

Original Article

## ***Evaluation of the Climate Village Program to Improve Environmental Health***

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### **ABSTRACT**

*Climate change has a wide impact on the lives of people who are vulnerable to multidimensional disasters. Government efforts in tackling the impacts of climate change through the climate village program as implemented in Korong Pasa Surau Nagari Guguk, Padang Pariaman Regency. The study intends to measure the degree of success achieved in implementing community-based solutions for adaptation and mitigation in response to the challenges posed by climate change. The current investigation is a qualitative descriptive study conducted between March and April 2023. The participants for this study were recruited using a random chance sampling technique to verify that the selected individuals could adequately represent their respective groups. A cohort of five individuals was engaged as informants. The study's findings suggest evaluating the implementation of the climatic village program (Proklim) in Nagari Guguk Korong Pasa Surau. The assessment was carried out by considering the several elements of the climate village program activities, which encompassed adaptation activities aimed at addressing climate change (74.33%), climate change mitigation actions (17.33%), and an evaluation of the institution's sustainability and support (14.50%). The circumstance above demonstrates that the proklim in Nagari Guguk Korong Pasa Surau falls inside the moderately effective classification. In the future, to increase the success and sustainability of Proklim in the area, multisector support is needed so that Proklim can make its people able to adapt and mitigate climate change and create good environmental health..*

**Keywords :** *Climate Change, Adaptation, Mitigation, Environmental Health*

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## **INTRODUCTION**

Human beings inhabit and engage with the surrounding environment, interacting with its various components<sup>1</sup>. From a legal standpoint, the definition of the environment, as outlined in Law No. 32 of 2009 on Environmental Protection and Management (UUPPLH), encompasses the entirety of physical space. This includes all entities, forces, conditions, and organisms, including human beings and their actions, that impact nature, the sustainability of life, and the well-being of both humans and other living organisms<sup>2</sup>.

The environment has a very close relationship with human life. Human dependence on the environment requires humans to know important things that must be

done to protect it through efforts called environmental management. Environmental management is a collaborative endeavor to foster relationships among diverse stakeholders, including governmental entities, the corporate sector, community-based organizations, and local communities. Environmental management plays a crucial role in mitigating environmental issues and preventing potential damage, such as the adverse impacts of climate change<sup>3</sup>.

Climate change is an event that has a broad impact on people's lives. People are increasingly vulnerable to multidimensional disasters such as floods, landslides, rob or coastal abrasion, drought, hurricanes, and other disasters that occur in the same period or not too long<sup>4</sup>. The Regional Disaster Management

Agency (BPBD) of West Sumatra Province (West Sumatra) recorded that at least 684 natural disasters occurred throughout 2021 in various regions in West Sumatra. Tornadoes and floods dominated the series of disasters due to extreme weather and high rainfall, with 400 events<sup>5</sup>.

The Ministry of Environment and Forestry (KLHK) has adopted a strategy to address climate change by promoting collaboration among multiple stakeholders. This strategy aims to enhance the ability of communities to adapt to and mitigate the impacts of climate change at the local level<sup>4</sup>. Implementing this strategy is facilitated through the Climate Village Programme (Proklim), governed by Minister of Environment Regulation No. 19 of 2012. The Proklim program is implemented at the regional level and has nationwide coverage. The program, known as Proklim, was established by the Ministry of Environment and Forestry (KLHK) to implement environmental management and preservation strategies while also harnessing the potential within the local area. Its primary goal is to mitigate the effects of climate change by empowering local populations to participate in adaptation and mitigation activities actively<sup>3</sup>. Climate change adaptation efforts encompass various activities to address climate change's impacts. These activities include the management of drought, floods, and landslides, as well as initiatives to enhance food security and control climate-related diseases<sup>6</sup>. On the other hand, climate change mitigation efforts involve waste management, both in solid and liquid forms, promoting renewable energy sources and sustainable agricultural practices. The topic of discussion pertains to the concepts of vegetation cover and fire protection<sup>7</sup>.

