

ANALYSIS OF THE INFLUENCE OF SEI MANGKEI SPECIAL ECONOMIC ZONE INFRASTRUCTURE ON THE ECONOMIC TRANSFORMATION OF SIMALUNGUN REGENCY

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Received: 07/05/2026 | Revised: 15/05/2026 | Accepted: 05/06/2026 | Published: 06/07/2026

Abstract

This study aims to analyze the impact of infrastructure development in the Sei Mangkei Special Economic Zone (SEZ) on economic growth in Simalungun Regency using a SWOT (Strengths , Weaknesses , Opportunities , and Threats analysis method . The Sei Mangkei SEZ is a new economic growth center focused on the downstream palm oil and rubber industries . The primary focus of this study is to evaluate how the availability of supporting infrastructure — such as multimodal connectivity (logistics) railways and toll roads), dry port facilities , and energy independence — can drive the transformation of the region's economic structure from the primary sector (raw agriculture) to the secondary sector (manufacturing).

Keywords : *Sei Mangkei SEZ, Infrastructure, Economic Growth , SWOT Analysis , Industrial Downstreaming , Simalungun Regency.*

I. INTRODUCTION

A. Background

A Special Economic Zone (SEZ) is a region designated to carry out economic functions with various facilities and conveniences. The success of SEZ development is greatly influenced by the availability of adequate infrastructure. Good infrastructure can reduce logistics costs, increase regional competitiveness, and attract investors. This area is designed to attract investment, accelerate the industrialization process, increase exports, and create jobs. Thus, SEZs are a strategic instrument in encouraging region-based economic growth. One of the SEZs currently being developed is the SEZ Sei. Mangkei is located in Simalungun Regency , North Sumatra Province . This area focuses on the palm oil processing industry and its derivative products (downstreaming), which is expected to increase the added value of local commodities. In addition, the Sei Special Economic Zone (KEK) Mangkei is also projected as a new economic growth center capable of driving the development of the surrounding areas. Infrastructure development in the Sei Special Economic Zone (KEK) Mangkei is a key driving force for economic transformation in Simalungun Regency . As the first Special Economic Zone (SEZ) in Indonesia , established through Government Regulation No. 29 of 2012, its primary focus is the downstreaming of palm oil and rubber.

B. Formulation of the problem

1. Sei affect ? Mangkei on the economic growth of Simalungun Regency?
2. What infrastructure factors are most dominant?
3. What is the development strategy based on SWOT analysis?

C. Theoretical basis

1. Regional Infrastructure Theory

Special Economic Zone (SEZ) infrastructure is the basic facilities, infrastructure, and physical infrastructure built to create a conducive environment for investment, export, and trade activities, aimed at encouraging economic

growth. According to Robert J. Kodoatie (2005), infrastructure is a system that supports the economy and social aspects. In the context of SEZs, it can be divided into:

- a) Hard (physical) infrastructure: roads, ports, airports, electricity supply and water networks.
- b) Soft infrastructure: regulatory and institutional systems that facilitate business. Regional economic impact is a strong influence (change) on economic activity in a particular region, both directly and indirectly, which includes aspects of sales, income, employment opportunities, and demand for goods/services.

According to Stynes (2013), economic impact is the influence of certain activities (such as projects or events) that flow through the regional economy. Economic impact is divided into several parts, including:

- a) Direct effect: initial expenditure of visitors or companies in the area (direct income for hotels, restaurants)
- b) Indirect effects: purchases of inputs (raw materials) by local businesses from other local suppliers.

Freddy Rangkuti (2013). SWOT analysis is method analysis conducted For maximize Strengths (*strengths*) and opportunities (*opportunities*) which are simultaneously can also minimize existing weaknesses (*weaknesses*) and threats (*threats*).

2. Regional Economic Growth Theory - Growth Pole Theory – François Perroux

Growth Pole Theory was put forward by François Perroux who stated that that growth economy No happen in a way evenly distributed throughout the region, but centered on points certain so -called as poles growth pole. growth the usually in the form of area industry, center investment, or strategic areas that have sector superior and capable interesting activity the surrounding economy.

According to Perroux (1955), the existence of core industry (leading industry) will create effect spread effect to surrounding areas through improvement investment, absorption power work, development infrastructure and activities trade.

In context of SEZ Sei Mangkei, area This can understood as center growth new in the Regency Simalungun Because own industry downstreaming coconut palm oil and rubber which are driving development regional economy. Infrastructure like road toll road, route train fire logistics, and dry port strengthening KEK function as driving force main growth regional economy.

3. Infrastructure and Regional Development Theory

Regional development theory explains that infrastructure is a key factor in accelerating regional economic growth. Infrastructure such as roads, ports, electricity, clean water, and transportation networks can increase the efficiency of the distribution of goods and services, reduce logistics costs, and improve connectivity between regions.

According to Todaro and Smith (2011), infrastructure development has a close relationship with increasing economic productivity because it is able to open market access, increase labor mobility, and attract private investment.

In addition, Aschauer (1989) stated that public infrastructure investment makes a significant contribution to industrial sector productivity and long-term economic growth.

In the case of SEZ Sei Mangkei, the development of logistics and energy infrastructure plays an important role in supporting downstream industrial activities, thereby increasing regional competitiveness and accelerating the economic transformation of Simalungun Regency.

