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EMPOWERING COMMUNITIES FOR CLIMATE CHANGE ADAPTATION: INSIGHTS FROM PEKANBARU'S CLIMATE VILLAGE PROGRAM

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ABSTRACT
Climate Village Program (ProKlim) in an urban context, addressing a gap in the literature that often emphasizes national policy frameworks while overlooking local governance and environmental outcomes. The research focuses on Tobek Godang Village in Pekanbaru City, Indonesia, a rapidly growing urban area facing increasing climate risks such as flooding and weather variability. Using a qualitative case study approach with purposive sampling, data were collected from 12 key informants, including local leaders, government officials, and community members, and analyzed through thematic analysis. Data collection methods included in-depth interviews, direct observation, and document analysis to ensure triangulation and validity. The findings indicate that ProKlim has improved local environmental conditions through initiatives such as flood control, waste management, and urban greening, supported by active community participation and leadership. However, several challenges affect program sustainability, including limited financial resources, weak institutional support, and uneven levels of community awareness. Fluctuations in participation between 2020 and 2023 further reflect governance and capacity constraints at the local level.Overall, this study highlights the need for stronger multi-level governance, consistent funding, and capacity-building efforts to sustain the gains achieved. It contributes to the literature by demonstrating how community empowerment initiatives can enhance urban environmental resilience while addressing existing constraints and institutional constraints.

Key words: ProKlim; community empowerment; climate adaptation; urban governance; environmental resilience

PEMBERDAYAAN MASYARAKAT UNTUK MELAWAN PERUBAHAN IKLIM: WAWASAN DARI PROGRAM KAMPUNG IKLIM PEKANBARU

ABSTRAK
Kampung Iklim (ProKlim) dalam konteks perkotaan, mengatasi kesenjangan dalam literatur yang sering menekankan kerangka kebijakan nasional sambil mengabaikan tata kelola lokal dan hasil lingkungan. Penelitian ini berfokus pada Kelurahan Tobek Godang di Kota Pekanbaru, Indonesia, daerah perkotaan yang berkembang pesat dan menghadapi peningkatan risiko iklim seperti banjir dan variabilitas cuaca. Dengan menggunakan pendekatan studi kasus kualitatif dengan pengambilan sampel bertujuan, data dikumpulkan dari 12 informan kunci, termasuk pemimpin lokal, pejabat pemerintah, dan anggota masyarakat, dan dianalisis melalui analisis tematik. Metode pengumpulan data meliputi wawancara mendalam, observasi langsung, dan analisis dokumen untuk memastikan triangulasi dan validitas.Temuan menunjukkan bahwa ProKlim telah meningkatkan kondisi lingkungan lokal melalui inisiatif seperti pengendalian banjir, pengelolaan sampah, dan penghijauan kota, yang didukung oleh partisipasi dan kepemimpinan aktif masyarakat. Namun, beberapa tantangan memengaruhi keberlanjutan program, termasuk keterbatasan sumber daya keuangan, dukungan kelembagaan yang lemah, dan tingkat kesadaran masyarakat yang tidak merata. Fluktuasi partisipasi antara tahun 2020 dan 2023 lebih lanjut mencerminkan kendala tata kelola dan kapasitas di tingkat lokal. Secara keseluruhan, studi ini menyoroti perlunya tata kelola multi-level yang lebih kuat, pendanaan yang konsisten, dan upaya peningkatan kapasitas untuk mempertahankan hasil yang telah dicapai. Studi ini berkontribusi pada literatur dengan menunjukkan bagaimana inisiatif pemberdayaan komunitas dapat meningkatkan ketahanan lingkungan perkotaan sekaligus menghadapi keterbatasan struktural dan kelembagaan.

Kata kunci: ProKlim; pemberdayaan masyarakat; adaptasi iklim; tata kelola perkotaan; ketahanan lingkungan

INTRODUCTION

The Climate Village Program (ProKlim) is a national initiative designed to strengthen local climate governance through active community engagement at the smallest administrative units, such as neighborhoods (RW) and villages. As a community-centered program, ProKlim encourages the development and implementation of a wide range of climate adaptation and mitigation activities that are rooted in local environmental challenges, capacities, and cultural wisdom. Through this program, communities are not just passive beneficiaries of government policy; instead, they play an essential role as agents of change who drive initiatives that reduce climate-related risks and enhance long-term

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resilience. ProKlim also encourages multi-stakeholder collaboration, involving government agencies, civil society, private sectors, and environmental groups to co-create sustainable solutions tailored to local needs Alifiyah & Zain (2023).