While the climate village program has successfully implemented climate change adaptation and mitigation measures, further action is required to address the issue of climate change effectively. According to the findings of Faedlulloh's (2019) study, the adoption of the climate village program has favorable outcomes. Nonetheless, there remains a need for further refinement in the community's efforts to devise adaptation and mitigation initiatives, raising concerns about the potential challenges of addressing the increasingly intricate consequences of climate change<sup>8</sup>. Furthermore, the research conducted by Rifiyanti (2018) demonstrated that the

community's adaptation actions yielded a significant effectiveness rate of 94%, whereas the mitigation activities only achieved a success rate of 49.09%. During of this study, it was seen that disparities in the comprehension of mitigation between the community and the government had an impact on the efficacy of the program. Nevertheless, when considering the program, the climate village initiative demonstrates a significant reduction in the likelihood of adverse climate change consequences, amounting to a 71.55% decrease<sup>9</sup>.

The efficacy of a program is inherently intertwined with the active engagement and collaboration of various community constituents, stakeholders, and private entities, all of whom contribute collectively to the smooth operation and desired outcomes of the program. The success of the initiatives above can be observed through their effective implementation of sustainable programs, exemplified by the accomplishments of Jorong Rejosari Nagari Tiumang in Tiumang District, Dharmasraya Regency, and Jorong Batu Kadurang Nagari Andaleh in Batipuh District, Tanah Datar Regency. These commendable efforts were recognized with the esteemed Proklim 2022 award. This specific Jorong is internationally acknowledged for its effective implementation of climate change adaptation and mitigation techniques sustainably. To limit the potential negative impacts of climate change, it is crucial to strategically leverage the opportunities that arise from it and adequately address the ensuing consequences.

Padang Pariaman Regency proposed a Proklim location in Korong Pasa Surau Nagari Guguak. The reason for appointing the area is because the village is still very beautiful, and many green open spaces can be a staple of crops that produce and have economic value, such as vegetables. So, with Proklim the village can strive for greening in addition to community empowerment which aims to increase awareness of the rate of climate change and add aesthetic value so that the village looks more beautiful, beautiful, and beautiful<sup>10</sup>. Proklim will be successful if the community sustainably implements the principles that have been proclaimed in the Road Map of the Climate Village Program. To measure the level of proklim implementation that has been implemented in Padang Pariaman Regency, an evaluation is needed to measure and describe

the development of the implementation of the climate village program to improve environmental health for the future. So that it can be taken into consideration in making a policy and applying the concepts contained in the Road Map of the Climate Village Program.

## METHOD

The present study adopts a qualitative research approach. The study was carried out from March to April 2023 in the locality of Korong Pasa Surau Nagari Guguak. The dataset utilized in this research comprises both secondary and primary data sources. Secondary data is acquired through relevant organizations and other sources of written information, such as books and journals, as mentioned in the preceding discourse. On the other hand, primary data is acquired through observation, interviews, and gathering relevant documents. The research methodology involved conducting interviews and administering questionnaires to selected resource persons possessing the expertise and knowledge to represent their respective groups effectively. This approach followed the Regulation of the Director General of Climate Change Control No guidelines. P.1/PPPI/SET/Kum.1/2/2017 provides specific instructions for implementing the Climate Village Programme.

Interviews with selected informants for in-depth interviews about the implementation process. The informants in this study were recruited by the random probability sample method. A total of five informants were included, namely the wali Nagari guguak, bundo kanduang, head of korong pasa surau, head of disaster preparedness group, and head of the proklim holder. The researchers employed source triangulation techniques to assess the validity of the data in this study. Using the source triangulation method in qualitative research entails examining and

validating data from several sources and at various time intervals. The primary objective is to evaluate and establish the reliability and credibility of the collected data<sup>11</sup>.

Data analysis involves a qualitative descriptive approach, wherein the data is organized into categories, described in units, and analyzed to identify significant findings. The results are then presented in sentences, tables, and numbers, focusing on addressing the research problem. This facilitates clear comprehension and enables the drawing of conclusions.

