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Original Article

Evaluation of Climate-Disaster Interventions for Community Resilience: A Mixed-Methods Research

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Abstract. This study evaluated the climate-responsive subprojects implemented under the KALAHI-CIDSS Program in the Municipality of San Miguel, Surigao del Sur, specifically in Barangays Libas Gua, Patong, and Barras. The research aimed to assess the projects' relevance, effectiveness, and contributions to Sustainable Development Goals (SDGs) 6 (Clean Water and Sanitation) and 13 (Climate Action) as perceived by community beneficiaries, volunteers, and program implementers. Addressing the empirical gap in evaluating the community-driven development (CDD) approach, the study examined stakeholders' roles, participation, and perceptions in project planning, decision-making, resource mobilization, and operations related to water systems, drainage canals, flood control structures, and evacuation centers. A mixed-methods research design, integrating descriptive-quantitative and qualitative approaches, was employed. Data were collected from 357 community beneficiaries, 93 volunteers, three (3) program implementers, nine (9) key informants, and 33 focus group participants. Quantitative findings indicated substantial contributions of KALAHI-CIDSS subprojects to SDG 6 and SDG 13, reflecting strong agreement on their effectiveness in enhancing access to safe water and sanitation and in strengthening climate resilience. Qualitative insights revealed that participatory governance, community empowerment, and collaborative resource mobilization were instrumental in sustaining project outcomes, though constraints in funding, technical expertise, and maintenance persisted. Anchored in Community-Driven Development and Sustainable Development theories, the study concludes that KALAHI-CIDSS climate-responsive subprojects substantially strengthen community resilience, promote inclusive local governance, and advance sustainable development in climate-vulnerable rural areas. Enhancing capacity-building initiatives, enforcing environmental safeguards, and ensuring sustained community engagement are recommended to secure the long-term sustainability of the subproject.

Keywords: *Climate resilience; Climate-responsive subprojects; Community-driven development; KALAHI-CIDSS; Sustainable Development Goals.*

Countries with high poverty incidence make individuals and communities more vulnerable to the impacts of climate change with recurrent natural hazards (Rana et al., 2023), posing significant challenges to achieving the Sustainable Development Goals (SDGs) (UNDP, 2021). In the study of (Moyer et al., 2023), it is highlighted that "climate-change-attributable extreme poverty will grow, though overall levels of global poverty decline. Climate change exacerbates risks such as water scarcity, health crises, and food insecurity (Ebi et al., 2021), through the increasing frequency and intensity of typhoons, floods, and droughts (IPCC, 2019). Low-

income nations, particularly the poor people, are disproportionately affected by natural hazards and disasters (Hallegatte et al., 2020). The Philippines is recognized as one of the most climate-vulnerable countries worldwide (World Bank, 2022), which demonstrates the significance of the SDG approach in achieving sustainable water security SDG 6 (Clean Water and Sanitation), where climate change mitigation is vital in the long run for SDG 13 (Climate Action) (Lee et al., 2020). National data reports indicate that approximately 8.4% of households rely on "potentially unsafe sources" and approximately 2.9% rely on "unsafe sources of drinking water," highlighting persistent gaps in access to safe and sustainable water supplies in the Philippines (NEDA, 2024). Since, the Philippines is considered one of the world's most at-risk countries due to its location within the Pacific Ring of Fire where frequently experiences typhoons, floods, earthquakes, and landslides (Chong et al., 2025), making the country vulnerable on water system people who perceived insufficient water resource were more likely to consider themselves living in a "high-risk disaster area" (Ho, 2019).

To address these vulnerabilities, the Department of Social Welfare and Development (DSWD), with World Bank support, has implemented the Kapit-Bisig Laban sa Kahirapan–Comprehensive and Integrated Delivery of Social Services (KALAHI-CIDSS) Program since 2004, using a Community-Driven Development (CDD) approach. According to Jaducana (2025), these CDD principles are further operationalized in local communities, with transparency, participation, accountability, and inclusivity as core components of the program. KALAHI-CIDSS follows the Community Empowerment Activity Cycle (CEAC), which ensures that participatory planning and community-driven processes can lead to tangible improvements in access to services, community participation, and social capital (Pontual et al., 2023). Communities identify and implement subprojects that promote resilience and sustainable development (Imbong, 2025). This study focuses on the Municipality of San Miguel, Surigao del Sur, where climate-responsive KALAHI-CIDSS subprojects have been implemented from 2004 to 2024. Despite the establishment of water systems, drainage canals, flood control structures, and evacuation centers, systematic evaluation of their effectiveness remains limited (Li et al., 2025). Thus, this research assesses the relevance, effectiveness, and contributions of these subprojects to SDG 6 and SDG 13, emphasizing their role in enhancing community resilience and sustainability in climate-vulnerable rural areas. This would answer the following objectives.

