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The Impact of Toll Roads Development: Ecology of Public Administration Perspective

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ABSTRACT

Toll roads are one of the drivers of the economy, and its existence creates equitable development in the country. These roads are used to measure economic progress and show readiness for civilization with fast-paced and simple activities. In Indonesia, the construction of toll roads in the era of the government of President Joko Widodo was carried out massively. Between 2014 and 2019, 1,235 km of toll roads have been built, and this wide-spread construction has various positive impacts on the unnatural aspects of public administration, such as the socio-cultural and economic domains. It however negatively impacts the natural environment by causing degradation and displacement of natural habitat. Furthermore, toll road policies focused on the economic benefits of goods distribution over the preservation of environmental factors that serve as the foundation for construction. Therefore, building more toll roads without considering the environmental effects degrades the environment further and reduces the quality of life as time goes on.

Keywords: Construction of Toll Road, Ecology of Public Administration, Sustainable Development, Environmental Policy

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INTRODUCTION

Indonesia is a developing country that currently promotes national development in all aspects, to improve the welfare of society. It prioritizes economic development in its policies and has recognized the potential positive effects in other areas of the economy [1] [2].

As one of the drivers of economic development, investing in infrastructure by constructing toll roads plays an important role [3] and consequently allows for the realization of equitable development in all areas of the country [4]. It can also be a benchmark for both micro and macro-economic progress as well as evidence to show readiness for civilization through fast-paced and simple activities [5].

Due to its identified economic benefits, the construction of toll roads in Indonesia under the government of President Joko Widodo was carried out massively. For instance, between 2015 and 2019, a total of 1,235km of roads was built, which is an improvement from the 780km constructed since the country's independence in 1945 till 2014.

Although the length of toll roads in Indonesia was about 2,015 km as of 2019, this represents only 33% of the 6,000km planned toll road construction by the government. Additionally, the current level of constructed roads is a far cry from what other Southeast Asian countries have achieved with less advanced economies. For instance, Malaysia, whose territory is not as large as that of Indonesia, has 3,800 km of toll roads, while Indonesia, with its large expanse, has only constructed 2,015 km as of 2019.

This massive construction certainly has both positive and negative impacts on the environment. Therefore, the purpose of this paper is to investigate and analyze these viz a viz the country's sustainable development and environmental policies.

LITERATURE REVIEW

Ecology of Public Administration

The ecology of public administration studies the environmental factors that influence and are influenced by administrative systems [6]. Furthermore, it aims to analyze the impacts and identify certain characteristics that make up a harmonious ecosystem [7].

[8] stated that physical, human, and cultural environments influence administrative systems' functionality. Firstly, according to geopolitical analysts, the physical environment, which includes, geography, climate, and location, are the factors that determine economic development. Hence, in certain regions where geopolitics exists, administrative doctrines become irrelevant to the government. Secondly, the human environment, characterized by biology, demography, and psychology, can change the way the capabilities of administrative systems, how they perform and are in turn affected by them. Thirdly, the cultural environment exerts its influence through the mutual relationships that exist within a system. For instance, if a government intends to use coercion for promoting a policy, cultural ties will come into play, thereby making this difficult and may hinder such administrative development. Additionally, it is important to note the experiences of countries that have managed and overcome the problems that arise from cultural changes.

[8] analyzed how fundamental factors like political systems, ideological/ symbolic patterns, communication networks, and social structures influence each other in the United State. Similarly, [7] explained how this plays out in Indonesia using the concept of Tri Gatra and Panca Gatra (Three Forms and Five Forms). Tri Gatra includes three natural environmental factors which consist of geographical location and position, natural conditions, and wealth as well as the condition and ability of the population. Panca Gatra includes five unnatural environmental factors, namely ideology, politics, economics, socio-cultural, and security defense. These concepts are the environmental factors that influence and are influenced by administration systems.

