Studi Akuntansi, Keuangan, dan Manajemen (SAKMAN)
ISSN: 2798-0251, Vol 6, No 1, 2026, 491-509 https://doi.org/10.35912/sakman.v6i1.7000

Regional Sector Priority Index: A Composite Approach for Economic Sector Prioritization in South Sumatra Province

Wan Ruslan Abdul Ghani[1*]
Universitas Islam Negeri Raden Intan Lampung, Bandar Lampung, Indonesia[1]
wanruslan@radenintan.ac.id[1*]

Article History
Received on 8 July 2026
1st Revision on 10 July 2026
2nd Revision on 15 July 2026
3rd Revision on 20 July 2026
Accepted on 22 July 2026

Abstract

Purpose: This study develops the Regional Sector Priority Index (RSPI), a composite instrument integrating the Index of Forward Linkage (IFL), Index of Backward Linkage (IBL), and Output Index (OI) within the Interregional Input-Output (IRIO) framework to identify and rank priority economic sectors in South Sumatra, Indonesia.

Research Methodology: A quantitative descriptive-explanatory approach was employed using secondary data from the 2016 Indonesian IRIO Table covering 52 economic sectors. The analysis proceeds through the technology coefficient matrix, the Leontief inverse, and the sequential calculation of IFL, IBL, and OI, which are expressed relative to their cross-sector means and aggregated with equal weights. Robustness was evaluated under four weighting scenarios: baseline, forward-oriented, backward-oriented, and output-oriented.

Results: Coal and Lignite Mining ranked first (RSPI = 8.725), followed by Oil, Gas and Geothermal Mining, Electricity, Coal and Oil and Gas Refining, and the Chemical and Pharmaceutical Industry. Of 52 sectors, 12 were Strategic Leading Sectors, 23 High Priority Sectors, and 17 Supporting Sectors. The top-ten ranking remained stable across all scenarios.

Limitations: The analysis relies on the 2016 IRIO Table and does not fully reflect post-pandemic structural changes or the ongoing energy transition.

Conclusions: South Sumatra's economy remains dominated by energy and resource-based industries with strong intersectoral linkages. The RSPI offers a more comprehensive tool for priority-sector identification than single-indicator approaches.

Contributions: This study introduces the RSPI as a novel, replicable composite index for evidence-based regional development planning in Indonesian provinces.

Keywords: *Backward Linkage, Forward Linkage, Interregional Input-Output, Output Index, Priority Sectors*

How to Cite: Ghani, W. R. A. (2026). Regional Sector Priority Index: A Composite Approach for Economic Sector Prioritization in South Sumatra Province. *Studi Akuntansi, Keuangan, dan Manajemen*, 6(1), 491-509.

1. Introduction

Regional economic development fundamentally aims to increase economic growth, productivity, employment opportunities, and community welfare through effective and sustainable resource management. In this context, identifying priority sectors is strategic because each sector has a different production capacity and level of interconnectedness with other sectors. Global economic developments, including supply-chain restructuring, industrial digitalization, the energy transition, and rising geopolitical uncertainty, further emphasize the importance of evidence-based development policy capable of identifying growth-driving sectors more comprehensively (Dietzenbacher, 2020; Rochmatulla et al., 2020).

South Sumatra Province is a strategic region in the national economy, supported by mining, plantation, and resource-based processing industries, as well as a transport network that serves as a distribution hub on the island of Sumatra. However, the dominance of the primary sector also creates a high dependence on natural-resource commodities, which calls for economic transformation toward a more productive, competitive, and value-added structure by strengthening inter-sectoral linkages (BPS South Sumatra Province, 2024; Bappenas, 2024). The growing commitment of Indonesia to the energy transition, including the Just Energy Transition Partnership announced in 2022, further intensifies the need for objective, data-driven tools to identify which sectors can anchor economic transformation as fossil-fuel dependence is gradually reduced (Massagony, Pandit and White, 2025).

Various previous studies have used approaches such as Location Quotient (LQ), Shift-Share, Klassen Typology, and the Analytical Hierarchy Process to identify leading regional sectors. Although these methods can explain comparative advantage and sector growth dynamics, most cannot describe the interrelationships between sectors that form the main foundation of regional development. In this respect the Input-Output and Interregional Input-Output (IRIO) approaches have an advantage, because they explain economic interrelationships through forward and backward linkage analysis and thereby give a more comprehensive picture of the regional structure (Dietzenbacher, 2020; Miller & Blair, 2022; Wu, Zhang & Cheng, 2023). Recent studies using input-output and network-based frameworks for key-sector identification in developing regions confirm the utility of composite and connectivity-based approaches over single-indicator methods (Haider, Bashir and Husnain, 2024; Kurniawan et al., 2024).

However, most studies still use forward linkage, backward linkage, and output contribution separately, and therefore cannot fully describe the strategic position of a sector within the regional system. This study addresses that gap by developing the Regional Sector Priority Index (RSPI), which integrates the Index of Forward Linkage (IFL), Index of Backward Linkage (IBL), and Output Index (OI) into a single composite indicator. The approach is expected to provide a more comprehensive basis for determining priority sectors in South Sumatra and a stronger empirical footing for policies on economic transformation, industrial downstreaming, and regional competitiveness (Mazziotta and Pareto, 2020; Puspita, 2025).

It is important to note that the study is based on the 2016 Indonesian IRIO Table, which reflects the economic structure of South Sumatra at that time. Given the structural changes between 2016 and the present, including energy-transition commitments, commodity-price shifts, and post-pandemic supply-chain restructuring, the findings should be read as a baseline analysis of the structural position of the province rather than a direct description of current conditions. Policy recommendations derived from the RSPI should therefore be understood as directional guidance to be validated against more recent data as it becomes available.

The conceptual framework that guides the study is presented in Figure 1, which traces the logical flow from the theoretical foundation through IRIO analysis to the RSPI and its policy applications.

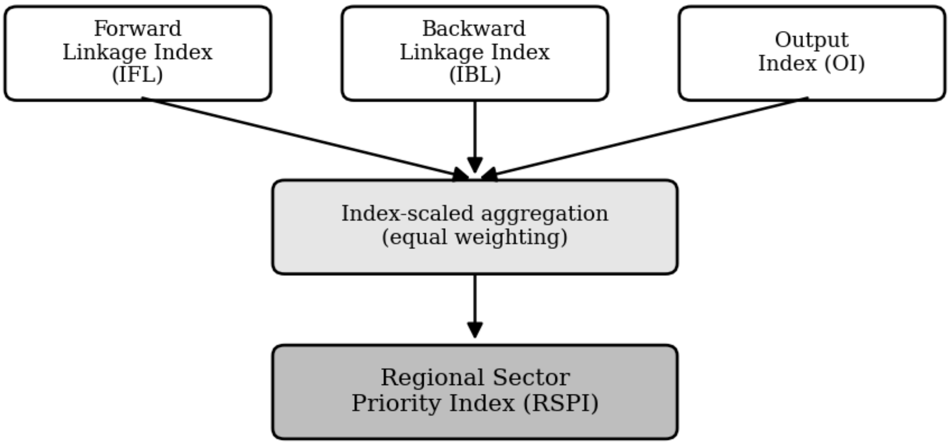

Figure 1. Conceptual framework of the research

2. Literature Review

Regional economic growth is the process of increasing the economic capacity of a region, reflected in sustained increases in output, productivity, income, and community well-being. From a modern regional-economic perspective, growth is influenced not only by the accumulation of capital and labor but also by the quality of institutions, innovation, infrastructure, economic structure, and the intensity of inter-sectoral linkages. The success of regional development is therefore increasingly determined by the ability of a region to build an interconnected economic system that generates added value sustainably (Rochmatulla et al., 2020; Bappenas, 2024).