(1) Identifying climate-disaster responsive subprojects established across barangays: Libas Gua, Patong, and Barras.
(2) Assessing the relevance, effectiveness, and contribution to SDG 6 (clean water and sanitation) and SDG 13 (Climate action) as perceived by community beneficiaries, community volunteers, and program implementers.
(3) Identifying recommended solutions/strategies to enhance sustainability for climate resilience and long-term community impact.

Methodology

Research Design

This study employed a mixed-methods design to assess the climate-responsive subprojects implemented under the KALAHI-CIDSS Program in the Municipality of San Miguel, Surigao del Sur. The quantitative approach provided statistical measures of the program's relevance and effectiveness, while the qualitative component offered a deeper understanding of community experiences, roles, and challenges. Illustrating that when properly integrated, mixed-methods produce "unique insights" unattainable by single-method studies (Plano, 2019). For the quantitative phase, a descriptive-quantitative design was employed, with a researcher-developed survey administered via RAOSOFT to collect data from 357 respondents. Descriptive designs are suitable for collecting information about existing conditions without manipulating variables; they involve only observation and measurement (McCombes, 2023).

For the qualitative phase, hermeneutic phenomenology was applied to capture participants' lived experiences and perceptions. There are 11 for Key informant Interviews, while 33 for focus group discussions across the barangay. Purposive sampling was used to select participants, and willingness to participate in the open-ended interview was assessed. According to Daruhadi (2024), phenomenological analysis enables researchers to understand individual subjective experiences by emphasizing the meanings, perceptions, and interpretations of reality within a phenomenon. As noted by Alhazmi et al. (2022), phenomenological qualitative methods were used to interpret lived and social experiences. Open-ended interview and focus group questions were translated into the local

dialect to ensure comprehension and the authenticity of responses. In addition to thematic analysis, it employs triangulation to analyze both reactions.

Participants and Sampling Technique

The study involved community volunteers, beneficiaries, and program implementers from three barangays—Libas Gua, Patong, and Barras. Using a 95% confidence level and a ±0.05 sampling error, the researcher selected a representative sample of 357 community beneficiaries. Each barangay had 31 community volunteers categorized under the Barangay Sub-Project Management Committee (BSPMC), for a total of 93 volunteers. Additionally, nine key informants participated in interviews, and 33 participants joined the focus group discussions. One representative from the KALAHI municipal office served as the program implementer respondent.

Research Instrument

A researcher-developed questionnaire was designed and validated to assess the perceived relevance, effectiveness, and sustainability of KALAHI-CIDSS. As cited by Pontual et al. (2023), research has developed a questionnaire; no standardized instrument exists to evaluate the specific dimensions of KALAHI-CIDSS subprojects, particularly the climate-responsive subprojects, to identify factors influencing project outcomes and sustainability. The instrument underwent expert validation by four specialists: the Provincial Social Welfare and Development Officer, the Provincial KALAHI Focal Person, the 4Ps Focal Person, and the Project Development Officer II for the Sustainable Livelihood Program. The tool obtained high validation ratings, confirming its reliability and appropriateness for data collection. To ensure reliability, a pilot test was conducted in Barangay Sagbayan, involving 10 community volunteers, 10 beneficiaries, and one external implementer. Cronbach's Alpha was computed to confirm internal consistency, ensuring that items measured intended variables accurately and consistently, as widely established in recent social-science and health-research literature (Batiancila et al., 2023; Mendonça et al., 2021; Santos-Pastor et al., 2022)."

Data Gathering Procedure

Before data collection, formal permissions were secured from the adviser, the Municipal Social Welfare and Development Office, the KALAHI Area Coordinator, and barangay officials. Respondents received informed consent letters outlining the study's purpose, confidentiality assurances, and voluntary participation. The researcher personally administered the questionnaires and facilitated interviews and focus group discussions. Collected data were organized, tabulated, and analyzed to draw conclusions and formulate recommendations aligned with the study objectives.

