AGRISOCIONOMICS
Jurnal Sosial Ekonomi dan Kebijakan Pertanian
ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (3): 906-920, November 2024

DYNAMICS OF COMPETITIVENESS AND MARKET POSITION OF INDONESIAN COCONUT SHELL CHARCOAL EXPORTS IN THE INTERNATIONAL MARKET

Lovina Aresta Putri[1*], Yusman Syaukat[1], and Feryanto[2]

[1]Department of Agricultural Economics, Faculty of Economic and Management, IPB University, Bogor, West Java, Indonesia
[2]Department of Agribusiness, Faculty of Economic and Management, IPB University, Bogor, West Java, Indonesia

*Correspondence Email: lovina.aresta@apps.ipb.ac.id

Submitted 22 April 2024; Approved 25 November 2024

ABSTRACT

Along with the energy and environmental pollution problems, demand for coconut shell charcoal in the international market has experienced an increasing trend in the last decade. However, the value of Indonesian exports of coconut shells frequently experiences fluctuating conditions. Seeing the increasing demand for this product and the intense competition between producing countries in the international market, shows that Indonesian coconut shell charcoal has the potential to be developed. This research aims to analyze the dynamics of competitiveness and market position of Indonesian coconut shell charcoal exports in ten major export destination countries (Saudi Arabia, South Korea, Japan, Iraq, China, Türkiye, Germany, Lebanon, United Arab Emirates, and Netherlands) using the Dynamic Revealed Comparative Advantage (DRCA) method. The DRCA analysis findings indicate that, in the ten major export destination countries, the dynamics of Indonesia's coconut shell charcoal exports competitiveness shows a fluctuating state with the best export competitiveness dynamic position in the South Korean and Japanese markets. However, the export market position of Indonesian coconut shell charcoal has also decreased from a Rising Star in Period I (2010–2014) to Leading Retreat in Period III (2019–2022). The implication is that Indonesian coconut shell charcoal products are stated to have weak export competitiveness in the main export destination countries. Therefore, export-oriented competitiveness development strategies such as improving the product quality, increasing effective promotion and marketing efforts, and improving market access are very necessary to strengthen Indonesian coconut shell charcoal's competitive position in export destination countries.

Keywords: *coconut derivative products, comparative advantage, DRCA, renewable energy*

BACKGROUND

Global energy demand has been steadily increasing in recent years with forecasts predicting a 45% rise by 2030 (Bilgili et al., 2022; Tabatabaei, 2019). Currently, approximately 84% of the world's energy consumption is met by fossil fuels. This reliance on fossil energy sources, such as coal, oil, and natural gas, has led to significant environmental issues, including air pollution and elevated greenhouse gas (GHG) emissions. Since the beginning of the industrial revolution, atmospheric concentrations of carbon dioxide (CO2), the chief heat-trapping greenhouse gas (GHG), have risen 35%, from about 280 to 377 parts per million (ppm) (Baumert et al., 2005; Sadorsky, 2021)

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (3): 906-920, November 2024

and is projected to more than double by 2050 (Bilgili et al., 2022). In response, governments worldwide are intensifying efforts to identify and implement alternative energy solutions aimed at reducing fossil fuel consumption, while simultaneously advancing the development of cleaner, more sustainable renewable energy sources to fulfill international energy needs (Anasthasia et al., 2020).

As technology advances and production costs decrease, renewable energy is projected to replace fossil fuels by 2050 (Haryati & Amir, 2021; Holechek et al., 2022). In Indonesia, one of the renewable energy products that is popular in the international market is coconut shell charcoal. Coconut shell charcoal is a form of environmentally friendly renewable energy that is processed from the combustion of coconut shell waste (Puspaningrum et al., 2022; Putri & Hidayat, 2023). Coconut shells are mostly considered as waste. In fact, coconut shell can be reprocessed into products that have high selling value and can even reach the export market, namely coconut shell charcoal briquettes with a number of benefits including: (1) lower cost; (2) higher heating value; (3) economical and energy-saving; (4) secure, safe, and easy to store; (5) eco-friendly; and (6) doesn't produce excessive smoke (Ahmad et al., 2022; Rizal et al., 2022).

Indonesia's coconut shell charcoal briquette products have a large export market potential to foreign countries. One of the factors that causes Indonesian coconut shell charcoal to be considered the best by the international market is the quality of its calorific value which is higher than other charcoals, which is around 6,700 to 7,100 kcal/kg (Haryati & Amir, 2021; Rizal et al., 2022). Coconut shell charcoal briquettes are commonly used as barbeque (BBQ) fuel in Europe and East Asia. In addition, the demand for Indonesian coconut shell charcoal briquettes is also high in Middle Eastern countries where it is used for *shisha*. Currently, the world's briquette products, especially for BBQ, are still dominated by wood charcoal. However, developed countries that are the largest consumers of this product are sensitive to the issue of global warming and are also very aware of the enormous damage to forests or trees cut down for the purposes of charcoal briquettes (Hadiwijaya et al., 2021). Therefore, in the future, coconut shell charcoal briquettes have the potential to become a substitute product for wood charcoal because it does not damage nature.

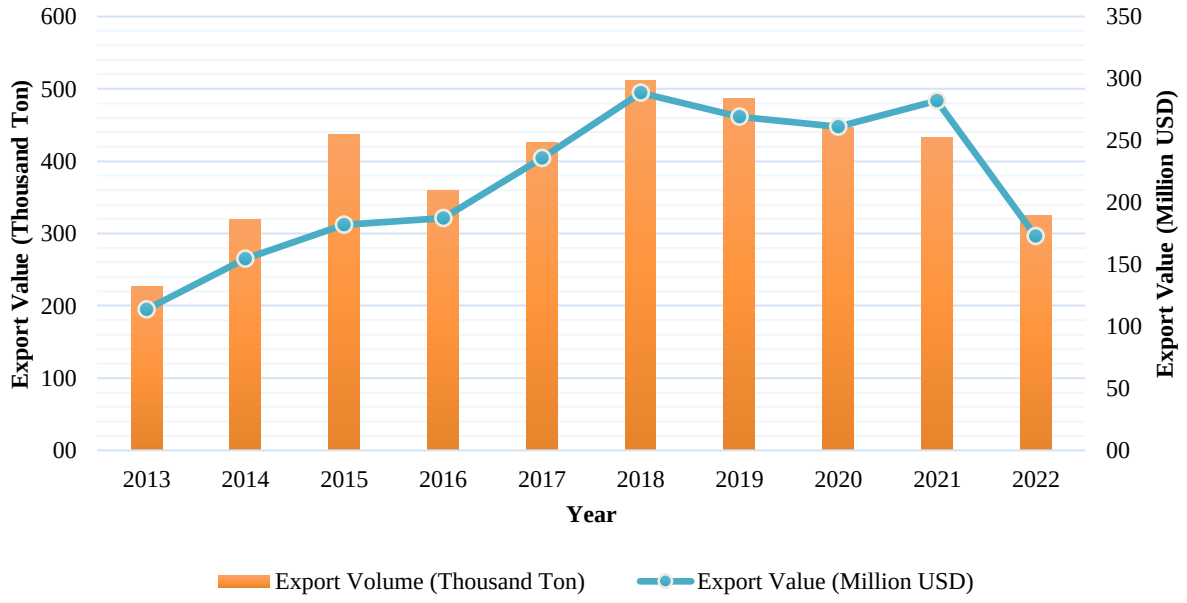

Figure 1. Export Value and Export Volume of Indonesian Coconut Shell Charcoal to The World Market (2013–2022)