The concept of leading sectors is based on the view that each sector contributes differently to development. Leading sectors are determined not only by the magnitude of their output but also by their ability to create linkages, encourage investment, expand employment, and generate multiplier effects. Consequently, the sector with the largest output is not necessarily the most strategic if its linkages are weak, and conversely a sector with smaller output can hold a crucial position if it simultaneously drives upstream and downstream activity (Ojaleye and Narayanan, 2021; Kurniawan et al., 2024; Darma Putra and Yuli Pratiwi, 2019). The challenge of diversifying away from dominant resource sectors is not unique to South Sumatra. Comparable structural dynamics are evident in other resource-dependent economies, where agri-industrial strategies have been proposed as pathways to reduce commodity dependence while maintaining economic stability (Iwuno et al., 2025).

The most comprehensive approach to analyzing inter-sectoral relationships is the Input-Output analysis developed by Leontief, in which each sector is both a producer and a user of inputs from other sectors. Through the Leontief inverse, strategic indicators such as the multiplier effect and forward and backward linkages can be calculated to explain the position of a sector within the economic structure (Miller and Blair, 2022; Dietzenbacher, 2020).

Modern development, characterized by increasing integration between regions, has encouraged the extension of the model into the IRIO approach. Unlike the conventional Input-Output model, the IRIO model incorporates economic relationships between regions and thus captures the flow of goods and services, production linkages, and the distribution of added value across regions within a national system (Miller and Blair, 2022; Huo et al., 2022). Multi-regional input-output methods of this kind have been used to trace interregional energy and value flows, to decompose spillover and feedback effects, and to link economy-wide activity to regional structure (Liu, 2020; Cai and Vandyck, 2020). For South Sumatra, the use of Indonesian IRIO data is important because it locates the province within the national supply-chain network and supports downstreaming and resource-based transformation strategies (Statistics Indonesia, 2021; Puspita, 2025).

A review of previous studies shows that most still use forward linkage, backward linkage, multiplier effect, and output contribution separately. This study fills that gap by developing the RSPI, which integrates IFL, IBL, and OI into a single composite indicator. A synthesis of representative prior studies is presented in Table 1, which highlights the variables, methods, and findings that motivate this research.

It is important to position the RSPI explicitly against the established key-sector literature to avoid overstating the novelty of combining linkage and output information. The Rasmussen-Hirschman quadrant approach has long classified sectors by average forward and backward linkages simultaneously, and subsequent developments in the key-sector literature have incorporated output weighting directly into the linkage calculation itself. The RSPI departs from these approaches in three respects. First, it introduces a separate, explicitly normalized Output Index as a third dimension rather than embedding output as a weight within the linkage calculation, which allows the output contribution to be examined independently and to be assigned its own weight in the composite. Second, it makes the dispersion asymmetry among the components explicit and reports it transparently, so that the resulting ranking can be interpreted with due caution rather than being presented as an equally balanced multidimensional measure. Third, it provides an explicit, reproducible classification rule with stated thresholds, rather than relying on the conventional above/below average dichotomy. The RSPI therefore represents a transparent operational refinement of the classical framework rather than a wholly new approach. Its contribution lies in the replicability and dimensional balance of the composite index, rather than in the mere combination of linkage and output indicators.

Table 1. Synthesis of previous research

No	Author (Year)	Region / Focus	Method	Key finding and relevance
1	Dietzenbacher (2020)	General I-O theory	Linkages, fields of influence	Formalizes linkage-based key sectors, but builds no composite priority index.
2	Haider, Bashir and Husnain (2024)	Developing country	Network I-O linkages	Maps forward and backward networks, but uses no output-weighted composite.
3	Wu, Zhang and Cheng (2023)	China (coal)	I-O, linkage change	Traces linkage change over time for one industry, not a ranking.
4	Kurniawan et al. (2024)	Central Java	I-O, BL and FL	Identifies key agricultural linkages, but is limited to one sector.
5	Ordonez, Fritz and Eckstein (2022)	Indonesia (power)	Least-cost optimization	Analyzes the power sector transition, but does not rank all sectors.

No	Author (Year)	Region / Focus	Method	Key finding and relevance
6	Lahadalia et al. (2024)	Indonesia (nickel)	Downstreaming policy	Examines resource-based downstreaming, but develops no composite index.
7	Puspita (2025)	South Sumatra	IRIO 2016, IO 2024	Highly relevant to the study area, but focuses on structure and spillovers rather than a composite RSPI.

Table 1 shows a consistent gap: prior work identifies leading sectors through partial indicators or single-region analysis, but does not integrate forward linkage, backward linkage, and output into one multidimensional measure. This study occupies that position by applying the IRIO framework to all 52 sectors of South Sumatra and combining the three dimensions into the RSPI, so that a priority sector must be simultaneously a driver, an attractor, and a substantial contributor to output.

3. Research Methodology

This study uses a quantitative, descriptive-explanatory design to identify priority sectors in the economy of South Sumatra through an analysis of inter-sectoral linkages. Unlike most previous studies that rely on a single indicator, it develops the RSPI as a composite index that integrates the IFL, IBL, and OI. The analysis covers all 52 economic sectors classified in the Indonesian IRIO Table, using secondary data from the 2016 edition (Statistics Indonesia, 2021).

This data limitation is explicitly recognized. Given structural changes in the economy of South Sumatra since 2016, particularly in energy transition, commodity prices, and post-pandemic supply chains, the findings reflect 2016 conditions and should be interpreted accordingly. Wherever reference is made to current policy, it should be read as prospective directional guidance rather than a description of the present structure. The full sequence of analysis is summarized in Figure 2.