Data Analysis Procedure

Quantitative data were analyzed using frequency distributions, weighted means, and ANOVA to assess the extent of the subprojects' contributions to SDG 6 (Clean Water and Sanitation) and SDG 13 (Climate Action). Qualitative data from interviews and focus group discussions were analyzed thematically to identify recurring themes related to participation, sustainability, and challenges in project implementation.

Ethical Considerations

The study adhered to ethical standards consistent with institutional and national research guidelines. All research activities complied with institutional ethics clearance and standard protocols to ensure integrity, transparency, and accountability throughout the study. The study underwent ethics clearance from MSU-IIT RICO with UERB code 2025-00295.

Results and Discussion

Climate-Disaster Responsive Sub-projects of KALAHI-CIDSS

This section presents the various climate-disaster responsive sub-projects implemented under the KALAHI-CIDSS (Kapit-Bisig Laban sa Kahirapan–Comprehensive and Integrated Delivery of Social Services) Program in the selected barangays of Libas Gua, Patong, and Barras in the Municipality of San Miguel, Surigao del Sur. The implementation of these sub-projects aims to enhance community resilience and adaptive capacity to climate-related hazards, including flooding, water scarcity, and other environmental risks. Identifying and assessing these sub-projects provides insights into the local government and community's collective efforts to integrate disaster risk reduction and climate adaptation into local development planning. Table 1 presents the frequency and percentage distributions of these climate-disaster-responsive subprojects.

Table 1. *Distribution of the Different Climate-Disaster Responsive Sub-projects of KALAHI-CIDSS*

Climate- Disaster Responsive Sub-project	Frequency	Percentage (%)
Barangay Drainage Canal	553	34.41%
Water System	529	32.91%
Evacuation Center	435	27.06%
Streetlight	56	3.48%
Isolation Facilities	28	1.74%
Foot Bridge	6	0.37%
Grand Total	**1,607**	**100%**

The data revealed that the most frequently implemented subprojects were barangay drainage canals (34.41%), followed by water systems (32.91%) and evacuation centers (27.06%). These subprojects reflect the program's prioritization of flood mitigation, access to safe and sustainable water sources, and community protection during climate-induced disasters. As highlighted by Srivastava et al. (2023) nature-based solutions for flood adaptation" and community-based coping constitute a more effective approach to flood management. The presence of drainage canals and water systems indicates a direct response to recurrent flooding and water scarcity, two of the most pressing climate-related challenges in rural communities (World Bank, 2012; UNDP, 2021). This is supported by the research of Aguilar et al. (2022), who showed that water infrastructure systems, such as drainage canals, irrigation networks, and direct access to safe water sources, make communities more resilient and secure during weather-related events. Meanwhile, the construction of evacuation centers underscores efforts to enhance local disaster preparedness and serves as the first temporary living spaces during emergencies for disaster-affected people (Kako et al., 2022).

Other sub-projects, such as streetlights (3.48%), isolation facilities (1.74%), and footbridges (0.37%), serve as complementary infrastructure that enhances community safety and accessibility. These findings demonstrate that communities actively prioritized projects aligned with their immediate climate risks and adaptive needs. This outcome reinforces the principles of the Community-Based Disaster Risk Reduction (CBDRR) Theory. As highlighted by Shaw (2012), the CBDRR approach promotes local ownership and participation, empowering communities to assess their risks, plan, and implement context-specific interventions. Similarly, the Community-Driven Development (CDD) framework adopted by the KALAHI-CIDSS program ensures that local voices guide the development process, fostering sustainability, accountability, and social cohesion. The prioritization of flood control and water access projects reflects how community-led initiatives under KALAHI-CIDSS operationalize participatory resilience building. This aligns with the Sustainable Development Goals (SDGs) 6 (Clean Water and Sanitation) and 13 (Climate Action), emphasizing that adaptation and resilience efforts are more effective when local and marginalized communities are granted an authentic voice and decision-making power (Parsons et al., 2025).

Climate-Disaster Responsive Sub-projects of KALAHI-CIDSS Program Contribution to SDG 6

To assess the impact of KALAHI-CIDSS climate-disaster-responsive subprojects on community access to clean water and sanitation, perceptions of community beneficiaries and volunteers were collected. This evaluation examines how these sub-projects have contributed to Sustainable Development Goal (SDG 6) by improving water availability, quality, and accessibility, and by reducing waterborne illnesses and the burden of water collection. The following table presents the respondents' perceived contributions of the implemented sub-projects in Barangays Libas Gua, Patong, and Barras.