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (3): 906-920, November 2024

Source: ITC Trade Map (2024)

The potential production of coconut shell charcoal in Indonesia is estimated to generate foreign exchange of Rp 6.8 trillion per year (DPR RI, 2022). The price of coconut shell charcoal is Rp 6,000 per kg, while processed products in the form of coconut shell charcoal briquettes can be sold up to Rp 14,000 per kg. If it enters the export market, charcoal briquettes can reach USD 1,300 per ton or the equivalent of Rp 18,590 per kg, assuming an exchange rate of Rp 14,300/USD. However, the International Trade Center (2024) shows that the value and volume of Indonesian coconut shell charcoal exports often faces fluctuating conditions on the international market as can be seen in Figure 1. Figure 1 illustrates that the export value and volume of Indonesian coconut shell charcoal is very volatile and experienced an increasing trend in the first six years (2013–2018) with an average annual increase of 18.9% and 15.58% per year, respectively. In contrast, this trend tends to decline in the last four years (2019–2022) with an average annual decrease of -4.18% and -3.62% per year, respectively (ITC Trade Map, 2024).

Currently, Indonesia's coconut shell charcoal briquettes have high market demand. Starting from the United States, Europe, East Asia, the Middle East and others. This shows that Indonesian coconut shell charcoal has the opportunity to continue to be developed (Lestari et al., 2023). As a potential export product, the quality and quantity of Indonesia's coconut shell charcoal briquettes must be consistent and fulfill the demands of the intended market. However, the availability of raw materials is a major problem in charcoal production in Indonesia over the past five years (2018-2022). Excessive exports of whole coconut grains to foreign countries cause difficulties in raw materials for charcoal production in Indonesia. Coconut shell waste, which is the main raw material for charcoal production, has become scarce. Therefore, charcoal production will be lower than the demand in the market. Looking upstream, data from the Ministry of Agriculture's Agricultural Data and Information System Center (2022) shows that the development of Indonesia's coconut area has decreased by 1.01% per year during the 2013-2022 period. Where the coconut area in 2013 amounted to 3.65 million ha and decreased to 3.33 million ha in 2022. Currently, 99.02% of Indonesia's coconut is cultivated by smallholder plantations where monoculture is practiced and productivity is still low. Along with the decline in planted area, over the last ten years coconut production has also declined by 0.71% per year. The average productivity of coconut has also not increased significantly and is only in the range of 1.12 tons/ha (Kementan, 2022; Hadiwijaya et al., 2021).

Another problem is that foreign entrepreneurs who used to be customers of the domestic charcoal industry are now entering Indonesia illegally. The absence of strict regulations from the Indonesian government makes these foreign entrepreneurs become competitors of domestic business actors. These foreign entrepreneurs build factories located in Java, Kalimantan and Sulawesi (Kementan, 2022). The presence of foreign entrepreneurs in the charcoal briquette production business in Indonesia makes domestic business actors not optimally get demand from importers and can actually kill domestic business actors. Most of the charcoal briquette businesses are small and medium-sized. Where the charcoal briquette industry can be done by the household industry and by unskilled labor because it is relatively easy and does not require large capital.

As explained earlier, the decline in the value and volume of Indonesia's coconut shell charcoal exports is due to the suboptimal process of downstreaming coconut waste products into coconut shell charcoal in Indonesia, either from the aspect of processing raw materials, export distribution, or competing industries (Suprehatin & Naufal, 2021). The fluctuating value and volume of coconut shell charcoal exports is something to be worried about because it can weaken the competitiveness of

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (3): 906-920, November 2024

Indonesian coconut shell charcoal in the international market. In the era of globalization and international competition, the level of competitiveness in terms of both comparative and competitive advantages is an important aspect (Maslova et al., 2019; Rambe & Malau, 2023), because traded products must be competitive if they are to survive well in the market.

Research on export competitiveness for Indonesian coconut shell charcoal products has not been widely conducted given the low concentration of Indonesian industry on value-added derivative products. The few studies conducted in Indonesia still use the Revealed Comparative Advantage (RCA) analysis method (Wulandari, 2021) and also the Revealed Symmetric Comparative Advantage (RSCA) (Putri & Hidayat, 2023). Both studies showed that Indonesia's coconut shell charcoal was strongly competitive in major export destination markets during the 2010–2019 period. However, export competitiveness proxied by RCA and RSCA index values only shows a static perspective of competitiveness (a certain period) and is unable to describe changes in competitiveness over time. Meanwhile, the competitiveness of a country is dynamic and can change at any time based on the intensity of competition (Ekmen-Özçelik & Güzin, 2013). Therefore, research on analyzing the competitiveness of Indonesian coconut shell charcoal exports from a dynamic perspective needs to be done to fill the research gap. So that it can be known whether Indonesian coconut shell charcoal has experienced an increase or decrease in competitiveness dynamics and export market position in different periods of time. This research will be used as a reference for international trade specialization in several major destination countries and identify appropriate steps in the development of the national coconut shell charcoal industry to increase the competitiveness and export market share of coconut shell charcoal.

RESEARCH METHODS

The scope of this research includes the dynamics of the competitiveness of Indonesian coconut shell charcoal exports in the international market through a comparative advantage analysis approach. This research uses secondary data in the form of time series data over a period of 13 years (2010–2022) in accordance with the availability of data on exports of Indonesian coconut shell charcoal which only started in 2010. The object studied in this research focuses on processed coconut shell waste products, namely Coconut Shell Charcoal (HS 440290). The export destination countries used in this research were selected based on the highest average export value within 13 years, including Saudi Arabia, South Korea, Japan, Iraq, China, Türkiye, Germany, Lebanon, United Arab Emirates and Netherlands (ITC Trade Map 2024). The data used was obtained from several sources, including ITC Trade Map, FAOSTAT, books, theses, journals and various sites related to research.