## RESULTS

The issue of climate change, which is widely recognized as a significant worldwide concern, is currently ascribed to the adverse effects imposed on the environment. The conservation of the ecosystem requires the use of adaptation and mitigation methods. Implementing the climate village program is a strategic approach to bolster community involvement and strengthen diverse stakeholders' ability to effectively address climate change's impacts. Moreover, this program's primary objective is to effectively decrease greenhouse gas release into the atmosphere. It also seeks to recognize and appreciate the efforts made to alleviate and adjust to the impacts of climate change. Ultimately, the program intends to enhance the overall welfare of society<sup>12</sup>.

The components assessed in Proklim are adaptation, mitigation, community institutional activities, and sustainability support. An initial evaluation will be conducted as part of the assessment process to identify climate villages and climate village program categories according to the criteria to be used. The pro-climate assessment of Nagari Guguk Korong Pasa Surau is presented in Table 1.

**Table 1. Performance of the Climate Village Program (Proklim) Nagari Guguk Korong Pasa**

No.	Component of Proklim Village	Component that relevant		Proklim Value
		Total	Maximum	
1.	Adaptation	15	120	74,33
2.	Mitigation	6	48	17,33
3.	Institutionalization and Sustainability Support	46	46	14,50
<b>Percentage of Final Proklim Score</b>				<b>45,35%</b>

The achievement of 74.33% was acquired based on observations and the results of completing

the Nagari Guguk Korong Pasa Surau pro-climate evaluation questionnaire, indicating the

effectiveness of the community's adaptation activities. Nevertheless, mitigation measures resulted in a 17.33% accomplishment rate. Through the course of this study, it was discovered that disparities existed in comprehending the mitigation concept between the community and the government, hence impacting the program's efficacy. However, when considered in its entirety, the climate village program demonstrates a reduction in the likelihood of climate change impacts by 45.35%. The current implementation rate for the climate village program's adaptation to environmental health stands at 17.7%. However, the implementation rate for mitigation measures for environmental health is somewhat lower at 17.33%.

## DISCUSSION

Padang Pariaman is a regency in the province of West Sumatra, Indonesia. The district has an area of 1,328.79 km<sup>2</sup> and a population of 430,626<sup>13</sup>. The district is characterized by the motto "Saiyo Sakato." Parit Malintang serves as the administrative center of Padang Pariaman Regency. According to Government Regulation (PP) no 79 of 2008, issued on December 30, 2008, there is a provision for the relocation of the capital city of Padang Pariaman district from Pariaman city to Nagari Parit Malintang in Kecamatan Enam Lingsung. The geographical coordinates of Padang Pariaman Regency are between 0°11'-0°49' South latitude and 98° 36' - 100° 28' East longitude. The regency spans an approximate area of 1,328.79 km<sup>2</sup>, with a length of 60.50 km<sup>2</sup>. The land area of the region in question corresponds to approximately 3.15% of the total land area of West Sumatra Province.<sup>14</sup>

The topography of Padang Pariaman Regency includes a large tropical climate with a very short dry season, and sea breezes strongly influence the ocean area. The hottest temperature falls in May, while the lowest is in September. Judging from the region's topography, Padang Pariaman Regency consists of the mainland area of Sumatra Island and 6 small islands, with 40% of the lowlands in the western part leading to the coast. The lowland area is located in the west along the coast with an altitude between 0-10 meters above sea level,

and 60% of the eastern area is an undulating area located in the east with an altitude of 10-1000 meters above sea level.

Padang Pariaman Regency Government chose Korong Pasa Surau as the location of pro-climate activities to improve community food security and reduce GHG emissions. This adaptation mitigation action for reforestation is associated with activity and reforestation programs. Because this hamlet is still quite beautiful and has many green places that can be planted with vegetables and other economically valuable products. So that the community can be empowered through Proklim to green the area, increase awareness of the rate of climate change and beautify the environment.