Table 2 presents the perceived responses of community beneficiaries and volunteers regarding the contribution of KALAHI-CIDSS climate-disaster-responsive subprojects to Sustainable Development Goal 6 (SDG 6) on clean water and sanitation in Barangays Libas Gua, Patong, and Barras. The findings indicate a very high perceived contribution, with an overall mean of 3.66 (SD = 0.61), suggesting that respondents strongly agreed that these sub-projects improved access to safe and clean drinking water, reduced waterborne illnesses, and minimized the time and effort required for water collection. In the case of Lepelle Nkumpi Local Municipality, South Africa, it is emphasized that improved access to safer water sources contributes to a decline in waterborne disease risks (Bazaanah & Mothapo, 2023).

The integration of water, sanitation, and hygiene interventions to reduce child morbidity and mortality in low- and middle-income countries is essential to mitigate health risks, particularly waterborne diseases such as diarrhea and typhoid (Merid et al., 2023). WaterAid and the University of East Anglia Water Security Research

Centre (2022) argue that WASH services (water, sanitation, and hygiene) are necessary to enhance community resilience to climate change. Similarly, Cook et al. (2021) provide robust empirical evidence supporting the physical burden of water collection, particularly for women and children. The argument that improved water access (through reducing water collection time) yields multidimensional benefits such as time savings, better well-being, and educational activities on children's education (attendance, study time).

Table 2. *Evaluation of the Contribution of KALAHI- CIDSS Climate-Responsive Subprojects to SDG 6 by Community Beneficiaries and Volunteers*

Questions	Mean	SD	Interpretation
1. The implemented climate-disaster sub-projects under the KALAHI-CIDSS program improved our access to clean and safe drinking water in our barangay.	3.70	.599	Strongly Agree
2. As community volunteers/community beneficiaries, I have noticed a reduction in the time or effort required because the collection of water in our communities is functional.	3.68	.527	Strongly Agree
3. The quality of drinking water has improved since the sub-project has been implemented in our communities.	3.67	.560	Strongly Agree
4. The construction of the water supply reduced the occurrence of waterborne illnesses, diarrhea, and typhoid since the project was implemented in our barangay.	3.64	.637	Strongly Agree
5. Since the sub-project was implemented in our barangay, clean water supply is now more consistently available in the households throughout the year.	3.64	.664	Strongly Agree
6. As a community volunteer/community beneficiary, I, with the help of the water system as our sub-project, am satisfied with the implementation and maintenance of the clean water system in our barangay.	3.62	.579	Strongly Agree
Overall Mean	**3.66**	**0.61**	**Strongly Agree (Very High Contribution)**

These findings align with the Community-Driven Development (CDD) theory, which emphasizes the active involvement of communities in identifying, planning, and implementing projects that address their local needs, thereby enhancing ownership, sustainability, and relevance of development interventions (Labonne & Chase, 2011). This implies that community participation in water systems implementation can indirectly educate participants, especially when it involves monitoring system components or demonstrations that show that exposure to the system enhances awareness of safe water and sanitation practices (Ignacio et al., 2019).

Table 3 presents the perceptions of KALAHI-CIDSS program implementers regarding the contribution of climate-disaster-responsive subprojects to Sustainable Development Goal 6 (SDG 6) on clean water and sanitation in Barangays Libas Gua, Patong, and Barras. The table highlights the implementers' assessment of project alignment with community water needs, adherence to technical and quality standards, reduction of health risks, and measures for operation and maintenance to ensure long-term sustainability. Overall, the findings indicate a very high perceived contribution of these sub-projects to improving access to safe water and promoting sustainable sanitation practices in the target communities.

