

## Chapter 6

# Community-based approaches to capacity building for climate resilience: Lessons from local initiatives in Nigeria

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## 1.0 Introduction

Nigeria faces a substantial threat from climate change, as its diverse ecosystems and economy are deeply reliant on climate-sensitive sectors such as agriculture, water resources, and energy (Adenuga et al., 2021; Mensah et al., 2022; Raimi, Vivien, & Oluwatoyin, 2021). The country is currently experiencing a variety of climate-related impacts, including rising temperatures, shifting rainfall patterns, and an increase in extreme weather events. These effects are intensifying existing vulnerabilities, particularly in rural and marginalized populations.

To combat these challenges, there is a growing acknowledgment of the importance of community-driven strategies for building climate resilience. These methods enable communities to identify their specific vulnerabilities, develop tailored adaptation plans, and strengthen their ability to withstand climate-related impacts. By involving local populations in decision-making, these strategies ensure that adaptation measures are context-specific, sustainable, and inclusive (Carmen et al., 2022; Kirkby, Williams, & Huq, 2018; Piggott-McKellar et al., 2019).

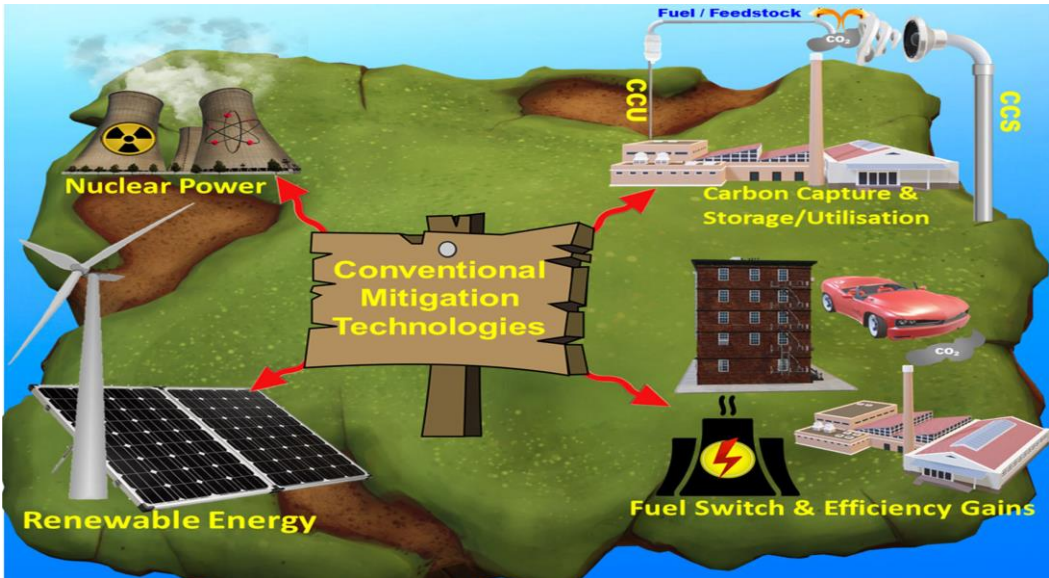
In Nigeria, numerous grassroots initiatives have been launched to enhance climate resilience at the community level. These efforts vary in size and focus but share the overarching goal of empowering communities to adapt to climate change (Choko et al., 2019; Izuogu et al., 2021; Kareem et al., 2020). For instance, in the Niger Delta, local organizations have implemented projects to improve water management and agricultural practices, helping communities adapt to unpredictable rainfall and reducing their vulnerability to droughts and floods. In the northern regions, programs centered on sustainable land management and reforestation have successfully restored degraded landscapes and improved local livelihoods (Gupta, Dagar, & Teketay, 2020; Kumar,

Phukon, & Singh, 2021; Ota et al., 2020). These initiatives not only boost climate resilience but also contribute to biodiversity conservation and sustainable development. Overall, community-based approaches to building climate resilience in Nigeria have demonstrated positive outcomes. However, further research and documentation are needed to identify best practices, challenges, and lessons learned (Okeke-Ogbuafor, Gray, & Stead, 2018; Oluwatimilehin & Ayanlade, 2021; Onyeneke et al., 2020). This study aims to address this gap by examining the experiences of local initiatives in Nigeria and extracting valuable insights to guide future climate resilience efforts.