In analyzing the export competitiveness of commodities, the most commonly used methods are Revealed Comparative Advantage (RCA) (Lestari et al., 2023; Santoso et al., 2022) and also Revealed Symmetric Comparative Advantage (RSCA) (Putri & Hidayat, 2023; Tarigan et al., 2024). However, this study uses Dynamic Revealed Comparative Advantage (DRCA) to analyze the dynamics of competitiveness and market position of Indonesian coconut shell charcoal exports in the international market which has never been done in previous studies. DRCA was first introduced by Edwards & Schoer (2002) which is a refined form of the RCA (Revealed Comparative Advantage) index. The advantage of this method is that it can explain changes in comparative competitiveness that are dynamic and fluctuate over time (Ekmen-Özçelik & Güzin, 2013). The DRCA calculation is

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (3): 906-920, November 2024

obtained by dividing the RCA comparative advantage delta by RCA's comparative advantage in year t is as seen in Equation 1 and 2 (Amanda & Rosiana, 2023; Manalu et al., 2022).

$$\mathrm{RCA} = \frac{(\mathrm{Xij}/\mathrm{Xj})}{(\mathrm{Xwj}/\mathrm{Xw})}$$

$$\mathrm{DRCA} = \frac{\Delta \mathrm{RCA_j}}{\mathrm{RCA_j}} = \frac{\Delta(\mathrm{Xij}/\sum \mathrm{Xj})}{\mathrm{Xij}/\sum \mathrm{Xj}} - \frac{\Delta(\mathrm{Xwj}/\sum \mathrm{Xw})}{\mathrm{Xwj}/\sum \mathrm{Xw}}$$

Information:
Xij : Shows the value of Indonesian coconut shell charcoal exports to destination countries (US$)
Xj : Shows the total value of Indonesian exports to main destination countries (US$),
Xw : Shows the total value of world exports to the main destination countries (US$).

In Dynamic Revealed Comparative Advantage (DRCA), Edwards & Schoer (2002) categorize a country's export market position into six groups as seen in Table 1 with the following details: (1) Rising Star, if the share of commodity j grows in the country's exports greater than the growth in the share of commodity j in world exports; (2) Falling Star, if the growth in the share of commodity j in the country's exports increases while the growth in the share of commodity j in world exports decreases; (3) Lagging Retreat, if the decline in the share of commodity j in the country's exports is greater than the decline in the share of commodity j in world exports; (4) Leading Retreat, if the decline in the share of commodity j in the country's exports is smaller than the decline in the share of commodity j in world exports; (5) Lagging Opportunity, if the growth in the share of commodity j in country exports is smaller than the growth in the share of commodity j in world exports; (6) Lost Opportunity, if the growth in the share of commodity j in the country's exports decreases while the growth in the share of commodity j in world exports increases.

Table 1. Dynamics of export market position

RCA	X		Y	Export Market Position	Export Evaluation
Increase	↑	>	↑	Rising Star	Successful restructuring
	↑	>	↓	Falling Star	Poor restructuring
	↓	>	↓	Lagging Retreat	Poor restructuring
Decrease	↓	<	↑	Lost Opportunity	Poor restructuring
	↓	<	↓	Leading Retreat	Successful restructuring
	↑	<	↑	Lagging Opportunity	Poor restructuring

Information:
X : Growth in the export share of commodity j in country exports
Y : Growth in the share of commodity j in world exports
Source: Edwards & Schoer (2002) and Ekmen-Özçelik & Güzin (2013)

The most profitable position for a country is Rising Star, while the most detrimental position is Lost Opportunity. Based on a dynamic perspective, the success of export restructuring is reflected in the transition of exports from a stagnant market condition (Leading Retreat) to a dynamic market (Rising Star). It should be noted that Edwards & Schoer (2002) evaluate changes in competitiveness by comparing values between the initial and recent years. In this study, the Dynamic RCA index will evaluate the dynamics of export competitiveness by comparing DRCA values into three periods as done by Rosiana et al., (2018), namely Period I (2000–2005), Period II (2005–2010), and Period III (2010–2015).

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (3): 906-920, November 2024

RESULT AND DISCUSSION

Indonesian coconut charcoal briquette products have a large export market potential to foreign countries, starting from Europe, East Asia, the Middle East and others. One factor is that the quality of Indonesian coconut shell charcoal briquettes is considered the best by the international market with a higher calorific value than other charcoal, which is around 6,700 to 7,100 kcal/kg (Haryati & Amir, 2021; Rizal et al., 2022). Meanwhile, a research institute from Thailand's Institute of Technology and Science said that coconut shell charcoal from their country has a lower caloric value of around 4,830 kcal/kg (Wang et al., 2015). In addition, the exported coconut shell charcoal certainly fulfill the Indonesian SNI Standard No. 06/4369/1996 which includes charcoal moisture content (<6%), ash content (<5%), fixed carbon (>70%), volatile content (<20%), and charcoal calorific value (>7,000 kcal/g) (ITPC 2022).

Based on ITC Trade Map data (2024), there are 10 main destination countries for Indonesia's coconut shell charcoal exports based on the highest average export value over a 13-year period (2010-2022), namely Saudi Arabia, South Korea, Japan, Iraq, China, Türkiye, Germany, Lebanon, United Arab Emirates, and the Netherlands . In East Asian regions such as South Korea, Japan, and China, coconut shell charcoal is often utilized as fuel for cooking barbecue dishes. In addition, researchers in East Asia also mentioned several other uses of coconut shell charcoal as a component of innovative products, such as water purification, maintaining the freshness of vegetables and fruits, improving soil quality, floor and wall moisture control, and as an odor eliminator (ITPC 2022).

Meanwhile, in the Middle East region such as Saudi Arabia, Iraq, Lebanon, and the United Arab Emirates, coconut charcoal briquettes are utilized as an alternative fuel that is often used for cooking, especially for grilling food and for smoking Middle Eastern *shisha* pipes (Haryati & Amir, 2021; Yuliah et al., 2022). In contrast to countries in the European region such as Germany and the Netherlands, the lack of energy sources and concerns about climate change continue to push governments to enact climate and energy policies with the aim of reducing emissions, protecting forests from acid rain, preventing rivers and oceans from being polluted by industrial waste, and so on. Nowadays, environmental protection is a top priority for governments as well as their citizens, hence the demand for biomass-based renewable energy such as coconut shell charcoal in the European region continues to increase (Pham, 2018).

Comparison of Exports of Indonesian Coconut Shell Charcoal in 10 Main Destination Countries for the 2010–2022 Period

The export maturity of Indonesian coconut shell charcoal products in the 10 main export destination countries has different conditions according to observations in Table 2 for export value, Table 3 for export volume, and Table 4 for Indonesian export share. In general, the export trend of Indonesian coconut shell charcoal in all export destination countries in terms of export value, export quantity and export share show a positive trend during the 2010–2020 period, but has a negative trend during the 2021–2022 period. Detailed comparisons and trends in export value, export quantity, and export markets for Indonesian coconut shell charcoal in the 10 main export destination countries can be seen further in Table 2, 3, and 4.