4. Agglomeration Theory Economy

Agglomeration Theory Economics explains that the concentration of industry and economic activity within a region will create economic efficiencies due to the proximity of companies. These efficiencies include ease of distribution, reduced transportation costs, information exchange, technology transfer, and the availability of a skilled workforce.

Marshall (1890) stated that industrial agglomeration produces collective benefits (external) economies) that cannot be obtained if industries are spread separately.

In the development of SEZ Sei Mangkei, a cluster of palm oil processing, logistics, energy, and other supporting facilities, creates an economic agglomeration that can increase regional productivity. The presence of industrial tenants in one area also facilitates supply chain integration and improves operational efficiency.

5. Hirschman Linkage Effect Theory

Albert O. Hirschman, through the Linkage Effect theory, explains that industrial development will create economic linkages between sectors, both backward linkages and forward linkages.

Backward linkage occurs when an industry increases demand for raw materials, labor, and supporting services from other sectors.

Forward linkage occurs when the production output of one industry becomes input for another industry.

According to Hirschman (1958), the interrelationships between sectors are able to create a multiplier effect . effect) which accelerates regional economic development.

At SEZ Sei Mangkei , the palm oil downstream industry, creates backward linkages with the smallholder plantation sector as a raw material supplier, as well as forward linkages with downstream industries such as oleochemicals , energy, and other manufactured products. This strengthens the regional economic structure and increases the incomes of local communities.

D. Research Gap

1. Previous Research

- a) Silvia's research (2015) analyzed the influence of infrastructure development in the Sei Special Economic Zone (KEK) Mangkei on the economic growth of Simalungun Regency with a quantitative approach using time data. The results of the study indicate that electricity infrastructure has a significant positive effect on economic growth, while road infrastructure has not had a significant effect .
- b) Another study by Suryani and Febriani (2019) discussed the impact of SEZs on regional economic development through a literature study on the SEZ Sei. Mangkei and Tanjung Lesung Special Economic Zones. The study concluded that the Sei Mangkei Special Economic Zone Mangkei has a positive impact on reducing unemployment, reducing poverty, and increasing economic growth in Simalungun Regency.

2. Shortcomings of Previous Research

- a) There has not been much research that specifically analyzes the relationship between regional infrastructure development and the economic transformation of the surrounding area.
- b) Previous research tends to focus on industrial and investment aspects, while the influence of basic infrastructure such as roads, ports, utility networks, and transportation connectivity on regional development has not been analyzed comprehensively.
- c) There is still minimal research that combines infrastructure analysis with a SWOT approach in formulating sustainable SEZ development strategies.

3. Research Novelty

The novelty in this research lies in:

- a) The focus of the research is to link the development of SEZ infrastructure with the economic transformation of the Simalungun Regency region.
- b) The use of a SWOT analysis approach to formulate infrastructure-based regional development strategies.
- c) The analysis not only looks at the macroeconomic impact, but also the influence on regional connectivity, community activities, and the development of the area around the SEZ.

II. RESEARCH METHODOLOGY

A. Types of research

This study uses a qualitative descriptive approach with a SWOT analysis . The qualitative descriptive approach was chosen because the primary focus of this study is to understand, explore, and interpret complex socio-economic and spatial phenomena that cannot be measured solely qualitatively and numerically. This study aims to explain and describe the existing infrastructure conditions of the Sei Special Economic Zone (SEZ) . Mangkei and its impact on the structure of economic growth in the district Simalungun . This data analysis uses SWOT analysis to map the internal and external factors of the Sei Special Economic Zone. Mangkei so that they can formulate relevant strategies.

B. Research Location



Figure 0 1 . Existing conditions of the Sei Mangkei Special Economic Zone

Source: Author's Documentation

Above is a description of the existing condition of the planned location of the Sei Mangkei Special Economic Zone, the construction of the Sei Mangkei Special Zone, which is located in the Sei Mangkei area, Bosar Maligas sub-district, Simalungun Regency, North Sumatra with a land area of 2,022.77 ha.



Figure 0 2. Entrance Gate to the Sei Mangkei Special Economic Zone
Source: Author's Documentation

The planning location boundary is directly adjacent to:

- a). north; Asahan crossroads and oil palm plantations.
- b). south; oil palm plantations
- c). west side; river, oil palm plantations and settlements.
- d). next to east ; plantation coconut palm oil



Figure 0 3. Sei Mangkei Special Economic Zone Master Plan
Source: KINRA Documentation

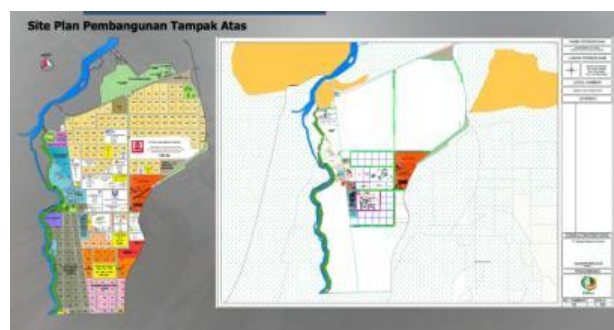


Figure 04 Site Plan Development Top View
Source : KINRA Documentation



Figure 0 5 Area Facilities
Source : KINRA Documentation



Figure 0 6 Area Facilities
Source: KINRA Documentation



Figure 07 Tenant List
Source : KINRA Documentation

C. Data collection technique

1. Observation

According to Abdussamad (2021: 147), observation is a data collection technique carried out intentionally through observation and recording. The following are the types of observation according to Abdussamad (2021).

