SITEKIN: Jurnal Sains, Teknologi dan Industri, Vol. 21, No. 2, June 2024xx, pp.344 - 356
ISSN 2407-0939 print/ISSN 2721-2041 online

Designing A Conceptual Model for Cooking Oil Scarcity in Indonesia

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ABSTRACT

Indonesia, a significant global palm oil market, has continuously increased Crude Palm Oil (CPO) production, becoming an essential export commodity. However, recent concerns, particularly in the cooking oil sector, have started scarcity issues in October 2021. Despite government efforts, including higher export taxes and eased biodiesel policies, the shortage persisted until now, resulting in a significant price. This research aims to develop a conceptual model illustrating the relationships among variables when designing a model for cooking oil scarcity. The conceptual model is the initial step in creating a dynamic model of cooking oil scarcity. Model conceptualization enhances the visualization of relationships between variables and involves using Causal Loop Diagrams (CLD). In creating the model of cooking oil scarcity, there are three subsystems: the CPO Industry subsystem, which models from the palm oil plantation to CPO production; the cooking oil industry subsystem, which models from the population to cooking oil stock in the market; and the biodiesel industry and other industries subsystem, which models from CPO demand to its effect on the CPO stock in the market. Each subsystem will produce different outputs and interact with other subsystems. A causal loop can serve as a foundation for formulating policy scenarios. Policies can be derived based on the variables present within the system.

Keywords: *causal loop diagram, system dynamic, cooking oil, conceptual model*

Introduction

Crude palm oil (CPO) is a vital vegetable oil extracted from the mesocarp of the palm fruit of the Elais guineensis plant, characterized by its reddish-persone color attributed to β-carotene pigments [1]. This vegetable oil, primarily composed of glycerides, plays a crucial role in various industries, including biodiesel, soap, cooking oil, and margarine [2]. CPO is an essential commodity in international trade, offering a sustainable alternative to depleting non-renewable resources [3].

Indonesia, the largest global CPO producer, has actively participated in the international market alongside countries like Malaysia, Thailand, and Colombia [4]. The demand for palm oil products, driven by global population growth, has prompted the Indonesian government to incentivize oil palm plantation development [3]. This development, facilitated by government policies offering licensing convenience and investment subsidy assistance, has increased palm oil production, particularly in provinces like Riau and Central Kalimantan [5].

Indonesia significantly contributes to the global palm oil market, and the production of CPO has steadily risen over the years, making it the country's leading export commodity [6]. However, recent issues surrounding palm oil-derived products, especially cooking oil, have emerged. Reports of scarcity starting in October 2021 led to a substantial price increase, reaching IDR 18,550/Kilogram by January 2022 [7]. Despite government interventions, such as raising export taxes and relaxing biodiesel policies, the scarcity persisted until March 2022 [8].

The scarcity of cooking oil is attributed to factors such as the increase in CPO prices, palm oil expeditions, chaotic distribution systems, global vegetable oil price hikes, and the implementation of policies [9-10]. This scarcity poses significant challenges, leading to individual losses, panic buying, and hindrances for small and medium-sized enterprises (UMKM). Understanding the dynamics of processed CPO products, particularly cooking oil, becomes crucial to address this complex issue.

The study adopts a system dynamics approach to analyze the complexities within the CPO supply chain system. System dynamics, as a methodology, helps describe processes and behaviors within a system, allowing the creation of models to simulate the dynamics of cooking oil scarcity. The aim is to forecast future supply conditions, providing valuable policy recommendations for the government to ensure domestic needs are met adequately [11-12]. This research was conducted to develop a conceptual model illustrating the relationships

among variables in designing a model for cooking oil scarcity. The conceptual model is the initial step in creating a dynamic model of cooking oil scarcity. The conceptual model in this research is designed using a Causal Loop Diagram (CLD). The CLD model is a tool within the System Thinking methodology used to comprehend a holistic, interconnected scenario. This model often called a cause-and-effect diagram, serves as a problem-solving or preventive tool that scrutinizes all components that influence one another. Employing curved lines with arrows connecting factors, the CLD model delves into the system's complexity, facilitating problem resolution by mapping interdependencies.

