

Infrastructure Management as a Catalyst for Accelerating Regional Economic Resilience

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ABSTRACT

The study aims to analyse the impact of the Trans-Sumatra Toll Road construction on regional economic resilience, with a case study on the Bakauheni–Terbanggi Besar section. The construction of this toll road is expected to increase the efficient and effective utilisation of natural resources on the island of Sumatra, which in turn can reduce dependence on imports and increase exports. To achieve this, the toll road infrastructure plays a crucial role in organising the existing economic hubs in Sumatra, facilitating the distribution of goods and agricultural products, and promoting the development of other economic sectors, such as industry and tourism. This study employs a descriptive method with a comparative approach, comparing conditions before and after the construction of the toll road through in-depth interviews with informants and analysis of documents from the Regional Spatial Planning (RTRW) of Lampung Province in 2010 and 2019. The results of the study indicate that the construction of the Trans-Sumatra toll road has created new economic hubs, where growth centres such as industrial and tourism areas have begun to emerge around the toll road. These growth centres play a role in strengthening the competitiveness of the region and equalising economic distribution between regions. Overall, the construction of this toll road has a positive impact on the economic resilience of the region, as it enhances connectivity, distribution efficiency, and opens up broader economic opportunities in the Sumatra region. Thus, this project makes a significant contribution to achieving equitable development and regional economic resilience in Indonesia.

Keywords: *Economic Resilience; Infrastructure; Toll Roads; Economy; Growth Centres.*



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INTRODUCTION

The Indonesian government has set a vision to become the fifth largest economy in the world, with a target Gross Domestic Product (GDP) estimated at US\$7.3 trillion and a per capita income of around US\$25,000. To achieve these goals, Indonesia has formulated various development policies that encompass four main pillars: first, human development through education and mastery of science and technology; second, sustainable economic development, which combines economic growth with environmental sustainability; third, equitable development to reduce regional disparities; and fourth, strengthening national resilience and good governance. These four pillars form an important foundation for achieving economic resilience, which is key to Indonesia's long-term stability and growth (Dian Noviyanti, 2020) (Muhammad Eka Kusuma, 2019).

In the context of sustainable development, infrastructure is one of the key elements supporting regional economic resilience. Equitable infrastructure development can reduce interregional disparities and unlock previously untapped economic potential. One major project currently underway is the construction of the Trans-Sumatra Toll Road. This toll road connects various strategic regions on the island of Sumatra and aims to facilitate access between major cities and previously underdeveloped regions. The toll road spans 2,700 km, including the Bakauheni–Terbanggi Besar section, which is approximately 140.94 km long. This development is seen as a strategic step in accelerating economic growth and enhancing connectivity between economic growth centres in Sumatra (Foster, 2023) (Jiayin Meng, 2024) (Syahrir, 2025).

As development progresses, this toll road infrastructure not only serves as a means of transportation but also as a catalyst for the formation of new economic hubs. Good infrastructure will create a more efficient network, which in turn will accelerate the distribution of goods and open up new opportunities for other economic sectors. Based on regional development theory, the economic hubs formed through this toll road infrastructure can accelerate the flow of goods and services and create opportunities for the development of the agricultural, industrial, and tourism sectors in previously isolated regions (Ahmad, 2022) (Siti Apriliyaningsih, 2025). In addition, the 'trickle-down effect' theory shows how economic progress in major growth centres can bring economic benefits to previously underdeveloped surrounding areas (Retno Widodo Dwi Pramono, 2019) (Syahrir E. A., 2021). The role of infrastructure in improving regional economic resilience is also very important in reducing vulnerability to economic crises. A well-distributed toll road infrastructure will provide wider access to previously isolated areas. As a result, the distribution of goods and resources will be more efficient, increasing the economic competitiveness of the region in both domestic and global markets. Equitable development can reduce economic inequality and strengthen regional resilience to external crises (Binti Mafflichah, 2023) (Dian Dinanti, 2021) (Syahrir E. A., 2025) (Yetty, 2021). With better connectivity, previously disadvantaged regions can develop and compete more effectively in the global market.