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (3): 906-920, November 2024

Based on the data in Table 2, there is a positive trend in the export value of Indonesian coconut shell charcoal in all export destination countries during the 2010–2022 period. This is supported by the average annual export value growth of Indonesian coconut shell charcoal in destination countries which shows a positive value with respective values of 27.29% in Saudi Arabia, 3.03% in South Korea, 2.98% in Japan, 750.60% in Iraq, 21% in China, 11.78% in Türkiye, 25.86% in Lebanon, 16.64% in Germany, 60.83% in the United Arab Emirates, and 62.22% in the Netherlands (ITC Trade Map 2024). The main reason for this positive trend is the growing demand for coconut shell charcoal as a fuel for cooking barbecue dishes, *shisha*, as well as an alternative fuel and raw material in various industries, including the activated charcoal manufacturing industry and the chemical industry in the manufacture of innovative product components such as water purification, keeping vegetables and fruits fresh, improving soil quality, regulating floor and wall moisture, and as an antidote to bad odors (ITPC 2022).

Table 2. Comparison of Indonesian Coconut Shell Charcoal Export Values in 10 Main Destination Countries for the 2010–2022 Period (In Thousand USD)

		10 Main Destination Countries of Indonesian Coconut Shell Charcoal										
	Year	Saudi Arabia	South Korea	Japan	Iraq	China	Türkiye	Lebanon	Germany	United Arab Emirates	Netherlands	Average Exports per Year
Export Value (in Thousand USD)	2010	2,824	20,159	11,013	0	4,385	1,973	696	1,023	172	320	4,257
	2011	2,779	25,070	15,142	11	10,931	2,262	808	1,729	319	1,568	6,062
	2012	5,409	24,903	16,053	941	16,160	3,751	1,434	2,209	1,593	1,122	7,358
	2013	6,205	28,113	16,415	4,280	9,672	5,555	2,626	2,886	2,795	1,502	8,005
	2014	12,927	29,965	20,206	6,424	12,097	8,190	3,208	4,393	5,720	1,256	10,439
	2015	22,867	28,685	20,710	9,286	11,817	8,247	4,142	6,330	10,592	1,182	12,386
	2016	28,063	27,823	15,967	10,781	6,437	10,130	5,937	9,719	8,096	4,353	12,731
	2017	41,042	27,744	15,899	21,293	9,230	10,932	8,997	14,108	6,316	4,244	15,981
	2018	42,963	27,352	16,982	21,298	23,982	10,087	11,903	12,821	4,970	8,648	18,101
	2019	46,565	24,604	17,210	20,182	17,458	10,388	10,680	7,320	6,790	10,473	17,167
	2020	49,705	20,439	15,226	29,553	14,484	9,111	8,799	5,895	6,045	11,504	17,076
	2021	47,875	19,797	14,504	35,095	7,448	9,870	10,735	5,855	10,210	15,211	17,660
	2022	23,622	26,194	13,900	10,397	7,998	4,207	6,557	2,891	5,326	6,207	10,730
13 years average		25,604	25,450	16,094	13,042	11,700	7,285	5,886	5,937	5,303	5,199	12,150
13 years minimum		2,779	19,797	11,013	0	4,385	1,973	696	1,023	172	320	4,257
13 years maximum		49,705	29,965	20,710	35,095	23,982	10,932	11,903	14,108	10,592	15,211	18,101

Source: ITC Trade Map (2024)

Based on export quantity, Table 3 shows that there is a positive trend in the export quantity of Indonesian coconut shell charcoal in most export destination countries with average annual export quantity growth of 24.13% in Saudi Arabia, 2.78% in South Korea, 295.69% in Iraq, 27.77% in China, 6.64% in Türkiye, 25.16% in Lebanon, 10.99% in Germany, 53.14% in the United Arab Emirates, and 50.57% in the Netherlands, respectively (ITC Trade Map 2024). Meanwhile, Indonesia's export quantity showed a negative trend in the Japanese market during the 2016-2022 period with an average annual growth of -1.39% per year. This condition is caused by the SNI standard of Indonesian coconut shell charcoal still does not match the standard in the ash content category set by Japan, where the SNI standard for ash content is <5%, while the ash content standard set by Japan is <3%. This has led

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (3): 906-920, November 2024

to a number of Indonesian coconut shell charcoal products being rejected in the Japanese market (ITPC 2022). Apart from that, export shipping is also an important problem. Shipping companies are rarely willing to transport charcoal briquettes because coconut shell charcoal is classified as a hazardous material due to its flammable nature, even though this charcoal briquette comes from environmentally friendly waste products where the industry that is part of the Indonesian Archipelago Charcoal Briquette Entrepreneurs Association (PABNIR) has obtained The Vanning Survey Report to meet export shipping requirements (Hadiwijaya et al., 2021). This has an impact on the delivery of charcoal briquette products for export to several countries also experiencing obstacles that cause the accumulation of briquette products in factory warehouses.

Table 3. Comparison of Indonesian Coconut Shell Charcoal Export Quantity in 10 Main Destination Countries for the 2010–2022 Period (In Ton)

		10 Main Destination Countries of Indonesian Coconut Shell Charcoal										
	Year	Saudi Arabia	South Korea	Japan	Iraq	China	Türkiye	Lebanon	Germany	United Arab Emirates	Nether lands	Average Exports per Year
Export Quantity (in Ton)	2010	5,679	38,758	28,818		23,140	4,256	911	2,667	469	582	11,698
	2011	5,656	46,365	30,938	18	39,115	4,977	865	4,400	693	2,948	13,598
	2012	7,918	42,106	29,228	423	46,074	6,952	1,460	1,860	3,086	2,541	14,165
	2013	8,942	44,901	30,431	5,148	28,427	9,845	2,777	3,484	5,479	3,192	14,263
	2014	17,939	51,859	36,241	7,873	35,363	14,433	4,456	4,737	14,274	2,814	18,999
	2015	34,934	51,995	40,779	11,248	109,719	15,874	5,360	5,727	21,896	2,113	29,965
	2016	46,634	51,023	29,220	13,135	18,552	19,255	7,371	10,509	17,187	5,277	21,816
	2017	66,886	53,382	27,860	22,625	32,045	19,492	10,785	12,946	15,452	5,898	26,737
	2018	70,377	51,461	28,194	23,258	74,503	16,892	13,678	10,908	9,101	10,450	30,882
	2019	84,644	46,290	27,830	22,628	56,482	18,170	12,326	7,832	12,441	10,388	29,903
	2020	84,509	39,197	24,867	31,391	42,340	14,577	11,033	5,892	11,163	10,545	27,551
	2021	70,200	38,097	23,732	36,036	22,444	10,979	13,568	5,565	13,763	13,680	24,806
	2022	39,592	49,367	22,326	15,432	27,871	5,764	7,321	2,674	10,470	7,657	18,847
13 years average		41,839	46,523	29,266	15,768	42,775	12,420	7,070	6,092	10,421	6,007	21,787
13 years minimum		5,656	38,097	22,326	18	18,552	4,256	865	1,860	469	582	11,698
13 yearsmaximum		84,644	53,382	40,779	36,036	109,719	19,492	13,678	12,946	21,896	13,680	30,882

