



## RESEARCH ARTICLE

## Climate Change Mitigation of Local Government Units (LGUs) in Basilan Province, Philippines

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This study examines climate change mitigation strategies and policies adopted by Local Government Units (LGUs) in Basilan, as well as the challenges encountered in these efforts. A qualitative research approach was used and utilizing a combination of desk research and interviews. Existing resolution from year 2016 to 2023 was analyzed and nineteen (19) administrators were selected as participant for the interview. These resolutions serve various functions such as policy statements, advocacy, and record-keeping. The analysis of 35 SP resolutions from 2015 to present reveals key themes including COCOLISAP infestation, disaster risk reduction fund allocation, climate change adaptation planning, collaboration with stakeholders, state of calamity declarations, and resource allocation for disaster response infrastructure. Interviews with respondents further elaborate on specific strategies and policies implemented by LGUs in Basilan, emphasizing programs by the Ministry of Environment, national policies, community resilience projects, and collaborative efforts. The narratives highlight initiatives in different municipalities and cities, and the challenges faced by LGUs, such as resource constraints, policy barriers, public awareness, socio-economic factors, and infrastructure deficiencies. Respondents stress the importance of tailored approaches, public awareness, collaboration, and stakeholder involvement in addressing climate challenges effectively. The findings inform the need for customized, context-specific strategies, policy integration, stakeholder engagement, monitoring and evaluation, capacity building, adaptive approaches, and innovative financing mechanisms to enhance climate change mitigation efforts in Basilan.

**INTRODUCTION**

Climate change have become pressing global issues that require urgent attention. The role of Local Government Units (LGUs) in addressing these concerns is increasingly being recognized as crucial. This is due to the unique position of LGUs in formulating and implementing policies, as well as coordinating various stakeholders' efforts in the fight against climate change.

Basilan Province, located in the southern part of the Philippines, is a region that is notably vulnerable to the impacts of climate change. This area, like many others in the country, is prone to natural disasters such as typhoons, floods, and landslides, which are expected to increase in frequency and severity due to climate change. Additionally, the province's economy heavily relies on agriculture and

fishing, sectors that are particularly susceptible to changes in weather patterns and rising sea levels. Hence, addressing climate change is crucial for the province's development and resilience.

LGUs, as the machinery of government, is responsible for translating political decisions into actions and outcomes. It plays a vital role in policy-making, planning, implementation, and evaluation. In the context of climate change, LGUs' responsibilities are manifold. It is tasked with developing and implementing environmental policies, promoting sustainable practices, coordinating efforts of various stakeholders, and ensuring compliance with environmental standards and regulations. Several studies have explored this role. For instance, a study by Patterson and Huitema (2018) examined how local government officials can facilitate the transition to a more sustainable society by implementing policies that promote green energy and reduce carbon emissions. Similarly, a study by Jordan and Huitema (2014) highlighted the role of local government officials in promoting climate change adaptation and resilience through policy-making and planning.

Bulkeley and Betsill (2013) focused their study on the role of local government in addressing climate change. They found that local governments play a significant role in mitigating climate change through local policies and initiatives. This shows that local government's role in addressing climate change is not limited to the national level but extends to the local level as well. Another study by Keskitalo et al. (2012) explored how local government promotes environmental sustainability through sustainable land use planning and management. They found that local government plays a crucial role in balancing development needs with environmental conservation.

Despite this, there is a gap in understanding the specific responsibilities of LGUs in Basilan Province in addressing climate change. There is a need for more in-depth research to provide a clearer picture of how local government can effectively fulfill these responsibilities and what challenges it faces in doing so.

This study aims to fill this gap by investigating the climate change mitigation of Local Government Units in Basilan. It will explore how local government effectively fulfill these responsibilities and what challenges it faces in doing so.

The findings of this study could provide valuable insights for policymakers, public administrators, and other stakeholders in Basilan Province. It could help them formulate and implement strategies to address climate change and promote environmental sustainability. Moreover, it could contribute to the broader literature on the role of local government in environmental sustainability, particularly in regions that are highly vulnerable to climate change.