- Participatory observation , which means the researcher is involved in daily activities people who are observed or who are used as sources of research information.
- Open observation, which means that the data collecting researcher states to the data source that he is conducting research.
- Unstructured observation, which means observation that is not systematically prepared regarding what will be observed.

2. Interview

An interview is a conversation conducted with a specific purpose. It is conducted by two parties: the interviewer, who asks questions, and the interviewee , who provides answers to those questions. This study used semi-structured interviews . According to Sugiyono (2017: 115), this type of interview falls into the in- depth category.

Interviews , which are more free-flowing than structured interviews. The purpose of these interviews is to uncover problems more openly, with the interviewees asked for their opinions and ideas. Documentation

According to Abdussamad (2021: 149), "documentation is a record of past events." Documentation takes many forms, including writing, drawings, or a person's work (Abdussamad , 2021: 149). Arikunto (2000) in Abdussamad (2021: 149) states that documentation is "searching for data regarding things or variables in the form of notes, transcripts, books, newspapers, magazines, inscriptions, meeting minutes, ledgers , agendas, and so on."

3. BPS Secondary Data

BPS data collection techniques are the methods used by the Central Statistics Agency (BPS) to collect accurate, reliable, and up-to-date statistical data. As mandated by the Statistics Law , BPS uses four main methods: censuses, surveys, compilations of administrative products, and other methods in line with developments in information technology (such as Big Data).

D. Data Analysis Techniques

a.) SWOT Analysis

method systematically identifies various factors to formulate a company strategy (Rangkuti, 2018: 19). This analysis is based on logic that maximizes strengths and opportunities while simultaneously minimizing weaknesses and threats . A SWOT analysis aims to determine an organization's position within the competitive landscape (Purhantara , 2010: 104).

According to Purhantara (2010:107), the process for conducting a SWOT analysis involves the following stages: the organization's strategic objectives

strategic environmental analysis consisting of an analysis of the objective conditions of the organization or an analysis of the internal environment and an analysis of the competitive environment or external environment.

3. Conduct IFAS and EFAS analysis and compile a competitive profile of a business organization. 4. Compile an IE analysis matrix and a SWOT analysis matrix .

5. Create a strategy based on the results of the SWOT analysis

III. RESULTS AND DISCUSSION

A. Simalungun Regency Statistical Data

1. Growth of GRDP of Simalungun Regency

One important indicator for understanding the economic conditions of a region within a given period is Gross Regional Domestic Product (GRDP), both at current and constant prices. GRDP is essentially the sum of the added value generated by all business units within a given region, or the sum of the final goods and services produced by all economic units.

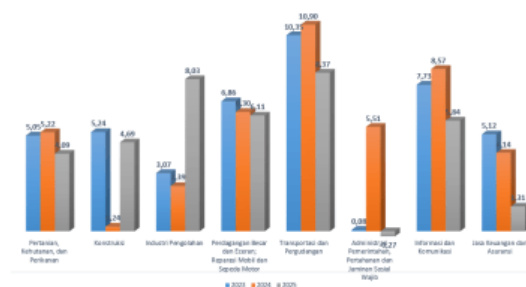


Figure 08 Diagram of GRDP Growth in Simalungun Regency
Source : BPS Simalungun Regency



Figure 09 Structure Diagram Business Fields of GRDP of Simalungun Regency
Source : BPS Simalungun Regency

Lapangan Usaha (1)	Harga Berlaku			Harga Konstan		
	2023 (2)	2024 (3)	2025 (4)	2023 (5)	2024 (6)	2025 (7)
A. Pertanian, Kehutanan dan Perikanan	28.406,03	33.327,96	37.296,32	18.509,80	19.476,61	20.273,93
B. Pertambangan dan Pengolahan	106,54	112,33	118,55	69,70	72,81	75,22
C. Industri Pengolahan	5.480,43	5.873,46	6.514,46	2.934,58	3.004,80	3.245,99
D. Pengadaan Listrik dan Gas	31,13	30,82	31,47	25,95	26,80	27,55
E. Pengadaan Air, Pengelolaan Sampah, Limbah dan Daer Ulang	38,19	40,50	43,03	24,35	24,90	25,76
F. Konstruksi	4.775,95	4.823,92	5.113,88	2.578,72	2.584,94	2.706,27
G. Perdagangan Besar dan Eceran, Reparasi Mobil dan Sepeda Motor	8.221,26	8.976,33	9.679,01	4.270,10	4.538,95	4.816,21
H. Transportasi dan Perhubungan	899,57	1.032,36	1.134,13	516,27	572,57	620,48
I. Penyediaan Akomodasi dan Makan Minum	402,84	461,87	493,88	262,20	294,16	305,83
J. Informasi dan Komunikasi	278,12	299,42	317,60	235,68	255,87	270,82
K. Jasa Keuangan dan Asuransi	533,29	563,61	582,72	285,84	297,67	301,57
L. Real Estat	408,81	437,14	460,06	256,56	271,14	292,93
M,N. Jasa Perusahaan	45,60	49,00	53,49	24,82	26,12	27,27
O. Administrasi Pemerintahan, Pertahanan dan Jaminan Sosial Wajib	1.883,00	2.085,09	2.098,87	1.056,57	1.114,82	1.111,85
P. Jasa Pendidikan	480,38	516,68	570,33	314,11	333,04	350,30
Q. Jasa Kesehatan dan Kegiatan Sosial	191,60	214,19	237,21	113,34	122,60	129,91
R,S,T,U. Jasa Lainnya	56,39	61,43	63,17	32,04	34,57	35,10
Produk Domestik Regional Bruto (PDRB)	52.239,10	58.906,11	64.810,17	31.510,63	33.052,35	34.618,99