Table 3. *Evaluation of the Contribution of KALAHI- CIDSS Climate-Responsive Subprojects to SDG 6 by Implementers*

Questions	Mean	SD	Interpretation
1. Before the construction of the water supply in Barangay, as program implementers, we made sure that the clean water sub-projects were aligned with the actual water needs of the community.	3.67	.577	Strongly Agree
2. As part of our duties, water facilities, equipment, and materials were constructed according to technical standards and quality control set by the Municipal and regional office of the KALAHI - CIDSS program.	4.00	.000	Strongly Agree
3. The sub-project contributed to reducing health risks related to unsafe water sources in the communities.	3.67	.577	Strongly Agree
4. Before the end of the implementation of the sub-project, the KALAHI office ensures that there is a clear system in place for the operation and maintenance of the clean water facility at the barangay level.	3.67	.577	Strongly Agree
5. Once it was turned over in the barangay, there are sufficient resources and capacity for sustaining the sub-project, water project, and long-term sustainability in the community.	4.00	.000	Strongly Agree
6. The sub-project contributes meaningfully to SDG 6 (Clean Water and Sanitation), where it addresses the immediate needs of the community.	3.33	.577	Agree
Overall Mean	**3.72**	**0.39**	**Strongly Agree (Very High Contribution)**

The results show an overall mean rating of 3.72 (SD = 0.39), interpreted as "Strongly Agree," indicating a very high level of contribution to addressing the community's water needs. Program implementers strongly agreed that the construction of water facilities was aligned with the community's actual needs (Mean = 3.67). Additionally,

projects were implemented according to technical standards and quality control measures (Mean = 4.00), reduced health risks associated with unsafe water sources (Mean = 3.67), ensured clear systems for operation and maintenance before project turnover (Mean = 3.67), and provided sufficient resources and capacity at the barangay level to guarantee long-term sustainability (Mean = 4.00).

These findings are consistent with the Theory of Participatory Development (Chambers, 1994), which emphasizes the importance of community participation in development planning as essential for fostering sustainable growth and enhancing the quality of life within communities. As noted by Rabia (2025), in addressing community problems, community residents should be involved in planning and development, project implementation, resource management, and decision-making to ensure the value of community participation. People living in rural areas are more likely to experience significant impacts of climate change on water supplies (Dasgupta et al., 2014).

The results also support the Community-Driven Development (CDD) framework, which underpins the KALAHI-CIDSS program. According to Labonne and Chase (2011), the CDD approach strengthens community agency, promotes accountability, and ensures that development initiatives respond directly to locally identified needs. Consider the three (3) barangays as rural, climate-vulnerable communities, with safe water access as one of the key dimensions that must be integrated with environmental and management dimensions to remain secure over time (Kohlitz et al., 2020).

Climate-Disaster Responsive Sub-projects of KALAHI-CIDSS Program Contribution to SDG 13

Table 4 presents the perceptions of community volunteers and beneficiaries regarding the contribution of KALAHI-CIDSS climate-disaster-responsive subprojects to Sustainable Development Goal 13 (Climate Action) in Barangays Libas Gua, Patong, and Barras. The table highlights how these locally implemented projects, such as drainage systems and evacuation centers, help communities adapt to and mitigate climate-related hazards. The findings reflect the role of community participation, consistent with the Community-Based Disaster Risk Reduction (CBDRR) framework, in enhancing local resilience and promoting sustainable climate action.

Table 4. *Evaluation of the Contribution of KALAHI- CIDSS Climate-Responsive Subprojects to SDG 13 by Community Beneficiaries and Volunteers*

Questions	Mean	SD	Interpretation
1. The sub-projects helped reduce the impact of climate-related disasters faced by our residents in terms of flooding, soil erosion, earthquakes, and others.	3.59	.694	Strongly Agree
2. The climate-disaster responsive subproject that is implemented in our barangay is addressing and is on the way to long-term environmental sustainability in the barangay.	3.61	.565	Strongly Agree
3. The climate-disaster responsive subprojects ensure that community resources are already protected, and they help to ensure balance to restore natural resources (e.g., forests, waterways).	3.64	.570	Strongly Agree
4. Climate-disaster responsive sub-projects are being maintained and monitored regularly by the community volunteers and community members in the communities where the sub-projects are located.	3.62	.587	Strongly Agree
5. Through the Climate-disaster sub-projects, as community volunteers/community members, in terms of awareness about climate change among community volunteers and community members in our community.	3.76	.483	Strongly Agree
6. The KALAHI-CIDSS sub-projects integrated disaster risk reduction and climate adaptation strategies to address our immediate challenges to become a resilient community.	3.64	.557	Strongly Agree
Overall Mean	**3.64**	**0.58**	**Strongly Agree (Very High Contribution)**