Implementing Environmental Health within the worldwide threat of climate change is undertaken to safeguard public health and the environment from the adverse effects of climate change on health. This is achieved through the implementation of climate change mitigation and adaptation programs. Mitigation measures are implemented to decrease greenhouse gas emissions, carbon sequestration, and carbon reserve storage to address the consequences of climate change. Climate change adaptation strategies are implemented to enhance the capacity to adapt by mitigating potential adverse effects and capitalizing on the advantageous effects of climate change to safeguard public health.

Implementing measures to reduce and adapt to climate change is carried out within the context of completing the health sector's assigned responsibility in achieving the Nationally Determined Contribution, as required by legislative regulations. Furthermore, the central aim of the proklim initiative is to promote active participation of the community in solving a wide range of issues, thereby strengthening their capacity to mitigate the impacts of climate change and reduce greenhouse gas emissions.

The Climate Village Programme, commonly referred to as Proklim, seeks to facilitate community involvement to strengthen the adaptive capacity of communities, particularly at the grassroots level, in response to climate change's impacts and to limit greenhouse gas emissions. Proklim also provides recognition to commend efforts in climate change adaptation and mitigation following regional conditions. The term

"climate village" denotes a particular geographic region situated at the lowest level of administrative division, commonly covering a neighborhood or small settlement and extending up to the sub-district or village level. The phenomenon is distinguished by the persistent efforts of the community to adjust to and alleviate the consequences of climate change. The definition adheres to the guidelines in the paper by the Director General of Climate Change Control, especially Regulation Number P.1/PPI/SET/KUM.1/2/2017.

The execution of problem-based activities is conducted by a meticulously devised plan aimed at attaining certain objectives. The success of an activity is contingent upon the completion of all set objectives by established rules. This study examines the implementation of the climate village flagship program based on three indicators outlined in the Regulation of the Minister of Environment and Forestry Number P.84/MENLHK-SETJEN/KUM.1/11/2016, which are: (1) adaptation, (2) mitigation, and (3) community support.

Additionally, the discipline of environmental health significantly contributes to the overall welfare of individuals. A favorable environment facilitates the generation of valuable resources, while an unfavorable environment promotes the spread of many diseases. Environmental health is a comprehensive endeavor to mitigate diseases and health issues from various environmental risk factors. Its primary objective is to achieve optimal environmental quality by addressing the environment's physical, chemical, biological, and social dimensions. The Minister of Environment and Forestry offers a set of indicators that can be utilized to evaluate the state of environmental well-being. The need for regulatory measures. According to the document labeled P.84/MENLHK-SETJEN/KUM.1/11/2016, the key factors for effective disease prevention and control include vector control, sanitation practices, access to clean water, and the adoption of a clean and healthy lifestyle known as PHBS.

### **Evaluation of the Implementation of Climate Change Adaptation to Environmental Health**

Climate change adaptation refers to the deliberate actions taken to enhance the capacity to cope with the impacts of climate change,

encompassing both variations in climate patterns and extreme weather events. The primary objective of such efforts is to minimize the potential harm caused by climate change, capitalize on the opportunities it presents, and effectively address the challenges arising from it.

Adapting to climate change in human cultures includes both reactive responses to climate-related events that have already occurred, as well as proactive measures involving prediction and preparation for anticipated future changes. This holds special significance in instances of discernible early signs of climate change<sup>15</sup>. Societal self-preservation is deliberate efforts to mitigate the adverse outcomes of a society's activities. It necessitates critically evaluating and interrogating the prevailing norms and practices to effect essential transformations<sup>16</sup>. In this context, adaptation pertains to a significant and comprehensive alteration in response to environmental circumstances. It involves making adjustments that preserve or enhance the system's sustainability<sup>17</sup>.

The optimal functioning of social, ecological, and institutional systems is crucial for human societies to adapt to climate change successfully. This process involves diverse human endeavors to boost well-being and improve the overall quality of life.