Source: ITC Trade Map (2024)

In the meantime, Table 4's analysis of the growth of the export market share indicates that Indonesian coconut shell charcoal's export market share is trending upward in Saudi Arabia, Iraq, Lebanon, Germany, the United Arab Emirates, and the Netherlands. Nonetheless, there is a downward tendency of Indonesia's export market share for coconut shell charcoal in the markets of South Korea, Japan, China, and Türkiye. The decline of Indonesia's market share in coconut shell charcoal exports in the South Korean, Japanese, Chinese and Turkish markets is caused by various interrelated factors. Increased competition from other countries in supplying coconut shell charcoal in destination markets, especially if they offer products with better quality and more competitive prices, can erode Indonesia's market share. In addition, other factors that influence the decline in Indonesia's market share are innovation and new technology in coconut shell charcoal production, lack of understanding

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (3): 906-920, November 2024

of market preferences, and Indonesia's ineffective promotional and marketing efforts in offering coconut shell charcoal in the destination market (Putri & Hidayat, 2023).

Table 4. Comparison of Market Share Development for Indonesian Coconut Shell Charcoal in 10 Main Destination Countries for the 2010–2022 Period (In %)

	Year	10 Main Destination Countries of Indonesian Coconut Shell Charcoal										
		Saudi Arabia	South Korea	Japan	Iraq	China	Türkiye	Lebanon	Germany	United Arab Emirates	Netherlands	Average Exports per Year
Market Share (%)	2010	4.50	32.30	17.60	0.00	7.00	3.20	1.10	1.60	0.30	0.50	6.81
	2011	3.40	30.60	18.50	0.00	13.30	2.80	1.00	2.10	0.40	1.90	7.40
	2012	5.30	24.50	15.80	0.90	15.90	3.70	1.40	2.20	1.60	1.10	7.24
	2013	5.50	24.70	14.40	3.80	8.50	4.90	2.30	2.50	2.50	1.30	7.04
	2014	8.40	19.40	13.10	4.10	7.80	5.30	2.10	2.80	3.70	0.80	6.75
	2015	12.60	15.80	11.40	5.10	6.50	4.50	2.30	3.50	5.80	0.60	6.81
	2016	15.00	14.90	8.50	5.80	3.40	5.40	3.20	5.20	4.30	2.30	6.80
	2017	17.40	11.80	6.70	9.00	3.90	4.60	3.80	6.00	2.70	1.80	6.77
	2018	14.90	9.50	5.90	7.40	8.30	3.50	4.10	4.40	1.70	3.00	6.27
	2019	17.30	9.10	6.40	7.50	6.50	3.90	4.00	2.70	2.50	3.90	6.38
	2020	19.10	7.80	5.80	11.30	5.60	3.50	3.40	2.30	2.30	4.40	6.55
	2021	17.00	7.00	5.10	12.40	2.60	3.50	3.80	2.10	3.60	5.40	6.25
	2022	13.70	15.20	8.00	6.00	4.60	2.40	3.80	1.70	3.10	3.60	6.21
13 years average		11.85	17.12	10.55	5.64	7.22	3.94	2.79	3.01	2.65	2.35	6.71
13 years minimum		3.40	7.00	5.10	0.00	2.60	2.40	1.00	1.60	0.30	0.50	6.21
13 years maximum		19.10	32.30	18.50	12.40	15.90	5.40	4.10	6.00	5.80	5.40	7.40

Source: ITC Trade Map (2024)

Dynamics of Indonesian Coconut Shell Competitiveness in 10 Main Destination Countries for the 2010–2022 Period

In general, the analysis results in Table 5 show that the Dynamic RCA (DRCA) value of Indonesian coconut shell charcoal is experiencing a downward trend. In this way, it can be stated that Indonesian coconut shell charcoal has a weak competitiveness in various export destination countries. This condition cannot be separated from the phenomenon of decreasing quantity value and market share of Indonesian coconut shell charcoal in a few destination countries during the analysis year period (see Tables 2 and 4). Meanwhile, ITC Trade Map (2024) shows that the export value of Indonesia's export competitors such as China, the Philippines and Ukraine increased by 1.04%, 15.16% and 0.34% respectively. These condition causes in a shift in the market share of Indonesia's coconut shell charcoal exports in the main export destination countries compared to export competitor countries, which then had an impact on weakening the competitiveness of Indonesia's coconut shell charcoal exports in export destination countries.

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (3): 906-920, November 2024

Table 5. DRCA Analysis Results of Indonesian Coconut Shell Charcoal in 10 Main Destination Countries for the 2010–2022 Period

Countries	Period of Time		
	Period I (2010–2014)	Period II (2015–2018)	Period III (2019–2022)
Saudi Arabia	0.029	0.130	-0.672
South Korea	0.078	-0.033	0.002
Japan	0.161	-0.019	0.019
Iraq	0.000	0.190	-0.227
China	-0.020	-0.101	-0.887
Türkiye	-0.020	0.009	-0.633
Germany	0.314	0.210	-0.371
Lebanon	0.163	-0.005	-0.448
United Arab Emirates	0.426	-0.012	-0.326
Netherlands	0.083	0.214	-0.174

Source: ITC Trade Map (2024)

In the markets of Saudi Arabia, the competitiveness of Indonesian coconut shell charcoal exports showed a positive value and strong competitiveness in period I (2010-2014) and period II (2015-2018). However, this condition of competitiveness experienced a negative trend and continued to decline until it reached a negative value so that the competitiveness condition weakened in period III (2019-2022). The same thing also happened to Indonesia's export competitor countries in the Saudi Arabia market such as China and Paraguay which tended to experience a weakening competitiveness in period III (2019-2022). In contrast, Vietnam has experienced a strengthening of export competitiveness in period III (2019-2022). This indicates that there is a shift in market share from Indonesia, China, and Paraguay to Vietnam. This condition is caused by the quality of Indonesian coconut shell charcoal exports that are less competitive with Vietnamese companies, where Vietnam always offers high-quality charcoal products and focuses more on selling products to certain customer groups that prioritize product value and quality at competitive prices as a strategy to attract customers around the world (Pham, 2018; Putri & Hidayat, 2023).

