CHAPTER VI
CONCLUSION

This section contains conclusion and recommendation.

6.1 Conclusion

This study was conducted to propose policy interventions aimed at achieving national sugar self-sufficiency in Indonesia by the year 2030. Using a system dynamics approach, the research successfully mapped the complexity of the national sugar supply system through the development of a simulation model. Parameter estimation was carried out using a combination of regression analysis and rational assumptions, in which the most suitable functional forms were selected based on statistical performance. The model successfully passed the verification test and was validated by both academic and practitioner experts, as well as by comparison with actual data using R^2 and MAPE values that indicated satisfactory accuracy.

The baseline simulation results revealed that the Self-Sufficiency Ratio (SSR) remains below 80% under current conditions, highlighting Indonesia's significant dependence on imported sugar. Three intervention scenarios were tested based on sensitivity analysis results. While each scenario showed a positive effect on SSR, none were sufficient to independently achieve the 100% target. Consequently, a combined scenario involving both increased sugar content and improved state-owned productivity was identified as the most effective policy alternative. This integrated strategy is supported by empirical benchmarks, such as the application of Good Agricultural Practices (GAP) and the revitalization of sugar mills. Simulation results demonstrated that this combined intervention raised the SSR to 101.66% by 2030. These findings affirm that sugar self-sufficiency is achievable through targeted and coordinated intensification strategies, especially within the state-owned plantation sector, where centralized management allows for more effective policy execution.

6.2 Recommendation

Based on the findings and limitations of this study, the following recommendations are proposed to support future research and policy formulation:

1. Focus Policy on State-Owned Sectors

Policy interventions should prioritize the state-owned plantation sector, as it provides greater flexibility and feasibility for implementing centralized strategies. Improving sugar content and productivity within these estates has been shown to significantly impact national self-sufficiency and should be the main focus of future development programs.

2. Strengthen Institutional and Technical Capacity

To realize the scenario targets, it is essential to invest in modern agricultural technologies, farmer training, and mill revitalization. The government should enhance coordination between stakeholders, especially ministries, BUMN, and research institutions to ensure the sustainability and scalability of productivity and quality improvements.

3. Further Model Development for Broader Policy Analysis

This system dynamics model has strong potential for future development. It can be extended to include refined sugar demand from industrial users, or even evolve into a more comprehensive food security model by incorporating aspects such as affordability and nutritional adequacy, which were not covered in the self-sufficiency framework of this study.