Figure 10. GRDP Table of Simalungun Regency
Source : BPS Simalungun Regency

Lampiran
Appendix 1 Produk Domestik Regional Bruto Atas Dasar Harga Berlaku Kabupaten Simalungun (miliar rupiah), 2021-2025/ Gross Regional Domestic Product at Current Prices of Simalungun Regency (billion rupiah), 2021-2025

Komponen Pengeluaran Component of Expenditures	2021	2022	2023	2024*	2025**
(1)	(2)	(3)	(4)	(5)	(6)
1. Pengeluaran Konsumsi Rumah Tangga/ Household Final Consumption Expenditure	22.652,80	24.275,92	26.494,63	28.907,95	31.210,32
2. Pengeluaran Konsumsi LNPR/ NPSHs Final Consumption Expenditure	425,25	444,68	510,27	582,08	613,63
3. Pengeluaran Konsumsi Pemerintah/ General Government Final Consumption Expenditure	2.518,36	2.624,06	2.971,48	3.086,79	3.218,75
4. Pembentukan Modal Tetap Bruto/ Gross Fixed Capital Formation	10.683,53	11.320,83	11.915,77	12.832,57	13.336,30
5. Perubahan Inventori/ Changes in Inventories	478,70	441,73	765,62	727,40	495,23
6. Net Ekspor/ Net Exports	5.818,24	8.178,87	9.581,34	12.768,31	15.935,93
PDRB/ GRDP	42.576,88	47.285,89	52.239,10	58.906,11	64.810,17

Figure 11 Table of GRDP of Simalungun Regency 2021-2025
Source: BPS Simalungun Regency

Based on Table 1, the GRDP value of Simalungun Regency ADHB during the period 2021 to 2025 shows an increase from year to year. This increase in value is influenced by changes in prices and also changes in volume. The GRDP value of ADHB in 2021 was 42,576.88 billion rupiah, increasing to 64,810.17 billion in 2025. Household Consumption Expenditure (PKRT) has the largest value compared to other expenditure components, namely 31,210.32 billion rupiah in 2025. Another component with a large value is the Net Export component with a value of 15,935.93 billion rupiah.

2. PMA/PMDN Investment in Simalungun Regency

Simalungun Regency is one of the highest investment-generating regions in North Sumatra. Foreign Direct Investment (PMA) in the region reached Rp 11.977 trillion, while Domestic Direct Investment (PMDN) reached Rp 16.434 trillion, with the industrial and plantation sectors being the primary contributors.



Figure 12 Potential & Investment Opportunities in Simalungun Regency

Source: BPS Simalungun Regency

The main investment opportunities in Simalungun Regency are divided into four specific sectors:

- a) **Special Economic Zone (SEZ) Sei Mangkei** : A center for the development of agro-based industries, palm oil, and downstream chemicals. This area is strategically located approximately 40 km from Kuala Tanjung Port and 10 km from the Trans-Sumatra Highway.



Figure 13 Investment Potential of SEZ Sei Mangkei

Source: Investment and One-Stop Integrated Services Agency (DPMP) Simalungun Regency

- b) **Lake Toba Integrated Tourism** : Opportunities for developing *resorts* , hotels, and premium ecotourism facilities in strategic areas such as Parapat, Haranggaol, and Tigaras.



Figure 14 Tourism Potential of Simalungun Regency

Source: Investment and One-Stop Integrated Services Agency (DPMP) Simalungun Regency

- c) **Agriculture and Plantations** : Development of integrated plantations (such as oil palm, rubber, and Sidamanik tea), cultivation of food crops (secondary crops, corn), and processing of downstream products.



Figure 15 Agricultural and Plantation Potential of Simalungun Regency

Source: Investment and One-Stop Integrated Services Agency (DPMP) Simalungun Regency

d) Livestock and Fisheries

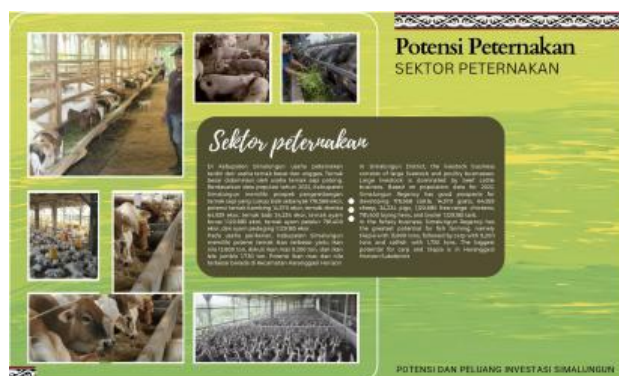


Figure 16 Livestock Potential of Simalungun Regency

Source: Investment and One-Stop Integrated Services Agency (DPMP) Simalungun Regency