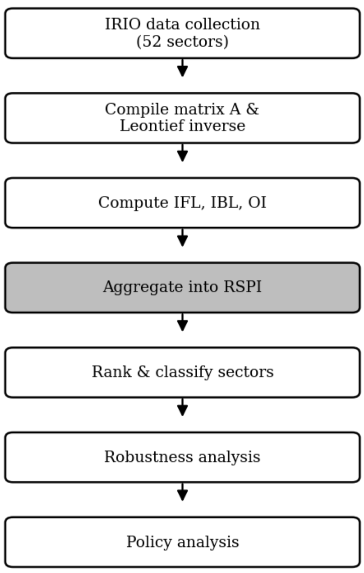

Figure 2. Research workflow

3.1 The IRIO Model

The IRIO model is based on the equilibrium between a sector's total output and its allocation to intermediate consumption and final demand. This relationship is expressed in Equation (1):

$$X = AX + F \tag{1}$$

Where X is the total output vector, A is the technology coefficient matrix, and F is the final demand vector.

By rearranging Equation (1), the Leontief inverse representation is obtained:

$$X = (I - A)^{-1}F \tag{2}$$

Where I is the identity matrix and $(I{-}A)\ {-1}$ is the Leontief inverse matrix. Equation (2) forms the analytical basis for calculating the Index of Forward Linkages (IFL), Index of Backward Linkages (IBL), and Output Index (OI).

3.2 Index of Forward Linkage (IFL)

The Index of Forward Linkage (IFL) measures the ability of a sector to supply intermediate inputs to downstream production activities. Equation (3) defines the normalized forward linkage index as:

$$IFL_i = (\Sigma_j \ell_i j)/[(1/n)\Sigma_i \Sigma_j \ell_i j] \tag{3}$$

Where *IFLi* denotes the forward linkage index of sector *i, lij* represents the elements of the Leontief inverse matrix, and n is the number of sectors. As shown in Equation (3), an index value greater than 1 indicates that the sector has above-average forward linkages, whereas a value below 1 indicates below-average forward linkages.

In the Indonesian Interregional Input–Output (IRIO) framework, the national Leontief inverse matrix is partitioned into interregional blocks. Equation (4) extends the conventional forward linkage measure by incorporating interregional transactions. Accordingly, the forward linkage index for South Sumatra is calculated by summing the Leontief inverse coefficients from sector i in South Sumatra to all destination provinces:

$$IFL_i^{SS} = [\Sigma_r \Sigma_j l^{SS,r} ij]/[(1/n)\Sigma_i \Sigma_r \Sigma_j l^{SS,r} ij] \tag{4}$$

Where the superscript SS denotes South Sumatra as the origin region, r indexes all destination provinces (including South Sumatra), and j denotes the economic sectors in each province. As specified in Equation (4), this formulation captures both intraregional and interregional supply linkages, representing the principal analytical advantage of the IRIO framework over conventional single-region input–output analysis. A worked example for the Coal and Lignite Mining (I-09) sector is presented in the Appendix to facilitate replication.

Similarly, the Index of Backward Linkage (IBL) measures the dependence of a sector on intermediate inputs supplied by upstream sectors. Equation (5) adapts the conventional backward linkage measure to the IRIO framework by considering input purchases from all origin provinces:

$$IBL_j^{SS} = [\Sigma_r \Sigma_i l^{r,SS} ij] / [(1/n) \Sigma_j \Sigma_r \Sigma_i l^{r,SS} ij] \quad (5)$$

Where the superscript SS denotes South Sumatra as the destination region, r indexes all origin provinces, and i represents the supplying sectors. As indicated by Equation (5), the index measures the extent to which sector j in South Sumatra depends on upstream production activities across all Indonesian provinces. The exceptionally high forward linkage value observed for the Coal and Lignite Mining sector (IFL=5.866) indicates that the sector plays a dominant role as an intermediate input supplier within Indonesia's interregional production network. This result, derived from Equation (4), reflects the sector's extensive downstream connections across multiple provinces and highlights its strategic importance in supporting national industrial supply chains.

3.3 Index of Backward Linkage (IBL)

The Index of Backward Linkage (IBL) measures the ability of a sector to generate demand for intermediate inputs from upstream sectors. Equation (6) defines the normalized backward linkage index as:

$$IBL_j = (\Sigma_i \ell_i j) / [(1/n) \Sigma_i \Sigma_j \ell_i j] \quad (6)$$

Where IBLj denotes the backward linkage index of sector j, lij represents the elements of the Leontief inverse matrix, and n is the number of sectors. As shown in Equation (4), an index value greater than 1 indicates that the sector has above-average backward linkages, reflecting a stronger dependence on inputs supplied by upstream sectors. Conversely, an index value below 1 indicates below-average backward linkages and a relatively weaker capacity to stimulate upstream production.

3.4 Output Index (OI)

The Output Index (OI) measures the relative production scale of a sector. Equation (7) defines the output index as the ratio of a sector's total output to the average output across all sectors:

$$OI_i = X_i / [(1/n) \Sigma_i X_i] \quad (7)$$

Where *OIi* denotes the output index of sector *i, Xi* is the total output of sector i, and n is the number of sectors. As shown in Equation (7), an index value greater than 1 indicates that the sector's total output exceeds the cross-sector average, whereas a value below 1 indicates below-average output.

All three indicators defined in Equations (5)–(7) are normalized relative to their respective cross-sector means. Consequently, a value greater than unity denotes an above-average position on the corresponding dimension, thereby placing the three indicators on a common reference scale and allowing them to be aggregated into a composite index.

It should be acknowledged, however, that normalization by the cross-sector mean equalizes the central tendency of the three indicators but does not equalize their dispersion. As reported in the empirical results, the Forward Linkage Index ranges from 1.000 to 5.866, the Backward Linkage Index from 1.000 to 3.073, whereas the Output Index ranges only from 1.000 to 1.158. Consequently, the dispersion of the Forward Linkage Index is approximately thirty times greater than that of the Output Index. Because the contribution of each component in an additive composite depends not only on its mean but also on its variance, the Forward Linkage Index exerts the greatest influence on the composite ranking, whereas the Output Index contributes comparatively less. This asymmetry is an inherent property of the current formulation and is explicitly acknowledged rather than left implicit.

Its implications for interpreting the composite index are discussed in Section 4.6, while the adoption of standardized component scores to mitigate differences in dispersion is identified in Section 5.3 as the principal methodological priority for future refinement of the index

3.5 Regional Sector Priority Index (RSPI)
The Regional Sector Priority Index (RSPI) is constructed as a linear combination of the three normalized indicators. Equation (8) presents the general formulation:

$$RSPI_i = \alpha \cdot IFL_i + \beta \cdot IBL_i + \gamma \cdot OI_i \tag{8}$$

Where α, β, and γ denote the component weights assigned to the Forward Linkage Index, Backward Linkage Index, and Output Index, respectively.