The construction of the Trans Sumatra Toll Road is part of a strategy to equalise economic distribution and open up new opportunities, not only in urban areas but also in previously underdeveloped regions. The existence of this tollway infrastructure will accelerate the development of key economic sectors such as agriculture, industry, and tourism, which in turn will strengthen the economic resilience of the region. This initiative will enhance the region's competitiveness and reduce socio-economic disparities, which are major challenges in Indonesia's economic development (Syahrir E. A., 2025) (Palei, 2015) (Ririn Nopiah, 2024). Therefore, this research is very important to explore the impact of toll road infrastructure development on regional economic resilience, as well as how this can encourage the formation of new economic growth centres in Indonesia.

RESEARCH METHOD

Data Collection

This study utilises two types of data, namely primary and secondary data. Primary data was obtained through in-depth interviews with several sources directly related to the research topic, such as the Ministry of Finance, BPJT (Toll Road Regulatory Agency), and PT Hutama Karya (Persero). These interviews aim to explore more in-depth information and obtain perspectives from key actors involved in the construction of the Trans Sumatra toll road infrastructure, particularly the Bakauheni-Terbanggi Besar section. Secondary data was obtained from various relevant documents, such as the 2010 and 2019 Regional Spatial Planning Documents (RTRW) for Lampung Province. These documents were used to compare changes in the urban system in Lampung Province before and after the construction of the toll road. Through this data collection, the study aims to understand the changes occurring in the economic and urban structure, as well as the impacts of toll road infrastructure development on regional development.

Research Methodology

The approach used in this study is a descriptive method, which aims to explain phenomena or events that occur systematically and in depth. This descriptive research focuses on analysing the causes and effects that influence the occurrence of a phenomenon, in this case related to the impact of the Trans-Sumatra Toll Road construction on the economic resilience of the areas surrounding the toll road. This research also uses a comparative approach to compare the conditions before and after the construction of the toll road, by analysing data collected through interviews and existing documents. This comparative method is carried out by comparing the facts found in the field with relevant theories and frameworks to explore the relationship between infrastructure development and changes in the economic and social structure of the region. By conducting this comparative analysis, it is hoped that this research can clearly describe the impact of toll road construction on economic equality, the development of new growth centres, and the economic resilience of the region.

RESULTS AND DISCUSSION

Analysis Results

Based on the interview results, the construction of the Trans-Sumatra Toll Road has the main objective of optimising the utilisation of natural resources on the island of Sumatra. This objective is in line with the government's efforts to improve the economic resilience of the region by regulating existing economic hubs in Sumatra so that natural resources can be used more efficiently and effectively. The utilisation of these natural resources is expected to reduce dependence on limited natural resources, support increased exports, and reduce imports, ultimately reducing the country's economic vulnerability.

Currently, based on the Spatial Plan for Sumatra Island, most of Sumatra is planned to be utilised in the agriculture, plantation, and mining sectors. However, with the opening up of this region through improved accessibility provided by the Trans-Sumatra Toll Road, other sectors outside the primary sectors are expected to develop rapidly.

This change in the spatial structure of Sumatra Island is also evident in the development of urban systems and transportation networks, both land, sea, and air. Based on changes in the Lampung Province Spatial Plan, it is evident that new local activity centres (PKL) are beginning to emerge around the Trans-Sumatra Toll Road, such as in Bakauheni, Terbagus, Mesuji, and Natar. This indicates that new economic and distribution hubs are beginning to concentrate along the toll road, making the areas around the toll gates regions with great potential for further development.

Table 1 Urban Systems Shaping the Spatial Structure of Sumatra Island in 2010 and 2019