Table 4 illustrates that the overall mean score of 3.64 (SD = 0.58) indicates a strong consensus among community volunteers and beneficiaries that these sub-projects have substantially mitigated the adverse effects of climate-related hazards, including flooding, soil erosion, and earthquakes. Notably, the highest mean rating was for raising community awareness (M = 3.76), suggesting that the program's impact extends beyond physical infrastructure to include enhancing local knowledge, preparedness, and adaptive capacity. Zhai and Lee (2024) argue that human capital, social capital, and regional institutional competence are the most significant drivers of community disaster resilience, extending beyond physical infrastructure. These results underscore the effectiveness of community-based approaches in climate adaptation. By engaging local stakeholders in the planning and implementation of sub-projects, KALAHI-CIDSS fosters a sense of ownership and accountability,

consistent with the principles of the Community-Based approach (CBA) to ensure that climate change, which implies a grassroots-driven action of the communities (McNamara et al., 2020), and this approach is conceptualized as an inclusive, participatory, deliberate, and holistic approach (Clarke et al.,2019) to address the immediate needs of climate-disaster resilience sub-projects of the communities. The findings suggest that the KALAHI-CIDSS climate-disaster-responsive subprojects effectively integrate structural interventions with community education and engagement, thereby making a meaningful contribution to SDG 13. The strong sense of contribution among beneficiaries demonstrates the value of combining technical infrastructure with participatory approaches to address the complex challenges of climate change at the barangay level.

Table 5 shows project implementers' perceptions of the KALAHI-CIDSS climate-disaster sub-projects' contribution to SDG 13 (Climate Action) in Barangays Libas Gua, Patong, and Barras. It highlights how these interventions enhance community resilience, reduce vulnerability to climate hazards, and support adaptive strategies.

Table 5. *Evaluation of the Contribution of KALAHI- CIDSS Climate-Responsive Subprojects to SDG 13 by Implementers*

Questions	Mean	SD	Interpretation
1. As program Implementers, as part of the CEAC process, thorough coordination with LGUs and communities was properly implemented for climate actions.	4.00	.000	Strongly Agree
2. The construction of climate-disaster response sub-projects, along the way of implementation. Several educational training and awareness activities were conducted to build community capacity.	4.00	.000	Strongly Agree
3. We have close monitoring and evaluation in the implementation of the Climate-disaster responsive sub-project.	4.00	.000	Strongly Agree
4. As program implementers, the climate disaster sub-project contributes to the long-term environmental sustainability of the barangay.	3.67	.577	Strongly Agree
5. Climate-disaster responsive sub-projects provide proper measures, where they conduct regular meetings to address grievances and issues brought during implementation.	4.00	.000	Strongly Agree
6. As program implementers, these climate-disaster responsive sub-projects contribute to SDG 13 (Climate Action) in the barangay to lessen its impact on the community, such as flooding, erosion, and other factors.	3.67	.577	Strongly Agree
Overall Mean	**3.89**	**0.29**	**Strongly Agree (Very High Contribution)**

Table 5 results indicate a very high level of agreement, with an overall mean of 3.89 (SD = 0.29; Strongly Agree). Implementers strongly agreed on the importance of coordination with local government units (LGUs) and communities, continuous monitoring and evaluation, and the integration of capability-building activities, each receiving a mean of 4.00 (Strongly Agree). These findings highlight the effectiveness of the Community-Driven Development (CDD) approach, which is central to KALAHI-CIDSS. According to Agoot (2025), the report emphasizes the institutionalization of CDD, which builds "ownership" at the community level. Understanding that communities "own" the subproject, they will monitor its implementation to ensure that funds are used appropriately and the project is completed successfully.

By engaging communities in climate-disaster responsive initiatives, CDD, as operationalized by KALAHI-CIDSS, embodies a governance model grounded in principles such as transparency, participation, accountability, and inclusiveness (TPAI) (Jaducana, 2025) that strengthens local adaptive capacities by allowing actively engaging of local governments, civil society, and community stakeholders, that promotes inclusive decision-making at the grassroots level it builds local capacities for climate action that are both inclusive and sustainable (CLARE Programme, 2024). Community-based participatory research argues that "deepened participation" of communities in planning, decision-making, implementation, and monitoring of adaptation/mitigation is critical because communities are often the primary sites of adaptation, thereby improving legitimacy, local buy-in, social cohesion, and the long-term sustainability of climate actions (Restrepo-Mieth, 2023).