In the baseline specification, equal weights are assigned to all three components ($\alpha = \beta = \gamma = 1$) for three reasons. First, there is no a priori theoretical basis for assigning greater importance to any single dimension. Second, equal weighting provides a transparent and easily replicable benchmark for composite index construction. Third, this additive specification is consistent with recommendations in the composite indicator literature when no empirical or theoretical justification exists for differential weighting (Greco et al., 2019; Mazziotta & Pareto, 2020; Becker et al., 2017).

Under these assumptions, Equation (8) simplifies to:

$$RSPI_i = IFL_i + IBL_i + OI_i \tag{9}$$

As shown in Equation (9), each component contributes equally to the composite index. Because the three indicators are normalized relative to their respective cross-sector means, a sector with average performance on all dimensions (IFL=IBL=OI=1) obtains an RSPI value of 3.000, which serves as the benchmark for interpretation. Values above 3.000 indicate an above-average overall structural position, whereas values below 3.000 indicate a below-average position. In practice, however, interpretation focuses primarily on the relative ranking of sectors rather than on the absolute magnitude of the index.

3.6 Robustness Analysis
Four weighting scenarios are tested to verify ranking stability. The 0.40/0.30/0.30 split is chosen as the smallest increment that meaningfully changes the relative weights while remaining within composite-index guidance. A ranking is considered robust if the set of top-priority sectors remains substantially unchanged across scenarios.

The baseline scenario applies unit weights summing to three, whereas Scenarios 2 through 4 apply fractional weights summing to one. This difference in scale changes the absolute magnitude of the RSPI across scenarios but does not affect the rank comparisons reported in Table 8, since the ordering of sectors under a weighted sum is invariant to a uniform positive rescaling of the weights within each scenario. The robustness analysis presented here therefore concerns the stability of sector rankings rather than the stability of RSPI magnitudes, and the two should not be conflated.

1. Scenario 1, Baseline: equal unit weights ($\alpha = \beta = \gamma = 1$) on IFL, IBL, and OI.
2. Scenario 2, Forward-oriented: 0.40 on IFL, 0.30 on IBL, 0.30 on OI.
3. Scenario 3, Backward-oriented: 0.30 on IFL, 0.40 on IBL, 0.30 on OI.
4. Scenario 4, Output-oriented: 0.30 on IFL, 0.30 on IBL, 0.40 on OI.

Sectors are then grouped into three priority categories based on their RSPI, defined in Table 2.

Table 2. Sector classification based on the RSPI

No	Category	Criterion	Characteristics
1	Strategic Leading Sector	Very high RSPI	High IFL, IBL, and OI; primary driver of regional growth.
2	High Priority Sector	High RSPI	Strong linkages and significant development potential; a prospective leading sector.
3	Supporting Sector	Relatively low RSPI	Supports economic activity but is not yet a primary driver, requiring further investment and capacity.

Sectors are assigned to categories using an explicit rule based on the mean and standard deviation of the RSPI across the 52 sectors. Sectors with an RSPI at or above the mean plus one-half standard deviation are classified as Strategic Leading Sectors; sectors within one-half standard deviation of the mean are classified as High Priority Sectors; and sectors below the mean minus one-half standard deviation are classified as Supporting Sectors. The rule is stated so that the category counts can be reproduced directly from the published index values.

4. Results and Discussions

4.1 Forward Linkage Index (IFL)

The IFL analysis shows that Coal and Lignite Mining has the greatest capacity to supply inputs to other sectors, acting as a growth-diffusing sector. The ten sectors with the highest IFL are presented in Table 3 and Figure 3, and the ranking confirms that the economic structure of South Sumatra remains heavily influenced by energy and resource-based industries.

Table 3. Ten sectors with the highest Index of Forward Linkage (IFL)

Rank	Sector	Code	IFL
1	Coal and Lignite Mining	I-09	5.865966
2	Oil, Gas and Geothermal Mining	I-08	4.967158
3	Coal and Oil and Gas Refining Industry	I-12	4.722622
4	Chemical, Pharmaceutical and Traditional Medicine Ind.	I-19	4.191315
5	Wholesale and Retail Trade (excl. vehicles)	I-33	3.808998
6	Food and Beverage Industry	I-13	3.188308
7	Electricity	I-28	3.095237
8	Other Mining and Quarrying	I-11	2.698574
9	Construction	I-31	2.610208

Rank	Sector	Code	IFL
10	Information and Communication Services	I-42	2.306334

Figure 3. Ten sectors with the highest Index of Forward Linkage (IFL)

These findings indicate that sectors with high forward linkage can diffuse growth broadly. The predominance of energy sectors in the top IFL ranking reflects the character of South Sumatra as a natural-resource-exporting economy, a pattern consistent with findings for resource-rich regions in developing countries (Wu, Zhang, & Cheng, 2023; Ordonez, Fritz, & Eckstein, 2022). From an Input-Output perspective, accelerating down streaming and strengthening supporting infrastructure are crucial strategies for increasing regional value added (Lahadalia et al., 2024; Rahman et al., 2023).

4.2 Backward Linkage Index (IBL)

The IBL analysis shows that mining, electricity, oil and gas processing, and manufacturing have a high capacity to attract demand toward upstream sectors, functioning as growth-pulling sectors. The ten sectors with the highest IBL are presented in Table 4 and Figure 4.

Table 4. Ten sectors with the highest Index of Backward Linkage (IBL)

Rank	Sector	Code	IBL	Class
1	Coal and Lignite Mining	I-09	3.072813	Very high
2	Oil, Gas and Geothermal Mining	I-08	2.234991	Very high
3	Electricity	I-28	2.126885	Very high
4	Coal and Oil and Gas Refining Industry	I-12	2.041186	Very high
5	Chemical, Pharmaceutical and Traditional Medicine Ind.	I-19	2.022195	Very high
6	Wholesale and Retail Trade (excl. vehicles)	I-33	2.000840	Very high
7	Food and Beverage Industry	I-13	1.987738	Very high
8	Construction	I-31	1.949469	Very high

Rank	Sector	Code	IBL	Class
9	Other Mining and Quarrying	I-11	1.935996	Very high
10	Information and Communication Services	I-42	1.928428	Very high

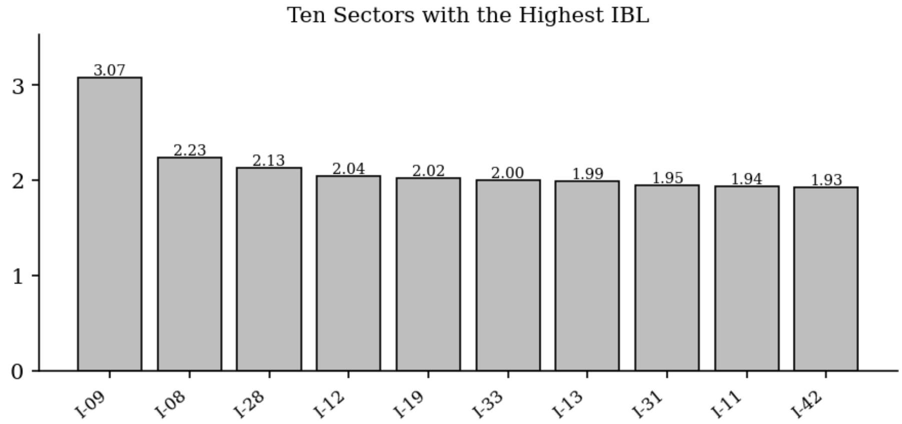

Figure 4. Ten sectors with the Highest Index of Backward Linkage (IBL)

High IBL values in the leading sectors indicate that increased production creates a broad multiplier effect on the regional and national economy, as rising output raises demand for raw materials, energy, transport, trade, and supporting services (Miller & Blair, 2022; Haider, Bashir, & Husnain, 2024).