RTRW Tahun 2010	RTRW Tahun 2019	RTRW Tahun 2010	RTRW Tahun 2019	RTRW Tahun 2010	RTRW Tahun 2019
PKN	PKN	PKW	PKW	PKL	PKL
Bandar Lampung	Bandar Lampung	Metro	Metro;	Tanjung Bintang;	Sukadana;
		Kalianda	Kotabumi;	Sidomulyo;	Blambangan Umpu;
		Liwa	Liwa;	Agung;	Pringsewu;
		Menggala	Kalianda;	Seputih Banyak;	Gedong Tataan;
		Kotabumi	Menggala;	Kalirejo;	Bakauheni;
		Kota Agung	Kota Agung.	Way Jepara;	Terbagus;
				Fajar Bulan;	Mesuji;
				Labuhan Maringgai;	Panaragan;
				Krui;	Tanjung Bintang;
				Bukit Kemuning;	Sidomulyo;
				Wiralaga;	Unit II Banjar Agung;
				Wonosobo.	Seputih Banyak;
					Kalirejo;
					Way Jepara;
					Fajar Bulan;
					Labuhan Maringgai;
					Krui;
					Bukit Kemuning;
					Wiralaga;
					Wonosobo;
					Natar – Jati Agung

Source: Local Regulation of Lampung Province

The differences between the urban systems before and after the toll road was built can be seen in the following map:

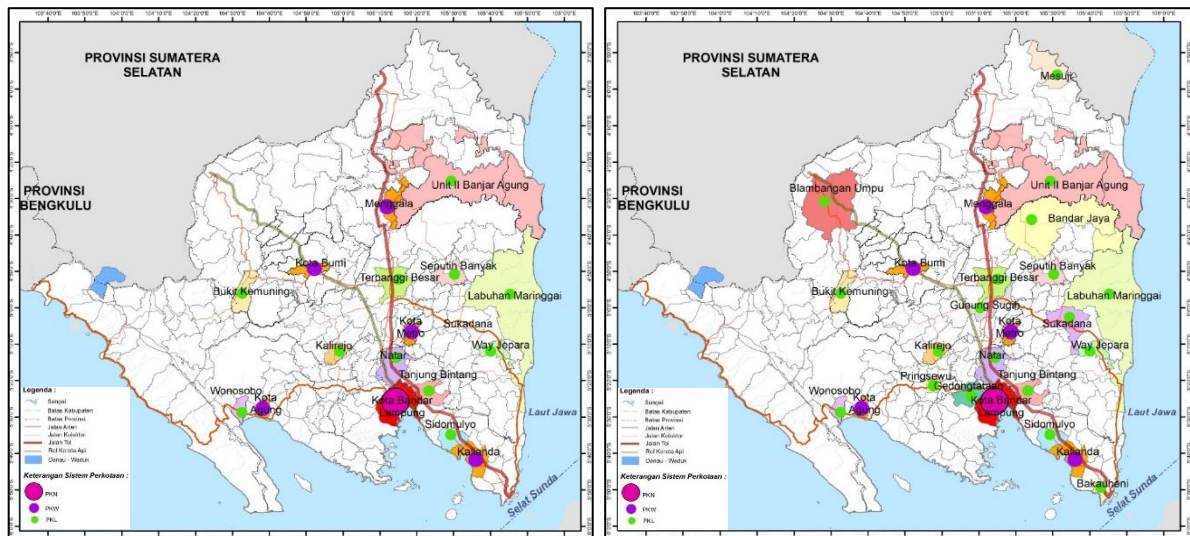


Figure 1. Differences in the urban system of Lampung Province before and after the construction of the toll road

Identification of Growth Centres in Lampung Province through the Trans-Sumatra Toll Road Bakauheni Terbanggi Besar Section

With the Trans Sumatra Toll Road, new growth centres have been identified, developed by the government and as a direct result of the toll road itself. Based on an analysis of the Regional Spatial Plan (RTRW) and observations of urban development around the Bakauheni –Terbanggi Besar section, which spans three districts in Lampung Province—Lampung Tengah District, Pesawaran District, and Lampung Selatan District—several growth centres have been identified, encompassing strategic areas along the toll road. These growth centres are characterised as follows:

A. Industrial Estate

An industrial estate is an area dedicated to industrial activities, complete with supporting facilities and infrastructure developed and managed by an industrial estate management company that has a business licence (Presidential Decree No. 41 of 1996 concerning Industrial Estates). This area is designed to serve as an economic growth hub with strategically selected locations, where the choice of industrial zone location is based on transportation cost efficiency in accordance with location theory, making it highly advantageous when complemented by good connectivity, such as access via the Trans-Sumatra Toll Road section between Bakauheni and Terbanggi Besar.