Research Methods

The research methodology outlines the systematic approach employed during the research process. The following stages are integral components of the research methodology:

1. Supply Chain Analysis
   The analysis of the cooking oil supply chain is conducted to examine the entire system, allowing it to be divided into subsystems
2. Identification Variable
   Identification of variables is carried out for each subsystem.
   This system has three types of variables: level, auxiliary, and constant.
   - Level: This is the main element representing the system's state at a specific time, essentially the stock or accumulation of all variables over time.
   - Auxiliary: Describes relationships between level variables, helping illustrate changes, connect multiple variables, or provide extra system information.
   - Constant: This has a fixed value in the system, representing parameters or characteristics not influenced by time or other variables.
3. Causal Loop Diagrams (CLD)
   Causal loop diagram (CLD). This diagram illustrates cause-and-effect relationships and feedback loops within a system. It is based on real-life behavior and behavioral patterns among variables. At this stage, the creation of a Causal Loop Diagram (CLD) is done using the Vensim PLE x32 simulation software.

Causal loop diagrams (CLDs) are crucial in building dynamic system models as they visually represent feedback loops, helping to identify and understand interactions between variables. This visualization is key for predicting system behavior and mapping positive and negative feedback loops [13]. CLDs are effective communication tools, simplifying complex systems for stakeholder discussions and shared understanding [14]. CLDs help identify root causes of problems, enabling targeted interventions. In policy design, CLDs allow testing different scenarios and understanding policy impacts. By promoting a holistic view, CLDs ensure system changes are considered in context, avoiding unintended consequences. They also support learning and adaptation by exploring system responses to changes, aiding in the development of resilient systems. Overall, CLDs enhance understanding, communication, and management of complex systems [15].

Previous research utilizing causal loop diagrams to determine relationships among variables in dynamic systems has been extensively conducted. Waterlander [16] used causal loop diagrams for understanding obesity-related behaviors in youth, which are inherently dynamic. Setianto [17] used a dynamic systems approach to identify archetypes for enhancing strategies to improve smallholder beef farming in Java, starting with the creation of causal loop diagrams.

Results and Discussion

The cooking oil supply chain system in this research is divided into three sub-models: CPO Industry, Biodiesel and Other Industries.

1. CPO Industry
   Palm oil comes from three types of plantations: Private (PS), Smallholder (PR), and State (PN). These differ in land area, productivity, and rejuvenation rates. Land is categorized as Non-Productive (TBM), Productive (TM), and Non-Producing (TTM), impacting production. TM land produces palm fruits sent to the factory for Crude Palm Oil (CPO) extraction.
2. Cooking Oil Industry:
   This subsystem is dynamic, relying on Crude Palm Oil (CPO) as its raw material. The industry's demand for CPO is directly proportional to population growth. Insufficient CPO can lead to cooking oil scarcity, affecting production. Cooking oil stock is influenced by production rates and consumption.

3. Biodiesel and Other Industries:
   Industries like biodiesel, soap, detergent, and cosmetics use CPO as raw material. CPO demand for these industries is influenced by factors like diesel consumption levels and government blending mandates. Fulfilling CPO demand is crucial for the biodiesel and related industries, impacting their overall production.

Identifying Variables in Cooking Oil Scarcity Model

Solving cooking oil scarcity in Indonesia, use system dynamic modeling. This method is influenced by factors impacting the production and demand of Crude Palm Oil (CPO). The first step involves identifying relevant variables for the system and understanding their interactions. Variables for each subsystem can be seen in Table 1.