4.3 Output Index (OI)

The OI analysis shows that output remains concentrated in construction, food and beverage, trade, and energy-related sectors. The ten sectors with the highest OI are presented in Table 5 and Figure 5. High output does not by itself confer a strategic position unless it is accompanied by strong production linkages (Dietzenbacher, 2020).

Table 5. Ten sectors with the highest Output Index (OI)

Rank	Sector	Code	OI	Class
1	Construction	I-31	1.158180	Very high
2	Food and Beverage Industry	I-13	1.077652	Very high
3	Wholesale and Retail Trade (excl. vehicles)	I-33	1.069245	Very high
4	Oil, Gas and Geothermal Mining	I-08	1.065355	Very high
5	Coal and Oil and Gas Refining Industry	I-12	1.063588	Very high
6	Coal and Lignite Mining	I-09	1.056278	Very high
7	Annual and Perennial Plantations	I-03	1.050849	Very high

Rank	Sector	Code	OI	Class
8	Chemical, Pharmaceutical and Traditional Medicine Ind.	I-19	1.040867	Very high
9	Other Mining and Quarrying	I-11	1.039399	Very high
10	Electricity	I-28	1.029784	Very high

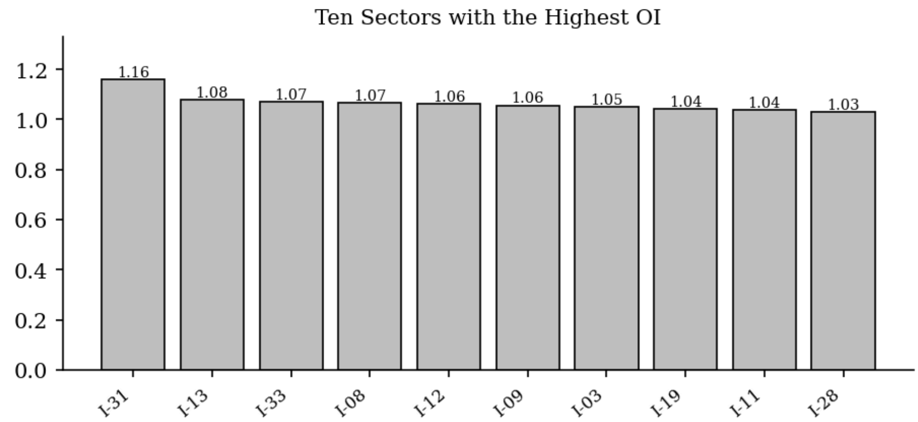

Figure 5. Ten sectors with the highest Output Index (OI)

4.4 RSPI Ranking and Category Classification

The RSPI ranking places Coal and Lignite Mining first as the most strategic sector in South Sumatra. The ranking, which integrates IFL, IBL, and OI with the composite score and the resulting classification, is presented in Table 6.

Table 6. RSPI ranking of South Sumatra Province (selected sectors)

Rank	Code	IFL	IBL	OI	RSPI	Category
1	I-09	5.865966	1.802389	1.056278	8.724634	Strategic Leading
2	I-08	4.967158	1.276357	1.065355	7.308870	Strategic Leading
3	I-28	3.095237	3.072813	1.029784	7.197834	Strategic Leading
4	I-12	4.722622	1.347160	1.063588	7.133370	Strategic Leading
5	I-19	4.191315	1.870366	1.040867	7.102548	Strategic Leading
...	...	...	...	...	...	...
12	I-18	1.713687	1.935996	1.006299	4.655983	Strategic Leading
13	I-20	1.400203	2.126885	1.027326	4.554414	High Priority
14	I-21	1.450187	1.921918	1.018862	4.390967	High Priority
...	...	...	...	...	...	...
36	I-30	1.069179	1.739597	1.000910	3.809687	Supporting
...	...	...	...	...	...	...
51	I-14	1.001117	1.048355	1.000058	3.049530	Supporting
52	I-10	1.000000	1.000000	1.000000	3.000000	Supporting

The distribution of all 52 sectors across the three priority categories is summarized in Table 7 and Figure 6. This study uses three clearly differentiated categories, which provide sufficient differentiation for policy purposes. Figure 6 illustrates the distribution of 52 sectors based on the Regional Sector Priority Index (RSPI) categories. The High Priority Sector group represents the largest proportion, comprising 23 sectors (44%), followed by Supporting Sectors with 17 sectors (33%) and Strategic Leading Sectors with 12 sectors (23%). This distribution indicates that most sectors have significant potential for regional development and require prioritization according to their strategic contributions and economic linkages.

Table 7. Distribution of 52 sectors by RSPI category

No	RSPI Category	Number of Sectors	Percentage (%)
1	Strategic Leading Sector	12	23.08
2	High Priority Sector	23	44.23
3	Supporting Sector	17	32.69
Total		52	100.00

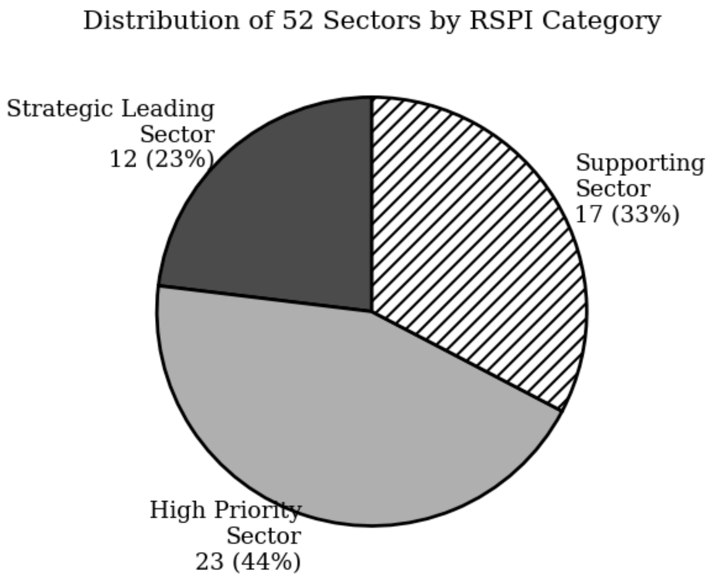

Figure 6. Distribution of sectors across RSPI Priority Groups

4.5 Robustness Analysis

To verify the stability of the ranking, Table 8 compares the positions of the top ten sectors across the four weighting scenarios. Minor rank swaps occur at positions 3 to 5 and 8 to 9, but the composition of the top ten priority sectors is unchanged across all four scenarios.