In addition to these initiatives, other community-based approaches in Nigeria have focused on capacity building through education and training (Akinyemi, Harris, & Kawonga, 2019; Franco & Tracey, 2019; Olalubi & Bello, 2020). For example, community members have been trained in sustainable farming techniques that help conserve soil moisture and enhance crop resistance to drought. These programs not only improve food security but also reduce dependence on external resources, making communities more resilient to the effects of climate change.

Additionally, locally-driven early warning systems have been established to notify communities about imminent weather-related hazards, such as floods or droughts. These systems utilize indigenous knowledge and local resources, making them more efficient and sustainable compared to centralized methods (Kayamba-Phiri & Abbott, 2023; Maripe et al., 2022; Rangarirai, Marnani, & Rahmat, 2023; Šakić Trogrlić et al., 2022). By enabling communities to take proactive measures, these systems can lessen the impact of climate-related disasters and save lives. Overall, community-based strategies for building climate resilience in Nigeria demonstrate that local populations are not merely passive victims of climate change but can also serve as active agents of transformation. By enhancing their ability to adapt, communities can improve their resilience and overall well-being. Fawzy et al. identified key decarbonization technologies aimed at reducing CO<sub>2</sub> emissions associated with both the supply and demand sides of energy, as illustrated in Figure 1.

In addition to the examples mentioned, community-based approaches in Nigeria have also focused on enhancing climate resilience through sustainable energy solutions (Butu et al., 2021; Fouladvand et al., 2022; Mulopo, 2022; Ogunleye, Coenen, & Hoppe, 2022). For instance, the adoption of clean cookstoves and renewable energy technologies has reduced dependence on traditional biomass fuels, which contribute to deforestation and pose health risks from indoor air pollution. Community-led reforestation and afforestation initiatives have also been effective in rehabilitating degraded lands and enhancing carbon



**Figure 1: Major decarbonization technologies for mitigating CO<sub>2</sub> emissions (Fawzy, et. al., 2020)**

sequestration. These projects not only contribute to climate change mitigation but also offer co-benefits such as improved soil health, biodiversity preservation, and watershed protection. afforestation projects have also been successful in restoring degraded landscapes and increasing carbon sequestration. These projects not only help mitigate climate change but also provide additional benefits such as improved soil fertility, biodiversity conservation, and watershed protection. The projected trends of the key climate changes parameters for Nigeria using the ecological zones were pre-se Reforestation initiatives have proven effective in rehabilitating degraded areas and enhancing carbon sequestration. These efforts not only contribute to mitigating climate change but also deliver additional advantages, including enhanced soil fertility, preservation of biodiversity, and protection of watersheds. Onyeneke et al. outlined the projected trends of key climate change parameters for Nigeria across ecological zones, as detailed in Table 1. nted by Onyeneke et. al. as shown in Table.1 In addition, community-driven strategies have highlighted the significance of gender-sensitive and socially inclusive approaches. Women, who frequently bear the brunt of climate change impacts, have been actively engaged in decision-making processes and capacity-building efforts (Awiti, 2022; Clarke et al., 2019; Dev & Manalo IV, 2023; Kristjanson et al., 2019). This inclusion has not only empowered women but also enhanced the effectiveness and long-term sustainability of climate resilience programs.

**Table 1:** Projected trends of key climate change parameters for Nigeria by ecological zone (Onyeneke, et. al., 2020).

Climate Variable	Mangrove Zone	Rainforest	Tall grass (Savanna)	Short grass (Sahel)
Temperature	increasing	increasing	increasing	increasing
Rainfall	increasing	increasing	decreasing	decreasing
Rainfall variability	increasing	increasing	increasing	increasing
Extreme rainfall events-drought	likely	likely	increasing	increasing
Extreme rainfall events-storms and floods	increasing	increasing	likely	likely
Seas level rise	increasing	not available	not available	not available

Overall, community-based methods for building climate resilience in Nigeria demonstrate the critical role of local knowledge, resources, and initiatives in adapting to climate change. By supporting and expanding these efforts, policymakers and practitioners can foster more resilient communities and contribute to global climate action.

## 2.0 Procedure for literature analysis: identification, screening and eligibility

This research utilized academic databases, including PubMed, Google Scholar, and ScienceDirect, to locate pertinent literature. Keywords such as "community-based approaches," "capacity building," "climate resilience," "local initiatives," and "Nigeria" were employed to refine search results (Anim-Jnr et al., 2023; Gusenbauer & Haddaway, 2020; Hakizimana, 2021; Wanyama, McQuaid, & Kittler, 2022). The study identified relevant articles, studies, and reports discussing community-driven strategies for building climate resilience in Nigeria. The literature was screened for relevance, excluding studies that did not focus on community-based methods or climate resilience efforts in Nigeria. Abstracts and summaries were reviewed to assess their alignment with the research objectives.