Table 1. Variable for Cooking Oil Scarcity Model

Variables for CPO Industry		Variables for Cooking Oil Industry		Variables for Biodiesel and Other Industries	
Level	TBM Area (Ha)	**Level**	Population (Person)	**Level**	CPO stock in the market (Ton)
	TM Area (Ha)		Cooking Oil Stock in the Market (Ton)	**Auxiliary**	CPO Exports (Ton/Year)
	TTM Area (Ha)		CPO Stock for Cooking Oil (Ton)		CPO Sales for Biodiesel (Ton/Year)
	Available Forest Conversion Area (Ha)	**Auxiliary**	Births (Person/Year)		CPO Sales for Other Industries (Ton/Year)
Auxiliary	CPO Production (Ton/Year)		Death (Person/Year)		Total CPO Sales (Ton/Year)
	Failed Replanting (Ton/Year)		Domestic Cooking Oil Demand (Ton/Year)		Total CPO Demand (Ton/Year)
	Replanting (Ha/Year)		Cooking Oil Consumption (Ton/Year)		CPO Demand for Biodiesel (Ton/Year)
	Newly planted crops (Ha/Year)		Cooking oil export (Ton/Year)		CPO Demand for Other Industries (Ton/Year)
	Maturation Phase (Ha/Year)		CPO Sales for Cooking Oil (Ton/Year)		Global CPO Demand (Ton/Year)
	Aging (Ha/Year)		Cooking Oil Production (Ton/Year)		Percentage Global CPO Demand Fulfillment (%)
	Productivity of PS (Ton/Ha/Year)		Difference between Cooking Oil Demand and Stock (Ton)		Percentage CPO Demand for Other Industries (%)
	Productivity of PN (Ton/Ha/Year)		Cooking oil imports (Ton/Year)		Domestic Biodiesel Demand (Ton/Year)
	Productivity of PR (Ton/Ha/Year)	**Constant**	Birth Rate (%)		Global Biodiesel Demand (Ton/Year)
	Desired Land Area (Ha)		Death Rate (%)		Percentage Domestic Biodiesel

				Demand Fulfillment (%)
	Moratorium Graph (%)	Per Capita Cooking Oil Consumption (Ton/Person)		Percentage Global Biodiesel Demand Fulfillment (%)
	Deforestation (Ha/Year)	Cooking Oil Production Capacity (Ton)		Total Biodiesel Demand (Ton/Year)
	Replanting Policy (Ha/Year)	Cooking Oil Production Yield (Ton/Ton)		Biodiesel Production (Ton/Year)
Constant	%PS (%)		**Constant**	Biodiesel Production Capacity (Ton)
	%PN (%)			Biodiesel Production Yield (Ton/Ton)
	%PR (%)			
	Pests (%)			
	CPO Production Capacity (Ton)			

The next step is describing the variable to explain and depict the characteristics or attributes of a variable. Appendic 1 will provide an overview of the descriptions of the variables.

Causal Loop Diagram

After identifying variables, the next step is to create causal loop diagram CLD. Causal loops are crucial in creating dynamic system models as they help in understanding and illustrating cause-and-effect relationships within complex systems. They enable the identification of feedback loops, which are essential for analyzing system stability and behavior. By providing a visual representation, causal loop diagrams (CLDs) facilitate the communication and documentation of system dynamics, making it easier for diverse stakeholders to grasp the system's structure. CLDs also support decision-making by highlighting leverage points where small changes can lead to significant impacts, aiding in the design of effective interventions. Additionally, they allow for the validation and testing of models and the analysis of potential policies, ensuring a comprehensive understanding of system interactions and avoiding unintended consequences. In solving cooking oil scarcity in Indonesia, there are three subsystems: the CPO Industry, the cooking oil industry, and other industries using CPO. Each subsystem has distinct feedback relationships, requiring separate explanations in the causal loop diagram.

- CPO Industry

The following Figure 2 shows the CLD for the CPO Industry subsystem.

