

SUITABILITY OF THE INFRASTRUCTURE POLICY TO SPATIAL POVERTY BASED ON THE SUSTAINABLE LIVELIHOOD APPROACH IN LABUAN BAJO, WEST MANGGARAI DISTRICT

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Abstract. *Inequality in the implementation of strategies and policies will impact many sectors. One of the factors affected is the spatial accessibility of essential community infrastructure. The fulfillment of basic community infrastructure affects the community's ability to create a decent life. The method used to achieve the objectives of this research uses deductive analysis using the sustainable livelihood approach (SLA) and spatial data from GIS software. Through the SLA approach, this research aims to identify infrastructure development policies and see their relevance to poverty conditions in the West Manggarai Regency. SLA can be used to determine policies for handling poverty in the West Manggarai Regency. The result is that policies in infrastructure development do not have a significant impact on poverty conditions. Apart from that, the policies implemented in West Manggarai Regency have not met the SLA indicators. The spatial analysis results show that the distribution of infrastructure development does not look at the distribution of poverty and there is no integration between infrastructures.*

Keywords: *Policy, spatial, SLA, poverty*

1. INTRODUCTION

The background to the need for infrastructure policies in poverty alleviation lies in the understanding that limited access to basic infrastructure can be a major obstacle for people struggling to get out of poverty. Adequate infrastructure, such as transportation networks, clean water, sanitation, education and health, provides a solid foundation for improving the quality of life and creating economic opportunities. Often, communities in less developed or remote areas face significant challenges in accessing these services and facilities, which can increase levels of poverty and social inequality.

The relevance of infrastructure policy to the rise and fall of poverty rates arises because inadequate infrastructure can become an obstacle to economic development and improving people's living standards. Proper infrastructure development, such as roads, can open access to remote areas, allowing local farmers and producers to get their products to market more efficiently. Clean water systems and good sanitation can improve public health, reduce the burden of disease, and increase productivity. With increased access to education, children can gain the knowledge and skills necessary to increase their employment opportunities in the future. Therefore, investment in infrastructure development can have a positive impact on the economic conditions of society and directly reduce the rate of increase in poverty rates.

Regarding the rise and fall of poverty rates, the role of infrastructure can be explained by involving aspects of economic resilience. Good infrastructure can help create new jobs and business opportunities, reduce levels of economic uncertainty, and provide a strong foundation for sustainable economic growth. However, this sustainability can also be influenced by external factors such as global economic fluctuations, natural disasters, or political instability. Therefore, infrastructure development must be

accompanied by a comprehensive strategy to overcome uncertainties and risks that may arise, so that the positive impact can be maintained in the long term.

2. LITERATURE REVIEW

Efforts to overcome poverty are efforts to improve community welfare. The government should consider ecological poverty alleviation and build an interactive model of ecological protection and poverty reduction (Cheng et al. 2018). Poverty alleviation here refers to general poverty, where poverty does not only include income poverty, but also multidimensional poverty, such as educational facilities, public health, drinking water and sanitation (Liu, Yu, and Wang 2015). Achieving the zero percent poverty target will require a nuanced approach to poverty alleviation that recognizes various approaches to knowing which households “succeed” or “fall” back into poverty, or remain in the poor category (Shepherd et al. 2013).

Related to contributions or solutions to poverty alleviation. Currently, the pace of poverty alleviation is slowing, so the government must develop new approaches to increase the effectiveness of current poverty alleviation programs. Thus, existing programs must be redesigned to minimize targeting errors (Nugroho et al. 2021). However, redesigning is not easy because Indonesia has a complex targeting environment for poverty reduction for the following reasons: (i) Indonesia has the fourth largest population globally; (ii) is an archipelagic country; (iii) have a government with a decentralized system; (iv) has the characteristics of widespread poverty; and (v) the program created has several targeting objectives (Alatas, 2019).

Poverty reduction, inclusive growth, green growth and global partnership for development are the main areas and priority directions of global development in the next stage to continue and adhere to the development mode that combines poverty reduction with sustainable development MDGs and SDGs (Liu et al. 2015).