Sustainable Development

The ecology of public administration as a theoretical concept finds its root and practicability in sustainable development. This term was first put forward in 1987 by the Prime Minister of Norway, Bruntland, who at that time served as Chair of the World Commission for Environment and Development and defined it as a

process of development (land, city, business, community, etc.) that is designed to meet current needs, without compromising the needs of future generations [9].

Therefore, every development needs to be based on the efficient use of available resources while consciously maintaining environmental sustainability for the sake of current and future generations. In essence, sustainable development is a new perspective of development that is committed to contributing to the future [10] and is widely practiced by various countries as they are beginning to realize that the world is faced with more problems such as climate change, the reduced biodiversity, poverty, crisis of trust, and others [11].

Furthermore, it is one of the long-term stages of development that is complex and involves inputs from multidisciplinary sciences [12]. For instance, the agricultural sector will encourage the expansion of the industrial sector better [13].

While accelerated development policies are required to increase economic growth, it is also important to consider the increasing inequality and environmental degradation that will occur in the process. Therefore, the primary sector base, which is currently a disadvantaged area requires educated human resources, increased productivity, and inclusion of technological elements.

Furthermore, sustainable development is the combination of two main elements, namely "development", which aims to increase the potential of a phenomenon towards better conditions, and "sustainable", representing resilience and sustainability [14]. There are also two dimensions of the concept, as follows: (1) time, which is concerned with what happens in the present and future; and (2) interaction, that focuses on the economic and environmental systems because the fulfillment of human needs is always dependent on the availability of limited natural resources [15].

In September 2000, representatives from 189 United Nations (UN) member states declared 8 Millennium Development Goals (SDGs) to be achieved in 2015, namely:

1. To eradicate extreme poverty and hunger.
2. To achieve universal primary education.
3. To promote gender equality and empower women.
4. To reduce child mortality.
5. To improve maternal health.
6. To combat HIV/AIDS, malaria, and other diseases.
7. To ensure environmental sustainability.
8. To develop a global partnership for development.

[16]

Subsequently, in 2015, they agreed on 17 additional (SDGs), detailed below:

1. End poverty in all its forms everywhere.
2. End hunger, achieve food security and, improved nutrition as well as promote sustainable agriculture.
3. Ensure healthy lives and promote well-being for all ages.
4. Ensure inclusive and equitable quality education as well as promote lifelong learning opportunities for all.
5. Achieve gender equality and empower all women and girls.
6. Ensure availability and sustainable management of water and sanitation for all.
7. Ensure access to affordable, reliable, sustainable, and modern energy for all.
8. Promote sustained, inclusive and, sustainable economic growth, full and productive employment and, decent work for all.
9. Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation.
10. Reduce income inequality within and among countries.
11. Make cities and human settlements inclusive, safe, resilient, and sustainable.
12. Ensure sustainable consumption and production patterns.
13. Take urgent action to combat climate change and its impact by regulating emissions and promoting developments in renewable energy.
14. Conserve and sustainably use the oceans, seas, and marine resources for sustainable development.
15. Protect, restore, and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.
16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable, and inclusive institutions at all levels.
17. Strengthen the means of implementation and revitalize the global partnership for sustainable development.

[17]

Environmental Policy

To achieve sustainable development, it needs to be supported by environmental policies that are backed by governmental laws and regulations. Consequently, Indonesia began this with the enactment of "Law 4 of 1982" on environmental principles, which was later developed into "Law 23 of 1997" that took care of its management. Subsequently, environmental policies experienced another change with the establishment of "Law 23 of 2009" on protection of the environment.

The government enacted these policies because the negative impacts of environmental degradation were felt, and subsequently became a growing concern. Accordingly, its purpose serves to shift the existing paradigm from growth that is focused on economic interests to one concerned with sustainable environmental development.

With these in place, the central and regional governments are required to pay attention to better environmental management. This is important because humans always try to improve their standards of living through various means that exploit nature and the environment, hence, tending towards sacrificing it for economic reasons.