Following this, the study evaluated the eligibility of the screened literature using specific inclusion and exclusion criteria. Inclusion criteria encompassed studies conducted in Nigeria, focusing on community-based capacity-building for climate resilience, and

offering insights or lessons from local initiatives (de Hond et al., 2022; Ilic et al., 2018; Mengist, Soromessa, & Legese, 2020). Exclusion criteria involved studies outside Nigeria, those not centered on community-based approaches, or those not directly addressing climate resilience efforts. Relevant data were then extracted from the eligible literature, including study details (e.g., author, publication year, design), community characteristics (e.g., location, demographics), capacity-building strategies, resilience outcomes, and key lessons from local initiatives. The findings were synthesized to identify common themes, trends, and lessons, with comparisons drawn across studies to assess the effectiveness of community-based approaches in Nigeria (Dev & Manalo IV, 2023; Okeke-Ogbuafor, Gray, & Stead, 2018).

The quality of the included studies was critically appraised using tools such as the CASP (Critical Appraisal Skills Programme) for qualitative research and the JBI (Joanna Briggs Institute) checklist for quantitative studies. Strengths and limitations were considered when interpreting findings and drawing conclusions (Heise et al., 2022; Long, French, & Brooks, 2020; Pollock et al., 2022). A comprehensive report was prepared, summarizing the methodology, key findings, lessons from local initiatives, policy implications, and recommendations for future research. This systematic approach enables researchers to analyze literature on community-based climate resilience strategies in Nigeria and derive actionable insights for future efforts (Daniels et al., 2020; Leippert et al., 2020; Nyadzi, Ajayi, & Ludwig, 2021).

The study also assessed the level of community engagement and participation in the identified initiatives, evaluating how communities were involved in decision-making, planning, and implementation, as well as the degree of community ownership and empowerment (De Weger et al., 2018; Haldane et al., 2019; Jackson et al., 2018). Capacity-building strategies, such as training programs, workshops, knowledge-sharing sessions, and skill-building activities, were examined for their effectiveness in enhancing community resilience. Resilience outcomes, including improved preparedness for climate hazards, increased adaptive capacity, and strengthened livelihoods, were identified and analyzed (Kretschmann et al., 2020; Provvienza et al., 2020; Viglione et al., 2023).

Lessons learned from local initiatives were synthesized to identify best practices that could be replicated or scaled up. Factors contributing to the success or failure of initiatives, as well as challenges and their resolutions, were considered. The study also discussed the implications of these findings for policy and program development in Nigeria, offering recommendations for policymakers, practitioners, and stakeholders. Emphasis was placed on the importance of community-based approaches and the need for strategies tailored to local needs and priorities (Chapman et al., 2018; Kirkby, Williams, & Huq, 2018; Owen, 2020; Rosales, Kilag, & Depoyart, 2023).

Gaps in the literature were identified, suggesting areas for future research, such as the role of gender, social dynamics, and governance structures in enhancing local climate resilience. The study concluded by summarizing key findings and reiterating the significance of community-based approaches for building climate resilience in Nigeria (Abdul-Rahman et al., 2022; Elum & Snijder, 2023; Olatunji, Adebimpe, & Oladokun, 2023). It underscored the value of local initiatives in fostering adaptive capacity and resilience to climate change, calling for sustained support and investment in these strategies.

### **3.0 Results**

The literature underscores the critical role of community involvement and participation in climate resilience initiatives. Programs that actively engage local populations in decision-making and implementation processes tend to achieve greater success in fostering resilience (Choudhury et al., 2021; Pandey, 2019; Robertson et al., 2021). A variety of capacity-building strategies have been utilized in local projects, such as training sessions, workshops, and knowledge-exchange activities. These methods have proven effective in improving community members' understanding and skills related to climate change adaptation.

The results of community-driven capacity-building efforts for climate resilience are encouraging (Carmen et al., 2022; Ford et al., 2018; Ziervogel et al., 2022). Such initiatives have enhanced community readiness for climate-related risks, boosted adaptive capabilities, and strengthened livelihood resilience. Several key lessons have emerged from local projects in Nigeria. Best practices include designing capacity-building programs to align with local needs and priorities, incorporating traditional knowledge and practices into adaptation plans, and promoting partnerships and collaboration among stakeholders.