In summary, the findings confirm that KALAHI-CIDSS climate-disaster responsive subprojects have made substantial contributions to achieving SDG 6 and SDG 13 in San Miguel, Surigao del Sur. The prioritization of flood control, water systems, and evacuation facilities reflects the alignment of community needs with climate adaptation and the Sustainable Development Goals. The success of these initiatives lies in the program's community-driven approach, which ensures participatory planning, local ownership, and long-term sustainability. The KALAHI-CIDSS Program demonstrates that when communities are empowered to identify, plan, and manage climate-resilient infrastructure, they not only reduce disaster vulnerability but also enhance

social cohesion, environmental stewardship, and inclusive local governance. These outcomes affirm the program's vital role in fostering resilient and sustainable rural communities in the Philippines.

Recommended for Program Improvement

This section presents the recommended strategies and solutions derived from key informant interviews to enhance the effectiveness, sustainability, and climate resilience of KALAHI-CIDSS climate-disaster sub-projects. These insights reflect the practical experiences of program implementers, local leaders, and community volunteers in ensuring that interventions not only address immediate community needs but also contribute to long-term progress toward Sustainable Development Goals, particularly SDG 6 (Clean Water and Sanitation) and SDG 13 (Climate Action). The thematic analysis synthesizes these recommendations into actionable approaches for improving project design, implementation, and community engagement. Table 4 presents key informant recommendations to enhance the effectiveness, sustainability, and climate resilience of KALAHI-CIDSS climate-disaster sub-projects. The thematic analysis highlights community-informed strategies to improve project outcomes, ensure long-term maintenance, and support SDGs 6 and 13 through participatory planning and adaptive resource management.

Table 6. *Recommended Strategies or Solutions to Enhance the Effectiveness, Sustainability, and Climate Resilience of Climate-Disaster Sub-projects Towards Sustainable Development Goals by the Key-Informants*

Theme	Sub-theme	Description of Strategy	Illustrative KII Evidence
Social Aspect *Strengthening Social Capacity and Community Engagement*	1. Lack of Communication and Coordination	Establish precise and reliable mechanisms for communication, such as regular community meetings, information-sharing platforms, and collaboration guidelines.	"We need regular meetings and information-sharing platforms, so everyone knows what is happening throughout the implementation of the subproject." KII 3
	1.2 Lack of Skills and Technical Training Among Volunteers	Provide structured training programs and workshops that equip community volunteers with knowledge on project implementation, disaster response, and climate adaptation.	Capacity-building sessions help our volunteers understand the tasks and respond efficiently to climate risks." KII 5
	1.3 Lack of Motivation and Encouragement	Strengthen motivation through recognition, logistical assistance, and incentives for active community participation and volunteerism.	Recognizing and supporting community volunteers helps ensure they remain consistently motivated to contribute to our subprojects. KII 2
Economic Aspect *Promoting Economic Resilience*	2.1 Promote Economic Development in Communities	Enhance local livelihood opportunities and provide community-based economic programs to strengthen adaptive capacity and reduce vulnerability to climate shocks.	When communities have sustainable livelihoods, they are better prepared to adapt to climate shocks. KII 4
	2.2 Provide Long-Term Livelihood Sub-project	Develop and implement sustainable, climate-resilient livelihood subprojects that offer stable, long-term income for households vulnerable to climate-related hazards.	Most of the subprojects implemented contribute to short-term livelihoods; our community needs a long-term impact on livelihoods. KII 6
Environment Aspect *Environmental Stewardship and Conservation*	3.1 Collaboration on Environmental Conservation	Foster partnership among community members, local government, and external stakeholders to implement environmental protection and conservation initiatives.	"Working together to preserve our natural resources ensures that our adaptation efforts last." KII 1
	3.2 Strengthen Education and Awareness Among Community Volunteers	Enhance community volunteers' knowledge and awareness through ongoing education programs focused on disaster preparedness, climate change adaptation, and community-based risk reduction.	We need greater education and awareness of the potential of environmental conservation upon implementation. KII3