Figure 17 Fishery Potential Simalungun Regency

Source: Investment and One-Stop Integrated Services Agency (DPMP) Simalungun Regency

3. Unemployment Rate in Simalungun Regency

Labor Force Participation Rate (TPAK) and Open Unemployment Rate (TPT) In 2024, the working-age population in Simalungun Regency was 798,483, consisting of 569,405 in the labor force and 229,078 outside the labor force. Furthermore, the TPAK is an indicator that can describe the extent of the role of the labor force in a region. The higher the TPAK value, the greater the involvement of the working-age population in the labor market.

Tabel 6.1 Jumlah dan Persentase Penduduk 15 Tahun ke Atas menurut Kegiatan Seminggu Yang Lalu, 2022-2024

Kegiatan	2022		2023		2024	
	Jumlah	%	Jumlah	%	Jumlah	%
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Angkatan Kerja	456.084	69,91	566.621	72,15	569.405	71,31
- Bekerja	430.970	94,49	536.291	94,65	539.969	94,83
- Pengangguran	25.114	5,51	30.330	5,35	29.436	5,17
Bukan Angkatan Kerja	196.282	30,09	218.727	27,85	229.078	28,69
Jumlah	652.366	100	785.348	100	798.483	100
TPAK (%)	69,91		72,15		71,31	
TPT (%)	5,51		5,35		5,17	

Sumber data: Provinsi Sumatera Utara Dalam Angka, 2023-2025

Figure 18 Table of Workforce in Simalungun Regency
Source: BPS Simalungun Regency

The 2024 TPAK of Simalungun Regency is 71.31 percent, meaning that in 2024, 71.31 percent of the working-age population in Simalungun Regency will be ready to enter the job market, either working or looking for work/preparing for a business. Looking at its development, the labor force participation rate in Simalungun Regency is consistently increasing. In 2022, the TPAK of Simalungun Regency was 69.91 percent, then increased to 72.15 percent in 2023, and in 2024 it decreased to 71.31 percent. This is because Simalungun Regency is still dominated by the agricultural sector. However, the manufacturing sector experienced a decline in the percentage of labor absorption. When the formal sector slows down, the workforce is often absorbed into the fluctuating informal sector, or even exits the labor market if family economic conditions allow. Unemployment that is considered the most serious to address is open unemployment, namely the workforce that does not have a job and is looking for/preparing for work. The open unemployment rate (TPT) in Simalungun Regency in 2024 was 5.17 percent, a decrease compared to 2023, which was 5.35 percent.

4. Number of Industrial Workers in Simalungun Regency

By 2025, industry in Simalungun Regency exhibits striking diversity, with a large focus on food production, such as bread, crackers, tofu, tempeh, and chips. The cracker industry is a key sector, with 68 companies producing 1,900,000 kg of crackers and employing 428 workers. The large number of companies involved in this industry reflects the high demand for cracker products in the region. The cracker industry's contribution is evident in its large production scale and its role in providing employment for the local community. The industry with the largest number of companies in Simalungun Regency in 2025 is the ulos weaving industry, which consists of 289 companies. Although its production volume is smaller than some other sectors, at 208,080 pieces, this industry plays a significant role in absorbing labor, employing 374 workers. The large number of companies in the ulos weaving industry reflects the high level of community participation in this business, as well as the sustainability of local traditions and products that are characteristic of Simalungun Regency.



Sumber/Sources: Dinas Perindustrian dan Perdagangan Kabupaten Simalungun/ Manufacturing Industry and Trade Office of Simalungun Regency

Gambar 6.1 Banyaknya Perusahaan Industri Menurut Jenis Industri di Kabupaten Simalungun, 2025
Number of Industrial Establishments by Type of Industry in Simalungun Regency, 2025Figure 19 Industrial Diagram of Simalungun Regency
Source: BPS Simalungun Regency

6.1 INDUSTRI INDUSTRY

Tabel 6.1.1 Banyaknya Perusahaan Industri, Tenaga Kerja, Kapasitas Produksi dan Modal tetap Menurut Jenis Industri di Kabupaten Simalungun, 2025
Number of Industrial Establishments, Labor Force, Fixed Capital, and Production Capacity by Type of Industry in Simalungun Regency, 2025

Jenis Industri Type of Industry	Jumlah Perusahaan Establishment	Tenaga Kerja Labor Force	Produksi Production	Modal Tetap Fix Capital (000)
(1)	(2)	(3)	(4)	(5)
Pembuatan Roti Bread Production	35	118	1.916.250 bungkin package	2.750.000
Pembuatan Kerupuk Crackers Production	68	428	1.190.000 kg	10.500.000
Industri Alat Pertanian Agricultural Tools Industry	30	55	43.200 buah pieces	4.500.000
Pembuatan Tahu Tofu Production	78	225	50.544.000 potong slice	3.200.000
Pembuatan Tempe Tempe Production	60	100	10.800.000 batang bar	5.145.000
Pembuatan Keripik Chips Production	54	140	194.400 kg	2.500.000
Temun Ulos Ulos Weaving	289	374	208.080 lembar sheet	5.200.000
Industri Perhiasan Jewelry Industry	7	15	25.200 gram	30.000.000
Pembuatan Mie Hun Glass Noodle Production	7	267	2.520.000 kg	80.000.000
Pembuatan Peti Mati Coffin Production	10	50	7.200 unit	3.000.000
Pembuatan Rubber Sheet Rubber Sheet Production	5	318	...	...
Pembuatan Crumb Rubber Crumb Rubber Production	6	165	...	...