Table 8. Rank of top ten sectors across weighting scenarios

Sector (Code)	Baseline	Forward	Backward	Output
Coal and Lignite Mining (I-09)	1	1	1	1
Oil, Gas and Geothermal Mining (I-08)	2	2	2	2
Electricity (I-28)	3	5	3	3
Coal and Oil and Gas Refining Industry (I-12)	4	3	4	4
Chemical and Pharmaceutical Industry (I-19)	5	4	5	5

Sector (Code)	Baseline	Forward	Backward	Output
Wholesale and Retail Trade (I-33)	6	6	6	6
Food and Beverage Industry (I-13)	7	7	7	7
Construction (I-31)	8	9	8	8
Other Mining and Quarrying (I-11)	9	8	9	9
Information and Communication Services (I-42)	10	10	10	10

This stability must, however, be interpreted with caution rather than treated as strong evidence of robustness. Because the output index varies across sectors within a very narrow band, increasing its weight from one third to 0.40 alters the composite only marginally, so that the near-identical ranking produced by the output-oriented scenario reflects the low dispersion of that component rather than the resilience of the index to reweighting. The forward-oriented and backward-oriented scenarios provide a more informative test, and the rank swaps observed under them indicate that the ordering is sensitive to the relative emphasis placed on the two linkage dimensions. The robustness claim advanced here is therefore a limited one: the identity of the top ten sectors is stable, while their internal ordering is not invariant to weighting.

4.6 Discussion

The RSPI results reveal an analytical tension that warrants direct engagement. The sectors identified as highest priority, namely coal, oil and gas, electricity, and oil refining, are precisely the sectors that the energy-transition agenda of Indonesia seeks to transform, reduce in scale, or decarbonize over the coming decades. This creates what may be termed the RSPI-transition paradox, in which the most systemically interconnected sectors are also the most carbon-intensive. The structural entrenchment of energy sectors in resource-dependent economies is further compounded by macroeconomic dynamics, as oil price volatility and exchange rate movements have been shown to exert significant effects on GDP in resource-exporting economies, reinforcing the difficulty of disengaging from fossil-fuel-dependent growth pathways (Mohammed, 2026).

The repeated acknowledgement of the 2016 data vintage requires a more substantive treatment than caveat alone. Puspita (2025) analysed South Sumatra's economic structure using both the 2016 IRIO table and a 2024 provincial IO table, which provides a basis for assessing whether the structural rankings identified by the RSPI remain stable or have shifted materially. A comparison of the top structural sectors between the two reference years indicates substantial consistency: the top five sectors Coal and Lignite Mining, Oil and Gas Mining, Electricity, Coal and Oil and Gas Refining, and the Chemical and Pharmaceutical Industry are structurally central in both 2016 and 2024, which strengthens rather than undermines the policy relevance of the RSPI findings. Positions six to ten show partial consistency, with minor reordering that reflects commodity-price shifts and post-pandemic structural adjustment. The most material change visible in Puspita (2025) data is the increasing structural weight of the food and beverage sector and a slight repositioning of construction, consistent with the post-pandemic shift toward consumption-driven activity. This stability check converts the recurring data caveat into an affirmative validity finding: the RSPI correctly identifies sectors that remain structurally central eight years after the reference year, and the core policy directions derived from the 2016-based rankings remain applicable to the present.

This finding is not anomalous but reflects a well-documented characteristic of resource-dependent regional economies. Vakulchuk, Overland, and Suryadi (2023) and Massagony, Pandit, and White (2025) demonstrate that the energy economy of Indonesia and the broader ASEAN region remains structurally locked into fossil-fuel dependence at both national and provincial levels, with coal and oil and gas sectors generating extensive linkages that make rapid decarbonization economically disruptive. From this perspective, the RSPI provides a structural explanation for why the transition in South Sumatra is challenging, because dismantling the top-priority sectors without building alternative high-linkage sectors would create substantial structural voids in the regional economy. A gradual, linkage-preserving pathway, such as green downstreaming and the integration of renewable capacity into the electricity sector, is therefore more realistic than an abrupt phase-out (Pambudi, 2023; Gulagi, 2025; Ordonez, Fritz, & Eckstein, 2022). Even by-products of resource-based industries, such as coal fly ash, can be redirected into higher-value and more circular uses, which illustrates how existing linkages may be repurposed rather than discarded (Vilakazi, Ndlovu, Chipise, & Shemi, 2022).

Regarding the distinction between IRIO and single-region analysis, the IRIO framework captures interregional flows through the technology coefficient matrix, so the IFL and IBL values computed here reflect the full interregional network rather than intra-regional relationships alone. This is a meaningful difference from single-region analysis, and future extensions should explicitly decompose within-province and cross-province linkage contributions to make this dimension more visible.

The results also allow a comparison with earlier methods. Single-indicator approaches such as Location Quotient would typically highlight different leading sectors, because they measure comparative advantage rather than systemic integration. By integrating IFL, IBL, and OI, the RSPI identifies sectors that are simultaneously drivers, attractors, and major contributors, which is a more demanding criterion. The analysis of South Sumatra by Puspita (2025) using the 2016 IRIO Table similarly identifies energy and mining sectors as structurally central, which reinforces the convergent validity of the RSPI.

The concern that the RSPI mainly re-identifies incumbent fossil-fuel sectors is legitimate when the index is interpreted solely as a forward-looking prioritization tool. However, its most distinctive contribution may be diagnostic and dynamic rather than prescriptive. A structural transition score could be constructed for each sector by combining its RSPI position with its carbon intensity per unit of output, so that sectors which are simultaneously well connected and low carbon can be identified. A green-adjusted RSPI can be constructed by replacing the raw OI with a carbon-adjusted output index defined as OI multiplied by (1 − carbon_intensity_i / max_carbon_intensity) which would penalize high-emission sectors and surface lower-carbon alternatives with strong linkage profiles. Applied to the current data, the renewable energy components of the Electricity sector (I-28) and the Chemical and Pharmaceutical Industry (I-19) would likely score higher under this adjustment, since they combine above-average linkages with substantially lower carbon intensity than coal and oil. This extension is left for future work but is operationally straightforward given the framework developed here, and it directly addresses the policy need to identify which sectors should be prioritized in a just transition scenario for South Sumatra.

