



## The Effect of Community Characteristics on Achievement of Sanitation Access Policy Development in Maluku Province

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### Abstract

Maluku Province is an area with minimal access to sanitation because of its archipelagic location. Access to sanitation is one indicator of sustainable development goals (SDGs) that must archive in 2030. To achieve sustainable universal sanitation access, an indicator is needed that can be used to make policies that can grow access to proper sanitation. This study aims to determine the factors that can improve sanitation in Maluku Province. The development of livable housing must also pay attention to access and proper sanitation. This study used secondary data to analyze multilinear regression of socioeconomic impact on access to sanitation. Economic growth affects people's welfare. Economic growth is usually followed by a reduction in poverty, an increase in the Human Development Index (HDI), and an expansion of employment opportunities. This study uses secondary data from 2006 to 2016. Integrating human development, reducing poverty, and increasing residential ownership is needed to increase Maluku Province's sanitation access. With improved policies and better master plans for improving the quality of social variables, this variable will also affect increasing access to sanitation in Maluku Province. Better policy and programs from the central and local governments should seek to reduce poverty levels to improve access to sanitation in Maluku Province.

*Keywords: access to sanitation; maluku province; policy; SDGs*

### 1. Introduction

The lack of proper sanitation infrastructure causes inadequate sanitation in Maluku Province (Adicita et al., 2021; Fitri et al., 2022; Girsang, 2016). The location of Maluku Province, which is quite challenging to reach, poses obstacles to developing adequate sanitation infrastructure. The index shows an imbalance between the percentages of Ambon and the Aru Islands, where Ambon is an urban area with the highest index value of 0.87, and the district with the lowest sanitation is in the Aru Islands Regency of 0.33 (Jatti et al., 2019). Therefore, the government needs to collect data and provide policies for areas with low proper sanitation (Weststrate et al., 2019).

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Basic sanitation is the minimum needed to provide a healthy environment and meet health requirements that focus on monitoring various environmental factors that affect human health (Isah et al., 2021). Basic sanitation efforts include providing clean water, disposal of human waste (latrines), waste management, and sewerage (Koko et al., 2022; Suryawan et al., 2021). Indonesia, a developing country, has environmental health problems ranging from sanitation (latrine) problems, clean water supply, housing, garbage disposal, and wastewater disposal (Edy Santosa, 2019; Prakoeswa et al., 2020; Vollmer & Grêt-Regamey, 2013). The sixth goal of the Sustainable Development Goals (SDGs) is to ensure the availability and sustainable management of water and sanitation for all. The existence of this SDG's commitment has launched a national agenda, namely 100% universal access to drinking water and sanitation, as stated in the 2015-2019 National Medium-Term Development Plan (RPJMN) (Apritama et al., 2020; Budiharti & Wardana, 2018; Dariah et al., 2019). Maluku Province is no exception, targeting all regencies/cities in Maluku to achieve 100% universal drinking water and access to proper sanitation by 2019 (Agustina et al., 2019; Irianti & Prasetyoputra, 2019; Putirama, 2021).

The Directorate General of Human Settlements has constructed infrastructure for sewage treatment plants in various regions in Indonesia. This is an effort to increase public access to sanitation services. Institutionally, to provide sanitation services optimally and sustainably, it is necessary to separate the functions of the regulator and the operator managing the sanitation sector. Improving the environment's quality by managing domestic sewage sludge is an essential variable in providing basic services and improving the community's quality of life. Clean water and proper sanitation are basic human needs. The sustainable development goals (SDGs) in the environmental sector ensure that people achieve universal access to clean water and sanitation (Tortajada & Biswas, 2018). It is stated explicitly in SDGs 6.2 that by 2030, achieve access to adequate and equitable sanitation and hygiene for all and stop the practice of open defecation, paying particular attention to the needs of women and vulnerable groups of people (Andres et al., 2018).

