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Designing Future Policy Scenarios for Sustainable Urban Freight Transport: Lessons from the Jakarta Greater Area

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Abstract

As the center of economic growth and the hub of industries and trade in Indonesia, the issue of goods transportation development in the Jakarta Greater Area deserves higher priority, amongst academics, private sector leaders, and policymakers. Currently, freight trucking is the most widely used mode of goods transportation within the Jakarta greater area (91.3 percent), exceeding the other two alternative modes: sea (7.6 percent) and railway (1.1 percent) transportation. However, the movement of goods transported along the corridor is very congested, not environmentally friendly, and has a relatively small efficiency value and economies of scale. On the other hand, the train mode offers several advantages over the truck mode, including a large transport capacity, relatively fast travel times, freedom from illegal levies, and more guaranteed goods safety. This article employs a mixed-methods approach that combines documentary and SWOT Analysis to explore the current and prospective status of freight railways in the Jakarta region as perceived by key multiple stakeholders, including national and provincial governments, the private sector, academia, and civil society organizations. The results reveal vertical and horizontal disharmony among the responsible government units at both the national and provincial levels regarding the future direction of Jakarta's freight transport. Interestingly, during the FGD, the rational trucking business owners did not show any reluctance toward railway development, as it turned out that a more integrated, intermodal transportation is a better option for all. Finally, the DKI Jakarta Provincial Government needs to prioritize its resources to address the existing weaknesses and challenges before expanding further with a broader and more ambitious strategy.

Keywords: Integrated Policy, Policy Strategy, SWOT Analysis, Transportation Policy.

Abstrak

Sebagai pusat pertumbuhan ekonomi dan pergerakan industri serta perdagangan di Indonesia, isu pengembangan angkutan barang di Jabodetabek membutuhkan perhatian yang lebih baik di kalangan akademisi, para pemimpin dunia usaha, maupun pembuat kebijakan. Saat ini, angkutan truk barang merupakan moda angkutan barang yang paling banyak digunakan di wilayah Jakarta (91,3 persen), melampaui dua alternatif moda lainnya: angkutan laut (7,6 persen) dan kereta api (1,1%). Akan tetapi, pergerakan barang yang diangkut di sepanjang koridor tersebut sangat padat, tidak ramah lingkungan, serta memiliki nilai efisiensi dan skala ekonomi yang relatif kecil. Di sisi lain, moda kereta api menawarkan sejumlah keunggulan dibandingkan moda truk, antara lain kapasitas angkut yang besar, waktu tempuh yang relatif cepat, bebas pungutan liar, dan keamanan barang yang lebih terjamin. Artikel ini menggunakan pendekatan metode campuran melalui analisis dokumen dan SWOT untuk mengeksplorasi kondisi terkini dan prospek kereta api barang di wilayah Jakarta sebagaimana dipersepsikan oleh berbagai aktor, termasuk pemerintah nasional dan provinsi, sektor swasta, akademisi, dan organisasi masyarakat sipil. Hasilnya menunjukkan ketidakharmonisan vertikal dan horizontal di antara unit-unit pemerintah yang bertanggung jawab di tingkat nasional dan provinsi mengenai arah masa depan transportasi barang Jakarta. Yang menarik, selama Diskusi Kelompok Terarah, para pemilik bisnis truk yang rasional tidak menunjukkan keengganan terhadap pengembangan kereta api karena ternyata transportasi antarmoda yang lebih terintegrasi merupakan pilihan yang lebih baik bagi semua. Pemerintah Provinsi DKI Jakarta perlu memprioritaskan sumber dayanya untuk mengatasi kelemahan dan tantangan yang ada sebelum memperluas lebih jauh dengan strategi yang lebih luas dan lebih ambisius.

Kata kunci: Analisis SWOT, Kebijakan Terpadu, Kebijakan Transportasi, Strategi Kebijakan

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INTRODUCTION

A sustainable urban transportation system plays a vital and strategic role in supporting regional and national development (Thondoo et al., 2020). It provides accessibility, social inclusion, and mobility. Optimizing a transportation policy can impact a country's development through various levers, including costs, savings, sustainability, and investments. A reliable transportation system ensures the smooth flow of goods and services to desired destinations (Matyas et al., 2023; Rodrigue, 2020; Ugoani, 2023). The transportation sector plays a vital role as a regional liaison, supporting, encouraging, and mobilizing national development to ensure the even distribution of logistics and commodities across Indonesia's major cities and regions. Kemenhub (2024) data highlights the scale of Indonesia's rail sector underpinned by significant existing assets: 4,861.10 km of railway track, 486 locomotives, 920 diesel/electric train units, 1,716 passenger trains, and 6,249 carriages. Moreover, the market potential for rail transportation is enormous, given its advantages over other transportation modes in capacity, punctuality, and cost. Rail transportation supports multimodal development and is integrated with other public transportation developments—especially in urban and inter-city areas, ports, and airports, as well as inter-city bus terminals, feeder transport, and bus rapid transit (Kementerian Perhubungan Republik Indonesia, 2024).

The capital city of Jakarta has a large volume of commodity movements. There is a vast potential market for logistics businesses considering the varieties of goods to be delivered, such as textile products in Tanah Abang, food logistics from and to Cipinang, and other goods from and to the airport (Authors' own data, 2022). The average daily mode of movement to and from Jakarta accounts for approximately 100 million movements (DKI Provincial Government, 2022). However, the movement of goods transported from and to Jakarta is very congested, as it is predominantly by land. For instance, along the 780 km Jakarta-Surabaya corridor, trucking still dominates the number of logistics shipments, despite the availability of a long-distance railway line (Kusumatandianma et al., 2014).