Along with efforts to reduce global poverty gradually and the phenomenon of poverty is decreasing. It is necessary to consolidate the achievements of poverty alleviation and promote sustainable livelihood development (Liu and Xu 2016; Liu, 2018). Sustainable livelihood approach (SLA) is a process in which a household builds various types of livelihoods and social support capabilities in their struggle to survive and to improve their standard of living (Serrat 2017).

The status transition in the sustainability approach is based on the following process: first, the government provides poor households with certain livelihood resources to help them have a certain livelihood base; second, the government provides technical training for rural households to awaken their endogenous strengths so that they can realize accelerated livelihood improvements; third, the government improves the household livelihood environment and removes obstacles to household livelihood activities (Deng, Li, and Zhang 2020).

Poverty is an issue that attracts attention, especially in developing issues where policy or social change is needed to overcome risks or reduce vulnerability to uncertain conditions. Without social change, sustainable development is impossible and poverty alleviation will stall (Diwakar and Shepherd 2022). So overcoming poverty requires efforts from various sectors, from society and also from the government as a policy maker.

Survey analysis in poverty reduction is based on monetary poverty and correlation, and this provides a starting point for qualitative research. Qualitative data is closer to a multidimensional definition of poverty that examines household assets, labor capacity, and nutrition (Da Corta et al., 2021). This stems from the recognition that poverty is multidimensional and that poverty alleviation efforts also need to be multidimensional (Alkire and Foster 2011). In general, other research only covers a few indicators used by multi-dimensional analysis, based on local perceptions of poverty and then offers contributions or solutions (Da Corta et al., 2021). So there is a need for analytical tools that are able to accommodate these multi-dimensional factors.

A composite index combines several individual indices to provide a synthetic

measure (a statistical summary) of a complex, multidimensional, and meaningful social problem (e.g., poverty, degree of human development, level of sustainability, or capacity for disaster risk management). Individual indices and indicator sets can be selected, organized, and combined to produce sub-indices representing the main components or dimensions of the system being investigated (Farrugia 2007).

Composite indices are useful in policy analysis and public communications because they demonstrate comparisons in describing complex and sometimes difficult to understand problems. Composite indices can be more easily understood by the general public (Saltelli 2007).

The dynamic analysis process includes three key sources of strength of poor households - improving the ability to earn a living independently, eliminating poverty and maintaining its results, and realizing the entire dynamic process and mechanism of household poverty alleviation. (Deng et al. 2020). This is the basis for the use of dynamic systems in this research. However, studies using dynamic systems and mechanisms in the literature related to existing poverty are still insufficient (Deng et al. 2020).

3. RESEARCH METHODS

This research was conducted in West Manggarai Regency. The research was carried out using secondary data, including social condition data, ecological condition data, statistical data and data based on spatial planning documents in West Manggarai Regency.

The approach method used to achieve the objectives of this research uses a deductive approach, namely a theoretical approach to obtain confirmation based on hypotheses and observations that have been made previously.

4. RESULTS AND DISCUSSION

Tourism development in West Manggarai Regency has a complex relationship with inequality in the distribution of facilities and poverty in several areas. On the one hand, tourism can bring economic benefits by increasing regional income, creating new jobs, and providing business opportunities for local communities. However, on the other hand, the impact of tourism development is often uneven, which can cause inequality in access to basic facilities and cause poverty.

Some areas that are tourist destinations may receive more attention in terms of infrastructure, transportation and other supporting facilities, while other areas that are not very accessible to the tourism industry may be marginalized. This could deepen the gap between regions that benefit from tourism growth and regions that do not.

Additionally, in some cases, tourism growth can lead to increases in property prices and living costs around tourist areas, which may be difficult for local residents on low incomes to afford. This could lead to the formation of pockets of poverty around developing tourism destinations.

To reduce these negative impacts, it is important to pay attention to the equitable distribution of tourism benefits. There needs to be careful planning to ensure that all areas in West Manggarai Regency benefit from tourism growth, including infrastructure development, skills training for local residents, promotion of sustainable tourism, as well as tourism revenue management that takes into account social justice.

Collaborative efforts between the government, non-governmental organizations, tourism industry players and local communities are key in ensuring that tourism growth provides balanced benefits for all communities in West Manggarai Regency, as well as reducing inequality in the distribution of facilities and pockets of poverty that may arise as a result.