Research Method

The research used qualitative method, which according to Bogdan & Taylor [18], is the procedure that uses and produces data from observable behavior as well as written or oral words from respondents. According to [19], it is used to explore and understand the meaning which, by several individuals or groups of people, is ascribed to social or humanitarian issues.

Qualitative data was collected through the study of literature and documentation of events while analysis was carried out qualitatively. According to [20], qualitative analysis consists of three activities that are carried out simultaneously, namely data redundancy, presentation, and conclusion drawing.

The validity test of this research was conducted through triangulation techniques, which [18] defined as data checking techniques that utilize independent elements for checking or comparison purposes.

DISCUSSION

Construction of Toll Roads in Indonesia

According to "Law 38 of 2004", toll roads are part of the public and national network system, which commuters are required to pay. Hence, a toll is a certain amount of money that is paid for this use. For its operations, concessions are carried out by the Government and/or business entities that meet the stated requirements. Its existence serves the below purposes:

1. Reducing traffic in developed areas.
2. Increasing the effective movement of goods and services to support increased economic growth.
3. Relieving the burden on Government funds through the participation of road users by toll.
4. Increasing the distribution of development and equity outcomes.

The history of toll roads construction in Indonesia began in 1975 when 59 km Jagorawi (Jakarta-Bogor-Ciawi) was constructed and subsequently began operations in 1978. In 1987, the private sector became operators by signing a concession agreement with PT Jasa Marga and began to participate in its investment. Consequently, by 2007, a total of 553 km had been built and operated in Indonesia, 418 km of which were operated by PT. Jasa Marga (SOEs), while the remaining 135 km were operated by the private sector.

Between 1995 and 1997, efforts were made to accelerate the construction of 19 toll roads with a total length of 762 km. However, this was stalled by the monetary crisis in July 1997 which made the government postpone the construction program with the issuance of Presidential Decree No. 39. As a result of the delay, the construction of toll roads became stagnant, as evident in the meager 13.30 km between 1997 and 2001.

In 1998, the Indonesian government issued Decree No. 7 on public and private sector cooperation in the provision of infrastructure countrywide. Furthermore, in 2002, the government issued Decree No. 15 on the evaluation and continuance of delayed infrastructure projects. hence, between 2001 to 2004, four sections of toll roads with a total length of 41.80 km had been built. The acceleration of the construction process took full force in 2005 evidenced by the establishment of the Toll Road Regulatory Agency, on June 29 to regulate the construction of the 19 toll road projects postponed in 1997 [21].

Since its independence in 1945 until 2014, the total of toll roads constructed was only 780 km. However, under the governance of President Joko Widodo between 2015-2019, 1,235 km were built as detailed below:

Table 1: Constructed Toll Roads in Indonesia (2014-2019)

No.	Toll Roads	Length (Km)
I.	**Toll Roads in Jabodetabek**	
	1. AksesTanjungPriuk	11.4
	2. Bekasi-Cawang-KampungMelayu	8.4
	3. Antasari-Brigif	5.8
	4. Kunciran-Serpong	11.2
	5. Jakarta-Cikampek	36.4
	Amount	**73.2**
II.	**Toll Roads in West Java and Banten:**	
	1. KedungBadak-Simpang Yasmin	2.65
	2. Cikampek-Palimanan	116.75
	3. Soreang-PasirKoja	8.15
	4. Ciawi-Cigombong	15.3
	Amount	**142.85**
III.	**Toll Roads in Central Java**	
	1. Pejagan-Pemalang	57.5
	2. Pemalang-Batang	39.2
	3. Batang-Semarang	75.0
	4. Bawen-Salatiga	17.6
	5. Salatiga-Kartasura	32.0
	6. Kartasura-Sragen	35.2
	7. Sragen-Ngawi	51.21
	Amount	**307.71**
IV.	**Toll Roads in East Java**	
	1. Ngawi-Wilangan	51.95
	2. Wilangan-Kertosono	37.9
	3. Kertosono-Bandar	0.9
	4. Bandar-Jombang	14.4
	5. Jombang-Mojokerto	24.9
	6. Mojokerto-Surabaya	36.27
	7. Porong-Gempol	3.55
	8. Gempol-Rembang	12.5
	9. Rembang-Pasuruan	8.1
	10. Pasuruan-Probolinggo	45.0
	11. Pandaan-Malang	38.4
	Amount	**273.87**
V.	**Toll Roads in Trans-Sumatra**	
	1. Bakauheni-Kota Baru	14.0