## **LITERATURE REVIEW**

Like many regions in South Asia highlighted by Afzal & Nishtar (2023), Basilan Province is highly susceptible to climate change impacts. Learning from studies like Wen et al. (2023), integrating disaster risk reduction, climate adaptation, and sustainable development strategies is crucial. Karani et al. (2023)'s focus on the blue economy in Africa offers valuable lessons for Basilan Province, an archipelago heavily reliant on marine resources. Incorporating climate change considerations into coastal management and fisheries is vital.

Medeiros et al. (2022)'s assessment of environmental policies in Portugal emphasizes the need for robust policy frameworks. Basilan Province's Local Government Units (LGUs) must develop, implement, and evaluate effective climate mitigation policies tailored to the local context. Decentralization, as seen in the case of the Philippines, necessitates strong leadership at the LGU level. Mustun (2022)'s work on governance and oil rent underlines the importance of transparency and accountability in managing resources and mitigating climate change.

With increasing urbanization, lessons from Darma (2023) on smart city initiatives in Nigeria become relevant. Basilan Province's LGUs can explore sustainable urban planning, promoting green

infrastructure and efficient transportation systems. Nallathiga (2023)'s strategies for sustainable urban development in India, particularly regarding waste management and resource efficiency, offer valuable insights for Basilan Province's urban centers.

Elsherif (2023)'s research on green financing in Egypt highlights the potential of attracting investments for climate-resilient infrastructure and renewable energy projects. Balancing economic growth with environmental sustainability is key. Learning from Wu et al. (2023)'s system dynamics model, LGUs can develop strategies for sustainable livelihoods, particularly in agriculture and fisheries, considering climate change impacts.

Climate action requires community buy-in. Anabaraonye et al. (2022)'s innovative use of poetry for climate change education underscores the importance of engaging communities creatively. Drawing from Tugjamba et al. (2018), integrating climate change education into school curricula can empower future generations in Basilan Province to become responsible stewards of the environment.

### **The Problem**

Climate change is a significant issue that the world is currently grappling with. In Basilan Province, these issues have become increasingly pertinent due to the region's unique environmental challenges. This study aims to examine current policies and practices, identify areas of improvement, and propose strategies that can enhance the effectiveness of LGUs in addressing these environmental challenges. Specifically, the study aims to answer the following questions:

1. What are the strategies and policies adopted by the LGUs in mitigating climate change?
2. What are the challenges faced by the local government units in mitigating climate change?
3. How can these challenges on climate change mitigation inform and enhance policies?

### **METHODOLOGY**

This qualitative study investigates climate change mitigation efforts by LGUs in Basilan, Philippines. Employing a purposive sampling technique, the research focuses on 15 key stakeholders including government officials and policymakers directly involved in formulating, planning, or implementing climate change policies. Data collection involved three layers: 1) reviewing existing resolutions and policy documents related to climate change mitigation from the past 8 years, 2) conducting one-on-one, unstructured interviews with the selected participants to gather insights and perspectives, and 3) analyzing the collected data to understand the current state of climate change mitigation strategies and policies in Basilan.

### **Findings and Discussion**

A Sangguniang Panlalawigan (SP) resolution is a formal written motion adopted by the Provincial Board at the provincial level. SP resolutions are important tools in the governance and decision-making processes of provinces. They serve various functions, including policy statements, decision-making, recognition, advocacy, expressing support or opposition, record-keeping, and legal implications. SP resolutions are significant in shaping governance, promoting transparency, and addressing the needs and concerns of the province and its constituents. Based on the data provided by the Provincial Government, there are 35 SP Resolutions that are directly or indirectly related to climate change mitigation in the Province of Basilan from 2015 to present. The following are some of the highlights of resolutions adopted and implemented.