Poverty involves the inability to meet the minimum demands of life, especially in terms of consumption and income (Omotola, 2008). Poverty is also a cross-sector problem, cross-area, and cross-generation, so an integrated, comprehensive, and sustainable approach is needed to deal with it. Political will is required to successfully accelerate poverty reduction programs (Rejekiningsih, 2011). The problem of poverty is very complex and multidimensional, which is related to social, economic, cultural, and other aspects (Hunter, 2022). Poverty continues to be a phenomenal problem in many parts of the world because of its multidimensional nature, and poverty also requires multidimensional solutions. Various programs from the central and local governments have been attempted to reduce poverty levels. Even poverty has become one of the essential SDGs agendas, which replace the MDGs (Millennium Development Goals) at the end of 2015. This study aims to determine the factors that can improve sanitation in Maluku Province.

## 2. Methods

Maluku Province is a province in the form of an archipelago that is part of the Maluku Islands (Gambar 1). The area of Maluku Province is 712,479 Km<sup>2</sup> consisting of 54,185 Km<sup>2</sup> (7.6%) of land and 658,294 Km<sup>2</sup> of sea (92.4%), which has a group of 395 islands, 83% or around 331 islands are uninhabited. Geographically, Maluku Province is located between the Seram Sea in the north, the Indian Ocean, and the Arafura Sea in the south. In the east, Maluku Province is bordered by West Papua Province. Meanwhile, Maluku Province is bordered by the Banda Sea in the west.

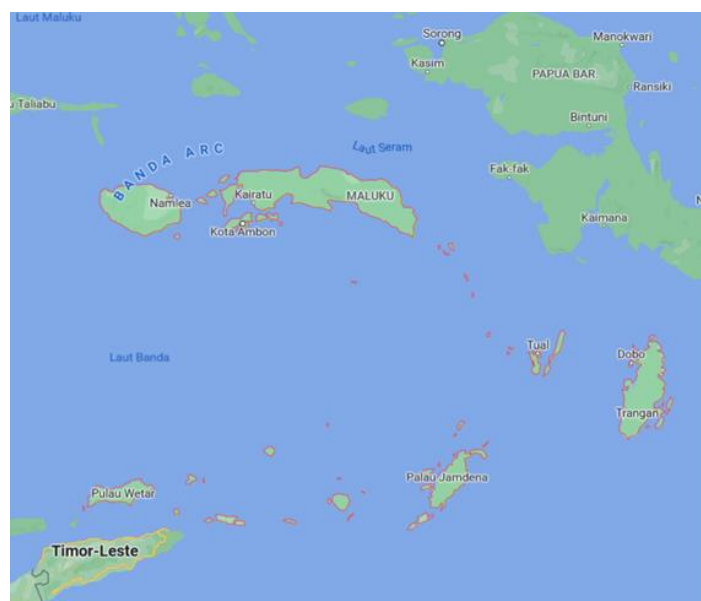


Figure 1. Location of Study Area (Google Map, 2021)

The basis of the research method used in this study is a descriptive method with a quantitative approach, namely, a research method that emphasizes analyzing actual problems with data in the form of numbers. The type of data used in this study is secondary data from the Central Statistics Agency of Maluku Province. The data used are HDI, Poverty Index, Housing Ownership, and access to sanitation from 2006 to 2016 (Table 1).

Table 1: Changes in HDI Value, Poverty Index, Residential Ownership, and Access to Sanitation in Maluku Province from 2006

Year	HDI (Badan Pusat Statistik Provinsi Maluku, 2022b)	Poverty Index (Badan Pusat Statistik Provinsi Maluku, 2022a)	Residential Ownership (Badan Pusat Statistik Provinsi Maluku, 2022c)	Access to Sanitation (Badan Pusat Statistik Provinsi Maluku, 2022d)
2006	69.7	7.51	4.66	19.76
2007	69.96	6.38	5.08	31.45
2008	70.38	6.89	5.65	40.19
2009	70.96	6.84	5.99	38.69
2010	64.27	5.27	9.52	48.28
2011	64.75	4.6	6.11	50.75
2012	65.43	4.38	5.62	53.17
2013	66.09	3.52	5.13	62.39
2014	66.74	4.11	5.76	62.87
2015	67.05	3.52	5.65	60.02
2016	67.6	3.63	6.93	66.81

In terms of testing the hypotheses that have been set previously, the researchers used multiple linear analyses. Multiple regression analysis is a study of the dependent variable's dependence on one or more variables, namely the explaining variable, to estimate and predict the average value of the dependent variable if the value of the explaining variable is already known. The variable that explains is often called the independent variable.