These findings hold significant implications for policy and program development in Nigeria. Policymakers and practitioners are urged to endorse community-based approaches to climate resilience and integrate them into broader climate adaptation and mitigation strategies (Ensor et al., 2018; Nkoana, Verbruggen, & Hugé, 2018; Piggott-McKellar et al., 2019). The literature also highlights the need for additional research on community-driven capacity-building efforts in Nigeria. Future studies could assess the long-term impacts of these approaches, examine the influence of gender and social dynamics, and identify effective methods for scaling up successful initiatives.

In summary, the evidence suggests that community-based capacity-building strategies hold significant potential for enhancing adaptive capacity and resilience to climate change in Nigeria. By empowering communities and promoting local ownership, these approaches can contribute to more sustainable and impactful climate resilience efforts.

### **3.1 Trend and distribution of Literature on Community-Based Approaches to Capacity Building for Climate Resilience**

Over the past decade, there has been a significant rise in the number of studies and publications focusing on community-driven strategies for building climate resilience in Nigeria (Ensor et al., 2018; Nkoana, Verbruggen, & Hugé, 2018; Piggott-McKellar et al., 2019). This upward trend highlights the increasing acknowledgment of the value of such approaches in tackling climate change challenges at the grassroots level. Research on community-based climate resilience in Nigeria is geographically diverse, with some studies concentrating on specific regions or states, while others offer a broader national overview, showcasing the varied contexts and experiences across the country.

The body of literature on community-based climate resilience in Nigeria spans a wide range of disciplines, including environmental science, development studies, geography, and anthropology (Alam & Kumar, 2023; Hellberg et al., 2023; Moran, 2022; Nhamo & Mjimba, 2020). This interdisciplinary approach reflects the multifaceted nature of the issue and underscores the necessity for comprehensive, context-specific solutions. A significant portion of the research focuses on case studies and best practices, offering critical insights into the strategies and methods that have effectively enhanced resilience at the local level.

Collaborative research initiatives involving academic institutions, NGOs, government agencies, and local communities are also evident in the literature (Brass et al., 2018; Kohrt et al., 2019; Leal Filho et al., 2019). Such partnerships ensure that research is relevant, participatory, and impactful, thereby supporting more effective climate resilience programs. Additionally, the literature underscores the policy and programmatic implications of community-based approaches, with many studies advocating for policies that bolster community-led initiatives and programs aimed at strengthening local capacity for climate adaptation.

In summary, the growing volume and distribution of literature on community-based capacity-building for climate resilience in Nigeria reflect a heightened interest and investment in empowering communities to adapt to climate change. By documenting and

disseminating lessons from local initiatives, researchers and practitioners can contribute to more effective and sustainable climate resilience efforts across the country.

### 3.2 Global outlook of research output on Community-Based Approaches to Capacity Building for Climate Resilience

The global perspective on research output regarding community-driven strategies for building climate resilience in Nigeria highlights a rising interest and acknowledgment of the significance of these methods in tackling climate change challenges (Anugwom & Anugwom, 2022; Greenwalt et al., 2020; Nzezbule et al., 2019). While much of the research centers on local initiatives within Nigeria, there is also a wider international focus aimed at extracting lessons and insights from these efforts for potential application in other settings.

Evidence of international collaboration in studying community-based climate resilience initiatives in Nigeria is apparent. Researchers and organizations from various countries partner with Nigerian counterparts to examine and support local projects, reflecting a global dedication to addressing climate change at the grassroots level (Abouzeid et al., 2022; Brechenmacher, 2019; Signé & Mbaye, 2022; World Health Organization, 2021). Some studies adopt a comparative approach, analyzing community-based strategies in Nigeria alongside those in other countries or regions. These comparisons seek to uncover shared challenges, effective practices, and key lessons that can guide worldwide efforts to enhance climate resilience. Coenen illustrated transnational climate actions aligned with the Sustainable Development Goals (SDGs), as depicted in Figure 2 below.