#### **Cocolisap Infestation and Climate-Related Calamities**

Resolutions like Resolutions No. 2016-50, 2016-21, and 2017-118 highlight the impact of COCOLISAP infestation and calamities like prolonged dry spells and droughts due to climate phenomena like El

Nino. These resolutions emphasize the urgent need for climate change mitigation strategies to combat such ecological crises.

### **Disaster Risk Reduction and Management (DRRM) Fund Allocation**

Resolutions such as Resolutions No. 2015-140, 2017-136, 2018-135, and 2019-168 approving Disaster Risk and Reduction Management (DRRM) funds indicate the province's commitment to preparedness and response to climate-related disasters. The allocation of funds for disaster risk reduction underscores the importance of proactive measures in mitigating the impact of climate change.

### **Policy and Planning for Climate Change Adaptation**

Resolutions like Resolutions No. 2018-75, 2021-131, and 2023-13 focus on adopting and approving Local Climate Change Action Plans, indicating the province's efforts to integrate climate change adaptation into its policies and planning. This proactive approach is crucial for building resilience against climate-related challenges.

### **Collaboration and Coordination for Climate Resilience**

Resolutions such as Resolutions No. 2016-88 and 2019-142 emphasize coordination with various agencies and stakeholders for disaster preparedness and response. Collaborative efforts are essential for effective climate change mitigation and adaptation strategies.

### **State of Calamity Declarations**

Declarations of a state of calamity in resolutions like Resolutions No. 2018-108, 2019-13, and 2023-14 reflect the severity of climate-related disasters in the province. Such declarations enable the mobilization of resources and prompt action to address the immediate impacts of calamities.

### **Infrastructure and Resource Allocation**

Resolutions requesting resources like ambulances, fire trucks, and disaster response equipment (Resolutions No. 2019-97, 2019-104, 2019-133) highlight the importance of investing in infrastructure for effective disaster response and climate resilience.

The resolutions demonstrate the Province of Basilan's proactive stance towards climate change mitigation and adaptation. By allocating resources, adopting climate action plans, and enhancing coordination among agencies, the province is working towards building resilience and addressing the challenges posed by climate-related disasters. The implications of these efforts include improved disaster preparedness, enhanced climate resilience, and sustainable development in the face of environmental challenges.

The study of Elsharif (2023) aligns with Basilan's focus on allocating resources for disaster response and climate resilience. It emphasizes the importance of financial mechanisms like green financing to support environmental sustainability initiatives, similar to the province's efforts in addressing climate-related challenges. The barriers identified by Darma (2023) for implementing smart city initiatives for environmental sustainability resonate with the challenges faced by regions like Basilan in enhancing infrastructure and resource allocation for disaster response and climate resilience. The study of Wen, et al. (2023) that explores the connections between disaster risk reduction, climate change adaptation, and sustainable development is in line with Basilan's comprehensive approach towards addressing environmental challenges through policy integration and proactive measures. Moreover, Rahman, Khan, and Glessen (2023) analyze the policy changes related to the environment and their impact on achieving Sustainable Development Goals (SDGs) in Bangladesh is similar to Basilan's efforts in adopting climate action plans and integrating climate change adaptation into policies and planning.

## Challenges Identified

A one-on-one interview was conducted to collect personal narratives of every participant. The narratives reveal a range of challenges faced by LGUs in mitigating climate change. These challenges can be categorized into the following themes:

### Theme 1: Resource Constraints

Lack of sufficient funds to implement climate action plans and invest in renewable energy, energy efficiency, and other mitigation measures. Shortage of personnel with technical expertise and experience in climate change mitigation. Lack of access to necessary technologies for effective mitigation and adaptation strategies.

Respondent 12 says:

"Financial limitations and lack of expertise hinder our fight against climate change. However, with innovation and collaboration, we can overcome these obstacles and build a sustainable future."

### Theme 2: Policy and Institutional Barriers

Inconsistencies between national and local policies, and regulatory constraints that hinder coordinated action. Lack of clear mandates and responsibilities among different government agencies, leading to siloed decision-making. Inadequate information on local climate impacts and vulnerabilities, hindering effective planning and decision-making.