Truck-based freight transportation in Indonesian context has several weaknesses, including 1) not being environmentally friendly; the transportation sector was responsible for 136 MT of carbon dioxide (CO2) emissions in 2016, 90% of which was caused by land transportation, 2) most of the trucks are outdated, do not have fuel processing technology that minimizes emissions, and has a higher accident risk, 3) has a relatively small value of efficiency and economies of scale because various expenses must be incurred, 4) Over dimension & Overloaded vehicles also increase the risk of accidents and higher maintenance/damage costs, and 5) the impacts such as road congestion cause significant delays and potential loss of time. However, truckload shipping remains the primary preference because it eliminates double handling by delivering goods directly to the endpoint. Additionally, it is not bound by a specific time frame, as delivery can be made at any time once the delivery quota has been reached (Kusumatandianma et al., 2014;(Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), 2022) (Ernyasih et al., 2025)

Among the three modes of transportation (sea, land, and railway), road transportation (trucking) dominates with a percentage of approx. 91.3%, sea transportation with around 7.6%, and rail transportation (KA) with only around 1.1% share (DKI Provincial Government, 2022). On the other hand, almost the entire road network is used for passenger transport, whether it be buses, private cars, or motorcycles, so the movement of goods is significantly hampered.

On the other hand, the train mode has several advantages over the truck mode, including a large transport capacity, relatively fast travel times, and exemption from illegal levies (Rodrigue, 2020). Additionally, the security and safety of goods are more guaranteed. The carrying capacity of one special baggage carriage is 20 tons, and the maximum carrying capacity for one trip is 160 tons (United Nations Economic Commission for Europe, 2016). A shift from road transport to rail transport can effectively reduce freight transport externalities, including CO2 and other emissions, accidents, and congestion (da Fonseca-Soares et al., 2024; Li & Zhang, 2020; Lin et al., 2017). Improving the competitiveness of rail freight transport in terms of cost, time, reliability, and public service level is crucial to achieving a higher rail-mode share. However, the train is constrained by the problem of a minimal departure frequency and a higher minimum delivery quota than trucks (International Transport Forum, 2019).

This study examines existing internal and external conditions and integrates these evaluations into goals and policy scenario. SWOT analysis was employed as the basis for exploring strategic recommendations for developing the right rail-based freight transport policy strategy in the Jakarta greater area. According to (Daft & Armstrong, 2021), a SWOT analysis is a strategy formulation that begins with evaluating both internal and external factors that affect organizational performance. At the same time, external information related to freight transportation opportunities and challenges was obtained from various sources, including interviews and FGD with key stakeholders (including consultants, logistic associations, private and public logistic industries, government agencies, and academia), as well as document analysis.

A SWOT analysis, as cited from Kotler & Keller (2016), is interpreted as an evaluation of all four factors: Strengths, Weaknesses, Opportunities, and Threats/Challenges. SWOT is a comprehensive analysis tool for evaluating both internal and external environments. This analysis is also based on the assumption that an effective strategy can minimize weaknesses and challenges. This simple assumption can have a significant impact on a successful strategy if implemented correctly.

According to Rangkuti (2015b), the SWOT analysis method is a way to conduct self-evaluation, enabling the organization to make projections, strategies, and plans to improve its operations. The basic concept of SWOT analysis was initially developed in 1952 by Lockheed's Corporate Development Planning Department and then improved by Robert F. Stewart, Head of the Theory and Practice of Planning Group at the Stanford Research Institute (Puyt et al., 2020). A SWOT analysis identifies strengths and weaknesses within organization's internal environment, as well as opportunities (O) and threats (T) from external environment. Both environments, namely internal and external, must be identified so that the organization can develop the right strategy to address the dynamics of environmental change and to anticipate potential opportunities (Rahayu, 2015; Davis, 2007). Benzaghta et al. (2021) provided a comprehensive literature work on SWOT applications across multiple sectors.

The SWOT mapping analysis is conducted through two discussion stages: The first stage collects SWOT information, and the second stage confirms it (Rangkuti, 2015a). The SWOT analysis systematically employs various factors to formulate organizational strategy by maximizing existing strengths and opportunities while minimizing weaknesses and challenges.

The following research questions are examined in this study:

1. How do the multiple national and provincial stakeholders perceive the existing conditions of the rail mode-based freight transport policies in the Jakarta Greater Area?
2. Based on the SWOT Analysis, what strategies are considered most effective to develop more sustainable freight transport policies in the Jakarta Greater Area context?

RESEARCH METHOD

This research employs a mixed-method approach combining literature reviews, interviews, focused-group discussions, and surveys to develop a SWOT Analysis mapping from multi-stakeholder perspectives in answering the proposed research questions.

An initial literature review was conducted at an early stage to develop a theoretical framework as guidance for answering the proposed research questions. The literature works also scrutinized relevant policy document analysis that generated a compilation of initial SWOT indicators as a pre-material for the FGD session, portraying the actual freight transport policy conditions in the Jakarta Greater Area. The main reference sources for the literature works include, amongst others: 1) the DKI Jakarta Provincial Railway Master Plan (RIPP), 2) the Greater Jakarta Transportation Master Plan (RITJ) Review, 3) the Greater Jakarta Goods Transport Station Master Plan, and 4) DKI Jakarta RIPP Institutional Study. To provide a more in-depth analysis, the levels of analysis were narrowed and initiated based on the planning aspect. The analysis also incorporated mapping out of outdated and no longer relevant regulations based on regulatory review of policy documents. The data obtained from these studies are elaborated with fieldwork results and relevant case literature studies.

Focused-group discussions with nineteen selected resource persons and in-depth interviews with the Jabodetabek Urban Transportation Policy Integration Team, a Jakarta-based expert team supported by the Japanese Government, and PT. KAI Logistics (the Indonesian Railway Logistics Division) was conducted to validate the initial SWOT indicators resulting from the literature works. The main discussion points explored during the FGD and interview sessions were related to three main topics: 1) Existing conditions regarding the rail mode-based freight transport policy in DKI Jakarta, 2) Exploration of the SWOT Factors for developing rail mode-based freight transport policies in DKI Jakarta, and 3) Potential strategy to implement the freight transport policies in DKI Jakarta. An updated list of SWOT indicators was then created accordingly. At the final stage, a survey using the Final SWOT instrument was redistributed to the same group of respondents and then further analyzed to develop a recommended strategy for the successful implementation of the Rail-based Freight Transport Policy Action Plan in the DKI Jakarta Province.