### 3. Results and Discussions

The development of liveable housing must also pay attention to access and proper sanitation. From 2010-to 2013, the number of households in Maluku that received the sanitation and drinking water eligibility criteria tended to increase but was still below the national level. The lack of adequate infrastructure support and the low awareness of the community to adopt a clean lifestyle are causes of the low quality and quantity of sanitation (Meidiana & Gamse, 2010), both in terms of wastewater management, solid waste, and settlement drainage. Sanitation development is significant because it impacts health, housing infrastructure needs, environmental degradation, regional aesthetics, and public welfare.

Sanitation problems are always related to several diseases, such as diarrhea, digestive disorders, or Upper Respiratory Tract Infections (ARI) (Xun et al., 2021). This sanitation problem can also occur in the school environment, so students may be at risk of disease due to poor sanitation. Sanitation as an aspect of development has an essential function in supporting the level of community welfare because it is related to housing and comfort in daily life. Figure 1 shows that the growth rate of sanitation access in Maluku Province increased steadily from 2006 to 2016. Still, sanitation is often considered a secondary matter, so it has not received attention. Housing conditions in Maluku are not suitable when viewed from the components that make up the category of slum houses, namely inadequate access to drinking water, inadequate access to sanitation, and low adequacy of residential floor area per capita (Bappenas, 2015). Based on these conditions, the policy direction determined by the government is to increase access of low-income people to decent, safe, and affordable housing supported by the provision of adequate infrastructure, facilities, and utilities, to ensure water security through increased knowledge of changes in attitudes and behavior in the use of public water and sanitation management (Bappenas, 2015).

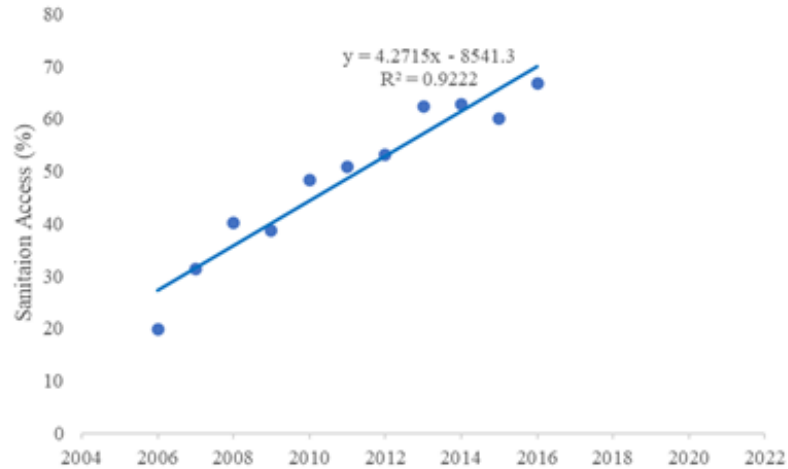


Figure 2. Changes in Sanitation Access in Maluku Province

The quality of economic growth affects people's welfare. Economic growth is usually followed by a reduction in poverty, an increase in the Human Development Index (HDI), and an expansion of employment opportunities. In addition, implementing education in remote areas will be able to bridge the cultural gap in society through the culture of learning in schools. The development of the education sector in Maluku has an essential and strategic role following the constitutional mandate of the 1945 amendments to the 1945 Constitution and confirmed in Law no. 20 of 2003 article 49 paragraph (1), namely education funds are allocated a minimum of 20 percent of the APBN and a minimum of 20 percent of the APBD (Hakim, 2016; Sirait, 2017). Therefore, the government needs to prioritize the development of educational attainment in Maluku.