	2. Palembang-Indralaya	21.15
	3. Medan-Kualanamu-Tebing Tinggi	61.72
	4. Medan-Binjai	10.6
	5. BakauheniTerbanggiBesar	140.9
	6. TerbanggiBesar-PematangPanggang-KayuAgung	189.0
	Amount	**437.37**
	Total Amount	**1,235.0**

Source: [22] [23]

Impacts of Toll Roads Construction

The construction of toll roads is an embodiment of the 9th SDG, namely: building resilient infrastructure, encouraging inclusive and sustainable industrialization, and fostering innovation. Consequently, the achievement of these is expected to achieve the 8th goal: encourage sustainable, inclusive, and sustainable economic growth, as well as full and productive employment opportunities and decent work for all people. However, in the practice, these goals often collide because infrastructural development sacrifices the people over the economy.

Additionally, the massive construction done between 2014 and 2019 had various positive and negative impacts. One of the positive impacts is the smooth distribution of people and goods between cities and provinces, hence, covering a mileage using toll roads becomes faster, saves time and energy although requiring higher costs. For instance, people who travel home during Eid Al-Fitr day spend lesser hours journeying and are not fatigued upon reaching respective destinations. However, since many people use the toll roads at the same time, it may cause very severe traffic jams at several entrances and exits, which subsequently makes some people develop fatigue.

Furthermore, some car owners avoid toll roads because of the high rates and would rather travel through other routes. Indonesia, for example, has more expensive costs (IDR 2,264.4 per km) compared to other countries in ASEAN (Malaysia: IDR 946.3 per km, Thailand: IDR 1,815.7 per km, and the Philippines: IDR 1,831.7 per km), except Singapore, which is IDR 2,890.9 per km [24].

This situation has driven the cost of goods distribution higher and subsequently contributed to declining profits for businesses. Due to this impact, truck entrepreneurs, who are members of the Indonesian Truck Employers Association, complained about these excessive charges (Aptrindo) on the Trans Java road, which doubled the operational cost of shipping goods, compared to when they are shipped through the Pantura Road. Likewise, logistic entrepreneurs who are members of the Indonesian Logistics Association (ALI) also shared grievances, emphasizing that profits were cut short due to high toll rates and that service fees could not be increased to customers because they were bound by contracts.

Furthermore, its existence has also impacted employment opportunities within the toll company. For example, when the Cikopo-Palimanan toll road was first opened, PT. Lintas Marga Sedaya as the toll road manager recruited hundreds of workers as gate officers. However, since the non-cash payment through e-toll was implemented, many of the company workers were laid off. The impact is also felt in various minimarkets, restaurants, and gas stations located within the toll road rest areas. Conversely, the establishment of toll roads reduces the turnover of restaurants and souvenir shops along the non-toll roads. For instance, restaurants and souvenir shops used to be crowded with buyers but now, they hardly get customers, have lost many buyers, and profit has dropped drastically while some had no other option than to close permanently. Therefore, to remain in business and generate revenue, the shop owners must open restaurants and shops in toll road rest areas with higher rental fees than their previous places.

The construction of toll roads is not always beneficial to the people around and as a result, Sri Sultan Hamengku Buwono X, as the Sultan and Governor of the Special Region of Yogyakarta consistently rejected the construction of toll roads in Yogyakarta, especially the toll road leading to New Yogyakarta International Airport (NYIA). This is because the toll road to NYIA did not provide benefits for the people within the vicinity and was only profitable for the owners [23].