Environmental management efforts are integrated with sustainable development policies. Where society is expected to change consumption and production patterns so that they are in synergy with natural resources and the environment. So, with these efforts it is hoped that sustainability can influence the poverty conditions of the community. An approach that can be integrated is the Sustainable Livelihood approach

which sees society in a particular context such as vulnerability where disasters and violent conflicts often occur and even various crisis tendencies.

To reduce these negative impacts, it is important to take a more inclusive and sustainable approach to park management. This includes ensuring active participation of local communities in tourism and conservation activities, increasing access to skills training, creating fair and sustainable employment opportunities, as well as paying attention to equal distribution of economic benefits for all levels of society. The conditions of society in Indonesia are diverse, much influenced by spatial conditions Island. This triggers the different characteristics of each region in Indonesia. Thus, strategies for poverty alleviation efforts in Indonesia must be developed based on the potential of each region which is determined based on development targets. One form of poverty alleviation strategy proposed by the government is through the development of the tourism sector. The development of strategic tourism areas is an effort to encourage accelerated regional economic growth, reduce poverty and inequality, especially in rural areas, and create quality employment opportunities.

The following are several types of programs implemented:

1. Social and Cash Assistance: Direct assistance program to poor families through the distribution of social and cash assistance.
2. Free Education or Scholarships: Free education or scholarship programs for children from poor families to increase access and participation in education.
3. Skills Training and Economic Empowerment: Skills training and economic empowerment programs to provide skills and employment opportunities to the poor.
4. Health Program and Health Insurance: Health program that provides access to affordable health services and health education to poor communities.
5. Infrastructure and Rural Development: Development of infrastructure in rural areas to increase accessibility, as well as construction of public facilities such as clean water and sanitation.
6. Food and Nutrition Program: Food program that provides special food or nutrition assistance to poor families.
7. Women's Empowerment Program: A program that aims to increase the role and welfare of women in society.
8. Community-Based Approach: Poverty reduction program that involves active community participation in planning, implementation and evaluation.
9. Formation of Joint Business Groups: Encourage the formation of joint business groups to improve the community economy through joint efforts.
10. Information and Monitoring System: Building an information and monitoring system to ensure the program runs effectively and efficiently.

Several infrastructure development programs that are generally implemented to support poverty reduction include:

1. Road and Bridge Construction: Build or repair road and bridge networks to increase accessibility and connectivity between regions, especially in rural areas.
2. Clean Water Infrastructure Development: Building a clean water supply and sanitation system to increase community access to safe, clean water and proper sanitation.
3. Development of Electricity and Lighting: Expanding the electricity network to increase access to electricity in remote or rural areas, as well as providing public street lighting.
4. Development of Health Facilities: Build and improve health facilities such as hospitals, health centers and clinics to expand public health services.
5. Construction of Educational Facilities: Building or improving schools and other educational facilities to increase access to education for children in less developed areas.
6. Telecommunications Infrastructure Development: Improving telecommunications networks to expand access to information and economic opportunities in remote

- areas.
7. Development of Markets and Economic Centers: Building or improving market facilities and local economic centers to support community economic activities, especially in the agricultural and craft sectors.
 8. Agricultural Infrastructure Development: Providing irrigation facilities, improving agricultural land, and providing agricultural technology to increase the productivity of the agricultural sector.
 9. Fisheries Infrastructure Development: Improve fisheries infrastructure, such as fishing ports, fish processing facilities and fisheries centers, to support the lives of coastal communities.
 10. Public Transportation Infrastructure Development: Improve public transportation facilities, such as buses and trains, to facilitate people's mobility and access to important services.

The programs above have been difficult to implement in the past few years, but ironically the poverty rate in West Manggarai in September 2018 actually reached 18.14%, almost double the national poverty rate. Through empowerment efforts, it is hoped that independent graduation will accelerate, meaning that KPM PKH and BPNT can be separated from the social assistance program that has been provided by the government.

Poverty reduction strategies in Indonesia are developed based on the potential of each region. Where through this coping strategy, development targets are determined. One of the regional developments prioritized by the government is the development of the National Tourism Strategic Area (KSPN). East Nusa Tenggara Province is one of the provinces that has received a tourism area development plan. The Labuan Bajo area in West Manggarai Regency is one of the priority areas in the Priority National Tourism Strategic Area (KSPN) and is also included in the Labuan Bajo Super Priority Tourism Destination (DPSP). Efforts to develop the tourism area are included in the Government's 2022 Work Plan. The main target is to accelerate regional economic growth, reduce poverty and inequality, especially in rural areas, and create quality employment opportunities.