Climate change itself represents a complex global phenomenon characterized by shifts in temperature, precipitation patterns, and extreme climate conditions that significantly affect human life Saputra et al. (2023). The severity of climate change impacts varies across regions, influenced by differences in geographical characteristics, socio-economic conditions, and local climate systems. Extreme weather events, such as prolonged heatwaves, heavy rainfall, and flooding, not only disrupt ecological balance but also pose serious risks to human health, economic stability, and social well-being. While climate change is often viewed predominantly as an environmental issue, its influence extends far beyond ecosystems affecting food security, infrastructure resilience, livelihood sustainability, and even psychosocial conditions of communities experiencing climate-related stress Susilawati (2021).

Empirical data indicate that Pekanbaru City has a high level of climate vulnerability. Based on data from the Meteorology, Climatology, and Geophysics Agency (BMKG) and the Central Statistics Agency (BPS), rainfall in this region exhibits significant fluctuations throughout the year, contributing to an increased risk of flooding and urban inundation.

Table 1. Climate Vulnerability Trends

Aspect	Condition in Pekanbaru
Rainfall variability	High
Extreme rainfall intensity	Increasing
Seasonal patterns	Unpredictable
Main impacts	Flooding & inundation
Vulnerable areas	Densely populated areas

Source: BPS of Riau Province

Table 1. shows that Pekanbaru City experiences high climate variability, characterized by fluctuating rainfall and unpredictable seasonal patterns. These conditions increase the region's vulnerability to hydrometeorological disasters, particularly flooding in densely populated residential areas.

The high level of environmental pressure underscores the importance of community-based adaptation strategies. In this context, the Climate Village Program (ProKlim) serves as a relevant approach to enhancing the adaptive capacity of communities in responding to climate change risks.

Communities in both urban and rural settings are now confronted with challenges such as rising sea levels, land degradation, biodiversity loss, and infrastructure vulnerabilities. In response to these threats, the Climate Village Program (Program Kampung Iklim/ProKlim) in Indonesia aims to build localized resilience through bottom-up initiatives that empower communities to develop adaptive behaviors and sustainable practices Nurpeni et al. (2022). The program is firmly grounded in regulatory frameworks, specifically the Regulation of the Minister of Environment and Forestry Number P.84/ MenLHK-Setjen/ Kum.1/ 11/ 2016 concerning the Climate Village Program, further operationalized by the Regulation of the Director General of Climate Change Control Number P.1/PPI/ SET/KUM.1/2/2017 which provides detailed technical guidelines for implementation (Afni el al., (2021).

By integrating local wisdom and community-driven innovation with national climate priorities, ProKlim serves as a collaborative platform that strengthens synergy among communities, private sectors, and government institutions. This coordinated effort is crucial not only for reducing greenhouse gas emissions and strengthening adaptation capacity but also for cultivating environmental stewardship at the grassroots level. Ultimately, ProKlim contributes to promoting sustainable community development, ensuring that society is better prepared to respond to climate uncertainties while safeguarding public welfare and ecological integrity.

Climate change affects different regions in diverse ways due to variations in geography and climate (Alifiyah & Zain, 2023; Luthfia & Alkhajar, 2021). Climate change has a global impact on various sectors, including the environment, economy, and society (Dewi et al., 2016; Afni el al., 2021). Although commonly believed to impact the environment, it has a significant impact on human health and well-being, particularly in severe climates (Susilawati, 2021). The correlation between fluctuations in temperature, precipitation, and atmospheric conditions is becoming more evident in relation to heat-induced ailments, waterborne diseases, and mental strain. Unforeseeable weather phenomena disrupt ecosystems, rendering individuals with insufficient infrastructure and resources

more susceptible. Elevated temperatures can contribute to the development of cardiovascular issues, while the phenomenon of climate change can facilitate the proliferation of water-borne illnesses (Susilawati, 2021). Specific, environmentally friendly solutions are required, and groups such as ProKlim can assist in undertaking the various consequences of climate change.

