

# THE SUSTAINABILITY OF THE CLIMATE VILLAGE PROGRAM TO SUPPORT FOOD SECURITY FOR COASTAL COMMUNITIES IN TANJUNGPINANG CITY

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## ABSTRACT

This study aims to analyze the relationship between PROKLIM sustainability and strengthened food security in coastal communities in Tanjungpinang City. The research uses a mixed-methods approach with an exploratory sequential design. The population consists of 41 PROKLIM groups with 179 respondents. Data were collected through questionnaires and Focus Group Discussions, analyzed descriptively using Spearman's correlation test, and qualitatively analyzed using interactive models. The results show that food security is in the good category (average 3.48), but is still weak in the aspects of food diversification, water availability, and community capacity. The sustainability of PROKLIM is in the good or fairly sustainable category (average 3.84), supported by environmental and social dimensions, but is still weak in the economic dimension due to high dependence on external funding. The Spearman correlation test shows a positive and significant relationship between Proklim sustainability and coastal community food security with moderate strength ( $\rho = 0.444$ , sig. = 0.000). Key supporting factors include community participation, institutional support, and program benefits for the environment, while inhibiting factors include low financial independence, dependence on individual drivers, and limited water and food diversification.

**Keywords:** Sustainability, Climate Village Program, Food Security of Coastal Community

## 1. INTRODUCTION

Climate change is one of the global challenges that has a significant impact on various aspects of life, particularly in coastal areas. Coastal areas are among the region's most vulnerable to the effects of climate change, such as sea-level rise, coastal erosion, seawater intrusion, tidal flooding, and changes in rainfall patterns<sup>1</sup>. The vulnerability of coastal areas to climate change will continue to increase if it is not offset by adequate community adaptation capacity.

The vulnerability of coastal areas to climate change will continue to increase if it is not offset by adequate community adaptation capacity<sup>2</sup>. This situation threatens the productivity of the fisheries and

agriculture sectors, which are the main sources of livelihood for coastal communities, thereby making households particularly vulnerable to food insecurity.

The Indonesian government, through the Ministry of Environment and Forestry, has launched the Climate Village Program (Proklim) as a community-based strategic policy to support climate change adaptation and mitigation efforts<sup>3</sup>. The success of community-based resource management depends heavily on active community participation, strong institutions, and mutually agreed-upon rules<sup>4</sup>. Food security is defined as a state in which everyone, at all times, has physical, social, and economic access to sufficient, safe, and nutritious food<sup>5</sup>, which is not only related to food

availability, but also to households' access to and ability to utilize it<sup>6</sup>.

The city of Tanjungpinang is highly vulnerable to climate change due to its coastal and archipelagic nature, and it remains heavily dependent on food supplies from outside the region because of limited agricultural land. Previous research has shown that climate change reduces fisheries and agricultural productivity, thereby impacting the food security of coastal communities<sup>7-8</sup>. Meanwhile, the community-based approach through Proklim has proven effective in enhancing adaptive capacity and local food security<sup>9-10</sup>. However, these studies have generally not specifically linked the implementation of Proklim to the program's long-term sustainability<sup>11-12</sup>. This study aims to bridge that gap by examining the relationship between Proklim sustainability and household food security in the coastal areas of Tanjungpinang City using a mixed-methods approach.

## 2. RESEARCH METHOD

### Time and Place

The study was conducted in neighborhoods that have implemented Proklim in Tanjungpinang City, with the research period spanning October through December 2025.

### Method

The study employed a mixed-methods approach with an explanatory sequential design, consisting of a quantitative phase to measure the sustainability of Proklim and food security, followed by a qualitative phase using Focus Group Discussions (FGDs) to explore the quantitative findings in greater depth.

### Procedures

A population is the domain of generalization consisting of objects or subjects with specific characteristics that the researcher has defined for study<sup>13</sup>. The study population consisted of 41 active Proklim groups in Tanjungpinang City. A multistage

sampling technique was used, involving total sampling of all groups in the first stage and purposive sampling of 5 respondents per group in the second stage, resulting in a target sample size of 205 people. A total of 179 valid, returned questionnaires were analyzed (response rate: 87.3%).

### Data Analysis

The data were analyzed descriptively to describe the levels of Proklim sustainability (X) and food security (Y), followed by validity and reliability tests using a Cronbach's Alpha criterion of  $\geq 0.60$ <sup>14</sup>. Scatterplot visualization using RStudio, as well as Spearman's correlation test to test the hypothesis of a relationship between variables. Qualitative data from the focus group discussions were analyzed using an interactive model that included data condensation, data presentation, and the drawing and verification of conclusions<sup>13</sup>.

## 3. RESULT AND DISCUSSION

### Respondent Characteristics

58.1%), had a high school education (64.8%), were aged 46–55 (35.2%), were homemakers (30.2%), were married (88.3%), and had lived in the Proklim area for more than 10 years (95.0%).