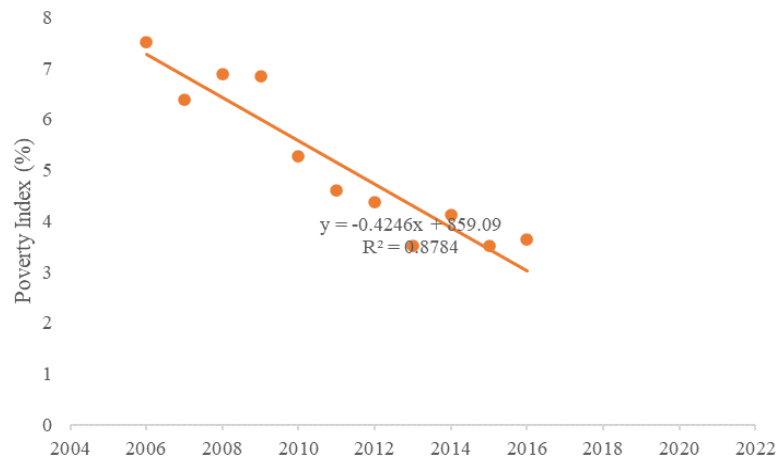


Figure 3. Changes in the Poverty Index in Maluku Province

The policy direction in the housing development target is to increase access for low-income people to decent, safe, affordable housing and support by providing adequate infrastructure, facilities, and utilities. The need for liveable housing in Maluku is substantial, considering that there are still 40,500 households still occupying Maluku Province 2015 Regional Development Analysis Series Maluku Province uninhabitable houses in Maluku, as many as 40,500 of the national total of 3.4 million households Education is a means of preparing human resources for development. Education plays an essential role in alleviating poverty and providing the entire community skills to optimally reach their potential. (Bappenas, 2015). The development of liveable housing is needed for people in Maluku Province, who are currently still in a slum area of 296 hectares of the national slum area, covering 37,407 hectares (Bappenas, 2015). The fulfilment of proper housing supported by adequate infrastructure, facilities, and utilities needs special attention. Many low-income people do not live in liveable houses because of their low affordability to build or buy houses (Average, 2019). Development activities and technical assistance for housing finance for the community can improve and encourage community empowerment and foster the private sector and stakeholders' role in developing housing and settlement areas.

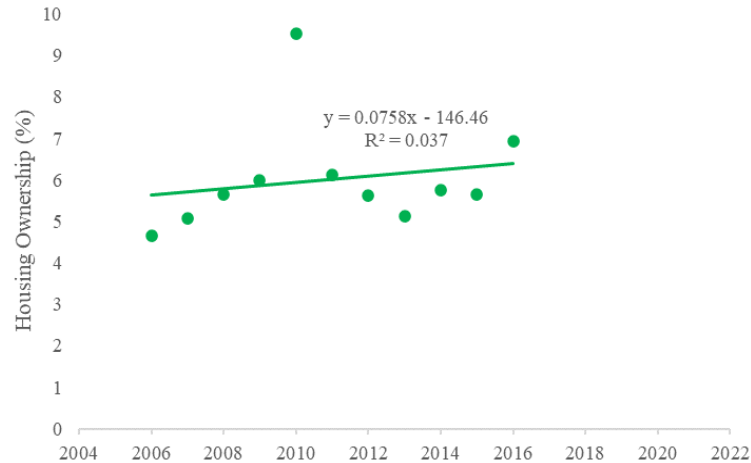


Figure 4. Changes in House Ownership in Maluku Province

Table 2 shows a model for estimating sanitation access in Maluku Province. HDI and residential ownership have a lower significance than the poverty index. This indicates that improving the community's economy is crucial in developing access to sanitation crucial in developing sanitation in Maluku Province. Poverty is a significant problem in development in Maluku Province. Although efforts to reduce poverty have been carried out since the beginning of the Maluku Provincial RPJPD in 2005, in 2014-2018, the reduction in the poverty rate did not show many significant results (Bappenas, 2015).