Figure 20 Diagram of the Industrial Workforce of Simalungun Regency
Source: BPS Simalungun Regency

Jenis Industri Type of Industry	Jumlah Perusahaan Establishment	Tenaga Kerja Labor Force	Produksi Production	Modal Tetap Fix Capital (000)
(1)	(2)	(3)	(4)	(5)
Pembuatan Perabot Furniture Production	9	92	5.100 set sets	1.570.000
Industri Bubuk Teh Tea Powder Industry	2	1.000	864.000 ton	...
Kertas Sembahyang/ Pembungkus Nasi Prayer Paper/ Rice Wrapping Paper	3	27	679 ton	660.000
Pembuatan Keranjang Basket Production	221	310	795.600 buah pieces	1.500.000
Bubuk Kopi Coffee Powder	35	140	50.400 kg	12.000.000
Bingkai Foto Photo Frames	1	27	10.080 buah pieces	250.000
Industri Meuble/Ukiran Kayu Furniture/ Wood Carving Industry	1	2	1.800 buah pieces	300.000
Kosen Pintu dan Jendela Door and Window Frames	3	11	2.160 buah pieces	2.500.000
Bingkai Rotan Rattan Frames	1	27	1.800 buah pieces	750.000
Pembuatan Timbangan Scale Manufacturing	1	25	1.200 unit	10.000.000
Bengkel Bubut Lathe Workshop	1	2	1.500 bentuk shapes	25.000.000

Figure 21 Diagram of the Industrial Workforce of Simalungun Regency
Source: BPS Simalungun Regency

Jenis Industri Type of Industry	Jumlah Perusahaan Establishment	Tenaga Kerja Labor Force	Produksi Production	Modal Tetap Fix Capital (000)
(1)	(2)	(3)	(4)	(5)
Pembuatan Bandrek Bubuk Powdered Bandrek Manufacturing	4	24	84.170 bungkus package	120.000
Pembuatan Terasi Terasi Production	1	22	96.000 kg	175.000
Industri Bak Mobil dan Truk Automobile and Truck Bed Industry	1	5	8 unit	80.000.000
Industri Minuman Ringan Soft Drink Industry	2	5	223.000 kotak box	3.310.000
Industri Kayu Gergajian Ice Cream, Stick Chops Sawmill Industry for Ice Cream Sticks, Stick Chops	1	51	9.000 m ³	11.262.113
Tali Plastik Plastic Rope	2	32	217.000 kg	1.500.000
Alat Musik Tradisional Traditional Musical Instruments	1	1	130 buah pieces	5.000.000
Industri terpinin Turpentine Industry	1	30	312 ton	150.000.000
Industri Tampi Bakul Winnowing Basket Industry	1	40	60.000 buah pieces	5.000.000
Pembuatan Plastik Kemasan Packaging Plastic Production	1	12	104.000 buah pieces	3.200.000

Figure 22 Diagram of the Industrial Workforce of Simalungun Regency
Source: BPS Simalungun Regency

5. Export Volume & Industrial Sector Contribution

Simalungun Regency contributes through its leading agricultural and plantation commodities, with its main loading ports located in Medan and Deli Serdang. Key export commodities from this region include:

- Plantations & Industry: Palm oil, rubber, and Arabica coffee
- Horticulture & Food Crops: Sweet potatoes, potatoes, cabbage, and bananas

Bulan	Nilai Ekspor (USD)	Berat Ekspor (Kg)	Nilai Impor (USD)	Berat Impor (Kg)
Januari	22.155.653.475,037	56.234.158.636,833	21.201.350.125,940	19.654.170.416,026
Februari	22.166.796.089,252	52.610.174.509,007	20.893.549.065,737	19.686.701.605,463
Maret	22.526.787.923,256	53.892.528.425,325	19.205.782.821,775	21.168.349.918,623
April	25.302.804.925,301	53.744.114.069,309	25.213.707.705,480	26.398.289.369,415

Sumber : <https://simalungunkab.bps.go.id/diexim> diakses pada Senin, 15 Juni 2026 pukul 18:15:59

Figure 23 Industrial Export-Import Diagram of Simalungun Regency
Source: BPS Simalungun Regency

The industrial sector (particularly the manufacturing industry) in Simalungun Regency contributes an average of 7% to 9% of the region's total Gross Regional Domestic Product (GRDP). This figure places the industrial sector as one of the most important secondary economic drivers in the region, although the overall economic structure of Simalungun is still dominated by agriculture.