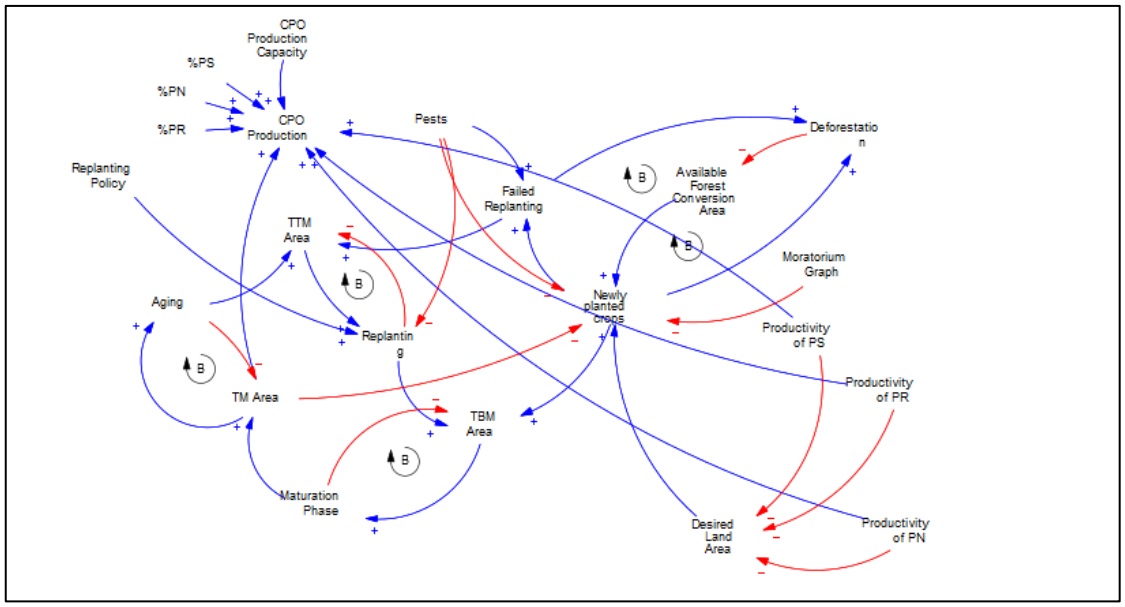

Figure 2. CLD of the CPO Industry Subsystem

The CPO Industry has three types of land: PR, PS, and PN, each going through three phases. New palm trees start in the TBM phase, producing no fruits. TBM planting expands when current production can't meet CPO demand, utilizing available forest areas. Expansion depends on forest conversion policies. If allowed, new palm trees are planted; if not, expansion halts. TBM matures in four years, entering the productive TM phase lasting 25 years. TM produces palm fruits for CPO, distributed or exported. After TM, trees enter the non-productive TTM phase. They are replanted in the TTM area, eliminating the need for expansion. The CPO Industry CLD includes five balancing feedback loops.

1. **TM Area** → (+) Aging → (-) **TM Area** (balancing loop)
2. **TTM Area** → (+) Replanting → (-) **TTM Area** (balancing loop)
3. **TBM Area** → (+) Maturation Phase → (-) **TBM Area** (balancing loop)
4. **Available Forest Conversion Area** → (+) Newly planted crops → (+) Deforestation → (-) **Available Forest Conversion Area** (balancing loop)
5. **Available Forest Conversion Area** → (+) Newly planted crops → (+) Failed Replanting → (+) Deforestation → (-) **Available Forest Conversion Area** (balancing loop)

- Cooking Oil Industry

The following Figure 3 shows the CLD for the cooking oil industry subsystem.