### Food Security in Climate-Resilient Villages

Respondents' responses regarding food security conditions received an overall average score of 3.48 (good category). The indicator for support for food security programs received the highest score (3.92). In contrast, the indicator for food diversification received the lowest score (3.06, "moderate" category), followed by the availability of water resources (3.23) and community knowledge capacity (3.37), which were also in the "moderate" category. These findings are consistent with the concept that food security among coastal households is heavily influenced by economic capacity, household food distribution, and nutritional knowledge, and confirm that access without the ability to

utilize resources can still lead to food insecurity<sup>6</sup>.

### **The Sustainability of Proklam in Tanjungpinang City**

Proklam's sustainability score received an overall average of 3.84 (rated "good"). The indicator for the implementation of participatory, environmentally friendly practices and ecological sustainability received the highest score (4.13), while the indicator for financial sustainability received the lowest score (3.31, "moderate" category), indicating the program's dependence on external assistance. Sustainability can only be achieved when there is a balance among the environmental, social, and economic dimensions<sup>15</sup>. Meanwhile, social responses to environmental and economic issues are expected to meet the needs of the current generation without sacrificing those of future generations<sup>16</sup>. Multidimensional analysis shows that the environmental and social dimensions have developed well, while the economic dimension remains a weak point in the program's sustainability; therefore, the Tanjungpinang Proklam program can be categorized as moderately sustainable.

### **The Relationship Between Proklam's Sustainability and Food Security**

The validity test showed that all items in the Proklam sustainability (X) and food security (Y) variables were valid (calculated  $r > \text{table } r$  of 0.147), with Cronbach's Alpha reliability coefficients of 0.816 and 0.873, respectively<sup>14</sup>. The scatterplot visualization shows a positive but not entirely linear relationship between the two variables, indicating the presence of other factors that also influence food security.

The results of the Spearman correlation test show a correlation coefficient of 0.444 with a significance level of 0.000 ( $< 0.05$ ), meaning there is a positive and significant relationship of moderate strength between Proklam sustainability and food security among the coastal

communities of Tanjungpinang City<sup>13</sup>. The higher the Proklam sustainability score, the better the community's food security, although food security is also influenced by other factors such as household income, access to food, education, agricultural technology, and institutional support. Other climate factors that drive climate change and affect food security in coastal areas and small islands are weather factors<sup>17</sup>.

### **Supporting and Hindering Factors**

The FGD results identified factors supporting the sustainability of Proklam and food security, namely high community participation, the program's tangible impact on environmental quality, support for cross-sectoral collaboration, and the presence of Women Farmers' Groups (KWT) that play a role in environmentally based productive activities such as hydroponics. Conversely, challenges include limited external assistance, inaccuracies in the classification of coastal Proklam areas, limited community capacity and knowledge, reliance on individual program leaders (a leader-driven approach), participation that is not yet fully inclusive, limited water availability, and low food diversification.

The implementation of Proklam in the coastal areas of Tanjungpinang still tends to be administratively oriented. It has not fully reached vulnerable groups, consistent with the finding that while Proklam has met the aspects of sustainable development, its implementation has not been evenly distributed<sup>12</sup>. Food security, which is rated as good but remains weak in terms of diversification and water availability, highlights the structural vulnerabilities also found in other coastal regions due to declining fish catches and agricultural productivity<sup>7-8</sup>. The effectiveness of community-based approaches depends heavily on local capacity and collaboration between communities and the government<sup>9</sup>. Meanwhile, the program's continued reliance on individual champions underscores the importance of strengthening local institutions, establishing clear rules,

and building the community's collective capacity to manage resources<sup>4</sup>. In addition, the awareness and knowledge of local communities are crucial to achieving a sustainable environment in coastal areas and on small islands<sup>18</sup>.

#### 4. CONCLUSION

The food security status of the community in Kampung Iklim, Tanjungpinang, falls into the "good" category (average of 3.48), but it is not yet fully robust because it remains weak in food diversification, water availability, and community capacity. Proklim's sustainability level falls into the "good" or "moderately sustainable" category (average 3.84), supported by strengths in the environmental and social dimensions, but remains weak in the economic dimension.

Spearman's correlation test indicates a positive and significant relationship of moderate strength between Proklim sustainability and food security ( $\rho = 0.444$ ; sig. = 0.000). Key supporting factors include community participation, the program's environmental impact, and local institutions such as KWT, while key inhibiting factors include low financial sustainability, dependence on individual leaders, and limitations in water resources and food diversification. Strengthening the economic dimension through the development of environment-based businesses and the reinforcement of local institutions is necessary to achieve more comprehensive and sustainable Proklim sustainability and food security for the coastal communities of Tanjungpinang City.

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