Figure 24 Infographic of North Sumatra's Industrial Exports and Imports
Source: BPS Simalungun Regency

B. Data Analysis Results (SWOT – IFAS & EFAS)

1. SWOT Analysis

a. Strength

- Connectivity Multimodal : Existence track train fire special logistics and close access with the Trans-Sumatra Toll Road accelerating current goods .



Sei Logistics Railway Station Mangkei

Source: Website <https://seimangkeisez.com/id/>



Figure 26 Trans Sumatra Toll Road Access Section – Lima Puluh Toll Gate
Source: Author's Documentation

- Availability Energy : Infrastructure Biogem PLT and substation parent independent ensure stability operational industry without burdensome Power public .



Figure 27 Substation Sei Mangkei Parent
Source: Author's Documentation

b. Weaknesses

- The gap Infrastructure Supporters : Traveling surrounding districts area often Not yet standard with burden vehicle weight (tonnage) tall).



Figure 27 Village and District Road Access Sections
Source: Author's Documentation



Figure 28 Village and District Road Access Sections

Source: Author's Documentation

- Local Human Resource Limitations : Lack of center training specific techniques in Simalungun support industry downstream palm oil / rubber .
- c. Opportunities
- Downstream People's Agriculture : Infrastructure factories in the SEZ can absorb results garden people Simalungun For processed become product export .
 - Growth of New Economic Centers : Opportunities for local MSMEs For enter to in chain supply chain needs tenant operations .
- d. Threats

- Degradation Environment : Risk pollution from activity industry If infrastructure processing waste No supervised strict
- Land Conversion: Development pressures can eliminate nearby productive agricultural land.

2. IFAS Analysis

IFAS (*Internal Factors Analysis Strategy*) is a tool for summarizing and evaluating an organization's **internal factors**. This analysis examines two main elements:

- Strengths : The advantages, resources and competencies possessed.
- Weaknesses : Limitations or deficiencies that hinder operational performance .

(1)	(2)	(3)	(4)
Internal Strategy Factors	Weight	Rating	Weighted Score
Strength			
Connectivity Multimodal : There is a special logistics railway line that goes directly to Kuala Tanjung Port and close access to the Trans-Sumatra Toll Road.	0.35	4	1.4
Availability Energy : Infrastructure Biogem PLT and substation parent independent ensure stability operational industry without burdensome Power public	0.22	3	0.66
Total Strength	0.57		2.06
Weakness			
Supporting Infrastructure Gaps: District roads around the area are often not up to standard with heavy vehicle loads (high tonnage).	0.30	3	0.9
Limited Local Human Resources: Lack of technical training centers in Simalungun that specifically support the downstream palm oil/rubber industry.	0.13	2	0.26
Total Weakness	0.43		1.16
Total IFAS	1.00		3.22

Table 01 : IFAS SCORE

3. EFAS Analysis

EFAS (*External Factors Analysis Strategy*) is EFAS is a tool for summarizing and evaluating **external environmental factors** that are beyond the company's control. This analysis dissects two main elements:

- Opportunities : Positive trends, market conditions, or gaps that can be exploited for growth .
- Threats : Challenges, regulatory changes, or risks from competitors that could harm the company .

EFAS Focus : Trends economics , politics , technology , social and dynamics competition industry .

(1)	(2)	(3)	(4)
External Strategy Factors	Weight	Rating	Weighted Score
Opportunity			
Downstreaming of People's Agriculture: Factory infrastructure in the Special Economic Zone can absorb the produce of Simalungun people's gardens to be processed into export products.	0.33	4	1.32
Growth of New Economic Centers: Opportunities for local MSMEs to enter the supply chain chain) tenant operational needs .	0.29	4	1.16
Total Chances	0.62		2.48
Threat			
Environmental Degradation: Risk of pollution from industrial activities if waste processing infrastructure is not strictly monitored	0.22	4	0.88
Land Conversion: Development pressures can eliminate productive agricultural land in the surrounding area.	0.16	4	0.64
Total Threat	0.38		1.52
Total EFAS	1.00		4.00

Table 02 : EFAS SCORE

4. Space Diagram SWOT

Strategic analysis using the SPACE Matrix approach is an effective method for identifying an organization's strategic position based on internal and external conditions. This matrix is used to determine the organization's strategic direction by comparing internal strengths and weaknesses (through IFAS analysis) and external opportunities and threats (through EFAS analysis). The final result of this calculation will determine the organization's position in one of four strategic quadrants: aggressive, conservative (turnaround), defensive, or competitive (diversification). In this study, IFAS analysis was conducted by identifying and evaluating the company's strengths and weaknesses. Each factor is weighted based on its level of strategic influence. its importance, then multiplied by the rating (level of influence).

According to Freddy Rangkuti (1997), the results in X and Y points of SWOT *Space Diagram* , divided in 4 Quadrants as following :

a) Quadrant I (SO) – Aggressive & Growth Strategy

Having opportunities and strengths so that you can take advantage of existing opportunities. The strategy that must be implemented in condition This Is support policy aggressive growth (*growth-oriented strategy*) .

b) Quadrant II (ST) – Stability Strategy

Although face various threat , this strategy Still own strength from aspect *internal* . The strategy that must be implemented Is use strength For utilise opportunity term long with *diversification* strategy method (product or service).

c) Quadrant III (WO) – Defensive Strategy Life

facing huge market opportunity , but on the other hand party , he face a number of constraint or internal weaknesses . Conditions business This similar with *Question Mark* on the *BCG* matrix . Focus of the company's strategy This is minimize internal company problems so that can seize greater market opportunities Good .

d) Quadrant IV (WT) – Diversification Strategy

This is a very unfortunate situation,
company the face various threats and weaknesses *internal*.