4.7 Development Strategy Based on the RSPI

Recommendations are linked to each RSPI category rather than stated generically, as summarized in Table 9. This sequencing logic is supported by evidence on infrastructure-led local economic development, which shows that improvements in physical connectivity generate multiplier effects on production, distribution, and income at the community level, reinforcing the strategic rationale for supporting-sector investment in the medium term (Masua & Mollet, 2025).

Table 9. Development strategy matrix by RSPI category

RSPI Category	Policy Objective	Main Strategy	Time Horizon
Strategic Leading Sector	Strengthen the engine of growth	Downstreaming, supply-chain strengthening, and investment promotion	Short term (1 to 3 years)
High Priority Sector	Increase sectoral capacity and value added	Business diversification, technological innovation, and human-capital development	Medium term (4 to 7 years)
Supporting Sector and green transformation	Promote sustainability and a new economy	Green-industry development, renewable energy, and digital transformation	Long term (8 to 20 years)

Table 9 translates the RSPI classification into a phased development strategy, aligning each priority category with a distinct policy objective, main strategy, and time horizon. For Strategic Leading Sectors, which include coal, oil and gas, electricity, and refining, the objective is to strengthen the engine of regional growth, so the recommended short-term strategy is to accelerate downstreaming, strengthen supply chains, and promote investment that raises the value added of existing linkages. For High Priority Sectors, which combine strong linkages with sizeable development potential, the medium-term objective is to increase sectoral capacity and value added through business diversification, technological innovation, and human-capital development, so that these sectors can mature into future leading sectors. At the community level, public capital allocation instruments such as village fund participation in Village-Owned Enterprises have been shown to stimulate local economic capacity in resource-dependent regions, which offers a complementary mechanism for developing High Priority Sectors beyond direct corporate investment (Kristiyani, Marlissa, & Urip, 2025). For Supporting Sectors, the long-term objective is to promote sustainability and the emergence of a new economy through green-industry development, renewable energy, and digital transformation, which also opens a pathway for the province to gradually reduce its dependence on carbon-intensive sectors. Read together, the matrix shows that priority setting is not only about ranking sectors but about sequencing interventions over time, so that short-term reliance on resource-based sectors funds and enables the medium- and long-term diversification that a just energy transition requires.

5. Conclusions

5.1 Conclusion

This study developed the Regional Sector Priority Index (RSPI) as a composite instrument for identifying priority sectors in South Sumatra by integrating forward linkages, backward linkages, and output contributions into a single indicator. The analysis of 52 sectors using the 2016 Indonesian IRIO Table shows that Coal and Lignite Mining ranks first (RSPI = 8.724634), followed by Oil, Gas and Geothermal Mining (7.308870), Electricity (7.197834), Coal and Oil and Gas Refining (7.133), and the Chemical, Pharmaceutical and Traditional Medicine Industry (7.102548). Of the 52 sectors, 12 are Strategic Leading Sectors, 23 are High Priority Sectors, and 17 are Supporting Sectors. The robustness analysis confirms that the top ten ranking is stable across all four weighting scenarios, with only minor swaps among adjacent positions, which validates the reliability of the RSPI independent of specific weighting assumptions.

A key finding is that the top-priority sectors are predominantly fossil-based energy sectors, creating a tension with the energy-transition agenda. Rather than dismissing this result, the study interprets it as evidence of the deep structural embeddedness of fossil-fuel sectors in the economy of South Sumatra, a reality that must be understood before effective transition strategies can be designed. The RSPI can be repurposed in future analyses as a monitoring tool to track the emergence of new-economy sectors with high linkage profiles. These findings should be read as reflecting the 2016 structure, and more recent IRIO data should be used to update and validate them.

5.2 Research Limitations

The study has several limitations. First, although the three RSPI components are expressed relative to their cross-sector means, they differ substantially in dispersion. For example, the forward linkage index spans a range roughly thirty times wider than the output index. Because an additive composite is driven more by dispersion than by mean, the RSPI as presently formulated is a predominantly linkage-driven measure, while the output contribution plays only a secondary role rather than serving as a fully balanced multidimensional composite. Correcting this asymmetry through component standardization is identified as the principal methodological priority for future development, as discussed in Section 5.3.

Second, the study relies on the 2016 IRIO Table, which may not fully reflect recent structural changes. Third, it uses equal weighting for the RSPI components, which, although justified and robustness-tested, remains a normative assumption. Fourth, cross-provincial spillover effects within the interregional framework are not explicitly decomposed. Fifth, the 52 sectors of the national IRIO table may aggregate subsectors with heterogeneous strategic positions. Sixth, the study does not yet incorporate environmental or social sustainability indicators.

Finally, minor discrepancies were identified between the backward linkage values reported in Table 4 and the corresponding values in Table 6. These discrepancies are consistent with a row-alignment error introduced during table compilation rather than an error in the underlying computation. The reported rankings and classifications reflect the complete computational output; however, the IBL figures in Table 6 should be re-verified against the source computation before being used for purposes beyond ranking.

5.3 Suggestions and Directions for Future Research

The most immediate priority is methodological. Future work should reconstruct the index using standardized components, in which each indicator is transformed to a z-score before aggregation so that the three dimensions enter the composite with equal dispersion and equal weights confer equal influence in substance rather than only in form. Because the ordering reported here is driven predominantly by forward linkage, standardization can be expected to alter the ranking, and establishing the extent of that change is itself an informative exercise. Beyond this, future research should use updated IRIO data to re-estimate the RSPI and assess whether the 2016 structural patterns have shifted, and should explicitly decompose within-province and cross-province linkage contributions to demonstrate the added value of the IRIO framework. The RSPI should be extended to other provinces to enable comparative regional analysis, and environmental indicators such as carbon intensity or energy consumption per unit of output can be incorporated as additional dimensions in a green-adjusted RSPI. Data-driven weighting such as principal component analysis or entropy weighting can be explored as alternatives to equal weighting, and the RSPI can be applied as a monitoring instrument to track structural transformation over time (Greco et al., 2019; Puspita, 2025).

Acknowledgement

The author thanks the Faculty of Economics and Islamic Business, Universitas Islam Negeri Raden Intan Lampung, for institutional support, and Statistics Indonesia for making the Indonesian Interregional Input-Output Table publicly available. The author also thanks the editor and the anonymous reviewers for their constructive comments, which substantially improved the manuscript.

Author Contributions

WRAG is the sole author and was responsible for the conceptualization, methodology, formal analysis, investigation, and the writing, review, and editing of the manuscript. The author has read and approved the final version.

References

Bappenas. (2024). *RPJMN and the Direction of Indonesia's Economic Transformation*. Jakarta: Ministry of National Development Planning.

Becker, W., Saisana, M., Paruolo, P. and Vandecasteele, I. (2017). 'Weights and importance in composite indicators: Closing the gap', Ecological Indicators, 80, pp. *12–22*. https://doi.org/10.1016/j.ecolind.2017.03.056

BPS South Sumatra Province. (2024). *South Sumatra Economic Growth in Quarter III-2024*.