The present analysis revealed that the community's level of achievement in adjusting to pro-climate measures was 74.33%. The situation above aligns with the findings of Sudarwanto's (2021) study, which revealed that the climate change adaptation achievement in Poleonro Village falls into the moderately effective category, with a recorded value of 70.12%. The Poleonro Village community has undertaken various climate change adaptation initiatives in response to the need for various activity efforts to adapt to climate change<sup>18</sup>. Rifyanti (2018), in her research, also found a very high achievement in the adaptation efforts of the Nglegi Village Community, Patuk District, Gunungkidul Regency, to climate change, namely 94%<sup>9</sup>. Rosnaeni, in her research, describes the implementation of climate change adaptation activities carried out in Bulukumba Regency such as a) on community land, there are infiltration wells and ponds to collect water; b) Farmers use irrigation systems to rice fields; c) Organic and non-organic waste is disposed of in the Waste

Bank<sup>19</sup>, while the form of climate change adaptation activities carried out in Nagari Guguk Korong Pasa Surau as follows.

### **1. Vector control**

The Nagari Guguk Korong Pasa Surau community has undertaken several activities to mitigate the proliferation of vectors. These activities include;

- a) Implementing the 3M approach, which involves draining, hoarding, and covering mosquito breeding sites such as bathtubs and gutters in residential areas;
- b) implementing measures to control the breeding of mosquitoes and rats;
- c) enhancing the local environment to prevent the accumulation of stagnant water;
- d) introducing fish into ponds or plant pots to deter vector breeding; and
- e) Establishing a Jumantik Team (Juru Pemantau Jentik) to monitor and address vector-related issues.

Based on the findings about indicators of adaptation efforts in implementing the climate village program on environmental health, the author concludes that the adaptation efforts have proven to be considerably effective in mitigating the prevalence of climate change-induced diseases. Furthermore, the activities undertaken to alleviate the impact of such diseases have been executed with commendable proficiency. The sustainable implementation of the Climate Village Programme could further enhance the effectiveness of this condition.

### **2. Sanitation and clean water**

Activities carried out by the Guguk Korong Pasa Surau community include clean and safe water supply, animal waste disposal, food protection, and clean and safe air. To anticipate the occurrence of water scarcity due to climate change, the Guguk Nagari community has provided clean water, both individually. Individual water supply facilities include dug wells and rainwater harvesting tanks.

The water sector holds significant importance in the formulation of adaptation strategies, particularly in the context of sustaining livelihoods through the use of underground water recharge methods. Additional focus areas encompass water resource management, namely irrigation, water

supply enhancements, and sanitation<sup>20</sup>. Water harvesting from rainwater and other sources is essential for community and household use<sup>21</sup>.

### **3. Clean and Healthy Living Behavior (PHBS)**

Activities carried out by the Nagari Guguk Korong Pasa Surau community to maintain environmental health are disease control related to climate change. Some activities are still carried out, such as washing hands before and after carrying out activities, using healthy latrines, and using clean water. Activities such as gotong-royong or community service, washing hands with soap, and other behaviors have been implemented to maintain cleanliness and health in the community.

### **Evaluation of Climate Change Mitigation Implementation on Environmental Health**

Climate change mitigation comprises a variety of efforts to reduce the emission of greenhouse gases, serving as a strategy to mitigate the effects of climate change. The enhancement of environmental health in Nagari Guguk is achieved by implementing climate mitigation methods, with a primary emphasis on solid waste management. This encompasses a range of strategies, including implementing waste containerization and collection systems, promoting composting practices, and encouraging 3R (reduce, reuse, recycle) activities. According to the Regulation of the Director General of Climate Change Control Number: P.1/PPI/SET/KUM.1/2/2017 concerning Guidelines for Implementing the Climate Village Program. The achievement of the mitigation capability of the Nagari Guguk Korong Pasa Surau Community in mitigating climate change is only 17.33%. The amount of accomplishment presented opposes the outcomes of Sudarwanto's (2021) study, which suggests that the endeavors to mitigate climate change in Poleonro Village exhibit a moderate level of effectiveness, as evidenced by a score of 66.06%<sup>18</sup>.