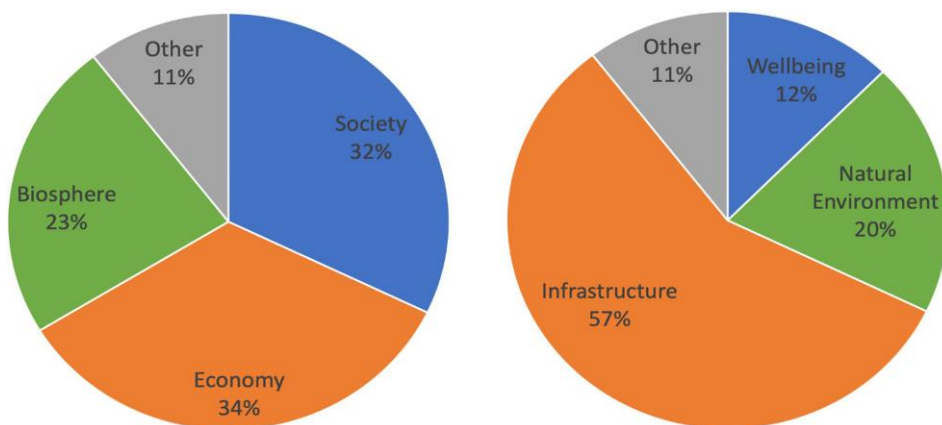


Figure 2: Coverage of SDGs by transnational climate actions, (Coenen, 2022)



The findings from research underscore the policy relevance of community-driven strategies for climate resilience in Nigeria, offering valuable insights for other nations and regions. Policymakers and practitioners globally can draw lessons from Nigeria's experiences and tailor these strategies to fit their unique contexts. The global body of research stresses the critical role of capacity building and knowledge exchange in strengthening community resilience to climate change. International collaborations and partnerships are essential in fostering the sharing of knowledge and best practices across countries and regions (Azeem et al., 2021; Harahap, 2020; Kyriakopoulos & Sebos, 2023).

This research aligns with key Sustainable Development Goals (SDGs), particularly SDG 13 (Climate Action) and SDG 11 (Sustainable Cities and Communities) (Coenen, Glass, & Sanderink, 2022; Mondal, Bresciani, & Rizzo, 2024; Vaidya & Chatterji, 2020). By emphasizing community-based approaches, researchers contribute to advancing these global objectives and promoting sustainable development on a worldwide scale. Global studies on community-driven climate resilience initiatives in Nigeria offer cross-cultural insights into the challenges and opportunities of implementing such strategies in diverse settings. These varied perspectives enrich the global conversation on climate resilience and help shape more inclusive and effective solutions. An innovative framework for enhancing knowledge management to achieve the SDGs, as illustrated in Figure 2 by Caiado et al. (2018), is presented below.

In summary, the global perspective on research related to community-based capacity-building for climate resilience in Nigeria highlights the significance of local initiatives in addressing worldwide challenges (Akpan, 2024; Erezi, Ehi, & Ayodeji, 2023; Reyes-García et al., 2024). Through knowledge sharing, partnership building, and mutual learning, researchers and practitioners around the world can contribute to creating more resilient and sustainable communities in the face of climate change.

#### **4.0 Community Participation and Engagement**

Active involvement and engagement of communities are fundamental elements of community-driven strategies for building climate resilience in Nigeria (Choko et al., 2019; Ntoimo et al., 2021; Nzegbule et al., 2019; Okeke-Ogbuafor, Gray, & Stead, 2018). Involving communities in decision-making processes and ensuring their active participation can result in more impactful and enduring resilience-building initiatives. By prioritizing community engagement, resilience efforts can be customized to align with the unique needs, priorities, and capabilities of local populations. This approach fosters a sense of ownership and empowerment among community members, which enhances their commitment and ensures the long-term sustainability of projects. Additionally,

community participation strengthens trust and cooperation between local populations and external stakeholders, improving the effectiveness and credibility of resilience-building initiatives. A graphical representation of a climate resilience framework, as illustrated by Sono, Wei, and Jin (2021), is shown in Figure 4.