Respondent 15 says:

"Inconsistency in policies and lack of clear mandates create hurdles in climate action. By streamlining policies and fostering collaboration, we can pave the way for effective mitigation strategies."

### Theme 3: Public Awareness and Engagement

Lack of understanding of climate change impacts and the need for mitigation measures. Insufficient involvement of local communities in climate action initiatives. Opposition from certain groups or individuals towards climate mitigation policies.

Respondent 13 says:

"Public understanding and community involvement are crucial in tackling climate change. Through education and engagement, we can build a collective will to address this global challenge."

### Theme 4: Socio-economic Factors

Limited financial resources within communities, making it difficult to invest in climate-resilient infrastructure and practices. Limited access to information and knowledge about climate change, hindering adaptation and mitigation efforts. Non-compliance with environmental laws and regulations, contributing to environmental degradation.

Respondent 11 says:

"Poverty and limited access to information hinder adaptation efforts. By empowering communities and investing in education, we can build resilience and promote sustainable practices."

### Theme 5: Infrastructure Deficiencies

Existing infrastructure may not be resilient to climate change impacts, requiring upgrades or new development. Reliance on fossil fuels, contributing to greenhouse gas emissions and limiting access to sustainable energy sources.

Respondent 6 says:

"Outdated infrastructure and reliance on fossil fuels exacerbate climate change impacts. By investing in renewable energy and resilient infrastructure, we can build a more sustainable future."

#### **Theme 6: Coordination and Collaboration Challenges**

Ineffective collaboration between national, regional, and local authorities. Insufficient cooperation among different government agencies and stakeholders with diverse interests and mandates.

Respondent 10 says:

"Effective collaboration across sectors and stakeholders is crucial for successful climate action. By fostering partnerships and aligning efforts, we can achieve greater impact."

#### **Theme 7: Climate Finance and Investment Challenges**

Difficulty securing funding for climate mitigation projects due to high transaction costs and stringent eligibility criteria. Insufficient investment in sustainable infrastructure and technologies needed for adaptation.

Respondent 7 says:

"Securing funding for climate mitigation projects remains a challenge. By exploring innovative financing mechanisms and attracting private investment, we can accelerate the transition to a low-carbon economy."

#### **Theme 8: Complexity of Climate Change Impacts**

Difficulty anticipating and responding effectively to the multifaceted and uncertain nature of climate change impacts. Need for integrated approaches that address the complex interactions between climate change and other social, economic, and environmental factors.

Respondent 8 says:

"The multifaceted nature of climate change requires integrated approaches. By addressing the interconnected social, economic, and environmental factors, we can build resilience and mitigate risks."

#### **Theme 9: Community-Level Challenges**

Limited understanding of climate change issues among community members. Deliberate violation of environmental laws and regulations. Insufficient local efforts to address climate change challenges.

Respondent 9 says:

"Limited understanding and non-compliance with environmental regulations hinder progress. By raising awareness and promoting sustainable practices, we can foster responsible behavior and community ownership."

#### **Theme 10: Lack of Public Awareness on Waste Management**

Limited understanding of the impacts of climate change on waste management. Lack of participation in waste segregation and recycling programs.

Respondent 2 says:

"Public awareness and participation in waste management are essential for mitigating climate change impacts. By educating communities and promoting sustainable waste management practices, we can reduce waste and promote resource efficiency."

### **Theme 11: Obstacles in Disaster Mitigation**

Limited public awareness and understanding of disaster preparedness and response. Lack of community participation and cooperation in disaster preparedness efforts.

"Public awareness and community participation are crucial for effective disaster preparedness and response. By investing in education and building community resilience, we can minimize the impact of disasters and build a more resilient society." – Respondent 3

### **MITIGATING CHALLENGES**

Analyzing the responses provided by the various respondents in the context of how current findings on climate change mitigation can inform and enhance policies yields the following key themes:

#### **Theme 1: Integration of Research Findings into Policy Frameworks**

Respondent 1 says:

"To fortify climate change mitigation strategies, it is crucial to seamlessly the latest research findings into existing policy frameworks. This necessitates a holistic approach where climate objectives are woven into the fabric of all sectoral policies, ensuring that every decision is made with climate resilience in mind."