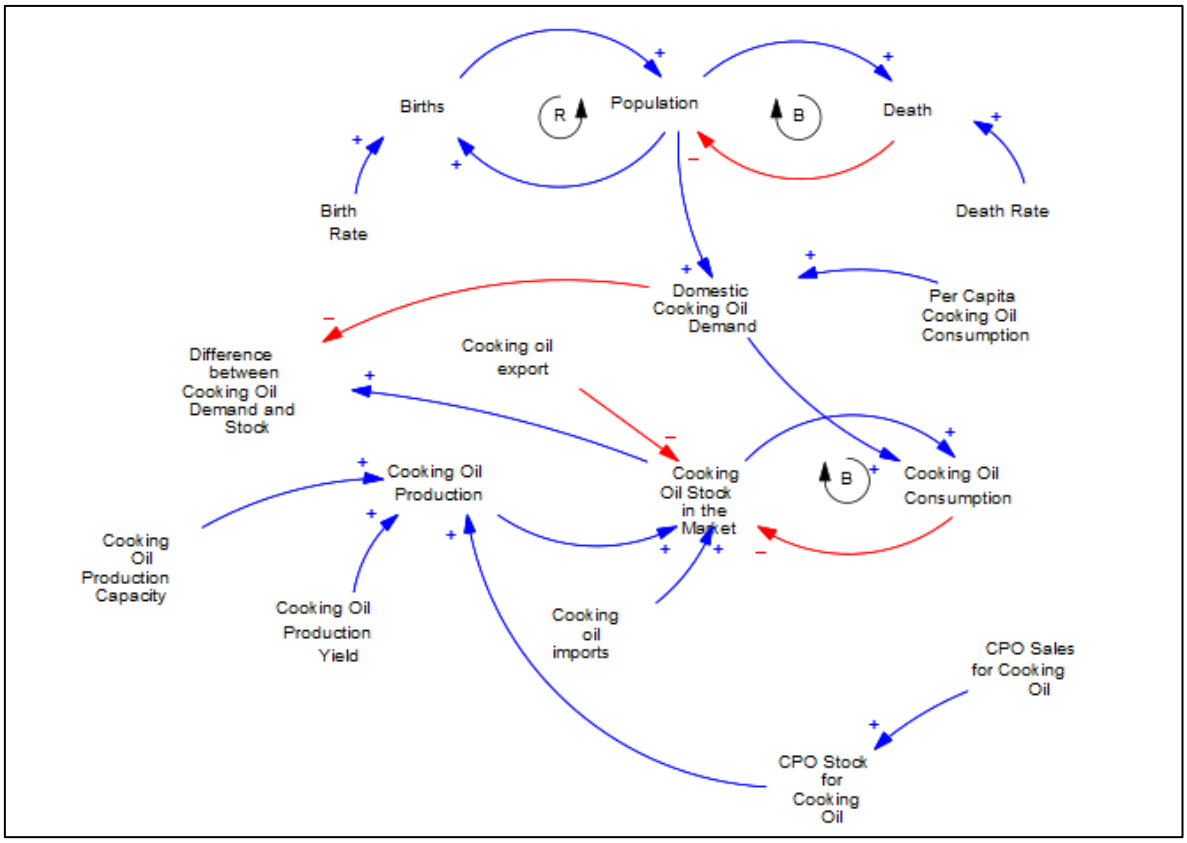

Figure 3. CLD of the Cooking Oil Industry Subsystem

Cooking oil demand is tied to a country's population, influenced by birth and death rates. These rates, measured per thousand population per year, affect population size. Cooking oil demand is calculated by multiplying population and per capita consumption. Cooking oil stock depends on production and consumption, driven by Crude Palm Oil (CPO) stock and oil palm yield. Increased production raises CPO consumption and sales, reducing CPO stock. The cooking oil industry CLD involves two balancing and one reinforcing feedback loop.

1. **Population** → (+) Births → (+) **Population** (reinforcing loop)
2. **Population** → (+) Death → (-) **Population** (balancing loop)
3. **Cooking Oil Stock in the Market** → (+) Cooking Oil Consumption → (-) **Cooking Oil Stock in the Market** (balancing loop)

- Biodiesel and Other Industries

The following Figure 4. shows the CLD for the biodiesel industry and other industries subsystem.