In general, the technical steps to conduct the SWOT Analysis are described in the following flowchart:

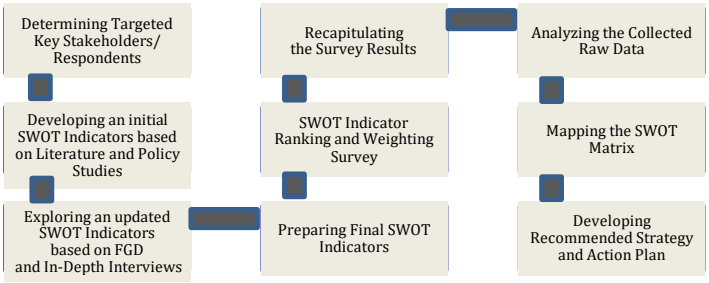

Figure 1. SWOT Analysis Steps
Sources: Research Results, 2023

As shown in Figure 1 above, the SWOT analysis began by identifying key stakeholders who could provide valuable inputs to this study. The mapping results included nineteen individuals representing seven different backgrounds, ranging from private and state-owned logistics companies to state-owned market, logistics warehouse operators, logistics associations, logistics regulatory body, and academicians. The variety of invited respondents made it possible to conduct triangulation, thereby maintaining the research quality.

Several additional new indicators were identified during this process. Moreover, deletion and adjustment of the original indicators found to be inaccurate were also conducted. After the survey instrument was compiled and reviewed several times, an internal team conducted a trial to gather input on the feasibility of the survey instrument. After the survey form was compiled and tested, the next step was to distribute the SWOT Indicator weighting and ranking survey.

The survey instrument was created using an online platform and distributed to the same targeted respondents via WhatsApp and Email. This survey was then completed by the same respondents representing nineteen institutions, including both public and private sectors. The questionnaire included questions addressing the current condition of freight transport, existing regulations that may support or hinder its operation, identified institutional or logistical needs, and private sector interest in utilizing freight transport services.

The participants' affiliated institutions can be classified under the following seven categories:

1. Private Logistic Companies: PT. Alpha Mega Logistics, PT. Sejahtera Mandiri Logistindo, PT Alam Sejagad Raya, PT Pancaran Darat Transport, Wira Karya Logistik, PT. Indosarana Jaya Perkasa, PT. Elron Huga
2. State-Owned Logistic Companies: Indonesian Railway Logistics (KALOG), Development Board of Regional-Owned Enterprise DKI Jakarta (BP BUMD DKI Jakarta), Indonesian Railways (PT KAI) Daop 1 Jakarta
3. State-Owned Local Market Management: PD Pasar Jaya
4. Logistic Warehouse Operator: Cikarang Dry Port, PT Food Station Tjipinang Jaya
5. Logistics Association: Indonesian Truck Owner Association (APTRINDO), Indonesian Express Delivery Companies (ASPERINDO)
6. Logistics Regulatory Body: Transportation Policy Agency (BAKERTRANS), Greater Jakarta Transportation Agency (BPTJ)
7. Academia/Think-tank: Bandung Institute of Technology (ITB), Bali Polytechnic of Land

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Transportation (POLTRADA), Jabodetabek Urban Transportation Policy Integration (JUTPI) Team

The quantitative component of the study, through the survey, primarily centers on a SWOT-based scoring and weighting system, designed to quantify stakeholder perceptions of internal (strengths and weaknesses) and external (opportunities and threats) factors influencing rail-based freight transport policy in the Jakarta Greater Area. The respondents were asked to assign a significance rating (ranging from 1 to 6) and a factor score (rating) (between 0.0 and 1.0) for each SWOT item.

A Significance Rating (SR) refers to the numerical value assigned by individual respondents to each internal or external factor to indicate its relative importance to the organization's strategic position, using a scale (e.g., 1 to 6) where higher scores denote greater importance. Based on these values, a Weighted Score (WS) is then calculated by dividing each factor's significance rating by the total of all significance ratings, showing the proportion or weight of each factor compared to others. A Rating Factor (RF) (for strengths or weaknesses) reflects the actual condition or performance of each factor, as perceived by an individual expert using a scale of 6–10 for strengths and 1–5 for weaknesses. The Final Score (FS) is generated by multiplying the weighted score × rating factor represents the overall contribution of each factor, calculated by multiplying its weighted score by its rating. Together, these measures help identify and prioritize which factors have the most substantial influence on organizational performance and strategic decision-making. After the data collection process, the next stage was processing and analyzing of survey data. Data were processed using quantitative data processing software. Based on the data processing results, a SWOT strategy map was produced and served as the foundation for developing a policy recommendation.

RESULTS AND DISCUSSION

SWOT Analytical Results

The following section presents the key analytical results, which are structured into four sections: The first two sections elaborate on the existing condition of the railway mode-based goods transport policy in DKI Jakarta and the Zero-ODOL Policy as potential opportunities for the Rail-based Freight Policy. Meanwhile, the third section highlights the leading units at national and regional levels for supporting a sustainable freight logistics policy development, as well as a thorough discussion on the SWOT mapping results, respectively. Recommended short- and long-term policy scenarios are discussed under the final section.

Existing Condition of the Freight Transportation Policy in the Jakarta Greater Area

This section explains the cross-actor synergies issue through a stratified analysis of regulatory mapping. The analysis is conducted by mapping relevant regulations at both the central and regional levels. Regulations at the central level encompass national laws and regulations, as well as those of ministries and agencies deemed relevant to the matter. Then, the further analysis process focuses on four relevant strategic plan documents to determine the synergies between them: RIPNAS, RIPP, RIT Jabodetabek, and RIT Jakarta.

For the record, at the time this study was conducted, the Zero-ODOL policy (Over Dimension Over Load policy, henceforth called as the ODOL Policy) was consistently emerging in a series of ongoing discussions and considered critical to the development of rail-based freight transport

policies. Therefore, the ODOL policy became a particular aspect that was closely examined. Many respondents argues that the implementation of ODOL policy may lead to a potential shift from the current predominant long-haul trucking mode of transport to the combination of long-distance freight logistics and short-trip trucking. See, among others, the works of Ilham (2025) and Widyanti et al. (2025) for a better understanding of how the ODOL Policy works and affects transportation governance in the Indonesian context.