Table 2: Changes in HDI Value, Poverty Index, Residential Ownership, and Access to Sanitation in Maluku Province from 2006

Model	Unstandardized Coefficients		Standardized Coefficients	t	R Square
	B	Std. Error	Beta		
(Constant)	-42.101	69.262		-0.608	
HDI*	1.954	1.033	0.314	1.892	0.934
Poverty Index ***	-11.057	1.434	-1.126	-7.713	
Residential Ownership*	2.604	1.329	0.231	1.959	

\*\*\*, \*\*, \* are significance at  $p < 0.01$ ,  $p < 0.05$ , and  $p < 0.1$ , respectively.

This study's relationship between the three variables showed a significant relationship (Table 3). This means that integrating human development, reducing poverty, and increasing residential ownership is needed to increase access to sanitation in Maluku Province. Furthermore, with improved policies and better master plans for improving the quality of social variables (Miranti, 2017), this variable will also affect increasing access to sanitation in Maluku Province. By remembering international political recognition through SDG'S. The state is obliged to provide a normative framework to expand efforts to realize human rights through better sanitation policies in the regions. The implementation of the human right to water and sanitation through sanitation governance needs to take this into account. Although there are still obstacles in managing the HDI and poverty index, it can provide lasting benefits for public health in the sanitation sector through sustainable policies and regulations.

Table 3: Changes in HDI Value, Poverty Index, Residential Ownership, and Access to Sanitation in Maluku Province from 2006

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	2031.665	3	677.222	32.793	0.000
Residual	144.562	7	20.652		
Total	2176.227	10			

Poor sanitation is associated with several health issues, such as diarrhea, digestive disorders, and upper respiratory tract infections (Julian, 2016; Sara & Graham, 2014; Sidhi et al., 2016). These problems extend to schools, where inadequate sanitation can put students at risk. Sanitation is a vital aspect of community development, as it supports comfort and quality of life by ensuring that housing is safe and healthy. Despite its importance, sanitation often receives less attention, being considered secondary to other development goals. Community participation plays a crucial role in addressing these challenges (Sianipar et al., 2024; Sianipar & Lee, 2024; Suryawan et al., 2024;

Suryawan & Lee, 2023; Sutrisno et al., 2024; Tehupeiry et al., 2023). Increasing awareness and involvement of the community in sanitation initiatives can lead to more effective and sustainable outcomes. When communities are actively engaged, they are more likely to adopt and maintain sanitation practices that improve public health and environmental conditions. Participation also fosters a sense of ownership, making it more likely that infrastructure will be maintained and that sanitation standards will be upheld. The policy direction set by the government, which focuses on increasing access to decent, safe, and affordable housing supported by adequate infrastructure, facilities, and utilities, emphasizes the need for community involvement. For these policies to be successful, it is essential that the community is not just a passive recipient but an active participant in the planning, implementation, and maintenance of sanitation and housing projects. Moreover, the integration of human development efforts, poverty reduction, and residential ownership initiatives, as shown in the study, underscores the need for a comprehensive approach that includes community participation. By involving the community in these processes, policies can be more effectively tailored to the specific needs and circumstances of the local population, leading to better outcomes in terms of access to sanitation and overall public health.

#### **4. Conclusion**

HDI and residential ownership have a lower significance than the poverty index. This shows that improving the community's economy is crucial in developing access to sanitation crucial in developing sanitation in Maluku Province. Poverty is a significant problem in development in Maluku Province. Integrating human development, reducing poverty, and increasing residential ownership are needed to increase sanitation access in Maluku Province. With improved policies and better master plans for improving the quality of social variables, this variable will also affect increasing access to sanitation in Maluku Province. Better programs and regulation from the central and local governments should seek to reduce poverty levels to improve access to sanitation in Maluku Province.

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