Research conducted by Rosnaeni (2020) outlines the form of implementation of mitigation activities carried out by communities in Bulukumba Regency to mitigate climate change through a). creating a Waste Bank to process waste into crafts and fertilizers; b) Increasing vegetation cover/tree planting to make the soil more fertile and make the village greener; c) Reducing pesticides on plants and

using organic fertilizers<sup>19</sup>, while in Nagari Guguk Korong Pasa Surau there are no waste management facilities in this area, the community disposes of their waste in the open once collected. Communities where waste is disposed of directly into open spaces, yards, or rivers rather than collected in landfills. For solid waste management, the community utilizes plastic waste to make handicrafts. The crafts made are plastic flowers and plastic bags. However, this activity is only sometimes carried out every time there is free time from the community.

### **Institutional Evaluation and Proklim Sustainability Support**

As per the Regulation of the Minister of Environment and Forestry Number P.84 MENLHK- SETJEN/KUM.1/11/2016 about the Climate Village Programme, the provision of institutional and sustainability support in the execution of said program encompasses community institutions, policy backing, community dynamics, community capacity, government engagement, and the advantages derived from climate change adaptation and mitigation endeavors. The successful implementation of the Climate Village Programme necessitates collaboration with governmental entities, community organizations, and external stakeholders while also emphasizing the importance of substantiating the undertaken initiatives through evidential documentation. The ease of program implementation and the widespread advantages several individuals see are key reasons for advocating this approach. They have the potential to serve as a model for other regions that have yet to adopt the initiatives outlined in the Climate Village Programme. The level of institutional support for proklim sustainability initiatives in Nagari Guguk Korong Pasa Surau is currently at 14.50%. This finding contradicts the research conducted by Sudarwanto (2021), which indicates that sustainability support in Poleonro Village is relatively effective, with a score of 72.77%<sup>18</sup>.

The district environmental office provided institutional and sustainability support for implementing the climate village program, as elucidated by the findings from observations and interviews. However, it is important to note that the advantages experienced by the community are significant, particularly in terms of economic and environmental benefits. The

community expresses its aspiration for the widespread implementation of the climate village program, wherein other regional communities collaborate with enterprises to establish environmentally sustainable areas. The implementation of the climate village program is influenced by various elements, one of which is the inclination of individuals to participate, primarily driven by the prospect of receiving immediate personal advantages<sup>22</sup>. In addition, there are community culture, norms, cooperation attitudes, leadership factors at the local level, and the seriousness of leaders to become community mobilizers<sup>23</sup>.

The results of observations of proklim inhibiting factors in Nagari Guguk are the level of community self-sufficiency, namely, there are no residents who contribute funds for proklim sustainability, the funding system is minimal because it does not have independent funds from membership fees, there is no sponsor assistance (external), none or smaller than members' independent fees.

In the event of an external sponsor, it is necessary to record the sponsor's details in the description column. Additionally, it should be noted that there currently needs to be more technological diversity in the realm of adaptation and mitigation of change, specifically about the absence of suitable technology for compost management. To effectively implement the climate village program, the designated area must allocate a sufficient budget through household contributions or independent means to cover the expenses associated with program activities. This is necessary as the financial support provided by the government is limited. Additionally, the program's success is contingent upon the community's awareness, participation, and comprehension of the climate village program.

The extent of collaboration between the government and the public in the climate village program is seen through community engagement. Involvement or participation refers to the active engagement of all parties throughout the various stages of development activities<sup>24</sup>. However, in this study, the level of community self-reliance in implementing the pro-climate village is low, coupled with the limitations of not yet utilizing technology to adapt-mitigate environmental change. The active involvement of both the community and the government can contribute to mitigating

climate change impacts<sup>25,26</sup>. The predicted effectiveness of the Climate Village Programme in addressing climate change through adaptation and mitigation measures is expected to be significant in the future.

## CONCLUSION

Evaluation of the Implementation of the Climate Village Program (Proklm) in Nagari Guguk Korong Pasa Surau is included in the moderately effective category, there is still a low level of local community self-sufficiency, coupled with limitations in the use of technology in overcoming adaptation-mitigation of environmental change. The success of the Climate Village program cannot be separated from the involvement of all levels of society, stakeholders and the private sector who work hand in hand to support proklm so that it can be sustainable.

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