Numerous studies have investigated the impact of climate change on various context, contributing valuable knowledge on strategies for adapting to and mitigating its effects. Anshari et al. (2023) contend that implementing localized environmental preservation initiatives is crucial in addressing the issue of climate change. The importance of community engagement in environmental protection programs aimed at mitigating climate impact is emphasized. Saputra et al., (2023) and Sari et al., (2021) further highlight that ProKlim actively promotes community involvement in climate adaptation efforts. Susilawati (2021) elucidates the potential exacerbation of cardiovascular illness and dissemination of vector-borne infections due to climate change. Dianingrum et al., (2023) also propose the incorporation of climate initiatives into public health frameworks as a means of safeguarding susceptible populations.

Nevertheless, this research, the efficacy of ProKlim in various places remains uncertain. the research does not thoroughly examine how ProKlim adapts to certain circumstances, particularly in urban areas such as Pekanbaru City, where socio-economic factors may impact the effectiveness of the program. Pekanbaru City presents a persuasive case for evaluating ProKlim's urban adaptation. Table 2 presents the statistics from the Pekanbaru City DLHK for the years 2020-2023, illustrating the extent and expansion of the program. In 2022, the number of planned Climate Village Program sites in Pekanbaru City increased to eight, compared to just one in 2020. Only two new locations were proposed in 2023, indicating that the level of community involvement or support from local government may differ.

Table 2. Climate Village Program Data in Pekanbaru City 2020 to 2023

Year	Proposal	Climate Village Program Locations
2020	1	Program Kampung Iklim Kel. Tobek Godang Kec. Tampan Kota Pekanbaru
2021	2	1) Program Kampung Iklim RW 03 Kelurahan Tobek Godang Kec. Binawidya Kota Pekanbaru
		2) Program Kampung Iklim RW 02 Kelurahan Tobek Godang Kec. Binawidya Kota Pekanbaru
2022	8	1) Program Kampung Iklim RW 16 Kelurahan Tobek Godang Kec. Binawidya Kota Pekanbaru
		2) Program Kampung Iklim RW 07 Kelurahan Tobek Godang Kec. Binawidya Kota Pekanbaru
		3) Program Kampung Iklim RW 13 Kelurahan Bambu Kuning Kec. Tenayan Raya Kota Pekanbaru
		4) Program Kampung Iklim RW 06 Kelurahan Sidomulyo Timur Kec. Marpoyan Damai Kota Pekanbaru
		5) Program Kampung Iklim Pondok Pesantren Ibnu Al Mubarok RW 003 Kelurahan Agro Wisata Kec. Rumbai Barat
		6) Program Kampung Iklim RW 04 Kelurahan Binawidya Kec. Binawidya
		7) Program Kampung Iklim RW 12 Kelurahan Umban Sari Kec. Rumbai
		8) Program Kampung Iklim RW 13 Kelurahan Umban Sari Kec. Rumbai
2023	2	Program Kampung Iklim RW 06 Kel. Agrowisata Kec. Rumbai Barat Kota Pekanbaru
		2) Program Kampung Iklim Kel. Sekip Kec. Lima Puluh Kota Pekanbaru Provinsi Riau GCF

Source: Primary Data

Tobekgodang Subdistrict, located in the Binawidya District, comprises 16 Citizens' Associations (RW) and 75 Neighborhood Associations (RT), with a total population of 25,835 persons as reported by the Pekanbaru City DLHK in 2023. The majority of these locations exist. This urban area offers a condensed representation of the climate change issues faced by cities, presenting an opportunity to assess specific climate policies implemented at a local level. Despite its growth, there is less knowledge regarding the effectiveness of ProKlim in adapting to different community circumstances in Pekanbaru City. Specifically, there is a lack of understanding of how socio-economic factors influence its implementation. Table 3 displays the results in Tobekgodang Village, Binawidya District, where there was a variation in ProKlim involvement from 2020 to 2023.

Table 3. Climate Village Program Data in Tobekgodang Subdistrict, Binawidya District, Pekanbaru City

Year	Locus	Climate Village Program Category
2020	RW. 01	Primary Climate Village Program Certificate
2021	RW. 02 and RW. 03	Primary Climate Village Program Certificate
2022	RW. 07 and RW. 16	Middle Climate Village Program Certificate
2023	-	None

Source: Primary Data

After receiving certificates of accomplishment for climate adaptation in 2020 and 2021, the village progressed to a medium-level Climate Village Program (ProKlim) certificate in 2022. However, participation was discontinued in 2023 due to a set of recurring challenges, including limited community mobilization, insufficient program facilitation at the local level, and competing priorities within village administration. This discontinuity not only disrupts the consistency of the village's climate initiatives but also raises critical questions about how community-based climate programs can be sustained over time. It also brings attention to the structural, cultural, and institutional factors that influence community motivation, program performance, and the overall success of climate adaptation interventions. The findings thus underscore the urgent need for continuous research to strengthen ProKlim implementation, improve policy coherence, and support long-term climate resilience, especially for communities in rapidly growing urban areas where vulnerability is increasing each year.