The regulatory review examining selected national and regional planning documents at the central to regional levels highlighted five key findings that could influence future implementation of rail-based freight transport policies in Jakarta greater area. Firstly, at the national level, the regulations related to ODOL policy were not clearly articulated in various planning documents related to transportation and railways. In turn, this condition has become a serious obstacle in the implementation of strict ODOL policies. The ODOL policy has been planned since 2017, but its implementation remains largely sectoral. It has not synergized with other transportation modes that can "catch" excess cargo subject to restrictions due to the implementation of the ODOL policy. On the other hand, the situation potentially creates difficulties for local governments in interpreting and narrating the policy in each region. The DKI Jakarta Provincial Government already issued rules for limiting the operating time of trucks and heavy transportation equipment, but these rules were not oriented toward an integrated intermodal transportation of goods.

Moreover, the central government should implement internal synergies and harmonization within related ministries, institutions, and organizations that interact with or are affected by the rail-based freight transport policy. This clarity, on the other hand, will also have a positive impact on the clarity of the actors involved, so that there will be no return to segregation or silo attitudes regarding goods-based rail transport policies from each relevant ministry and agency. At the regional level, assessment and planning are quite traceable and holistic, involving various stakeholders and shareholders in their preparation. On the other hand, translating the planning instrument into a series of policies that can be implemented simultaneously within the Jakarta Greater Area and its surroundings is a significant task for the DKI Jakarta Provincial Government. The issue of freight transportation in DKI Jakarta, as the State Capital (and the planned relocation of the capital), has a strategic role in interaction with other regions (Bogor, Depok, Tangerang, Puncak - Cianjur), especially related to the distribution of commodities originating from the buffer areas.

The planning documents were compiled as a reference for various programs to achieve the outlined strategies, targets, and policy directions. Although there was still a lack of impression regarding integration, the implementation could be coordinated at the technical level. Finally, it is important to underscore the fact that the vision developed by the Jakarta Provincial Government was considered more futuristic and a few steps ahead of the national vision, as perceived from the validity period and accommodation of the transport of goods issue. There was no coordination between the two responsible directorate generals under the Ministry of Transportation to synergize the ODOL policy and to develop a railway-based logistics policy, as evident from the inadequate attention to shifting from trucking to other modes of transport.

Zero ODOL Policy: A Potential Opportunity for Rail-based Freight Policy

Issues related to the orchestration of planning instruments are inseparable from the issue of mapping policy actors in rail-based freight transport policies. The Zero ODOL policy issue was first initiated in 2017. According to the policy document issued by Kementerian Perhubungan RI (2021), the absence of strategic policy guidelines and a centralized policy roadmap was the main obstacle undermining implementation of the ODOL policy. On the other hand, a mapping of actors across three main areas (demand, facilitation, and supply) had been carried out. This indicates that the government did recognize the importance of collaboration in implementing this policy. However, its implementation requires extra effort; thus, the Zero ODOL policy was not implemented until 2022 (although partially).

The Director General of Railways, the Director General of Land Transportation, and the Head of the Jabodetabek Transportation Management Agency (BPTJ) each play a vital role in mitigating the transfer of excess cargo from road mode to rail-based mode. They should collaborate with each other to synergize the Zero ODOL policy and rail-based freight transport policies as two mutually interrelated policies.

Another aspect to consider regarding the Zero ODOL policy is the involvement of the rail-based transportation sector, which also plays a significant role in policy success. Overloaded trucking, assessed as over-demand and over-loading, certainly requires additional transportation solutions. The cost of replacing trucks that were previously ODOL-sized into trucks of a specific size (which are not ODOL) might potentially become a burden for business actors because they also need to consider excess cargo. Initially, it can be transported using an overloaded, long-trip trucking. However, after the Zero ODOL policy is implemented, it must be transported via other smaller vehicles, incurring extra costs. Delayed full implementation of the Zero ODOL policy has shown a relatively high resistance from the affected policy targets due to poor communication and coordination among the key actors.

From the perspective of business actors, the ODOL policy may continue to face resistance because there was no policy mitigation. Therefore, the stigma that the Zero ODOL policy may permanently harm business actors might remain existing. Quoting the opinion of Mr. Tarigan (APTRINDO), ODOL trucks appeared as a form of cost efficiency by business actors. "The more ODOL, the more efficient and cheaper it is, the more attractive it is to consumers," he said in the Focus Group Discussion session. This void of policy space can be an opportunity for rail-based freight transport policies if they offer competitive prices and are no less efficient than previous costs.

Clarity of the Leading Units at Provincial and National Level

The central institutional issue in preparing an effective and workable action plan is to determine the leading sector for the strategic issue. In line with (Sazzad et al., 2021), successful public sector innovation must begin with the presence of a leading sector, enabling the government to address community challenges in new ways. In this context, Figure 3 summarizes the mapping of actors at the national and regional levels.

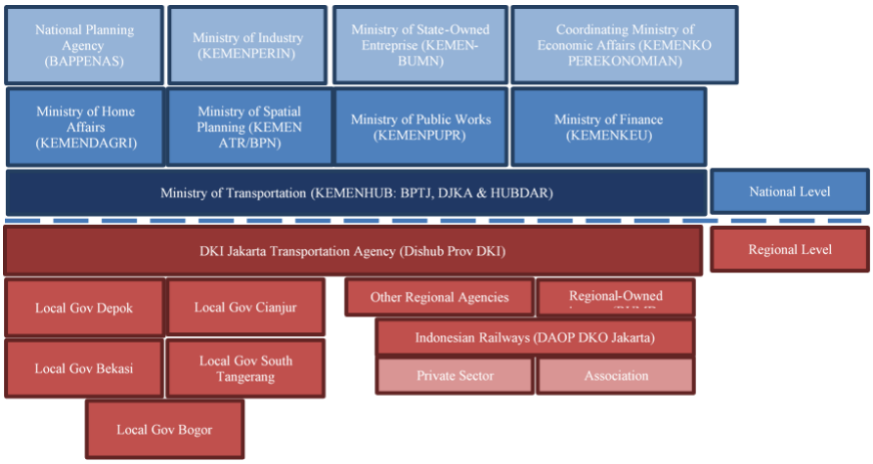

Figure 2. Mapping of Actors Rail-based Freight Transport Policy Actors
Sources: Research Results, 2023