The National Team for the Acceleration of Poverty Reduction (TNP2K) shows that data on poverty conditions in Indonesia has decreased to 9.78% in 2020. This figure has slowed down compared to the end of 2012, where the decline was up to 1%, but after 2012 the figure slowed down with a decline of only around 0.5%.

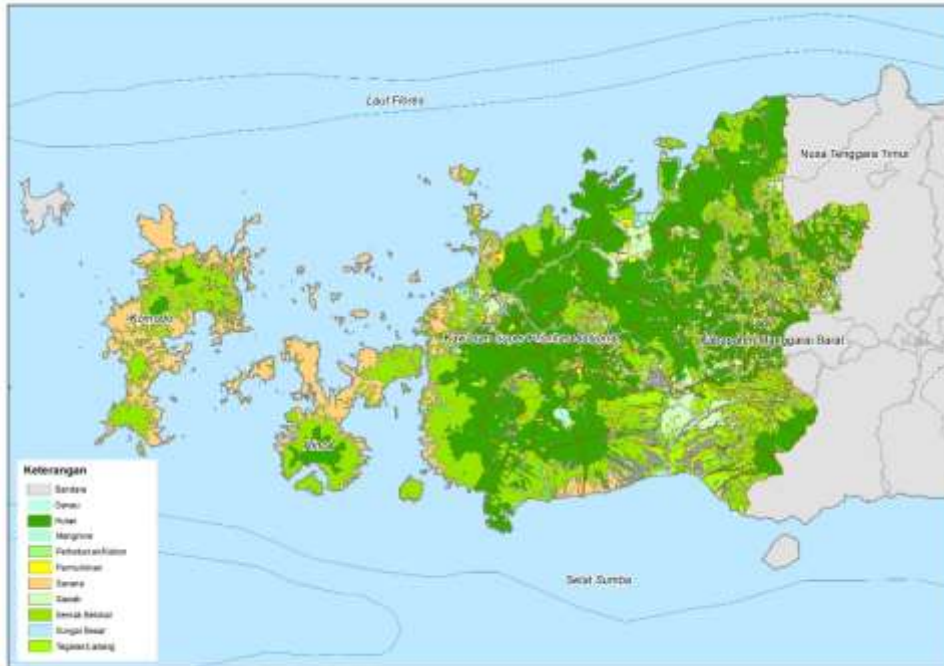
However, in NTT Province, the rate of decline in the poverty rate from 2019 to 2020 based on TNP2K data was 1%, above the national average rate of decline. However, the number of poor people is still far above the national figure, namely 20.9% in 2020. This reduction figure is based on TNP2K as a result of the government's assistance program for the poor.



Picture 1. Relevance Analysis of the Percentage of Poor Population in West Manggarai 2015-2020 (TNP2K, 2020)

land has been converted into land for oil palm or other commodities. Apart from forest burning, there is also other natural damage, namely coral reefs and changes in surface water temperatures which have resulted in the climate crisis and caused the coral bleaching phenomenon. Around 35.15% of coral reefs in Indonesia are in the bad category due to the greed of businesses to gain greater profits.