In the markets of South Korea, the competitiveness of Indonesian coconut shell charcoal exports was strongly competitive in period I (2010-2014), decreased and had a weak competitiveness in period II (2015-2018), and increased again and was strongly competitive in period III (2019-2022). Meanwhile, Indonesia's export competitor countries in the South Korean market such as Vietnam, Philippines, and China experienced a weakening of export competitiveness in the South Korean market. This indicates that there is a shift in market share from Vietnam, Philippines, and China to Indonesia, as shown by an increase in Indonesia's market share in the South Korean market by 15.20% in 2022, as seen in Table 4. This condition shows that Indonesia has a great opportunity to strengthen the competitiveness of coconut shell charcoal exports in the South Korean market.

In the Japanese market, Indonesia's coconut shell charcoal export competitiveness was strongly competitive in period I (2010-2014), declined and was weakly competitive in period II

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (3): 906-920, November 2024

(2015-2018), and increased again and was strongly competitive in period III (2019-2022). Despite the increase, Indonesia's coconut shell charcoal export competitiveness is still less competitive than its export competitors such as Philippines, Malaysia, and China. This condition is caused by the SNI standard of Indonesian coconut shell charcoal still does not match the standard in the ash content category set by Japan, where the SNI standard of ash content is <5%, while the standard of ash content set by Japan is <3%. This has caused a number of Indonesian coconut shell charcoal products to be rejected in the Japanese market (ITPC 2022). This opens up export opportunities for Indonesia to strengthen the competitiveness of coconut shell charcoal both in terms of quality and quantity of exports in accordance with export standards imposed by Japan (Santoso et al., 2022).

In the market of Iraq, the practice of importing coconut shell charcoal has just started in 2015 so that in period I (2010-2014) the competitiveness of Indonesia's coconut shell charcoal exports did not exist. In period II (2015-2018), Table 5 shows that Indonesia's coconut shell charcoal export competitiveness showed a positive value and strong competitiveness. However, this competitiveness condition experienced a negative trend and continued to decline until the value was negative and weakly competitive in period III (2019-2022). The weakening of export competitiveness also occurred in Indonesia's export competitor countries such as Ukraine and Vietnam. Meanwhile, Türkiye experienced a strengthening of export competitiveness in the Iraqi market, despite only acting as a re-exporting country of coconut shell charcoal products from its trading partner countries. This suggests that Turkish coconut shell charcoal products have a good reputation in the Iraqi market or are known with a strong brand, which makes them more attractive to consumers in Iraq.

In the Turkish and Netherlands markets, Indonesia's coconut shell charcoal export competitiveness showed weak competitiveness in period I (2010-2014), increased and had strong competitiveness in period II (2015-2018), then decreased significantly and had weak competitiveness in period III (2019-2022). Indonesia's competitiveness is below Namibia, the United Arab Emirates, and the Philippines in the Turkish market. Meanwhile, Indonesia's competitiveness is also below Ukraine, Germany, and Namibia in the Dutch market. This indicates that Indonesia must improve its competitiveness in the future if it is to remain in the Turkish and Dutch markets.

Meanwhile, in the markets of China, Germany, Lebanon, and the United Arab Emirates, Indonesia's coconut shell charcoal export competitiveness showed a declining trend in periods I (2010-2014), II (2015-2018), and III (2019-2022), indicating a weak competitive position throughout the years of analysis. The decline in export competitiveness also continued to occur in export competitor countries such as the Philippines and Vietnam in the Chinese market, Poland and Ukraine in the German market, Türkiye and Paraguay in the Lebanese market, and China in the United Arab Emirates market. This indicates that China, Germany, Lebanon and the United Arab Emirates are not suitable countries for Indonesia to specialize its trade.

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (3): 906-920, November 2024

Market Position of Indonesian Coconut Shell Charcoal Exports in 10 Main Destination Countries for the 2010–2022 Period

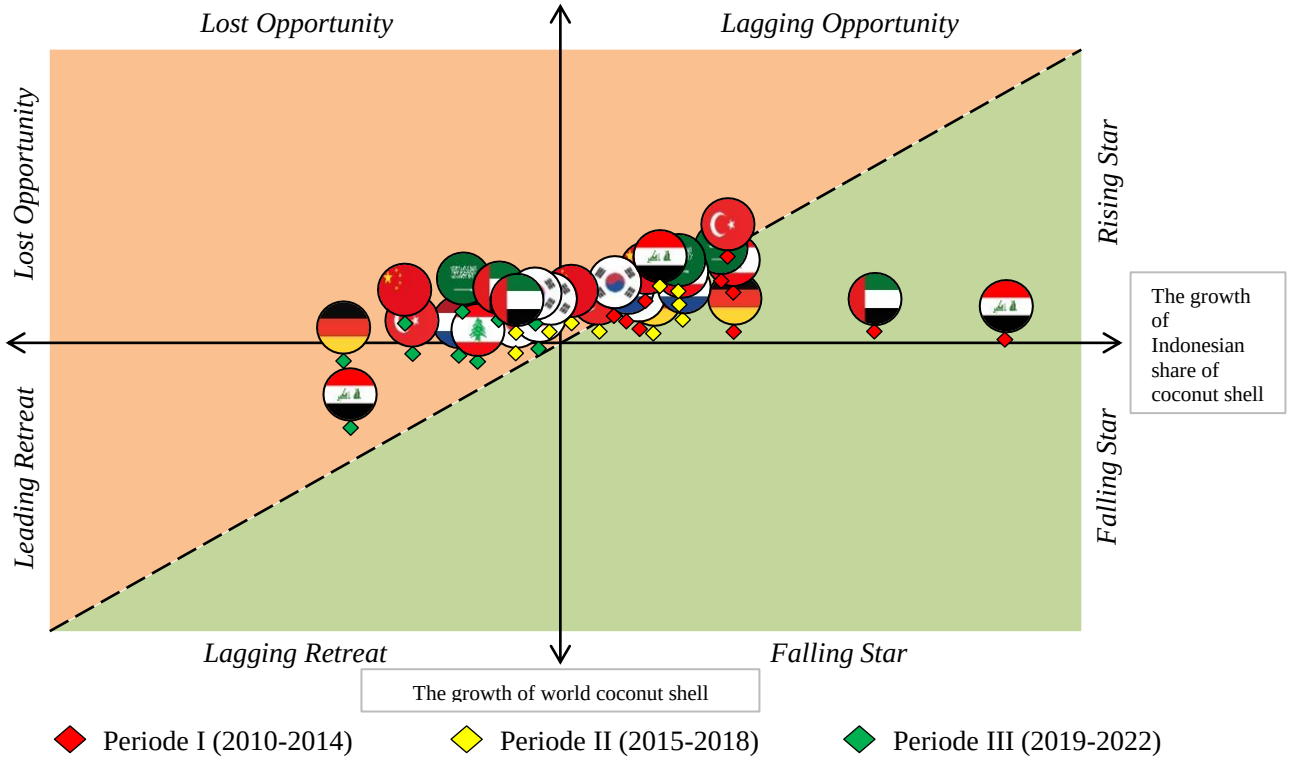

Figure 2. Market Position of Indonesian Coconut Shell Charcoal Export in 10 Main Destination Countries (2010–2022)
Source: ITC Trade Map (2024)

The analysis results in Figure 2 show that in period I (2010–2014), Indonesia's coconut shell charcoal export market position reached the best position, namely Rising Star in the nine main export destination countries, namely Saudi Arabia, South Korea, Japan, China, Türkiye, Germany, Lebanon, United Arab Emirates and Netherlands, while in the markets of Iraq, the practice of importing coconut shell charcoal has just started in 2015 so that in period I (2010-2014) the market position of Indonesian coconut shell charcoal exports is not yet available. Rising Star position indicates a success in export restructuring because the increase in the share of Indonesian coconut shell charcoal exports is greater than the increase in the share of world coconut shell charcoal exports. In this condition, Indonesia is able to take large profits by exporting more coconut shell charcoal at a time when world demand for coconut shell charcoal increases.