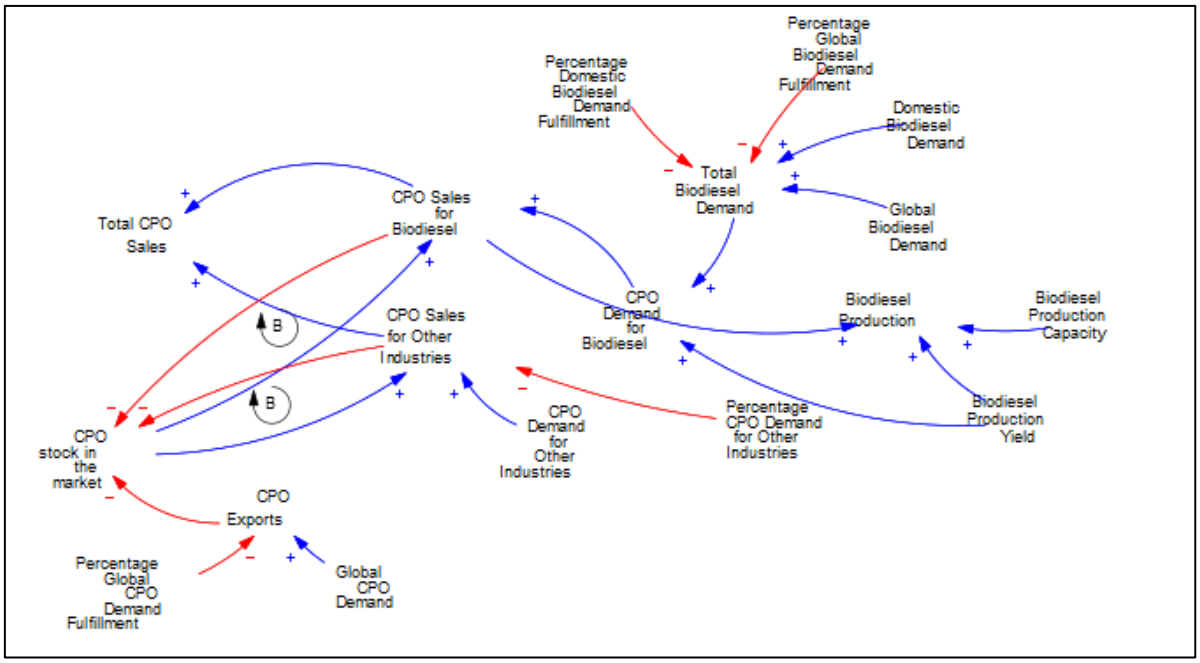

Figure 4. CLD of the Biodiesel Industry and Other Industries Subsystem

Total CPO sales come from cooking oil, biodiesel, and other industries. Sales are driven by demand for CPO in these sectors. CPO stock is influenced by production, exports, global CPO demand and sales, with sales and exports reducing stock. Sufficiency is positive if stock exceeds total sales and negative if stock is less than total sales. The biodiesel industry CLD features two balancing feedback loops.

1. **CPO stock in the market** → (+) CPO Sales for Other Industries → (-) **CPO stock in the market** (balancing loop)
2. **CPO stock in the market** → (+) CPO Sales for Biodiesel → (-) **CPO stock in the market** (balancing loop)

The CLD of each subsystem, consisting of the CPO Industry Subsystem, the Cooking Oil Industry Subsystem, the Biodiesel Industry and Other Industries Subsystem, is then combined into an overall CLD. This CLD will serve as a conceptual model that explains the feedback structure present in the entire system in this research.

Structure Verification Test

To support this test, several feedback loops from the Causal Loop Diagram have been established. The explanation of the feedback loop for each subsystem is as follows:

1. **TM Area** → (+) Aging → (-) **TM Area** (balancing loop)
   = The increase in TM Area undergoing the aging process and turning into TTM Area will reduce the TM area.
2. **TTM Area** → (+) Replanting → (-) **TTM Area** (balancing loop)
   = The increase in TTM Area undergoing replanting and becoming TBM Area will reduce the TTM area.
3. **TBM Area** → (+) Maturation Phase → (-) **TBM Area** (balancing loop)
   = The increase in TBM Area undergoing the maturation process and becoming TM Area will reduce the TBM area.
4. **Available Forest Conversion Area** → (+) Newly planted crops → (+) Deforestation → (-) **Available Forest Conversion Area** (balancing loop)
   = The increase in new land for palm oil will lead to more deforestation and reduce the available forest conversion area.
5. **Available Forest Conversion Area** → (+) Newly planted crops → (+) Failed Replanting → (+) Deforestation → (-) **Available Forest Conversion Area** (balancing loop)

= The increase in new area for palm oil will intensify the occurrence of replanting failures. The more frequent these replanting failures occur, the more it leads to deforestation and reduces the available forest conversion area.

6. **Population** → (+) Births → (+) **Population** (reinforcing loop)
   = An increase in births will increase the population.
7. **Population** → (+) Death → (-) **Population** (balancing loop)
   = An increase in deaths will reduce the population.
8. **Cooking Oil Stock in the Market** → (+) Cooking Oil Consumption → (-) **Cooking Oil Stock in the Market** (balancing loop)
   An increase in cooking oil consumption will reduce the stock of cooking oil in the market.
9. **CPO stock in the market** → (+) CPO Sales for Other Industries → (-) **CPO stock in the market** (balancing loop)
   The increase in CPO sales for other industries will reduce the stock of CPO in the market.
10. **CPO stock in the market** → (+) CPO Sales for Biodiesel → (-) **CPO stock in the market** (balancing loop)
    = The increase in CPO sales for biodiesel will reduce the stock of CPO in the market

This study utilizes a causal loop diagram (CLD) to identify palm oil (CPO) production and distribution systems and their effect on the cooking oil industry within Indonesia. By designing the cause-and-effect relationships between the CPO industry subsystem, the cooking oil industry, and other sectors utilizing CPO, this approach allows for a comprehensive examination of the complex interplay among variables involved. While this methodology offers a different understanding of the dynamics, it is worth noting that alternative studies may adopt divergent analytical frameworks such as system dynamics analysis or other methodologies to describe the connections between variables in the palm oil and cooking oil domains.