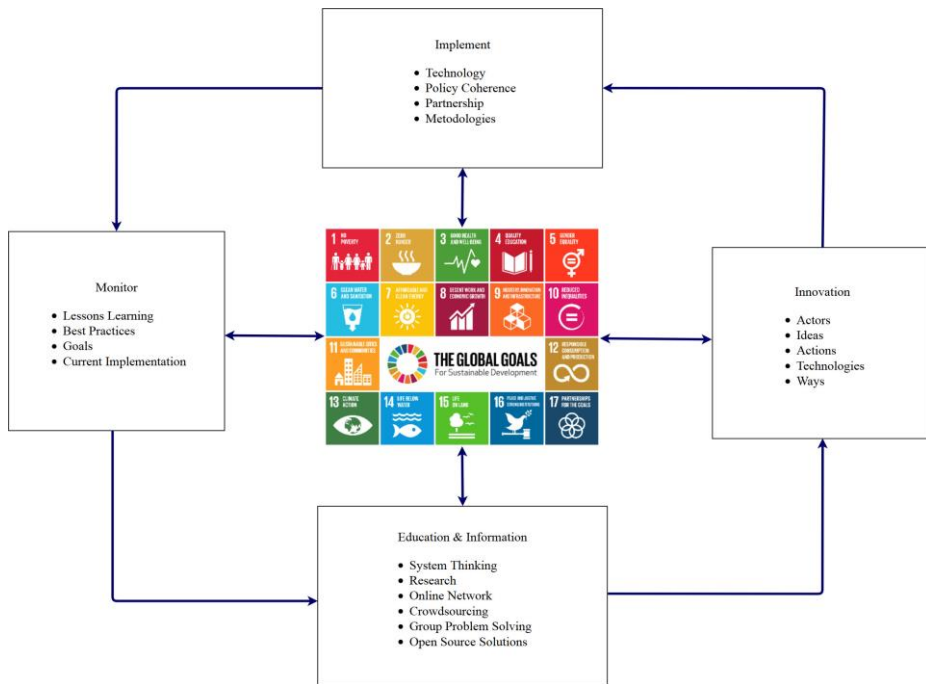
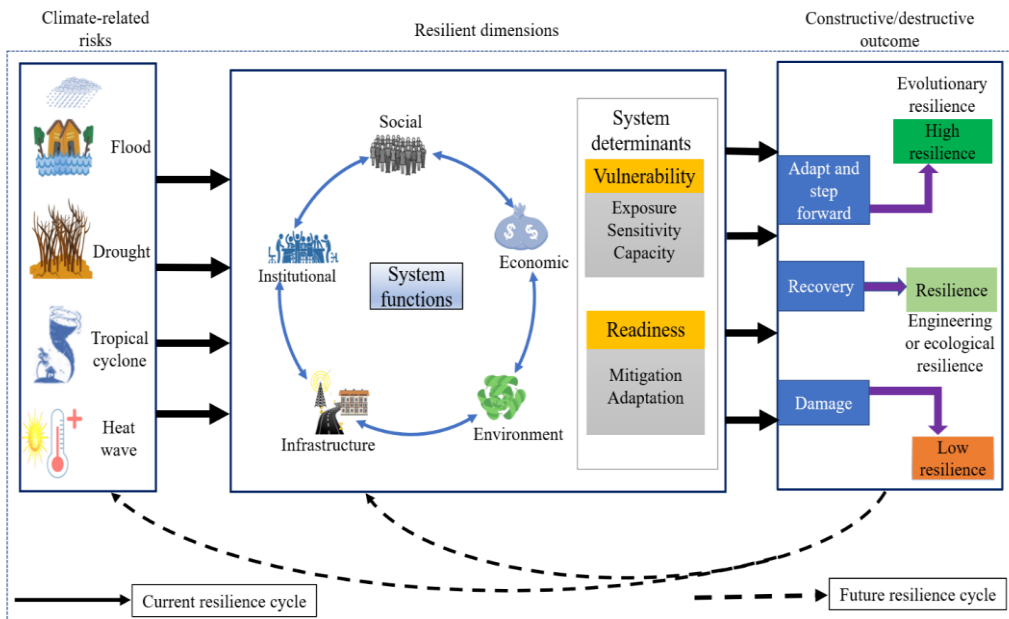


Figure 3 : Innovative framework to improve SD knowledge management to achieve SDGs (Caiado, et. al., 2018).