The difference in color gradation indicates the level of each actor's role. The darker color indicates that the actor's role is more responsible, and vice versa. At the national level, freight transport and rail policy are inextricably linked to their relationship with the Regional Spatial Plan (RSP). DKI Jakarta Province, when viewed from the geographical aspect, is closely related to the surrounding areas, namely BoDeTaBek - PunJur (Bogor, Depok, Tangerang, Bekasi, Puncak, and Cianjur). By the time this study was conducted, transportation policy within the scope of inter-regional development in the area was closely related to the main tasks of BPTJ. The Jabodetabek Transportation Management Agency had the task of developing, managing, and improving transportation services in an integrated manner in the Jakarta greater area, following the Jabodetabek Transportation Master Plan (RITJ). RITJ, established by Presidential Decree No. 55 of 2018, was a particular organizational unit under the Ministry of Transportation. Prior to the establishment of BPTJ, at the national level, this issue was previously coordinated under BKSP (a coordination body under the Ministry of Home Affairs. However, after experiencing a change of leadership under the coordination of the Ministry of ATR/BPN, the existence of BKSP remained unclear.

SWOT Analysis Mapping: Development of Rail-based Freight Transportation

The mapping of strengths, weaknesses, opportunities, and challenges is presented in the following Figure:

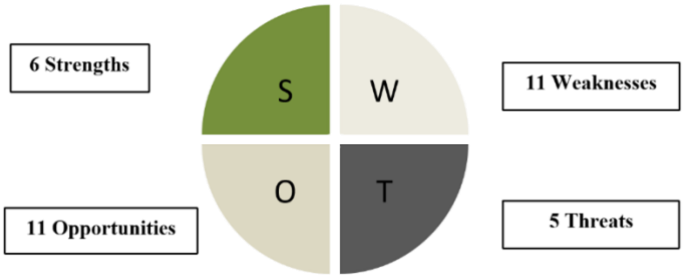

Figure 3. SWOT Analysis Mapping
Sources: Research Results, 2023

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Based on the SWOT analysis, six strengths, eleven weaknesses, eleven opportunities, and five challenges/challenges were highlighted. SWOT mapping was further classified under the two categories, namely Internal Factors Analysis (IFAS) and External Factors Analysis (EFAS), as suggested by Daft & Armstrong (2021). The factors categorized in IFAS are Strengths and Weaknesses. Meanwhile, findings related to Opportunities and Threats are categorized into EFAS. Furthermore, the various factors found by IFAS and EFAS were further processed into a strategy formulation to prepare an action plan.

The findings showing the various factors of IFAS and EFAS are described under Tables 1 and 2, respectively as shown below:

Table 1. IFAS Mapping in Rail-based Freight Implementation Transport Policies in DKI Jakarta
Sources: Research Results, 2023

Internal Strategy		Indicators	*SR (1-6)	*WS (0,0-1,0)	*RF S (6-10) W (1-5)	*FINAL SCORE
(S) Strengths	S1	Rail-based freight transport offers a more affordable cost	4,35	0,15	8	1,17
	S2	Rail-based freight transport offers faster (free) service	5	0,17	9	1,51
	S3	Rail-based freight transport offers greater carrying capacity	5,17	0,17	9	1,56
	S4	Illegal dues-free rail-based freight transport	5,04	0,17	9	1,52
	S5	Rail-based freight transport poses less risk (in terms of accidents, security, crime, etc.)	5,17	0,17	9	1,56
	S6	Rail-based freight transport is more environmentally friendly	5,09	0,17	9	1,54
Strengths Accumulation			29,82	1,00		**8,85**
(W) Weaknesses	W1	Rail-based freight transportation does not yet have precise governance/coordination between actors related to intermodal freight transportation (central government, local government, private sector).	4,35	0,08	3	-0,25

Internal Strategy	Indicators	*SR (1-6)	*WS (0,0-1,0)	*RF S (6-10) W (1-5)	*FINAL SCORE
W2	The rail transport subsidy policy is still weak	4,78	0,09	3	-0,27
W3	Rail-based freight transport and warehousing management are still not optimal	4,96	0,09	3	-0,28
W4	Rail-based freight transport has limited connectivity and accessibility to stations.	5,17	0,10	4	-0,39
W5	Rail-based freight transport has limited connectivity and accessibility to stations.	4,91	0,09	3	-0,28
W6	The location of the industrial area is far from the port	5	0,09	4	-0,38
W7	Some industrial actors still use conventional business processes and methods (for example, transportation using Porter's, etc.).	4,22	0,08	3	-0,24
W8	There is no dialogue platform between policymakers and stakeholders in the freight and logistics sector.	4,96	0,09	3	-0,28
W9	Lack of promotion/marketing activities related to rail-based freight transportation services.	4,52	0,09	3	-0,26
W10	The low priority of developing the rail-based freight sector compared to passenger transportation.	5,22	0,10	4	-0,40
W11	Limited capacity for rail transport and equipment that can accommodate the	4,61	0,09	3	-0,26

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Internal Strategy	Indicators	*SR (1-6)	*WS (0,0-1,0)	*RF S (6-10) W (1-5)	*FINAL SCORE
	demand for freight transport.				
	Weaknesses Accumulation	52,7	1,00		**-3,29**
	Total				**5,56**

**Notes:*
SR (Siginificance Rating using 1 – 6 scale), WS (Weighted Score using 0 – 1 scale), RF (Rating Factor S (using 6 – 10 scale) W (using 1 – 5 scale)), & FS (Final Score).

Based on the table shown above, the six strength factors indicated that, if implemented, the existence of freight logistics policy could encourage the following impacts and benefits: Efficiency (larger carrying capacity and more affordable prices), reduced congestion, free of unpredictable costs, relatively less risk, and more environmentally friendly. Meanwhile, potential weaknesses highlighted from the FGD were eleven (11) weaknesses, including rail-based freight transportation that lacked precise governance and coordination between actors related to intermodal freight transportation (central government, local government, and private sector).