In addition, this research focuses on addressing the issue of cooking oil scarcity within the Indonesian context. By Identifying the interactions between CPO production, the cooking oil industry, and various factors influencing cooking oil availability, this study offers targeted insights into potential solutions for mitigating scarcity. While this concentrated approach provides valuable depth, it is essential to recognize that broader studies may encompass additional facets of the CPO and cooking oil industries, including environmental impacts, governmental policies, and global market dynamics [18]. Thus, while this study contributes significantly to understanding the intricacies of the Indonesian palm oil and cooking oil sectors, it is essential to acknowledge the diversity of approaches and methodologies in analyzing multifaceted issues like cooking oil scarcity.

A causal loop can serve as a foundation for formulating policy scenarios. Policies can be derived based on the variables present within the system. For example, [19] a study conducted by Sarriot on the sustainability of integrated community case management in Rwanda used a causal loop diagram. The policy scenarios generated from the CLD included: (1) reduction in performance-based financing resources, (2) political shocks and erosion of political commitment for community health, and (3) insufficient progress in resolving district health systems' "building blocks" performance gaps. In this study, the policy scenarios related to waste management derived from the designed CLD include restrictions on export quantities, no land expansion, land expansion, and control of cooking oil consumption. These scenarios can be validated with a dynamic system model.

Conclusion

This study illustrates a cooking oil scarcity model influenced by interconnected variables. There are several variables influencing the occurrence of cooking oil scarcity. The value of each element will influence the value of other variables. Scarcity will occur if the stock available in the market is smaller than the demand. The variables influencing scarcity are CPO production, CPO stock in the market, CPO export, CPO demand for biodiesel, domestic cooking oil demand, CPO stock for cooking oil, cooking oil production, and cooking oil stock in the market. In creating the

model of cooking oil scarcity, there are three subsystems: the CPO Industry subsystem, which models from the palm oil plantation to CPO production; the cooking oil industry subsystem, which models from the population to cooking oil stock in the market; and the biodiesel industry and other industries subsystem, which models from CPO demand to its effect on the CPO stock in the market. Each subsystem will produce different outputs and interact with other subsystems.

A causal loop can serve as a foundation for formulating policy scenarios. Policies can be derived based on the variables present within the system. In this study, the policy scenarios related to waste management derived from the designed CLD include restrictions on export quantities, no land expansion, land expansion, and control of cooking oil consumption. These scenarios can be validated with a dynamic system model. In the following research, a model of cooking oil scarcity will be developed using a dynamic system using direct data in the field and from BPS (Central Statistics Agency) and related agencies. Models created with the system dynamic allow for testing several proposed strategies, known as a scenario. The best scenario can be selected through optimal results. Next, validation can be carried out to test whether the model obtained represents a natural system; if not, changes are made to improve the model.

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Appendices 1. Variable Description

TBM Area:	The newly planted oil palm tree, this plant has not yet started producing palm fruits and is not productive.
TM Area:	The oil palm tree that has produce fruit, this plant already productive.
TM Area:	The plant has lost its productivity, TTM is no longer producing palm fruits.
Available Forest Conversion Area:	The total area of the forest that can be converted for non-forest land use.
CPO Production:	The production of Crude Palm Oil (CPO) is influenced by the area of producing land and its productivity.
Failed Replanting:	The additional land area that failed to replant new plants due to pests.
Replanting:	The replanting of unproductive TTM plants that can no longer produce palm fruits.
Newly planted crops:	The expansion area for planting TBM
Maturation Phase:	The TBM plant phase before becoming TM, the filling phase lasts for four years.
Aging:	The TM phase before becoming TTM, this phase lasts for 25 years.
Productivity of PS:	The amount of CPO production of PS land area annually.
Productivity of PN:	The amount of CPO production of PN land area annually.
Productivity of PR:	The amount of CPO production of PR land area annually.
Desired Land Area:	The land area required to meet the total demand for CPO based on the productivity of each land type.
Moratorium Graph:	A graph depicting the changes in the moratorium policy over a specific period of time.
Deforestation:	The decrease in forest area due to the expansion of land for oil palm planting.
Replanting Policy:	The policy regarding the conversion of TTM into TBM
%PS :	The ratio of PS's TM land area compared to the total TM land area.
%PN :	The ratio of PN's TM land area compared to the total TM land area.
%PR :	The ratio of PR's TM land area compared to the total TM land area.
Pests	Pests are harmful to plants and can reduce oil palm productivity.
Population	Describing the population size of the Republic of Indonesia, the larger the population, the higher the domestic demand for cooking oil.
Births	Population growth will increase the population and the consumption of cooking oil.
Death	Deaths will decrease the population and the consumption of cooking oil.
Domestic Cooking Oil Demand	The amount of cooking oil needed by domestic consumers.
Cooking Oil Consumption	The consumption of cooking oil will reduce the stock of cooking oil.
Cooking oil export	The amount of cooking oil sold abroad.
CPO Sales for Cooking Oil	The sales of Crude Palm Oil (CPO) from CPO factory to meet the needs of cooking oil refineries.
Cooking Oil Production	The amount of cooking oil that can be produced depends on the stock of Crude Palm Oil (CPO) for cooking oil.
Difference between Cooking Oil Demand and Stock	The difference between the amount of demand and the stock of cooking oil in the market, where a negative sign indicates that the stock is insufficient to meet the demand during that period, resulting in a shortage of cooking oil.