Organize community consultations and participatory evaluations to pinpoint local needs, priorities, and existing capacities concerning climate resilience. Encourage inclusive and transparent decision-making processes that engage all community members, particularly women, youth, and marginalized groups (David-Chavez & Gavin, 2018; Ensor et al., 2018; McNamara et al., 2020). Offer opportunities for skill development and capacity-building programs that enable community members to take an active role in resilience-building efforts. Build partnerships and collaborative networks among communities, local governments, NGOs, and other stakeholders to pool resources and expertise for climate resilience projects. Implement participatory communication and outreach methods, such as community gatherings, workshops, and radio broadcasts, to increase awareness and encourage behavior change related to climate resilience. The "Community-Based Climate Change Adaptation and Mitigation Project" in Kano State, which engaged local communities in the development of climate-smart agriculture practices and water

management strategies. The "Community-Based Flood Early Warning System" in Lagos State, where communities were actively involved in the monitoring and response to flood risks, leading to improved resilience and reduced impacts. The "Community-Led Reforestation Initiative" in Cross River State, where communities were empowered to restore degraded forests and protect biodiversity, enhancing climate resilience and livelihoods. These examples demonstrate the importance of community participation and engagement in building climate resilience in Nigeria.



**Figure 4: The graphical representation of the climate resilience framework (Sono, Wei & Jin, 2021).**

By involving communities in decision-making and implementation processes, stakeholders can ensure that resilience-building efforts are contextually relevant, sustainable, and impactful.

### 5.0 Tailored Capacity Building Programs

Customized capacity-building initiatives are crucial elements of community-driven strategies aimed at enhancing climate resilience in Nigeria (Adetunji et al., 2023; Oni, Lawanson, & Mogo, 2021; Tahiru et al., 2019). These initiatives are tailored to address

the unique needs and challenges of local communities, ensuring they acquire the necessary knowledge, skills, and resources to effectively adapt to climate change. Below is an outline of how such programs can be effectively implemented:

1. **Needs Assessment:** Begin with a thorough evaluation of the community's specific needs, vulnerabilities, and existing capabilities concerning climate resilience (Koliou et al., 2020; Leal Filho et al., 2019). This process should actively involve community members to ensure their perspectives and priorities are integrated. Based on the findings, establish clear, measurable, and realistic capacity-building goals that align with the community's most pressing needs and available resources.
2. **Resource Development :** Create training materials and resources that are customized to the community's unique context. These materials should be culturally sensitive, easy to understand, and directly applicable to the community's livelihoods and environmental conditions.
3. **Participatory Training :** Organize interactive workshops and training sessions to deliver the capacity-building programs. These sessions should encourage active community involvement and focus on practical, hands-on skill development.
4. **Integration of Traditional Knowledge :** Incorporate indigenous knowledge and practices into the programs, recognizing their significant role in fostering climate resilience. This approach can increase the relevance and effectiveness of the initiatives by aligning them with the community's cultural and environmental context.
5. **Monitoring and Evaluation :** Continuously assess the impact of the capacity-building programs to gauge their effectiveness and identify areas for improvement (Saidani et al., 2019; World Health Organization, 2019, 2020). Actively seek feedback from community members and use it to refine and enhance the programs.
6. **Sustainability :** Ensure the programs are designed for long-term sustainability, enabling the community to continue them independently after the initial phase. This may involve training local facilitators and providing access to ongoing support and resources.
7. **Collaboration :** Partner with local governments, NGOs, academic institutions, and other stakeholders to support the implementation of these tailored programs. Such collaborations can bring additional expertise and resources, amplifying the programs' impact. By implementing these customized capacity-building initiatives, community-based approaches to climate resilience in Nigeria can empower local populations to effectively tackle climate change challenges and foster more resilient societies.

### **5.1 Need for programs that address local needs and priorities**

The importance of designing initiatives that align with the unique needs and priorities of local communities is critical in fostering climate resilience through community-based

capacity-building efforts in Nigeria (Adeyanju et al., 2021; Danhassan et al., 2023; Ifeoma et al., 2024). Local populations are frequently the most vulnerable to the adverse effects of climate change, making it essential to incorporate their specific concerns and priorities into resilience-building strategies to ensure both effectiveness and sustainability. Here's why this approach is vital. Programs customized to reflect local needs and priorities tend to be more impactful and relevant. By focusing on the distinct challenges encountered by communities, these initiatives can deliver practical, actionable solutions that resonate deeply with community members, fostering greater engagement and long-term success.

Initiatives that focus on local needs and priorities are more likely to gain community acceptance and ownership. When communities actively participate in identifying and tackling their own challenges, they become more committed to the success of these initiatives and are more driven to maintain them in the long term (Harris et al., 2019; Skogan & Hartnett, 2019). Local needs and priorities are often deeply connected to cultural traditions and values. Programs that consider these elements are more likely to be culturally appropriate and respectful, resulting in higher levels of engagement and participation from community members. Zidny, Sjöström, and Eilks (2020) developed an educational design framework, illustrated in Figure 5, to integrate indigenous knowledge with science education programs.