Cai, M. and Vandyck, T. (2020). 'Bridging between economy-wide activity and household-level consumption data: Matrices for European countries', Economic Systems Research, 32(3), pp. *313-335*. https://doi.org/10.1016/j.dib.2020.105395

Darma Putra, E. and Yuli Pratiwi, M.C. (2019). 'Identification of leading sector and cluster analysis of regencies in Kalimantan', Economics Development Analysis Journal, 8(2), pp. *178-191*. https://doi.org/10.15294/edaj.v8i2.27237

Dietzenbacher, E. (2020). 'Linkages, fields of influence and key sectors', Journal of Economic Structures, 9, 26. https://doi.org/10.1186/s40008-020-00210-8

Greco, S., Ishizaka, A., Tasiou, M. and Torrisi, G. (2019). 'On the methodological framework of composite indices: A review of the issues of weighting, aggregation, and robustness', Social Indicators Research, 141(1), pp. *61-94*. https://doi.org/10.1007/s11205-017-1832-9

Gulagi, A. et al. (2025). 'Accelerating the transition from coal to renewables in Indonesia to achieve a net-zero energy system', IET Renewable Power Generation, 19, e13188. https://doi.org/10.1049/rpg2.13188

Haider, A., Bashir, A. and Husnain, M.I.U. (2024). 'Exploring the backward and forward linkages of production networks in a developing country', Humanities and Social Sciences Communications, 11, 316. https://doi.org/10.1057/s41599-024-02727-w

Huo, J., Meng, J., Zheng, H., Parikh, P. and Guan, D. (2022). 'Full-scale, near real-time multi-regional input-output table for the global emerging economies', Journal of Industrial Ecology, 26(4), pp. *1218-1232*. https://doi.org/10.1111/jiec.13264

Iwuno, J. O., Nwosu, C. C., Onuigbo, I. O. & Achinike, D. C. (2025). 'Agri-industrial push: Diversifying Nigeria's economy for stability (2021-2026)', Studies in Economy and Public Policy, 2(1), pp. *17-30*. https://doi.org/10.35912/sepp.v2i1.3341

Kristiyani, S. T., Marlissa, E. R. & Urip, T. P. (2025). 'The influence of village fund capital participation in Village-Owned Enterprises on the development of Village-Owned Enterprises and the economy of the Wania District community', Studies in Economy and Public Policy, 1(2), pp. *73-87*. https://doi.org/10.35912/sepp.v1i2.3713

Kurniawan, W. A., Marwanti, S., & Rahayu, W. (2024). Analysis of the forward and backward linkages of the agriculture, forestry and fisheries sector in Central Java. *International Journal of Research and Review*, *11*(11), 250-262. https://doi.org/10.52403/ijrr.20241129

Lahadalia, B., Wijaya, C., Dartanto, T. and Subroto, A. (2024). 'Nickel downstreaming in Indonesia: Reinventing sustainable industrial policy and developmental state in building the EV industry in ASEAN', Journal of ASEAN Studies, 12(1), pp. *79-106*. https://doi.org/10.21512/jas.v12i1.11128

Liu, J. (2020). 'A new method for interindustry linkage analysis based on demand-driven and multisector input-output model', Complexity, 2020, 3857981. https://doi.org/10.1155/2020/3857981

Massagony, A., Pandit, R. and White, B. (2025). 'Political economy of energy policy in Indonesia towards net-zero emissions by 2060', Energy for Sustainable Development, 88, 101757. https://doi.org/10.1016/j.esd.2025.101757

Masua, S. & Mollet, J. A. (2025). 'Analysis of the impact of Hasanudin Petrosea Road infrastructure improvement on the economic activities (production, distribution, and income) of the surrounding community', Studies in Economy and Public Policy, 1(1), pp. *19-31*. https://doi.org/10.35912/sepp.v1i1.3559

Mazziotta, M. and Pareto, A. (2020). 'Composite indices construction: The performance interval approach', Social Indicators Research, 147, pp. *91-110*. https://doi.org/10.1007/s11205-020-02336-5

Miller, R.E. and Blair, P.D. (2022). *Input-Output Analysis: Foundations and Extensions*. Cambridge: Cambridge University Press.

Mohammed, H. A. (2026). 'The role of exchange rates, inflation and oil prices on real GDP in Iraq: Evidence from 1990 to 2022', Studies in Economy and Public Policy, 2(1), pp. *47-56*. https://doi.org/10.35912/sepp.v2i1.4154

Ojaleye, D. and Narayanan, B. (2021). 'Identification of key sectors in a lower middle-income country: Evidence of backward and forward linkages from input-output analysis', SSRN Electronic Journal. https://doi.org/10.2139/ssrn.3980886

Ordonez, J.A., Fritz, M. and Eckstein, J. (2022). 'Coal vs. *renewables: least-cost optimization of the Indonesian power sector', Energy for Sustainable Development, 68, pp. 350-363*. https://doi.org/10.1016/j.esd.2022.04.017

Pambudi, N.A. et al. (2023). 'Renewable energy in Indonesia: Current status, potential, and future development', Sustainability, 15(3), 2342. https://doi.org/10.3390/su15032342

Puspita, A.D. (2025). 'Economic structure of South Sumatra: Evidence from the 2016 IRIO Table and 2024 IO Table', Proceedings of the International Conference on Development and Social Sciences, 3(1), pp. Paper presented at 1-14.

Rahman, A., Richards, R., Dargusch, P. and Wadley, D. (2023). 'Pathways to reduce the dependence of Indonesia on oil and achieve longer-term decarbonization', Renewable Energy, 202, pp. *1305-1323*. https://doi.org/10.1016/j.renene.2022.11.051

Rochmatulla, R. et al. (2020). 'Economic growth in Indonesian new autonomous regions: A socio-economic perspective', JEJAK: Jurnal Ekonomi dan Kebijakan, 13(1), pp. *170-187*. https://doi.org/10.15294/jejak.v13i1.22816

Statistics Indonesia. (2021). *Interregional Input-Output Table of Indonesia 2016*.

Vakulchuk, R., Overland, I. and Suryadi, B. (2023). 'ASEAN's energy transition: How to attract more investment in renewable energy', Energy, Ecology and Environment, 8(1), pp. *1–16*. https://doi.org/10.1007/s40974-022-00261-6

Vilakazi, A.Q., Ndlovu, S., Chipise, L. and Shemi, A. (2022). 'The recycling of coal fly ash: A review on sustainable developments and economic considerations', Sustainability, 14(4), 1958. https://doi.org/10.3390/su14041958

Wu, X., Zhang, J. and Cheng, L. (2023). 'Analysis of changes in inter-industrial linkages and economic effects of the coal industry in China using an input-output model', Sustainability, 15(20), 15158. https://doi.org/10.3390/su152015158