Table 6 presents the key strategies and solutions recommended by key informants to enhance the effectiveness, sustainability, and climate resilience of climate-disaster-responsive subprojects under the KALAHI-CIDSS Program, aligned with the Sustainable Development Goals (SDGs). On the social dimension, strategies such as establishing clear communication channels would help community beneficiaries and volunteers communicate effectively through meetings and other forms of assembly, thereby fostering a sense of ownership and participation in the planning and implementation processes. As highlighted by Gallegos (2025), participatory communication, in which the community is actively involved in decision-making through focus group discussions and feedback gathering, enhances community engagement. Second, by providing enough training and capacity-building programs on climate risk management to improve the skills and knowledge of community volunteers. According to the United Nations (2024), through "knowledge and capacity-building", community volunteers will acquire new skills, knowledge, and competencies that are relevant to climate change mitigation and adaptation in building resilient communities. Furthermore, as another result of the key informant interview (KII), community beneficiaries and volunteers sought to strengthen their active participation through recognition, logistical support, and incentives. Those assistance and incentives highlighted in the results of the study of (Ormel et al., 2019), that those assistance and incentives "influenced motivation" among volunteers. A small amount of their unpaid labor and dedication to work for the successful implementation of the subproject.

Economically, promoting local livelihood opportunities and supporting income-generating activities were recommended to ensure the long-term sustainability of subproject benefits. Otherwise, the KALAHI-CIDSS program invested in subprojects that contribute to short-term sustainability. Based on the supporting evidence of (Ngadima, 2019), arguments regarding how short-term subproject gains must be linked with livelihood/income-generating strategies for long-term sustainability. Environmentally, collaboration on environmental conservation, by strengthening education and awareness, provides a holistic approach to climate adaptation that protects natural resources and reduces community vulnerability. It shows how important it is for people to engage at the community level, which is typically associated with increased awareness and education on strategies to improve local resilience and enable more adaptive responses to climate risks (Baybay, 2020).

These recommendations from the Key Informants align with existing literature (Dushkova & Ivlieva, 2024), emphasizing the importance of an integration of learning/education, capacity building, participation, collective action, and local knowledge integration, which can increase quality of life and community resilience (social empowerment + economic and environmental sustainability). The Community-Driven Development (CDD) framework adopted by KALAHI-CIDSS supports this approach by prioritizing local decision-making, community participation, and accountability, which enhances both project relevance and sustainability (Roger, 2021). Similarly, studies on participatory development indicate that active engagement of local actors fosters ownership and ensures that interventions are responsive to community needs, thereby increasing resilience to climate-related risks. The recommended strategies emphasize that the sustainability and climate resilience of KALAHI-CIDSS sub-projects depend on integrating social, economic, and environmental dimensions, and are underpinned by participatory approaches that empower communities.

Conclusion

The findings of this study imply that the KALAHI-CIDSS Program in San Miguel, Surigao del Sur, particularly in Barangays Libas Gua, Patong, and Barras, provides a viable model for advancing community resilience and sustainable development through participatory, community-driven approaches. The successful implementation of climate-disaster-responsive subprojects—including drainage systems, water supply facilities, evacuation centers, and isolation facilities—demonstrates that such interventions can simultaneously reduce disaster risk, improve access to safe water, and address the social, economic, and environmental dimensions of development. The study highlights the critical role of organized local governance structures, such as the Barangay Sub-Project Management Committee (BSPMC), in fostering transparency, accountability, and active community participation. Moreover, the projects' contributions to livelihoods, market access, and poverty alleviation illustrate how community-driven initiatives can promote inclusive economic growth. Environmentally, the sub-projects enhance resilience to flooding, soil erosion, and water contamination while fostering awareness of climate change and resource conservation.

This study contributes to the broader effort to establish climate-disaster-responsive subprojects within international and national development programs. This study helps future researchers narrow down which SDGs are most closely aligned with SDG 6 and SDG 13. It is also able to further understand how development programs,

especially the KALAHI-CIDSS program, contribute to social, economic, and environmental dimensions. In addition, the results of this study contribute to policymakers and development workers by enabling the triangulation of development initiatives that provide and enhance community climate resilience without compromising future generations. These findings suggest that sustained capacity-building, institutional support, and participatory governance are essential for maintaining the effectiveness and sustainability of community-driven projects. The study underscores that CDD-based interventions, when well-supported, can empower communities to manage resources effectively, achieve SDGs 6 and 13, and provide a scalable model for climate-resilient, sustainable development at the grassroots level.

Contributions of Authors

Author 1: conceptualization, data gathering, data analysis
Author 2: data analysis, conceptualization

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Conflict of Interests

There is no conflict of interest in this study.

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