Figure 3. West Manggarai Regency Land Use Map 2023



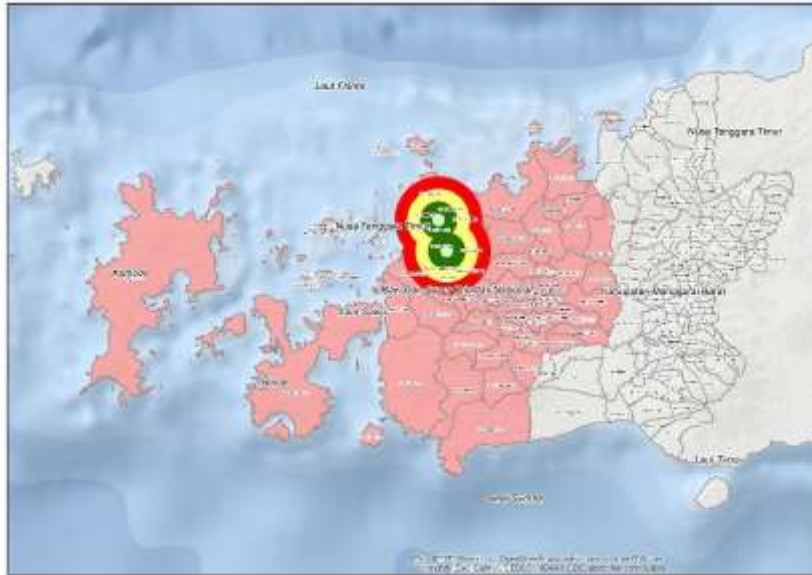
Apart from that, looking at land use in West Manggarai Regency in the KSPN Labuan Bajo area, it is generally dominated by forest and savanna. This shows that the designation of the KSPN area is non-developed. Based on this statement, KSPN Labuan Bajo will have an impact on ecological factors, but with the existence of KSPN it is hoped that it will also have a good impact on the local economy and can be one solution to the issue of poverty in NTT Province and West Manggarai Regency. The poverty aspect in this research is described into several related aspects, including: Income Conditions, Health Access, Education Access, Access to Settlement Activity Centers, Transportation Accessibility and Infrastructure Services. The explanation is related to poverty conditions and related aspects in West Manggarai Regency and KSPN Labuan Bajo.

Infrastructure access developments are also being improved in West Manggarai Regency, where based on 2023 data, access to several infrastructure is as follows:

Health Access

Based on the Manggarai Regency RTRW for 2021-2041, it was found that the distribution of Health Access only consisted of 2 locations, the Sait Siloam House was in Labuan Bajo Village and the Komodo Regional Hospital was in Golo Bilas Village, Komodo District. This shows that the condition of Health Access in West Manggarai Regency and the KSPN Area is still lacking, of course with Labuan Bajo's status as KSPN there will be a need to increase the number of Health Facilities to support tourism activities and provide supporting facilities for the general public. Health facilities are based on spatial data and settlement standards, only concentrated in Komodo sub-district.

Figure 4. Map of Health Access Distribution in West Manggarai Regency



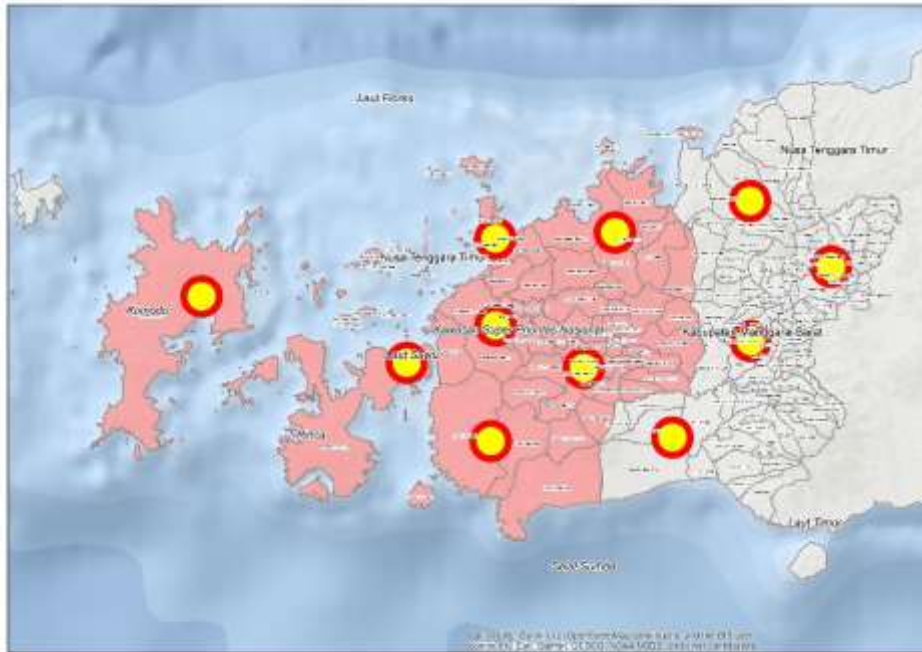
Access to Education

Based on the RTRW of West Manggarai Regency for 2021-2041, it is found that the distribution of Access to Education consists of 20 schools such as MTS, SMP, SMA, SMU and SMK. The distribution of these schools includes Komodo District, Mbeling District and Sanoganong District. This is related to the aspect of poverty in West Manggarai Regency, of course, the distribution of educational facilities which is still uneven is one of the aspects of high poverty in an area, with the status of Labuan Bajo KSPN, access to education needs to be improved to support human resources who will work in the future.