In period II (2015–2018), the competitive position of Indonesian coconut shell charcoal exports was still in the best position, namely Rising Star in the markets of Saudi Arabia, Iraq, Türkiye, Germany, Lebanon and Netherlands. This condition indicates that Indonesian coconut shell charcoal has a stable competitive position in the export destination country. Meanwhile, during this period Indonesian coconut shell charcoal also faced the most detrimental export market position, namely Lost Opportunities in the markets of South Korea and the United Arab Emirates. In a Lost Opportunity condition, Indonesia loses export opportunities because when world demand for coconut shell charcoal increases, Indonesia's exports of coconut shell charcoal actually decline. This condition is in line with the weakening of Indonesia's export competitiveness which has decreased from period

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (3): 906-920, November 2024

I (2010–2014) to period II (2015–2018) in the South Korean and United Arab Emirates markets as previously explained and can be seen again in Table 5.

On the other hand, in period II (2015–2018) Indonesia's coconut shell charcoal export market position also faces a Leading Retreat position in the Japanese market and a Lagging Opportunity in the Chinese market. The Leading Retreat condition in the Japanese market reflects the decline in Indonesia's share of coconut shell charcoal exports, which is smaller than the decline in the world share of coconut shell charcoal exports. However, this condition is included in the category of successful export restructuring. This is because when world demand for coconut shell charcoal decreases, Indonesia will also reduce exports of coconut shell charcoal to the world. Meanwhile, the Lagging Opportunity position in the Chinese market shows that the growth in the share of Indonesian coconut shell charcoal is smaller than the growth in the share of coconut shell charcoal in the world. This condition indicates the failure of export restructuring in export destination countries because when global demand for coconut shell charcoal increases, Indonesian coconut shell charcoal exports actually decrease.

In Period III (2019-2022), Indonesia's coconut shell charcoal competitiveness position in Saudi Arabia, China, and the United Arab Emirates markets shows the most disadvantageous position, namely Lost Opportunity where Indonesia will lose export opportunities in these three destination countries. On the other hand, Indonesia's coconut shell charcoal export competitiveness position shows the success of export restructuring in the stagnant export market position (Leading Retreat) in the markets of South Korea, Japan, Iraq, Türkiye, Germany, Lebanon, and the Netherlands. The Leading Retreat condition shows the success category of export restructuring. This is because when the world's demand for coconut shell charcoal decreases, Indonesia will also reduce its exports of coconut shell charcoal to the world.

Based on the dynamic perspective, the success of export restructuring is reflected in the transition of exports from a stagnant market (Leading Retreat) to a dynamic market (Rising Star). However, the analysis shows that Indonesia did not experience a good export transition. Even in period III (2019-2022), most of Indonesia's export market positions in destination markets are still in a stagnant export market position (Leading Retreat). However, Indonesia's Leading Retreat position shows that Indonesia is an adaptive country in order to fulfill the demand for coconut shell charcoal in destination markets. Therefore, this position is a potential position for the development and improvement of Indonesia's coconut shell charcoal market position, especially in the markets of South Korea, Japan, Iraq, Türkiye, Germany, Lebanon, and Netherlands in the future.

CONCLUSION AND SUGGESTION

This research concludes that Indonesia's coconut shell charcoal export competitiveness, based on DRCA analysis, has fluctuated, with the best performance in South Korea and Japan. In Period I (2010–2014), Indonesia held a Rising Star position in the 10 main export destination countries, but experienced a decline in Periods II (2015–2018) and III (2019–2022), reaching a "Leading Retreat" status in markets like South Korea, Japan, Iraq, Turkey, Germany, Lebanon, and the Netherlands. The findings indicate that Indonesian coconut shell charcoal products are stated to have weak export competitiveness in the main export destination countries. Therefore, export-oriented competitiveness development strategies are needed to strengthen the competitiveness of Indonesian coconut shell charcoal in export destination countries, such as: (1) improving the product quality of coconut shell

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (3): 906-920, November 2024

charcoal (including moisture content, ash content, carbon content, density, and optimal combustion capability) product assurance certification in order to meet or even exceed the standards demanded by destination markets, especially in the South Korean and Japanese markets, (2) increasing effective promotion and marketing efforts of Indonesian coconut shell charcoal through participation in trade shows, and (3) improving market access by establishing partnerships with local agents or distributors in destination markets to improve access to the market, as well as ensuring product availability in strategic places and at the right time. Future research could consider to explore competitive advantages and trade flow determinants, or focus on strategies and barriers specific on Indonesias export to South Korea and Japan.

REFERENCES

[DPR RI] Dewan Perwakilan Rakyat Republik Indonesia. 2022. Potensi dan Permasalahan Produk Olahan Arang Kelapa Bernilai Tambah. Pusat Kajian Anggaran Badan Keahlian Sekretariat Jenderal DPR RI.

[ITC Trade Map] International Trade Center Trade Map. 2024. List of Exporters and Importers For The Selected Product In 2010-2022 [Internet]. https://doi.org/https://trademap.org/

[ITPC] Indonesian Trade Promotion Center Osaka. 2022. Laporan Analisis Intelejen Bisnis Arang Kayu (Wood Charcoal) HS 4402. https://doi.org/https://itpc.or.jp/wp-content/uploads/2023/01/3.-Charcoal-MB-2022.pdf

[Kementan] Kementerian Pertanian. 2022. Outlook Komoditas Perkebunan Kelapa. Pusat Data Dan Sistem Informasi Pertanian Sekretariat Jenderal - Kementerian Pertanian.