This industrial zone focuses on the processing of agricultural and plantation products as well as the development of local natural resources. With the presence of the Bakauheni-Terbanggi Besar toll road section, this area is expected to make a positive contribution to the economic growth of Lampung Province, particularly by increasing the value added for the industrial sector. In return, the development of this industrial area is expected to drive increased traffic on the toll road, creating a mutually beneficial cycle between infrastructure and economic growth. The identification of industrial zones with the potential to become economic growth centres as a result of the Bakauheni-Terbanggi Besar toll road section indicates significant potential for further development. This is as outlined based on the results of the identification of industrial zones with the potential to become growth centres as a result of the Bakauheni-Terbanggi Besar toll road section:

1. Katibung Industrial Estate

The Katibung Industrial Estate is located in South Lampung Regency. Based on the Lampung Province Spatial Plan (RTRW), there are plans to develop an 1,859-hectare industrial estate in Katibung. This estate will focus on becoming a centre for the processing of fertilisers and other gases.

2. Way Pisang Industrial Estate

The Way Pisang Industrial Estate is located in South Lampung Regency, specifically in Penengahan District. This location is currently a registered production forest area that will be exchanged for non-forest land located in Tulang Bawang Regency.

The Lampung Province's RTRW programme in support of the Way Pisang Industrial Estate includes:

- a. Construction of an agribusiness terminal and supporting infrastructure covering an area of 460 hectares
- b. Revitalisation of Way Pisang station
- c. Irrigation network
- d. Development of a 3,000-hectare industrial area

3. Lampung Industrial Area (KAIL) in South Lampung Regency

The Lampung Industrial Estate is located in Tajung Bintang Subdistrict, South Lampung Regency. This area is very strategic given its proximity to industrial raw materials and the Trans-Sumatra Toll Road section between Bakauheni and Terbanggi Besar. This means that industrial downstreaming and the industrial raw material supply chain are likely to remain uninterrupted.

4. Tegineneng Industrial Estate

The Tegineneng industrial area is located in Pesawaran Regency.

The Tegineneng industrial area is centred on the food and animal feed processing industries. The 950-hectare Tegineneng area is located in Pesawaran Regency.

5. Sulusuban Industrial Estate

The Sulusuban industrial area is located in Central Lampung Regency, where the spatial plan covers an area of 13,344 hectares. The Lampung Industrial Technopark is currently being developed in this industrial area, which is an agriculture-based industrial area covering an area of 1,000 hectares. A food production and processing centre is being developed in this area.

B. Tourism Area

In accordance with Law No. 10 of 2009 concerning Tourism, a tourism area is an area whose main function is to carry out tourism activities or has the potential for tourism development. In this case, tourism areas will become centres of growth because they have an important influence on economic, social and cultural growth and the empowerment of natural resources.

1. Lampung Bay Tourism Area

The Lampung Bay tourism area is one of the strategic areas with great potential for the development of the tourism sector in Lampung Province. This location is expected to become a centre for tourism activities, offering a variety of natural and cultural attractions that can support local and regional economic growth.

2. Krakatau Tourism Area

The Krakatau Tourism Area is a strategic area located in South Lampung Regency. This area has been designated as a national tourism area in the Lampung Province Spatial Plan (RTRW), with great potential for tourism sector development that can support regional economic growth.

3. Local Tourism Areas in South Lampung Regency

The local tourism area located in South Lampung Regency is close to the Natar toll gate, making it highly likely that local tourism can be developed in this area. This area already has a water park and several livable hotels in the vicinity.

4. Kalianda Urban Area

The Kalianda Urban Area is a Local Activity Centre (PKL) located in South Lampung Regency. This area serves as a major support for the tourism service sector, providing various facilities and services that support the development of the tourism industry in the region.

5. Bakauheni Urban Area

The Bakauheni Urban Area in South Lampung Regency is a Local Activity Centre (PKL) that focuses on the tourism sector. This area plays an important role in supporting the development of the tourism industry by providing various facilities and services that support tourist visits and enhance local economic potential.