Research focusing specifically on the dynamics of ProKlim implementation in urban settings remains notably scarce. Much of the existing literature concentrates on national-level policy narratives, regulatory frameworks, or sectoral strategies, often overlooking the intricate realities of local governance systems. This study responds to that gap by prioritizing an analytical lens that captures localized public sector strategies and the collaborative mechanisms through which communities engage in innovation networks related to environmental management. By examining Pekanbaru City as a case study, this research offers a crucial contribution to the discussion on climate adaptation in Indonesia's urban centers contexts characterized by high population density, rapid land-use change, and heightened exposure to climate-induced hazards such as flooding, heatwaves, and deteriorating air quality.

Furthermore, this study examines how ProKlim acts as a catalyst for grassroots-driven adaptation and mitigation initiatives. In this context, the research question posed is: *How effective is the Climate Village Program (ProKlim) in promoting community-based climate change adaptation and mitigation initiatives in Pekanbaru?*

Through community-led waste management activities, green open space revitalization, homegarden movements, and improved water resource management, ProKlim enables residents to collectively reduce vulnerability and enhance environmental stewardship. The study is expected to reveal which components of the program generate the most significant positive impact such as strong participatory governance structures, consistent local government support, and active engagement from civil society organizations, youth groups, and environmental actors. It also places particular emphasis on the effectiveness of Information, Education, and Communication (IEC) strategies as tools for shaping climate-literate communities, shifting behavior toward sustainable practices, and nurturing long-term adaptive capacity.

Another key contribution of this research lies in its ability to generate actionable, evidence-based policy recommendations aimed at optimizing ProKlim practices within Pekanbaru. The paper begins by elaborating the conceptual framework of ProKlim, its institutional design, and intended outcomes, while identifying persisting gaps in prior

studies and program evaluations. It then details the methodological approach applied to gather community-level data, including interviews, participatory observations, and collaborative engagements with relevant stakeholders.

The analysis provides comprehensive insights into the effectiveness, limitations, and operational challenges of ProKlim in advancing localized climate action. These findings provide strategic guidance for policymakers, program administrators, and community leaders seeking to refine climate adaptation governance. Ultimately, the concluding section highlights the broader implications of the study for strengthening Indonesia's national climate agenda and emphasizes that active community participation remains the cornerstone of achieving resilient, environmentally responsible urban societies.

METHOD

This study adopts a qualitative case study approach to explore in depth the implementation and sustainability of the Climate Village Program (ProKlim) in an urban context. The case study design was chosen to allow a comprehensive understanding of complex social and environmental dynamics within a real-life setting, particularly in Tobekgodang Village, Binawidya Sub-district, Pekanbaru City. The research location was selected using purposive sampling, based on specific criteria: (1) the village has actively implemented ProKlim, (2) it has received multiple recognitions at regional and national levels, and (3) it demonstrates consistent community participation in climate adaptation activities. Tobekgodang Village is the only village in Pekanbaru that has achieved three major and two minor ProKlim certifications, indicating sustained performance in environmental governance, waste management, and community resilience. These characteristics make it a relevant and information-rich case for examining community-based climate adaptation in urban areas. The study involved 12 key informants, selected purposively based on their direct involvement and knowledge of the program. These informants consisted of 3 local government officials (DLHK and village administration), 3 community leaders (RW/RT leaders), 2 environmental facilitators or ProKlim coordinators, and 4 community members actively participating in ProKlim activities. The selection criteria included: (1) active participation in ProKlim implementation, (2) experience or responsibility related to environmental programs, and (3) willingness to provide in-depth information.

Data were collected through in-depth semi-structured interviews, direct observation, and document analysis to ensure data triangulation. Interviews were conducted face-to-face to capture participants' perspectives, experiences, and interpretations of climate adaptation practices. Observations were used to document actual program implementation, such as waste management systems, greening activities, and flood mitigation efforts.