Respondent 1 emphasizes the importance of seamlessly integrating the latest research findings into existing policy frameworks. This involves weaving climate objectives into all sectoral policies and ensuring that every decision is made with climate resilience in mind. The adoption of data-driven decision-making processes is highlighted as crucial for refining policies based on cutting-edge climate models and projections.

#### **Theme 2: Collaboration and Stakeholder Engagement**

Respondent 12 says:

"Engaging stakeholders from diverse sectors, including scientists, researchers, policymakers, practitioners, and community members, fosters collaboration and knowledge exchange. By involving stakeholders in the co-creation of climate policies and strategies, governmental bodies can leverage their expertise and perspective to integrate the latest insights and data into decision-making processes"

And Respondent 13 says:

"To bolster and refine policies and strategies for effective climate change mitigation, the insights and data can be integrated into existing formulation through continuous monitoring and evaluation policy review and update, stakeholders' engagement capacity building international collaboration and adaptive management."

Respondent 12 and Respondent 13 stress the significance of stakeholder engagement and collaboration in integrating the latest insights and data into policy formulation. Engaging diverse stakeholders, including scientists, researchers, policymakers, practitioners, and community members, fosters collaboration and knowledge exchange. This collaborative approach ensures that policies are informed by a wide range of perspectives and expertise.

#### **Theme 3: Regular Monitoring and Evaluation**

Respondent 5 says:

"Integrating latest climate data strengthens existing frameworks. Regularly review frameworks to incorporate new science on impacts, mitigation, and technologies."

And Respondent 13 also says:

“To bolster and refine policies and strategies for effective climate change mitigation, the insights and data can be integrated into existing formulation through continuous monitoring and evaluation policy review and update, stakeholders’ engagement capacity building international collaboration and adaptive management.”

Respondent 5 and Respondent 13 emphasize the importance of regular monitoring and evaluation in enhancing climate change policies. By utilizing new data sources, real-time feedback loops, and standardized metrics, governments can track progress effectively and make informed decisions to achieve more achievable mitigation targets.

#### **Theme 4: Capacity Building and Training**

Respondent 3 says:

“Collaborate and engage in knowledge sharing with partners and institutions; Engage with expressing the field and stakeholders and the public of transparency and inclusivity in policy recommendations; and Prioritize adaptive approaches that can respond to changing circumstances.” and Respondent 15 says:

“We also prioritize capacity-building and training for our staff and local communities to ensure that they are equipped with the knowledge and skills needed to address the evolving landscape of climate change effectively.”

Respondent 3 and Respondent 15 highlight the necessity of capacity building and training for governmental bodies and local communities. This empowers them to interpret and apply research insights effectively, ensuring that they are equipped with the knowledge and skills needed to address the evolving landscape of climate change.

#### **Theme 5: Adaptive Approaches and Mainstreaming Climate Considerations**

Respondent 3 says:

“By staying well-informed, proactive and adaptive, LGUs can enhance their capacity to complex and evolving challenges posed by climate change and can work towards sustainable and resilient future for their communities. and Respondent 12 says:

“Mainstreaming Climate Considerations Across Sectors: Integrating climate considerations into decision-making processes across sectors, such as energy, transportation, land use, and finance, ensures that climate change mitigation is embedded into broader policy frameworks and institutional practices. By mainstreaming climate considerations, governmental bodies can leverage synergies, avoid trade-offs, and maximize co-benefits across different policy domains. By adopting these approaches, governmental bodies can effectively integrate the latest insights and data from climate change research into existing frameworks, thereby strengthening and refining their policies and strategies for more effective climate change mitigation. This proactive and adaptive approach is essential for building resilience, promoting sustainability, and safeguarding the well-being of current and future generations in the face of climate change.”