Cooking oil imports	The amount of cooking oil imported from abroad to meet the domestic demand for cooking oil.
Birth Rate	The birth rate refers to the rate of change in the number of births in a population during a specific period. The birth rate is measured by using the number of births per thousand population per year.
Death Rate	Describing the number of deaths in a population during a specific period. The death rate is measured by using the number of deaths per thousand population per year.
Cooking Oil Consumption per Capita	The amount of cooking oil consumed by each individual in a population or country during a specific period.
Cooking Oil Production Yield	Referring to the amount of cooking oil produced from the oil extraction process of palm fruits.
CPO stock in the market	The amount or quantity of Crude Palm Oil (CPO) available or stored in the distribution channels and ready for sale to consumers in the market. The stock of CPO in the market is influenced by CPO production, CPO exports, and CPO sales.
Cooking oil export	The amount of Crude Palm Oil (CPO) sold abroad.
CPO Sales for Biodiesel	The sales of Crude Palm Oil (CPO) from CPO factory to meet the biodiesel needs.
CPO Sales for Other Industries	The sales of Crude Palm Oil (CPO) from CPO factory to meet the needs of other industries that use CPO as raw material.
Total CPO Sales	The total sales of Crude Palm Oil (CPO) for cooking oil, biodiesel, and other industries.
Total CPO Demand	The total demand for Crude Palm Oil (CPO) for biodiesel, cooking oil, and other industries.
CPO Demand for Biodiesel	The amount of Crude Palm Oil (CPO) needed to meet the biodiesel demand.
CPO Demand for Other Industries	The amount of Crude Palm Oil (CPO) needed to meet the demand of other industries that use CPO as raw material.
Export CPO	The amount of Crude Palm Oil (CPO) needed to meet the demand for CPO exports to be shipped abroad.
CPO Production Capacity	The maximum amount of CPO that factories can produce in a one-year
Cooking Oil Production Capacity	The maximum amount of cooking oil that factories can produce in one year
Global CPO Demand	Demand from countries around the world for CPO
Percentage Global CPO Demand Fulfillment	The amount of contribution CPO exports from a country to global demand for CPO.
Percentage CPO Demand for Other Industries	The amount of contribution CPO distribute to other industries
Domestic Biodiesel Demand	The amount of biodiesel needed by domestic consumers within one year.
Global Biodiesel Demand	Demand from countries around the world for Biodiesel

Percentage Domestic Biodiesel Demand Fullfilment	The amount of biodiesel from a country contribute to domestic biodiesel demand
Percentage Global Biodiesel Demand Fulfillment	The amount of biodiesel from a country contribute to global biodiesel demand
Total Biodiesel Demand	The amount of biodiesel to be distributed from domestic biodiesel demand and global biodiesel demand
Biodiesel Production	The amount of biodiesel produced within one year
Biodiesel Production Capacity	The maximum amount of biodiesel can produce in a one-year
Biodiesel Production Yield	Referring to the amount of biodiesel produced from CPO
CPO Sales for Other Industries	The sales of Crude Palm Oil (CPO) from CPO factory to meet the needs of other industries that use CPO as raw material.