Data analysis followed the interactive model of Miles and Huberman (2002), which consists of four stages: data collection, data reduction, data display, and conclusion drawing. The analysis focused on identifying key themes related to community empowerment, environmental impact, governance dynamics, and program sustainability.

To ensure the validity and reliability of the findings, this study applied data triangulation (interviews, observations, and documents) and source triangulation (multiple informant groups). In addition, member checking was conducted to confirm the accuracy of the information obtained from participants.

RESULTS AND DISCUSSION

Community Empowerment in the Implementation of ProKlim

The research findings indicate that community empowerment is a key factor in the successful implementation of the Climate Village Program (ProKlim) in Tobekgodang Village. Active community participation is reflected in waste management initiatives, greening activities, and community-based flood mitigation efforts.

In the context of Pekanbaru City, the implementation of ProKlim carries strategic urgency due to the region's rapid urbanization, high population density, and environmental challenges that continue to escalate each year. Pekanbaru, as one of the fastest-growing urban centers in Sumatra, is highly vulnerable to the impacts of climate change, including extreme heat, declining air quality, disruption of water availability, and recurrent flooding events. The city's geographical and socio-economic conditions reflect the complexity of balancing urban development with environmental sustainability. These dynamics position Pekanbaru as a critical location for assessing the effectiveness of community-based climate governance through the ProKlim framework.

The adoption of ProKlim in Pekanbaru aligns with the municipal government's agenda to strengthen environmental resilience and climate

risk reduction at the neighborhood and village levels, particularly in urban settlements that face environmental degradation and limited green infrastructure. Tobekgodang Village, the focus of this study, offers a unique portrait of how urban communities can operationalize ProKlim's objectives within the reality of limited land space, shifting livelihoods, and increased resource demands. Through multi-actor collaboration supported by local authorities, Tobekgodang has managed to initiate various mitigation and adaptation programs, such as waste management innovation, improved drainage systems, expansion of vegetation, and community awareness initiatives on climate-related health risks.

According to the Head of Tobekgodang Subdistrict (Yasir Arafat), he explained:

> "*As time progresses, Tobekgodang Subdistrict has carried out an equitable distribution of ProKlim locations, and almost all neighborhood units (RW) within the Tobekgodang Subdistrict area have implemented both adaptation and mitigation activities. However, only three RWs have received the Main ProKlim certificate, followed by two other RWs that have obtained the Intermediate ProKlim. The program is implemented in accordance with the policies established by the Pekanbaru City Environmental and Forestry Agency (DLHK). ProKlim activities are consistently socialized during subdistrict meetings, emphasizing the importance of environmental preservation, creating water infiltration systems such as biopore holes, and cleaning drainage*." (March 20, 2024)

The results of the interview are in line with the policy of the Pekanbaru City Environmental and Forestry Agency Number 660/DLHK/TL/170.d/2021 concerning the Implementation of ProKlim and the Instruction of the Mayor of Pekanbaru Number 67 of 2020 regarding the Guidance, Assistance, and Strengthening of ProKlim Locations in Pekanbaru City. These policies explain the procedures for implementing the Climate Village Program (ProKlim) in Pekanbaru City, particularly in Tobekgodang Subdistrict.

These advancements are particularly important given that Pekanbaru has long been associated with transboundary haze pollution, air pollution from transportation, and inadequate waste management systems. ProKlim activities in Tobekgodang demonstrate that community-led climate action can provide innovative solutions to these persistent urban environmental issues. The success of this village in achieving ProKlim certification underscores the potential scalability of its best practices to other urban areas in Pekanbaru, thereby strengthening the city's overall climate resilience and contributing to the achievement of Indonesia's national climate targets.

By closely examining the case of Pekanbaru, this study expands the understanding of how ProKlim is implemented in a complex urban climate setting an area where academic studies remain limited. The findings highlight not only the environmental benefits but also the social value generated through strengthened community cohesion, improved awareness, and empowerment in addressing climate threats. Ultimately, the experience of Tobekgodang Village reinforces the importance of decentralized climate governance, where local initiatives become the backbone of national climate action and sustainable urban development in Indonesia.