To protect the people's economy, the Sultan also forbade foreign citizens from owning land in the form of Freehold in Yogyakarta but could only use them with Cultivation Rights and Concession Rights. A similar measure was also taken by the Mayor of Padang, who banned minimarkets such as Indomaret and Alfamart from operating in Padang City. Unfortunately, the pro-economic policies of the people were not followed by other regional heads, who generally prioritized liberal-capitalist economic considerations to pursue economic growth at the expense of the people. Consequently, this proves that the popular economy is only limited to discourse and rhetoric while economic development policies are still dominantly influenced by liberalist-capitalist economic ideologies that prioritize the interests of the capitalists.

Additionally, the socio-cultural sector that had been long-standing was affected as many residents of villages and other residential areas were displaced. Apart from this, there is also division within the community; the people who originally lived in one village have been separated by the toll roads.

Another negative effect is the displacement forests, water absorption areas as well as rice fields which are a source of livelihood for rural communities, hence, environmental sustainability is threatened. Although the government gives compensation to farmers, it is oftentimes not enough to satisfy them as their livelihood would.

The reduced area of rice fields because of the construction of toll roads is not only detrimental to farmers but also national rice production. This conversion of rice fields to toll roads has caused a reduction in rice production capacity resulting in the government being forced to import rice from other countries to feed its citizens.

The prioritization of economic development and recognition of the potential positive effects in other areas of the economy is very important. However, there is a need to pay attention to ecological factors and environmental policies implemented by the administrative system because they have been detrimental and need revision. In the same vein, the lecturer of Master of Public Administration at Gadjah Mada University, Nurhadi Susanto, stated that the government's concern so far has only been on benefits of goods and people distribution. It has not specifically

emphasized the need to preserve the environment which is the foundation for the construction of toll roads. Furthermore, concerns like this should be a part of transportation development, because, in the National Transportation System, one of the objectives is to support regional development in the form of transportation facilities and infrastructure. However, the anthropocentric way of thinking, which assumes that humans are the center of everything, and nature must submit to human desires, is the cause of the rise of ecological disasters. The high distribution of critical land accompanied by the shrinking forest area has had a serious impact on the forest, air, and water quality indexes, which in turn is a potential/serious threat to the carrying capacity of ecosystems [25].

Nurhadi Susanto cites data from the Ministry of Environment and Forestry (KLHK), which shows that the number of Environmental Quality Index (IKLH) in Indonesia as of 2016, was 52.44, and included in the "very less" category. The results of the studies are inversely proportional to the existing conditions. According to KLHK, the increase in the value of the National IKLH occurred because of the large contribution of Air Quality Index (IKU). The percentage of the increase of IKU towards the increase of IKLH was 221.1%, while the percentage of the decrease in Water Quality Index (IKA) and Land Cover Quality Index to the increase in IKLH value was 69.5 % and 51.6 %. This condition is in line with the perception of environmental damage caused by the construction of toll roads, as stated by the Indonesian Forum for Environment (Walhi) in Central Java that several toll roads projects in Central Java are converting green lands into roads. Hence, this condition will accelerate environmental damage even further [25].

Furthermore, toll roads infrastructure physically changes the composition of lands, as well as the carrying capacity of the environment (D3LTH) in the area traversed. Therefore, ignoring the environmental impacts during construction will cause a decrease in the quality of the environment, and life subsequently. So far, the stages carried out in the construction of toll roads i.e. the pre-construction, construction, and operationalization have not touched on environmental aspects, as such damages, in the long run, are predicted and well-anticipated [25].

CONCLUSION

Based on the discussions, the following conclusions can be deduced:

1. The massive construction of toll roads under President Joko Widodo's government has caused many positive on unnatural aspects of the ecology of public administration such as socio-cultural and economic domains. It however negatively impacts the natural environment by causing degradation and displacement of natural habitat
2. The government policies have only been focused on the benefits of the distribution of goods and people (economic aspects) and not specifically invested in the aspect of preserving environmental functions that are used as the capital for the construction of toll roads. Ignoring these environmental aspects will cause massive degradation in the quality of the environment, and life in the long run.

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