Respondent 3 and Respondent 12 emphasize the importance of adaptive approaches and mainstreaming climate considerations across sectors. By prioritizing adaptive strategies that respond to changing circumstances and integrating climate considerations into all relevant policies and programs, governments can ensure that climate change mitigation is embedded into broader policy frameworks and institutional practices.

#### **Theme 6: Innovative Financing Mechanisms**

Respondent 1 says:



“Innovative financing mechanisms are also needed to underpin research-informed climate initiatives, complemented by international collaboration that facilitate the sharing of knowledge and resources.”

Respondent 1 highlights the need for innovative financing mechanisms to underpin research-informed climate initiatives. This includes international collaboration to facilitate the sharing of knowledge and resources, ensuring that policies are not only current but also anticipatory.

### **Theme 7: Collaboration and Stakeholder Engagement**

Respondent 12 says:

“Stakeholder Engagement and Collaboration: Engaging stakeholders from diverse sectors, including scientists, researchers, policymakers, practitioners, and community members, fosters collaboration and knowledge exchange. By involving stakeholders in the co-creation of climate policies and strategies, governmental bodies can leverage their expertise and perspective to integrate the latest insights and data into decision-making processes.” and Respondent 13 says:

“To bolster and refine policies and strategies for effective climate change mitigation, the insights and data can be integrated into existing formulation through continuous monitoring and evaluation policy review and update, stakeholders’ engagement capacity building international collaboration and adaptive management.

The significance of stakeholder engagement and collaboration in policy formulation, as stressed by Respondent 12 and Respondent 13, aligns with the study by Mugenyi (2020) on climate change and sustainable development in developing countries. The study highlights the dilemma faced by developing nations and the need for collaboration to address climate change while pursuing sustainable development goals.

### **Theme 8: Regular Monitoring and Evaluation**

Respondent 5 says:

Regularly review frameworks to incorporate new science on impacts, mitigation, and technologies. and Respondent 13 says:

“...continuous monitoring and evaluation policy review and update, stakeholders’ engagement capacity building international collaboration and adaptive management.”

The importance of regular monitoring and evaluation in enhancing climate change policies, as emphasized by Respondent 5 and Respondent 13, corresponds to the study by Tugjamba, et al. (2018) on climate change education for sustainable development in Mongolia. The study underscores the need for ongoing evaluation and improvement in educational policies related to climate change.

The emphasis on seamlessly integrating research findings into policy frameworks, as highlighted by Respondent 1, resonates with the study conducted by Mustun (2022) in Saudi Arabia. The study emphasizes the importance of climate change vulnerability and governance in sustainable development, showcasing the integration of research findings into policy decisions.

## **CONCLUSION**

The LGUs in Basilan have implemented a diverse range of strategies and policies, including addressing COCOLISAP infestation, disaster risk reduction fund allocation, climate change adaptation planning, collaboration with stakeholders, state of calamity declarations, and resource allocation for disaster response infrastructure. These efforts emphasize preparedness, resilience building, and collaborative initiatives for sustainable development in the face of environmental challenges

Furthermore, the challenges faced by LGUs in mitigating climate change highlight various obstacles such as resource constraints, policy and institutional barriers, public awareness and engagement issues, socio-economic factors, infrastructure deficiencies, coordination challenges, climate finance obstacles, and community-level challenges. Addressing these challenges through innovative solutions, collaboration, education, and community engagement is crucial for enhancing climate resilience and promoting sustainable development.

Lastly, the insights provided by respondents on how current findings on climate change mitigation can inform and enhance policies underscore the importance of integrating research findings into policy frameworks, promoting collaboration and stakeholder engagement, implementing regular monitoring and evaluation practices, investing in capacity building and training, adopting adaptive approaches, mainstreaming climate considerations, and utilizing innovative financing mechanisms. By incorporating these key themes into policy formulation, governments can refine their strategies for more effective climate change mitigation and adaptation. An adaptive resilience framework was identified as theory for the findings of the study.

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