Evaluation of program effectiveness revealed that Tobekgodang Village has gained significant achievements, but in several areas, it needs to be improved to achieve its full potential. In this location, the research found that active involvement of local leaders and the community to support the development of the Climate Village Program was considered essential (Nurpeni et al., 2022). However, insufficient access to financial resources and the need for resourceful leadership remain major challenges. These limitations have hindered the program from being able to fully incorporate advanced climate adaptation and mitigation tactics. In addition, while the program is successful so far in achieving short term impact, there is still vulnerability to its sustainability if those gaps between resources and capacity are not being addressed. More government and institutional support in terms of financial resources, as well as technical education on the part of program administrators, could contribute to a greater ability to exert this sort of influence.

Program Impact on Environmental Conditions

The implementation of ProKlim demonstrates a positive impact on environmental conditions, particularly in reducing flood risks, improving the quality of residential environments, and promoting community-based waste management.

The Climate Village Program in Tobekgodang Villages has been able to distribute the benefits of climate adaptation measures so that they are fair and proportionate throughout the community. Implementation of this program has also improved the welfare of groundwater farm workers by mitigating floods and preventing climate-related illnesses (Kolopaking, 2016). However, the probe found significant shortcomings in public awareness about and instruction of the program. The program has gone a great way in reaching the community but there is little understanding amongst some sectors of society about how significant climate adaptation measures are. Stronger socialization plans and wider educational outreach that will get more public signed up (Ariyaningsih & Shaw, 2023). It will drive higher consciousness, with the wider presence in communities that this entails bolstering its ability to sustain assets against climate change.

The response of the Head of ProKlim RW 003 regarding the implementation of ProKlim is as follows:

> "*ProKlim itself has already been implemented through various ProKlim actions that are sustainable in nature after we obtained the Main ProKlim Certificate for RW 003. The coordination I carry out involves the subdistrict authorities and the residents in implementing these ProKlim actions, both adaptation and mitigation efforts, such as requiring every household to have biopore holes, planting one tree per house, and not littering but instead collecting waste at the RW 003 waste bank*." (March 25, 2024).

The interview results above explain that the actions carried out in ProKlim activities can reduce greenhouse gas (GHG) emissions, improve welfare at the local level according to regional conditions, and also reduce flooding caused by climate change.

Furthermore, the opinion of the working group (POKJA) regarding the implementation of ProKlim is as follows:

> "*The program has already been implemented along with innovations in its activities. Actions in carrying out ProKlim continue to be developed and expanded, such as creating family medicinal plant gardens (TOGA) or planting chili crops on vacant land. The results of these activities are utilized collectively by residents and can also generate additional income. We have also established a Women Farmers Group in the Tobekgodang Subdistrict area, located in RW 002. These activities are carried out with coordination and socialization from the Head of Tobekgodang Subdistrict as well as relevant stakeholders*." (March 26, 2024).

The interview results indicate that the program provides economic benefits to the community, as the outcomes of these activities have higher economic value. For example, mitigation activities that utilize household waste can be transformed into handicrafts

The data also showed that the response to it was mixed across different tiers of government. The response from higher levels of government, however, has been inadequate, as local leaders and the community have a high willingness to be dedicated to carrying out the Climate Village Program (Sufi et al., 2022). In the advice, time-frame and number mentoring was a great piece of information that had been furnished mentorship about how this is a training program that in fact has to become more common carried out, possessing some page-evolved toolbox, these kinds reminding zero executable advanced adaptation wizardry held back general governance best results. Our study highlights the need for greater political engagement at both national and provincial levels to ensure the long-term impact of community-led climate initiatives. Political engagement is crucial as it fosters an environment where community initiatives can thrive and be effectively integrated into broader climate policies.

Research indicates that positive political climates can enhance the willingness of individuals to engage in political action, particularly in the context of climate initiatives (Just & Anderson, 2014). When communities perceive support from higher-level authorities, they are more likely to mobilize and participate in climate actions, thereby amplifying the effectiveness of local initiatives (Sanz et al., 2025). Furthermore, a unified approach that combines local efforts with national policies can transcend existing barriers, such as resource limitations and lack of awareness. For instance, community partnerships and regional planning processes are essential for overcoming these barriers, as they facilitate knowledge sharing and capacity building among local authorities (Rhodes, 2017). This collaborative framework not only enhances the reach of community-led initiatives but also ensures that they are aligned with national climate goals, thereby increasing their sustainability and impact (Giest & Howlett, 2013).