Figure 5. Map of Distribution of Access to Education in West Manggarai Regency



Figure 6. Map of Distribution of Communication Facilities in West Manggarai Regency

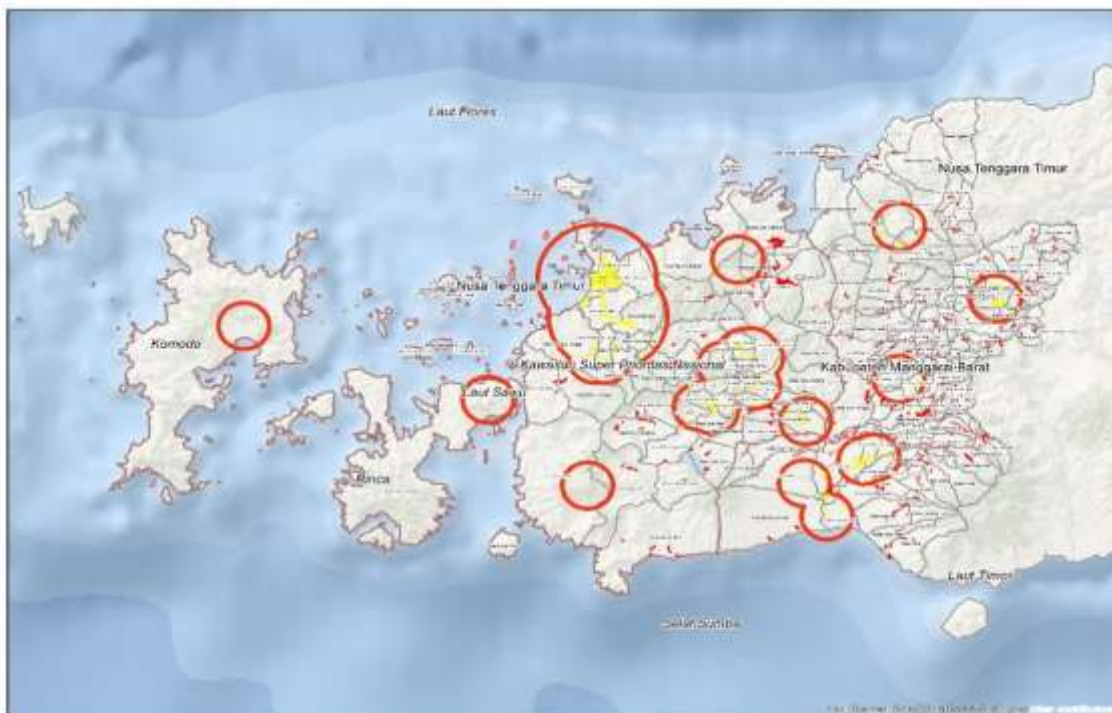


Telecommunications Access

Telecommunications access in West Manggarai Regency is facilitated through the Base Transceiver System (BTS), the current BTS distribution is still not yet available and covers the entire area.

Based on the results of the analysis of facility services in Manggarai Regency, it is possible to identify the distribution of settlements that are not yet equipped with facilities, so that they can still be categorized as areas where basic needs cannot be reached.

Figure 7. West Manggarai Regency Facilities Service Radius Map



In the areas circled in red, namely settlements in yellow, are areas served by facilities, where it can be seen that the center for providing facilities is in Komodo District. Meanwhile, areas colored red are residential areas that do not receive basic services. This is an indication of the gap in regional conditions in West Manggarai Regency.