On the other hand, policies related to incentives or subsidies for rail-based freight transportation need to be reviewed and strengthened by the DKI Jakarta Provincial Government as a regulator to encourage efficiency in transportation fares and encourage rail-based freight demand. From a governance perspective, the unavailability of a dialogue platform between policymakers and actors in the field of freight and logistics transportation, the lack of promotional and marketing activities related to rail-based freight services, and the low priority given to developing the rail-based freight sector compared to passenger transportation are also identified weaknesses.

On the other hand, the weakness is related to the limited capacity of rail transportation and equipment that can accommodate the demand for freight transportation, which makes business actors less interested in rail-based freight transportation because the supply provided is relatively still focused on large-volume commodities and long distances (less flexible). Meanwhile, emerging competitors offer various substitutes for freight transport services that are more affordable and efficient in terms of both time and cost, making them more profitable.

The subsequent weakness is the limited availability of warehouses or hubs, also related to poor warehousing management. This is related to the operation and positioning of warehouses in congested and crowded areas due to traffic. Rail-based freight transportation has limited connectivity and accessibility to stations. Logistics system infrastructure management runs independently. Industrial estate locations are often far from ports, and some industrial actors still use conventional business processes and methods (for example, transportation using porters). Then, the station's location is also one of the weaknesses considered; access to several stations remains challenging for large logistics vehicles. On a macro level, managing the logistics system infrastructure in DKI Jakarta (ports, warehousing, transportation, road networks, industrial estates) is considered to be running independently. The location of the industrial area is also still

far from the port (the issue of the density of warehousing activities at the port). Based on external factors, eleven opportunities and five challenges can be identified, as described in detail in Table 2.

Table 2. EFAS Mapping in the Plan for Implementing Rail-based Freight Transport Policies in DKI Jakarta
Sources: Research Results, 2023

External Strategy		Factors	*SR (1 – 6)	*WS (0,0-1,0)	*RF O (6-10) T (1-5)	*FINAL SCORE
(O) Opportunities	O1	ODOL regulations encourage shifting of road-based transportation to rail-based transportation	4,43	0,08	8	0,65
	O2	The development of e-commerce encourages higher transportation demand, so that it becomes an opportunity for rail-based freight transportation.	4,70	0,09	8	0,69
	O3	The development of Integrated Services is an opportunity for the development of integrated rail-based freight transportation.	5,26	0,10	9	0,87
	O4	The large population of Jabodetabek is an opportunity for the large demand for goods transportation	4,96	0,09	8	0,73
	O5	The existence of rail-based freight transportation is a form of developing rail services that has a big impact	4,91	0,09	8	0,72
	O6	The involvement of service providers / private providers (multi operators) is an opportunity in the development of rail-based freight transport policies	4,96	0,09	8	0,73
	O7	There are many potential objects that can become pilot projects in rail-based freight transport policies (cement, textiles, coal, bottled water, etc.)	5,09	0,09	9	0,84

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External Strategy		Factors	*SR (1 – 6)	*WS (0,0-1,0)	*RF O (6-10) T (1-5)	*FINAL SCORE
	O8	The development of the outer ring road rail line as a future for logistics connectivity in Jabodetabek is an opportunity for the development of rail-based transportation policies in DKI Jakarta Province.	5,13	0,09	9	0,85
	O9	The existence of a plan to regulate the truck/container access road network is an opportunity to develop rail-based transportation policies in DKI Jakarta Province	4,96	0,09	8	0,73
	O10	The existence of four goods/logistics terminal points in DKI Jakarta (1) Pulogadung Industrial Area, 2) Tanjung Priuk Container Terminal, 3) Kramat Jati Main Market Agro Warehouse, & 4) Cengkareng Logistics Terminal)	4,74	0,09	8	0,70
	O11	Potential collaboration between DKI Regional Government, private sector, and BUMN in the development of Rail-based Goods Transport Policy	5,09	0,09	9	0,84
Opportunities Accumulation			54,23	1,00		**8,38**
(T) Threats	T1	Incentive/subsidy policy for rail transportation is not available & not optimal	4,74	0,19	8	-1,51
	T2	Currently, there are many competitors providing transportation services that are faster and cheaper	4,96	0,20	8	-1,58
	T3	There is no legal umbrella for the distribution of goods via KRL	5,04	0,20	9	-1,81
	T4	There are no rules regarding the implementation of the hub and spoke between seaport & hinterland areas in the implementation of export-import cargo logistics	5,17	0,21	9	-1,85

External Strategy	Factors	*SR (1 – 6)	*WS (0,0-1,0)	*RF O (6-10) T (1-5)	*FINAL SCORE
T5	Supporting regulations related to integrated freight terminals to support the implementation of export-import logistics in Jabodetabek need to be refined	5,22	0,21	9	-1,87
Threats Accumulation		25,13	1,00		**-8,61**
Total					**-0,23**

**Notes:*
SR (Siginificance Rating using 1 – 6 scale), WS (Weighted Score using 0 – 1 scale), RF (Rating Factor S (using 6 – 10 scale) W (using 1 – 5 scale)), & FS (Final Score).

Based on the results of the SWOT analysis mapping above, the potential opportunities found based on the results of FGD 1 activities include; 1) ODOL regulations encourage shifting from road mode to rail mode, 2) The increasing online market makes the need for freight transportation also increase, 3) Development of Integrated Services; Integration with LRT, Monorail, KRL, & other land, sea, air modes, 4) Large population of Jabodetabek, 5) Service development; door to door delivery, member system, provision of container yards, 6) Involvement of service providers / private providers (multioperators), 7) Potential commodities that can become pilot projects for the development of freight transport (food, textiles, containers, gallons), 8) Development outer ringroad rail line as a future for logistics connectivity in Jabodetabek, 9) There is a plan to regulate the access road network for trucks/containers so as not to enter the city, 10) The existence of four goods/logistics terminal points in DKI Jakarta (1) Pulogadung Industrial Estate, 2) Terminal Tanjung Priuk Container, 3) Kramat Jati Main Market Agro Warehouse, & 4) Cengkareng Logistics Terminal), 11) Potential for collaboration between DKI Regional Government, private sector, and BUMN (in e-commerce development)

Meanwhile, regarding the potential challenges of rail-based freight transport policies, there are five main challenges as follows: 1) Policies related to incentives/subsidies for rail transportation have not been enforced properly, 2) There are more and more competitors who can provide faster and cheaper transportation services, 3) There is no legal registrar for the distribution of goods through KRL, 4) There are no regulations that become the reference for determining the hub and spoke relationship between Seaport & Ogisti Hinterland in the implementation of export-import cargo logistics, and 5) There is no integrated logistics terminal to support the implementation of export-import logistics in all directions in Jabodetabek.