Amanda, S., & Rosiana, N. 2023. Analisis daya saing kopi indonesia dalam menghadapi perdagangan kopi dunia. Jurnal Forum Agribisnis, 13(1), 1–11. https://doi.org/10.29244/fagb.13.1.1-11

Anasthasia, P., Syaiful, A. Z., & Tang, M. 2020. Pembuatan briket arang dari tempurung kelapa dengan metode pirolisis. Jurnal SAINTIS, 1(2), 43–48. https://ejournalfakultasteknikunibos.id/index.php/saintis/article/view/130

Baumert, K. A., Herzog, T., & Pershing, J. 2005. Navigating the Numbers: Greenhouse Gas Data and International Climate Policy. World Resources Institute.

Bilgili, M., Ekinci, F., Ozbek, A., & Demirdelen, T. 2022. Short term renewable energy strategic vision in the world. International Journal on Technical and Physical Problems of Engineering (IJTPE), 14(2), 111–123.

Edwards, L., & Schoer, V. 2002. Measures of competitiveness: A dynamic approach to South Africa's trade performance in the 1990s. South African Journal of Economics, 70(6), 1008–1046. https://doi.org/10.1111/J.1813-6982.2002.TB00055.X

Ekmen-Özçelik, S., & Güzin, E. 2013. Turkey's comparative advantages and dynamic market positioning in the EU Market. Emerging Markets Finance & Trade, 50(5), 18–41. 10.2753/REE1540-496X500502

Hadiwijaya, S., Norman, F., & Gunawan, F. E. 2021. Analyzing the impact of the covid-19 pandemic on the indonesian briquette industry performance. International Journal on Advanve Science Engineering Informaton Technology, 11(5), 2082–2088. https://doi.org/10.18517/ijaseit.11.5.13874

Haryati, T., & Amir, I. 2021. Identifikasi karakteristik briket arang kelapa yang diminati pasar Arab Saudi dan prosedur ekspornya. Jurnal Ilmiah Ekonomi Dan Bisnis Universitas Multi Data Palembang, 11(1), 39–57. https://doi.org/10.35957/forbiswira.v11i1.1401

Holechek, J. L., Geli, H. M. E., Sawalhah, M. N., & Valdez, R. 2022. A global assessment: Can renewable energy replace fossil fuels by 2050? Sustainability (Switzerland), 14(8), 1–22. https://doi.org/10.3390/su14084792

Lestari, F. P. K., Ferhat, A., & Bimantio, M. P. 2023. Competitiveness analysis of Indonesian

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (3): 906-920, November 2024

essential oil as an export. Agrisocionomics Journal, 7(March), 144–154.

Manalu, D. S. T., Harianto, Suharno, & Hartoyo, S. 2022. Analisis daya saing serta faktor-faktor yang memengaruhi pangsa pasar negara eksportir utama kopi di negara importir utama kopi. Buletin Ilmiah Litbang Perdagangan, 16(1), 1–24. https://doi.org/10.30908/bilp.v16i1.445

Maslova, V., Zaruk, N., Fuchs, C., & Avdeev, M. 2019. Competitiveness of agricultural products in the eurasian economic union. Agriculture (Switzerland), 9(3), 1–14. https://doi.org/10.3390/agriculture9030061

Pham, A. 2018. Market entry strategy for vietnamese coconut shell charcoal to Germany: Case study Kovitra Ltd. Skripsi. Vietnam: Seinäjoki University of Applied Sciences (SeAMK).

Puspaningrum, T., Yani, M., Indrasti, N. S., & Indrawanto, C. 2022. Dampak gas rumah kaca arang tempurung kelapa dengan metode Life Cycle Assessment (Batasan Sistem Gate-To-Gate). Jurnal Teknologi Industri Pertanian, 32(1), 96–106. https://doi.org/10.24961/j.tek.ind.pert.2022.32.1.96

Putri, L. A., & Hidayat, N. K. 2023. Analisis komparasi daya saing ekspor arang tempurung kelapa ASEAN di pasar Jepang. Indonesian Journal of Agriculture Resource and Environmental Economics, 2(1), 25–36. https://doi.org/10.29244/ijaree.v2i1.50008

Rambe, K. R., & Malau, L. R. E. 2023. Tingkat daya saing dan faktor-faktor yang mempengaruhi aliran perdagangan kayu manis Indonesia. Agromix, 14(1), 28–38. https://doi.org/10.35891/agx.v14i1.3107

Rizal, W. A., Suryani, R., Maryana, R., & Prasetyo, D. J. 2022. Coconut shell waste treatment Technology for A sustainable waste utilization : A Ccase study of the SMEs in Bohol Village, Indonesia. ASEAN Journal of Community Engagement, 6(2), 278–293. https://doi.org/10.7454/ajce.v6i2.1182

Rosiana, N., Nurmalina, R., Winandi, R., & Rifin, A. 2018. Dinamika persaingan kopi robusta Indonesia dengan negara-negara pesaing utama. Jurnal Tanaman Industri Dan Penyegar, 5(1), 1–10. https://doi.org/10.21082/jtidp.v5n1.2018.p1-10

Sadorsky, P. 2021. The effect of urbanization and industrialization on energy use in emerging economies : Implications for sustainable development. American Journal of Economics and Sociology, 73(2), 392–409. https://doi.org/10.1111/ajes.12072

Santoso, S. I., Pos Pos, L. S., & Nurfadillah, S. 2022. Competitiveness analysis of Indonesian cinnamon exports. Agrisocionomics Journal, 6(November), 402–418.

Suprehatin, & Naufal, H. Al. 2021. Daya saing produk kelapa indonesia dan eksportir kelapa utama lainnya di pasar global. Jurnal Penelitian Pertanian Terapan, 21(1), 24–31. https://doi.org/10.25181/jppt.v21i1.2073

Tabatabaei, N. M. 2019. Review of new energy sources and their applications. International Journal on Technical and Physical Problems of Engineering (IJTPE), 11(4), 66–70.

Tarigan, A. C. A., Suharno, & Harmini. 2024. Export performance of Indonesian black pepper in the United States market. Agrisocionomics Journal, 8(March), 216–230.

Wang, K., Zhou, Y. J., Liu, H., Cheng, K., Mao, J., Wang, F., Liu, W., Ye, M., Zhao, Z. K., & Zou, H. 2015. Proteomic analysis of protein methylation in the yeast Saccharomyces cerevisiae. Journal of Proteomics, 114, 226–233. https://doi.org/10.1016/j.jprot.2014.07.032

Wulandari, R. S. 2021. Analisis daya saing dan faktor-faktor yang memengaruhi ekspor arang tempurung kelapa Indonesia ke negara tujuan utama [Skripsi. Bogor (ID): Institut Pertanian Bogor]. http://repository.ipb.ac.id/handle/123456789/107070

Yuliah, Dzikri, M. A., Masri, Darmawan, E., & Yuliana, A. 2022. Pemanfaatan tempurung kelapa menjadi briket arang sebagai bahan bakar alternatif. Indonesian Journal of Engagement, Community Services, Empowerment and Development, 2(2), 244–250. https://doi.org/10.53067/ijecsed.v2i2