Moreover, the emotional engagement of individuals plays a significant role in motivating climate action. Studies have shown that feelings of urgency and hope can significantly influence individuals' intentions to learn more about climate science and take action (Rooney et al., 2018). This emotional connection can be leveraged to foster a more engaged citizenry that actively participates in climate initiatives, thereby reinforcing the need for political support at all levels. The integration of emotional and rational appeals in climate communication can enhance public engagement and facilitate a more robust political discourse around climate change (Creutzig & Kapmeier, 2020).

The results of this study will provide important information on how the Climate Village Programme outreach to Tobekgodang Village has succeeded in building community resilience in urban areas vulnerable to climate change. What makes this research unique is the focus of a single urban village, providing an in-depth case study that explores how adaptation may vary at local scales. The goal of this research is not to examine broader patterns in national childrearing but rather how particular challenges and opportunities play out within urban settings. The research demonstrates the importance of community leadership and participation in enhancing climate adaptation efforts. It also highlights the important role government and professional support play in sustaining these efforts over time (Ismiartha et al., 2021).

Program Challenges and Sustainability

Despite yielding positive outcomes, the implementation of ProKlim still faces several challenges, including limited financial resources, weak institutional support, and inconsistent community participation.

According to the Head of RW 002, the challenges of ProKlim are explained as follows:

> "*The community's response to ProKlim has been positive, but not yet consistent. The implementation of ProKlim in Tobekgodang Subdistrict has been successful largely due to the very important role of the community. However, support from higher levels of government is still lacking, such as expert personnel, facilitators, and funding to support ProKlim actions*." (March 21, 2024).

The results of this study serve as an important reminder of how stakeholders' efforts to undertake climate adaptation in the future must be designed, implemented, and evaluated within community settings. As climate hazards intensify and manifest in increasingly unpredictable patterns, adaptation measures must evolve toward more strategic, inclusive, and future-oriented approaches (Saputra et al., 2024). To enhance both the effectiveness and scalability of the Climate Village Program, it is critical to reinforce the current strategies with more robust and comprehensive support systems. These include greater financial investment for local climate actions, continuous coaching and structured capacity-building programs for community champions and local institutions, as well as solid political commitment across multi-level governance structures from neighborhood and city administrations to regional and national authorities (Dunn, 2015). By strengthening these enabling factors, successful interventions such as those demonstrated in Tobekgodang Village can be replicated across other high-risk communities throughout Indonesia, ultimately maximizing public welfare and contributing to national climate resilience goals.

Additionally, the findings highlight the urgent need for an integrated climate governance framework that emphasizes collaboration among stakeholders operating at different jurisdictional levels. Stronger coordination will ensure that local adaptation strategies are aligned with broader policy priorities and supported by coherent resource allocation. This multi-level synergy is essential not only for scaling up local success but also for ensuring long-term resilience, particularly as climate threats escalate and introduce new socio-environmental vulnerabilities. Such an approach will help transition adaptation governance from reactive responses to more anticipatory, preventative, and strategic systems capable of addressing both current pressures and future uncertainties.

Despite its promising outcomes, ProKlim still warrants rigorous and continuous evaluation to determine its adaptability and performance across diverse socio-economic and geographic contexts, especially among rapidly developing urban centers like Pekanbaru. Future research should pay closer attention to the institutional dynamics that influence implementation, including governance coordination, funding flows, policy enforcement, and the long-term sustainability of community-driven activities. There is also an urgent need to examine how variations in leadership commitment, stakeholder engagement, and community empowerment influence program impacts.

Furthermore, exploring the effectiveness of targeted engagement strategies such as structured

awareness campaigns, participatory monitoring, and the integration of local knowledge can offer valuable insights into what drives meaningful and sustained public participation in climate actions. Advancing these areas of inquiry will deepen understanding of how localized climate adaptation initiatives can be scaled, institutionalized, and innovated over time. Ultimately, expanding and sustaining such community-based initiatives is crucial for safeguarding vulnerable populations from the increasingly severe and far-reaching consequences of global climate change, while ensuring that adaptation efforts continue to foster social equity, ecological integrity, and sustainable development.