Developing Future Policy Scenario: Strategic Priority

The following table summarizes further analytical results of the IFAS and EFAS scores, which serve as a solid basis to develop future policy scenarios in promoting a more sustainable freight logistics plan in the greater Jakarta area. There are four alternative scenarios represented by four quadrants, each representing S-O (Expansion Strategy), W-O (Stability), W-T (Consolidation), and S-T (Combination) analysis.

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Table 3. Point position, Quadrant Area, and Strategy Priority
Sources: Research Results, 2023

SWOT	Quadrant	Position		Area of Matrix (X*Y)	Ranking	Strategy Priority
		X	Y			
S - O	I (Expansion)	8,85	8,38	74,1914591	1	4
W – O	II (Stability)	-3,29	8,38	-27,58494406	3	2
W – T	III (Consolidation)	-3,29	-8,61	28,35757311	4	1
S – T	IV (Combination)	8,85	-8,61	-76,269494	2	3

Four alternative quadrants each represented S-O, W-O, W-T, and S-T analysis. The results can be interpreted as follows: First, in terms of significance, the strategy prioritized for implementation shortly is to focus on Area III (Consolidation) by addressing policy deficiencies and challenges. The consolidation referred to in this case aims to correct the deficiencies identified first, so that they do not become obstacles in the future. In the private sector, consolidation may closely relate to common corporate austerity measures aiming at ensuring company's survival during a crisis. This can be interpreted as reducing public sector's inability to combine W-T dimensions. These two dimensions indicate two factors of weakness and threat, both of which are in the negative quadrant. Of course, the organization will need to develop a strategy based on the W-T combination, as it must minimize internal weaknesses while facing enormous challenges.

The most effective policy scenario is determined based on the two columns on the right, namely, the ranking and strategic prioritization columns. The ranking columns order the four SWOT quadrants based on the absolute value of their "Area of Matrix" score to show which factors have the largest overall impact on the organization, regardless of whether that impact is positive or negative. In short, the ranking informs what matters most, but not what to do about it. Meanwhile, the strategic priority column determines the order in which management should act based on the quadrant's strategic implications to provide a sequence for strategic action. It follows a logical crisis management and strategic growth sequence. The typical logical order for action is to address immediate dangers, to fix critical weaknesses holding back the organization, to manage threats while leveraging strengths, and finally to capitalize on the most advantageous position.

Based on the ranking, the recommended strategy is described in Area I (Expansion): optimizing your existing strengths and capitalizing on the opportunities that will arise. The combination of S-O (Strengths – Opportunities), which is at the point (8.85, 8.38), occupies quadrant I with the largest matrix area among the other quadrants, namely 74,19146. This means that the Rail-based Freight Transport Policy in DKI Jakarta is in a position to have sufficient strength. Because both factors have strengths, this policy can also be applied in an expansionary manner, utilizing its strengths while also pursuing opportunities.

The first combination is that this S-O is an actual current condition that must be maintained and improved, and the primary strategy must be maintained and developed. In this strategy, the organization can maintain its strengths and develop by optimizing the opportunities (opportunities) estimated during FGD activities, for example, by developing existing services in quantity and quality.

Second, the W-O combination is known for its stability, meaning that the DKI Jakarta Provincial Government must address the 11 existing weaknesses if the expansion is to be carried

out. This presents an excellent opportunity to be considered, given that there are 11 opportunities to implement this freight-based transportation policy.

Lastly, the combination of S-T dimensions is also considered. This combination consists of 5 organizational strength factors and 11 challenge factors. With the strength factor, it is hoped that the 11 existing challenges can be overcome, despite their considerable weight.

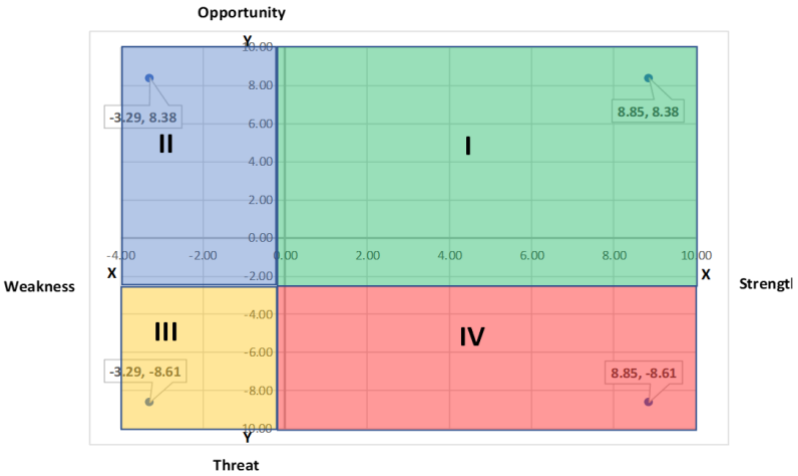

Figure 4. Strategy Mapping Results Based on SWOT Analysis
Sources: Research Results, 2023

The matrix above explains that quadrant I is a strategy called expansion, in which the organization has excellent and positive strengths and opportunities to develop itself. Therefore, this does not require effort but instead maintains and improves what already exists. Quadrant II describes excellent opportunities supported by great strengths and must be balanced by minimizing organizational weaknesses. Quadrant III should be prioritized because the two dimensions — weaknesses and challenges —must be addressed first, as they will significantly impact the organization. Furthermore, in quadrant IV, the combination of strengths and challenges can be the second priority, as the strength factor can mitigate challenges. If this effort is successful, this strategy will simultaneously boost the third strategy, namely W-T. The choice of strategic priorities depends on how far the organization is capable and has problem-solving capabilities.