Based on the results of the IFAS analysis, the total strength score was 2.06 and the weakness score was 1.16, resulting in the following X value:

$$X = \text{Strengths} - \text{Weaknesses}$$

$$X = 2.06 - 1.16 = 0.90$$

And based on the results of the EFAS analysis, the total Opportunity score was 2.48 and the Threat score was 1.52, resulting in the following X value:

$$X = \text{Opportunity} - \text{Threat}$$

$$X = 2.48 - 1.52 = 0.96$$

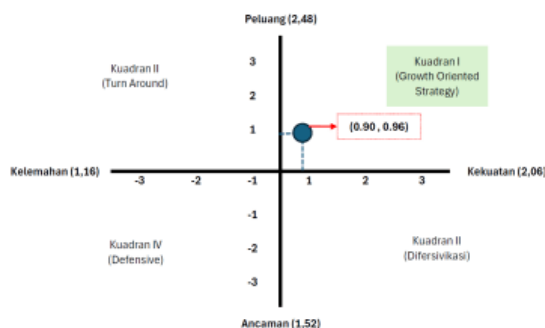


Figure 25: Space SWOT diagram

of X and Y Then plotted to in SPACE matrix , produces point coordinates (0, 90 ; 0.96). This point is in Quadrant I, namely the Strength and Opportunity quadrant.

Position This show that company own sufficient internal strength dominant and located in environment external that provides opportunity . With Thus , the most appropriate strategy is an aggressive strategy , namely a growth strategy that aims utilise strength For catch existing opportunities .

5. Strategy Based on SWOT Space Matrix Diagram

The following is a SWOT Matrix strategy:

- Strengths Opportunities* (SO) strategy , taking advantage of all over existing power For get the greatest opportunity the size .
- Strengths Threats* (ST) strategy , using the power possessed company For overcome threat .
- Weaknesses Opportunities* (WO) strategy , utilization existing opportunities with method minimize existing weaknesses .
- Weaknesses Threats* (WT) strategy , activities that are defensive and trying with method minimize existing weaknesses as well as avoid threat

IFAS EFAS	<u>Strength (S)</u> 1. Multimodal Connectivity: Logistics Railway Line & Trans-Sumatra Toll Road 2. Availability Energy : Infrastructure Biogem PLT and substation parent independent	<u>Weakness (W)</u> 1. Supporting Infrastructure Gaps: Surrounding district roads 2. Local HR Limitations: Lack of technical training centers
	<u>Opportunity (O)</u> 1. Downstreaming of People's Agriculture: Factory infrastructure in SEZs can absorb people's garden produce 2. New Economic Center Growth: Opportunities for local MSMEs to enter the supply chain	<u>SO Strategy</u> 1. Improvement and equal distribution of adequate transportation access, so that people's garden produce can be quickly distributed. 2. Encourage the creation of regulations that require companies in the Sei Mangkei Special Economic Zone to use products or services from local MSMEs.
	<u>Threat (T)</u> 1. Environmental Degradation: Pollution risks from industrial activities 2. Land Conversion: Development pressures can eliminate agricultural land	<u>WT Strategy</u> 1. Government Policy Support to suppress land conversion that does not comply with established zoning

Table 03 : SWOT Strategy Matrix

Based on the results of the IFAS & EFAS analysis of the SWOT Matrix, the point is in Quadrant I (SO) – Aggressive & Growth Strategy

(*Growth Oriented Strategy*), namely:

1. Improvement and equal distribution of adequate transportation access, so that people's garden produce can be quickly distributed.

2. Encourage the creation of regulations that require companies in the Sei Special Economic Zone Mangkei to use products or services from local MSMEs

6. Mitigation Recommendations

a) Synchronization of Buffer Road Infrastructure

- The Simalungun Regency Government needs to prioritize repairs and improvements to the quality of district roads that connect agricultural production centers (villages) directly to the Sei Special Economic Zone. Mangkei
- Objective : To reduce cost transport results earth farmer local (such as coconut palm oil and rubber) so that they can direct enter to factory processing in KEK without through Lots intermediary .



Figure 28. Equal distribution of road infrastructure improvements for plantations in Simalungun Regency

Source: Author's Documentation

b) Local MSME Supply Chain Integration

- Encourage the creation of regulations that require companies in the Sei Mangkei Special Economic Zone to use products or services from local Simalungun MSMEs for non-core needs.
- **Example** : Needs catering employees , services cleanliness (cleaning service), provision uniform , up to supply material standard supporters . This will distribute the proceeds industry to local markets in Simalungun

IV. CONCLUSION

In general , the influence KEK infrastructure is of a nature structural . Infrastructure the change face economy Simalungun from primary sector (agriculture) raw materials) to the secondary sector (manufacturing). Increase investment inflow (FDI) automatic increase Revenue Sharing Funds and PAD (Regional Original Income), which if managed with okay , will speed up development facility public throughout regency .

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