The Role of Governance and Policy Support

The research findings indicate that the success of ProKlim is strongly influenced by multi-level governance support involving local governments, communities, and other relevant stakeholders. Several policy implications emerge that are essential for strengthening the overall effectiveness of the Climate Village Program (ProKlim) and its long-term contributions to Indonesia's climate agenda. First, local governments, including the Pekanbaru City Government, must prioritize increased investment and budget allocation for community-based climate adaptation programs. Strengthening fiscal support is critical not only for program continuity but also for scaling successful initiatives across other urban villages facing similar climate risks. This financial commitment should be complemented by a more systematic approach to resource distribution, ensuring that high-risk areas with greater vulnerability receive adequate support to design, implement, and sustain climate initiatives. More importantly, budget planning must incorporate long-term projections of climate impacts, enabling proactive rather than reactive financing strategies.

In relation to ProKlim activities, to determine whether these activities or plans have produced results in the Tobekgodang Subdistrict area, the response from the Head of Tobekgodang Subdistrict, "*The results have been optimal, especially regarding flood issues. However, there is still a lack of government attention in terms of budget allocation to support the implementation of ProKlim*." (March 20, 2024).

Furthermore, the response from the Head of ProKlim RW 003 explains:

> "*The Climate Village Program activities are highly beneficial, especially for those of us living in urban areas. Tobekgodang Subdistrict has been able to carry out ProKlim activities, particularly in RW 003, due to the significant role of the community as well as the support from the subdistrict authorities. We also need cooperation among all parties to be involved in implementing ProKlim and to help carry out these activities so that we can maximize their implementationnot only to achieve recognition, but also to provide long-term benefits*." (March 25, 2024)

Policy frameworks should encourage stronger institutional collaboration between community organizations, private sector actors, universities, and local government agencies through clear operational guidelines, shared responsibilities, and robust accountability mechanisms. Strengthening cross-sector partnerships will enable knowledge-sharing, technological innovation, and joint problem-solving approaches in addressing climate challenges unique to urban environments. Collaboration with academic institutions, for instance, can help bridge scientific knowledge with grassroots practices, while partnerships with the private sector can mobilize additional resources and technological solutions for climate adaptation.

Regulatory bodies must integrate community driven climate programs into regional spatial planning, disaster risk reduction strategies, and public health policies, recognizing the interconnectedness of environmental, social, and economic resilience. In the case of Pekanbaru, aligning ProKlim implementation with urban planning policies particularly those related to waste management, flood mitigation, air quality control, and green open space expansion can significantly improve climate governance outcomes. Such alignment ensures that community-based initiatives are not isolated efforts but become embedded within broader city development priorities.

Additionally, stricter monitoring and evaluation systems are essential to track progress, identify gaps, and ensure that positive outcomes are sustained over time. Policymakers should adopt adaptive regulations that allow for continuous improvements based on local feedback, evolving community needs, and emerging climate trends. Incorporating digital monitoring tools and community scorecards could further enhance transparency and accountability.

Finally, embedded capacity-building interventions are required to strengthen local leadership,

improve climate literacy, and ensure long-term community participation in adaptation initiatives. Empowering community groups with the technical knowledge, organizational skills, and decision-making authority required to respond to climate risks will help institutionalize resilience practices into daily behavior and local governance structures. Investing in youth leadership programs, women-led environmental groups, and inclusive participatory forums will also broaden community engagement and enhance program ownership. By addressing these policy imperatives, ProKlim can better serve as a model for localized climate governance promoting equitable resilience and providing a strategic pathway for Indonesia to accelerate its transition toward a more climate-resilient future.

CONCLUSION

This study demonstrates that community empowerment is a key determinant of the successful implementation of the Climate Village Program (ProKlim) in urban areas, particularly in Tobekgodang Village, Pekanbaru City. Through active community engagement in waste management, greening initiatives, and flood mitigation efforts, the program has enhanced the adaptive capacity of local communities in responding to climate change risks.

The findings also highlight that the effectiveness of ProKlim is closely linked to local environmental conditions characterized by high climate variability. Significant fluctuations in rainfall in Pekanbaru City contribute to increased flood risk and environmental vulnerability, thereby reinforcing the urgency of implementing community-based adaptation programs.

However, the sustainability of the program continues to face several challenges, particularly related to limited resources, weak institutional support, and inconsistent community participation. Therefore, strengthening multi-level governance, enhancing community capacity, and ensuring consistent policy support are critical factors in maintaining the program's sustainability.

Overall, this study underscores that ProKlim functions not only as an environmental program but also as a community empowerment instrument in fostering sustainable urban climate resilience.

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