A two-track roadmap was proposed, combining short-term institutional reforms with long-term infrastructure investments. In the short term (0–2 years), the DKI Jakarta Provincial Government, in coordination with the Ministry of Transportation (KEMENHUB, especially DJKA and BPTJ) and the National Development Planning Agency (BAPPENAS), should establish a joint task force to align freight rail policy with ODOL enforcement, designate a clear leading institution, and finalize an actionable intermodal freight roadmap. Concurrently, the Ministry of Finance (KEMENKEU) should initiate a feasibility and benchmarking study to design an incentive scheme or subsidy policy that encourages businesses to shift from road to rail without increasing logistics costs.

In the medium to long term (2–5 years), priority must be given to developing multimodal logistics hubs and improving last-mile connectivity from industrial zones to railway access points. This task falls under the domain of the Ministry of Public Works & Public Housing (KEMENPUPR),

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Indonesian Railways (PT KAI), and the DKI Jakarta Provincial Government, which must also ensure the integration of spatial and transport planning. Additionally, the establishment of a permanent multi-stakeholder dialogue platform—involving logistics associations (APTRINDO, ASPERINDO), academia, and state-owned enterprises—is essential to ensure that freight rail development remains aligned with market needs and technological trends. Ultimately, this study emphasizes that the time for isolated, sectoral freight transport planning is over. Rail-based freight must be treated as a strategic national and metropolitan priority, supported by institutional clarity, budget commitment, and collaborative governance.

Jakarta stands at a critical juncture in transforming its freight transportation landscape. While truck-based logistics continue to dominate with 91.3% mode share, they also exacerbate congestion, emissions, and inefficiencies. Despite rail's clear advantages capacity, speed, safety, and sustainability, its adoption remains marginal due to weak governance, regulatory gaps, and fragmented inter-agency coordination. Yet, consensus is growing: both public and private sectors recognize that a well-integrated, rail-based freight system is not only viable but necessary. Jakarta must act decisively, aligning policy, infrastructure, and incentives to unlock a more resilient and sustainable logistics future.

CONCLUSION

This study found that rail-based freight transportation in the greater Jakarta area holds significant strategic potential, but remains underutilized due to fragmented governance, limited intermodal infrastructure, and regulatory inconsistencies. A quantitative analysis of the four SWOT quadrants revealed that the DKI Jakarta Provincial government should focus on Area III (Consolidation). This involves prioritizing systematic efforts to overcome policy deficiencies and weaknesses while developing mitigation plans related to external threats. In a public sector context, this Consolidation strategy focuses on reducing internal weaknesses so that they do not become future obstacles, analogous to corporate austerity measures in the private sector. In other words, it addresses the inability to effectively manage weaknesses and threats (W-T dimensions). Based on the collected evidence and thorough analysis, this study proposes five key recommendations for developing more sustainable freight transport in the Jakarta greater area: **1) Prioritize Governance Reform through a Multi-Stakeholder Taskforce**. A series of strategic policy interventions must be prioritized to accelerate the shift toward a more sustainable and efficient freight transportation system in Jakarta greater area. Governance reform is the foundational step. We recommend establishing a multi-stakeholder task force, led by BAPPENAS in collaboration with KEMENHUB and DKI Jakarta's transportation agency, to integrate freight policies across national and regional levels. This task force should be empowered to designate the leading sector, develop concrete action plans, and ensure cross-agency accountability thereby making rail-based freight a long-term policy and budget priority; **2) Design a Targeted Subsidy and Incentive Scheme.** There is a pressing need to design a well-targeted subsidy and incentive scheme that encourages a modal shift from road to rail. This can be achieved by conducting comparative benchmarking studies on international subsidy mechanisms and adapting them to Indonesia's context. Furthermore, economic promotion and marketing of rail-based freight services should be scaled up, supported by the recruitment of professionals and dedicated studies to design competitive service packages. The Ministry of Finance, working alongside the Ministry of Transportation and

Indonesian Railways, should take the lead on this initiative, with an initial framework and pilot scheme developed within a one-year timeframe; **3) Synchronize ODOL Enforcement with Freight Strategy and Invest in Multimodal Infrastructure**. The revision and synchronization of the ODOL (Over Dimension, Overloaded) enforcement policies with the broader freight intermodal strategy is critical. While ODOL restrictions are crucial for road safety and maintenance, their impact on logistics costs requires a compensatory approach, such as offering rail-based alternatives. This effort must be accompanied by investments in multimodal freight infrastructure and warehouse facilities to ensure better integration of logistics nodes and reducing friction costs. Adequate warehousing, combined with spatial planning that enhances connectivity between industrial estates, ports, and stations, will enable more efficient intermodal transitions. Coordination among DJKA, BPTJ, APTRINDO, and DKI Jakarta's transportation agency is essential in the short to medium term; **4) Develop Multimodal Freight Infrastructure for Seamless Connectivity.** Jakarta must invest in developing multimodal freight infrastructure that supports seamless transitions between road, rail, and sea. This includes optimizing existing hubs like Pulogadung Industrial Estate, Tanjung Priok Container Terminal, Kramat Jati Main Market, and Cengkareng Logistics Terminal, while also improving station accessibility from key industrial areas. The Ministry of Public Works and Housing, together with DKI Jakarta Provincial Government and the Indonesian Railways, should prioritize these investments over a medium to long-term horizon (two to five years), ensuring that infrastructure planning is tightly linked with spatial development strategies; **5) Establish a Permanent Public-Private Dialogue Platform**. To sustain progress and ensure stakeholder alignment, the government should establish a permanent public-private dialogue platform focused on urban freight and logistics policy innovation. This platform will institutionalize continuous open discussion and collaborative policy design, strengthening the co-creation of regulatory solutions that integrate governance, economic policy, and spatial accessibility dimensions.

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