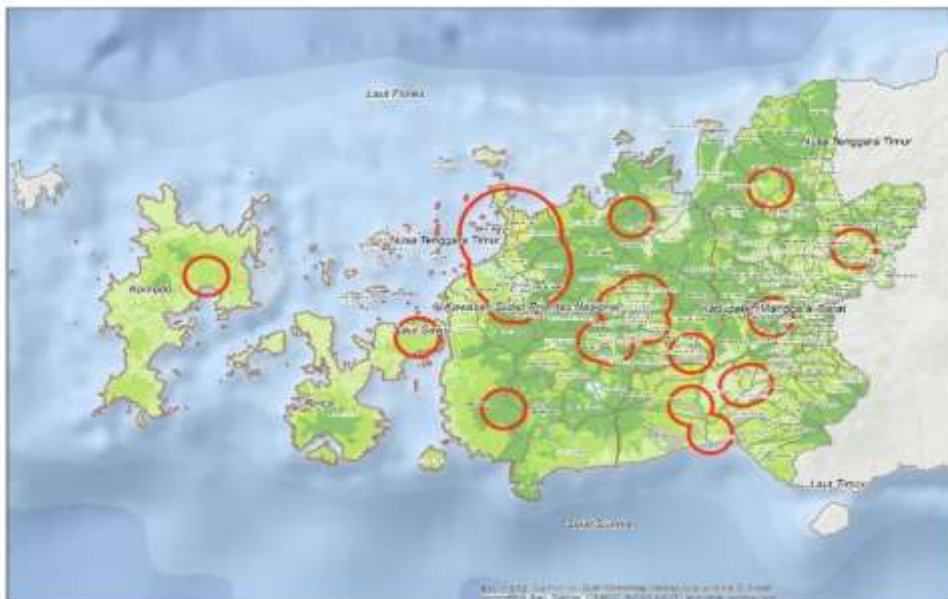
Apart from that, from a macro perspective, the provision of facilities in West Manggarai Regency is 4999.988206 ha of residential areas that have not been served by facilities. This shows that concentrating tourist areas in priority areas is still unable to have a broad impact on West Manggarai district as a whole. Meanwhile, with the conditions in West Manggarai Regency, which is largely a rural area, to produce rural development, development efforts must be carried out effectively and be able to be resolved appropriately and accurately. There are 12 sub-districts in West Manggarai Regency that are still not optimal in terms of facility services, so this is an indication of areas that are still in the category of being threatened by poverty. These sub-districts include Lembor Selatan, Sano Nggoang, Lembor, Welak, Komodo, Mbeliling, Kuwus, Kuwus Barat, Pacar, Boleng, Ndosso and Macang Pacar.

The impact of unequal distribution of facilities can deepen disparities and poverty in West Manggarai Regency. Unequal access to basic facilities such as education, health, transportation and infrastructure is the main factor causing social and economic inequality in this region. Limited educational facilities affect access to quality education for the community, especially children from poor families. This can limit equal educational opportunities for all children, leading to knowledge and skills gaps between generations.

Health is also a serious issue; Limited access to adequate health facilities can increase infant and maternal mortality rates, as well as worsen overall public health conditions. Additionally, limited transportation and inadequate infrastructure make it difficult for local residents to access markets, health services, or workplaces, which in turn can limit economic opportunities.

The unequal distribution of these facilities deepens the social and economic gap between urban and rural areas, as well as between certain social groups in West Manggarai Regency. To overcome this problem, efforts by the government and other stakeholders are needed to increase access to basic facilities throughout the district, improve infrastructure, expand transportation networks, increase access to quality education, and improve equitable and affordable health services. This effort can help reduce inequality and increase opportunities for people to escape the cycle of poverty.

Figure 8. Map of Areas at Risk of Poverty Based on Facilities Services in West Manggarai Regency



There are several factors that can cause poverty reduction policies to fail to reduce poverty rates as expected. Some of these factors include:

1. **Ineffective Implementation:** Sometimes, policies that are good on paper are not implemented well in the field. Lack of coordination between related parties, slow bureaucracy, and lack of supervision can hinder effective implementation.
2. **Corruption and Misuse of Funds:** Corruption and misuse of funds are serious problems in poverty alleviation. If funds that should be used for poverty reduction projects are misused, the positive impact will not be felt by the people in need.
3. **Economic Instability:** Economic fluctuations and macroeconomic instability can hinder the sustainability of poverty reduction projects. If the economy experiences a downturn, many community economic development and empowerment programs are vulnerable to budget reductions.
4. **Social Inequality:** Poverty reduction policies may be ineffective if they do not address underlying social inequalities, such as gender inequality, ethnic discrimination, or inequality in the distribution of resources.
5. **Structural and Demographic Changes:** Changes in economic structure or demographics can cause some groups of society to remain or become poorer, despite efforts to reduce poverty.
6. **Society's Inability to Accept and Adopt Change:** Sometimes, the communities targeted by poverty reduction policies may be unprepared or may not accept the proposed changes, thereby hindering the program's success.
7. **Difficult Environmental Conditions:** Some regions may face external challenges such as natural disasters, climate change, or conflict that make poverty reduction policies difficult to implement and sustain.
8. **Lack of Focus on Community Based Approaches:** Poverty reduction approaches that do not involve local communities in policy planning and implementation may be less successful because they do not take into account the local context and community needs.

The Sustainable Livelihood Approach (SLA) is considered an approach that can make a positive contribution to poverty alleviation. Although there is no single approach that can solve all poverty challenges, SLA has been proven to provide several benefits that can help overcome poverty. Some factors that indicate the effectiveness of an SLA involve:

1. **Focus on Community Capacity and Aspirations:**
SLA emphasizes developing the capacity of communities and empowering them to identify, manage and improve their own resources. It gives people the power to take control of their own lives.
2. **Community Based Approach:**
SLA encourages active community participation in planning and implementing policies and programs. This community-based approach can help ensure that proposed solutions are appropriate to local needs and conditions.
3. **Livelihood Diversification:**
The SLA approach encourages diversification of livelihoods, helping people not only depend on one economic sector. In this way, SLA can help increase community economic resilience.
4. **Holistic Approach:**
SLA involves various dimensions of life, including economic, social, and environmental. By considering these aspects simultaneously, SLA can provide a more holistic solution to poverty.
5. **Women empowerment:**
SLA often places special emphasis on empowering women by providing better access to resources, education, and economic opportunities.
6. **Local Innovation:**
In its application, SLA can stimulate local innovation, by encouraging the use of

local resources and the discovery of creative solutions to certain problems.

However, the success of SLAs remains dependent on a number of factors, including government support, supportive policies, and active involvement of relevant stakeholders. In addition, each context and community has unique characteristics, so the application of SLA needs to be adapted to local conditions.

It is important to remember that poverty alleviation is a complex challenge involving a variety of factors, and different approaches, including SLA, can make a contribution in certain contexts. Continuous evaluation and learning from the implementation of SLA programs is essential to increase their effectiveness and adaptability in overcoming poverty.

CONCLUSION

The relationship between policy implementation and poverty reduction rates is a critical element in efforts to improve community welfare. The success of a policy is largely determined by the extent to which the policy can be implemented effectively and efficiently. Full support from the government, adequate budget allocation, and active community participation are the main factors in designing and implementing policies that are successful in reducing poverty. In addition, regular evaluation and policy corrections based on data and measurable results are key to ensuring that the strategies adopted can have a significant positive impact in overcoming poverty challenges at the local, regional and national levels.

The importance of the Sustainable Livelihood Approach (SLA) in poverty reduction policies lies in the holistic approach it applies, which not only pursues increasing income, but also increasing the capacity and welfare of society as a whole. SLA places emphasis on community empowerment, active participation in decision-making, and diversification of livelihoods, ensuring that proposed solutions take into account the local social, economic, and environmental context. By understanding and exploring local potential and resources, SLA can stimulate innovation, create sustainable impact, and help communities develop resilience to economic and environmental change. Overall, the sustainability and success of poverty reduction can be improved through the implementation of SLA as an approach that focuses on improving the living conditions of society as a whole.

The role of infrastructure development in poverty reduction policies is very significant because good infrastructure can be a driver of economic growth and increase community welfare. Infrastructure that includes transportation networks, clean water, sanitation, education and health not only provides better access to basic services, but also creates new economic opportunities and increases productivity. Proper infrastructure development can create jobs, facilitate access to markets, and improve connectivity between regions, all of which contribute to reducing poverty levels. Therefore, wise investment in infrastructure development must be an integral part of poverty reduction strategies, ensuring that the most vulnerable communities benefit directly from improved infrastructure conditions.

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