ. 21 257–67

[13] Eryürük Ş, Nesimioğlu B I S, Altun H O, Açikgöz H, Yumuşak S, Yildiz H B, ERYÜRÜK Ş, Nesimioğlu B S, ALTUN H O, AÇIKGÖZ H, YUMUŞAK S, YILDIZ H B, Çalik A and
Bagriyanik O I E 2019 Research and Development Approaches and Implementation Issues in Agricultural Machinery Sector; Konya Case Proc. Comput. Sci. 158 235–43
[14] Huttunen S 2019 Revisiting agricultural modernisation: Interconnected farming practices driving rural development at the farm level J. Rural Stud. 71 36–45
[15] Alcamo J, Döll P, Henrichs T, Kaspar F, Lehner B, Rösch T and Siebert S 2003 Development and testing of the WaterGAP 2 global model of water use and availability Hydrol. Sci. J. 48 317–37
[16] Qiang W, Niu S, Liu A, Kastner T, Bie Q, Wang X and Cheng S 2020 Trends in global virtual land trade in relation to agricultural products Land use policy 92 104439
[17] Syafril 2017 Asuransi Usaha Ternak Sapi (AUTS) Peternak Tenang Memelihara Sapi (Jambi: Balitbangtan Jambi Balai Penelitian dan Pengembangan Kementrian Pertanian)
[18] Abdi R, Ghasemzadeh H R, Abdollahpour S, Sabzevarvar M and Nasab A D M 2010 Modeling and analysis of mechanization projects of wheat production by GERT networks Agric. Sci. China 9 1078–83
[19] Ding J, Huang J-K, Jia X-P, Bai J-F, Boucher S and Carter M 2015 Direct farm, production base, traceability and food safety in China J. Integr. Agric. 14 2380–90
[20] Jiao T 2016 Toward an alternative perspective on the foraging and low-level food production on the coast of China Quat. Int. 419 54–61
[21] Morrison K T, Nelson T A and Ostry A S 2011 Methods for mapping local food production capacity from agricultural statistics Agric. Syst. 104 491–9
[22] Aly A, Geall S and Song Y 2016 Sustainable maize production and consumption in China: practices and politics in transition J. Clean. Prod. 134 259–68
[23] Garrett R D, Lambin E F and Naylor R L 2013 The new economic geography of land use change: Supply chain configurations and land use in the Brazilian Amazon Land use policy 34 265–75
[24] Luthra S, Mangla S K, Xu L and Diabat A 2016 Using AHP to evaluate barriers in adopting sustainable consumption and production initiatives in a supply chain Int. J. Prod. Econ. 181 342–9
[25] Tseng M-L, Tan R R and Siriban-Manalang A B 2013 Sustainable consumption and production for Asia: sustainability through green design and practice J. Clean. Prod. 40 1–5
[26] Unnevehr L and Hoffmann V 2015 Food safety management and regulation: International experiences and lessons for China J. Integr. Agric. 14 2218–30
[27] Collins A and Fairchild R 2007 Sustainable food consumption at a sub-national level: an ecological footprint, nutritional and economic analysis J. Environ. Policy Plan. 9 5–30
[28] Gao S 2011 On Sustainable Development of Sericulture Industry-An Empirical Study on Pengan County of Sichuan Province Int. J. Bus. Manag. 6 216
[29] Zocca R O, Gaspar P D, da Silva P D, Nunes J and de Andrade L P 2018 Introduction to sustainable food production (Elsevier)
[30] Daoud A, Reinsberg B, Kentikelenis A E, Stubbs T H and King L P 2019 The International Monetary Fund’s interventions in food and agriculture: an analysis of loans and conditions Food Policy 83 204–18
[31] Jensen K and Davis G 1998 An analysis of export market strategies and barriers perceptions by US agricultural HVP exporters Int. Food Agribus. Manag. Rev. 1 509–24
[32] Alarcón S and Sánchez M 2016 Is there a virtuous circle relationship between innovation activities and exports? A comparison of food and agricultural firms Food Policy 61 70–9
[33] Merx M and J N 2005 Factors influencing knowledge creation in an organization J. Eur. Ind. Train. 29 135–47
[34] Fuglie K O 2003 Productivity Growth in Indonesian Agriculture 47th Annual Conference of The Australian Agricultural and Resource Economics Society (Bogor)