C. Residential Areas

Residential areas are part of the living environment located outside protected areas, both in urban and rural areas. The main function of these areas is as a place of residence or dwelling and an area for activities that support life and livelihood. These residential areas are designed to provide a decent environment for the community, with facilities that support daily living needs.

1. High-density residential areas in South Lampung Regency
High-density residential areas in the Lampung Province Spatial Plan are located in Bandar Lampung City, Metro City, and South Lampung Regency.
2. Medium-density residential areas in Central Lampung Regency
Residential Areas Medium-density residential areas are planned in Pesawaran Regency and Central Lampung Regency.



Figure 2. Map of Growth Centres Resulting from the Trans-Sumatra Toll Road, Bakauheni-Terbangi Besar Section

The construction of toll roads in Sumatra, particularly in Lampung Province, has brought significant changes to the regional economic structure by creating new economic hubs. This infrastructure development has acted as a catalyst in the formation of previously underdeveloped growth centres. The existence of these economic hubs has had a positive impact on the development of various economic sectors, which in turn has increased the competitiveness of the region. Additionally, by improving accessibility and connectivity between regions, the construction of toll roads also contributes to the equitable distribution of economic growth across the entire Lampung region. This helps reduce disparities between central and peripheral areas, thereby fostering the creation of a more equitable and sustainable economic resilience at the regional level.

Discussion

Based on the results of the analysis conducted on the construction of the Trans Sumatra Toll Road, it can be seen that this project has a very significant impact on the economic resilience of the areas surrounding the toll road. One of the primary objectives of this toll road construction is to optimise the utilisation of natural resources (SDA) on the island of Sumatra. This aligns with the government's efforts to enhance the economic resilience of the region by establishing more efficient economic hubs, thereby enabling natural resources to be utilised more effectively. One direct effect of improved accessibility is more optimal utilisation of natural resources, which supports increased exports and reduced dependence on imports. As a result, the economic resilience of the Sumatra region can be maintained and even enhanced, reducing vulnerability to economic crises that may arise due to high dependence on certain sectors.

Changes in the spatial structure of Sumatra Island, particularly in Lampung Province, also demonstrate the positive effects of the Trans-Sumatra Toll Road development. Comparing the Regional Spatial Planning (RTRW) plans from 2010 and 2019, there has been an increase in Local Activity Centres (PKL) around the toll road route, such as in Bakauheni, Terbagus, Mesuji, and Natar. This indicates that the construction of the toll road has created new economic hubs that play a crucial role in the economic distribution of the Sumatra region. With the opening of these areas, sectors that were previously underdeveloped now have the opportunity to grow more rapidly.

The development of industrial zones along the toll road, such as in the Katibung, Way Pisang, and Sulusuban industrial zones, serves as a concrete example of the positive impact of toll road construction on the regional economy. This development has a ripple effect on the industrial, agricultural, and tourism sectors. These industrial zones can reduce transportation costs and enhance the competitiveness of local industries. Additionally, with improved connectivity, the distribution of goods and agricultural products will become more efficient, which in turn will accelerate regional economic growth and support sustainable development.

It is important to note that the impact of toll road development is not limited to the industrial or agricultural sectors but also extends to the tourism sector. Tourism areas such as Lampung Bay and Krakatau have significant potential for growth, and improved accessibility will support the development of the local tourism sector, which has a positive impact on the social and cultural economy of the local community.

CONCLUSION

Based on the results of the analysis conducted, it can be concluded that the construction of the Trans-Sumatra Toll Road Infrastructure plays an important role in enhancing the economic resilience of the region, particularly in Lampung Province. This toll road not only serves as a transportation facility but also acts as a catalyst for the formation of new economic hubs that contribute to economic equality between regions. The growth centres that have emerged along the toll road corridor, whether industrial zones or tourist areas, demonstrate how this infrastructure can level the playing field for economic opportunities and enhance regional competitiveness. Therefore, the construction of this toll road is a strategic step in strengthening regional economic resilience, reducing disparities, and opening up greater economic opportunities for communities in Sumatra, particularly in Lampung Province.

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