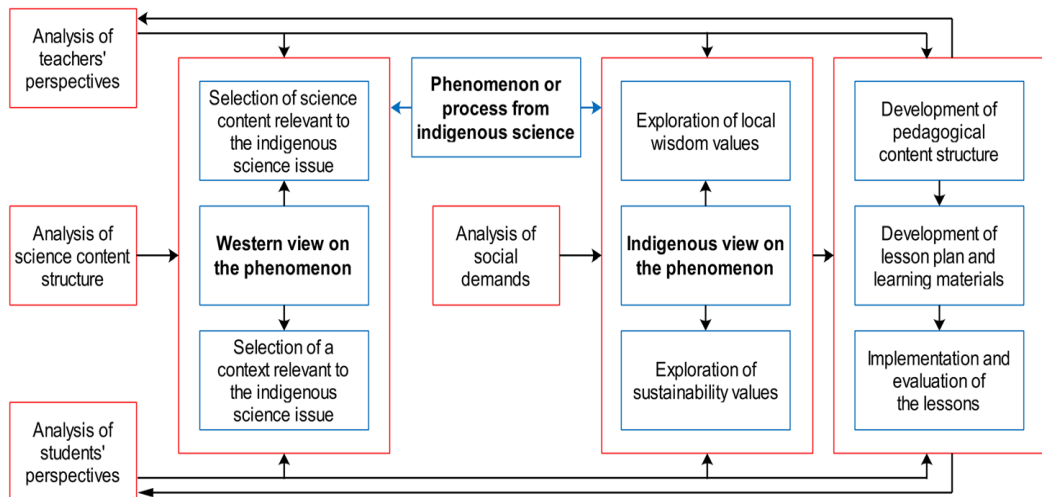


Figure 5 : Educational design framework to incorporate indigenous knowledge with science education (Zidny, Sjöström & Eilks, 2020).

By prioritizing local needs and concerns, programs can distribute resources in a more targeted and efficient manner. This approach ensures that resources are channeled toward initiatives that yield the most significant benefits and positive outcomes for the community. Initiatives that align with local needs and priorities can tap into the existing strengths and capabilities within the community (Honadle, 2018; World Health

Organization, 2021). This not only boosts the effectiveness of resilience-building efforts but also enhances their sustainability, as communities are empowered to utilize their own resources and expertise. Focusing on local needs and priorities enables communities to develop resilience in a comprehensive way, tackling various dimensions of vulnerability to climate change. This holistic approach fosters more robust and enduring resilience-building results. In summary, programs that are tailored to local needs and priorities play a critical role in community-driven capacity-building efforts for climate resilience in Nigeria (Greenwalt et al., 2020; Nzegbule et al., 2019; Oni, Lawanson, & Mogo, 2021). By ensuring that initiatives are contextually appropriate, culturally aware, and driven by the community, stakeholders can improve the effectiveness and longevity of resilience-building strategies. This, in turn, helps create stronger, more adaptable communities capable of withstanding the challenges posed by climate change.

## **5.2 Examples of capacity building programs tailored to specific communities in Nigeria**

1. **Climate-Smart Agriculture Initiative in Kano State** : This initiative aimed to educate local farmers in Kano State on climate-smart farming methods tailored to the region's semi-arid environment. Farmers were taught practices like rainwater collection, soil preservation, and cultivating drought-tolerant crops, enabling them to adapt to shifting climate patterns and boost farm yields.
2. **Flood Early Warning System in Lagos State** : A community-driven early warning system was introduced in flood-prone areas of Lagos State to enhance preparedness and response to flooding. Residents were trained to monitor rainfall and river levels, along with learning evacuation protocols and first aid, empowering them to take preventive actions against flood-related risks.
3. **Renewable Energy Microgrid Initiative in Ogun State** : A renewable energy microgrid project was launched in off-grid communities in Ogun State to deliver consistent and eco-friendly electricity. Local technicians received training in setting up and maintaining solar panels and battery systems, fostering local expertise in renewable energy and decreasing dependence on non-renewable energy sources.
4. **Reforestation Project in Cross River State** : A community-driven reforestation effort was initiated in areas adjacent to the Cross River National Park to rehabilitate damaged forests and safeguard biodiversity. Participants were educated in agroforestry and sustainable forest management, equipping them to actively participate in environmental conservation and strengthen climate resilience.

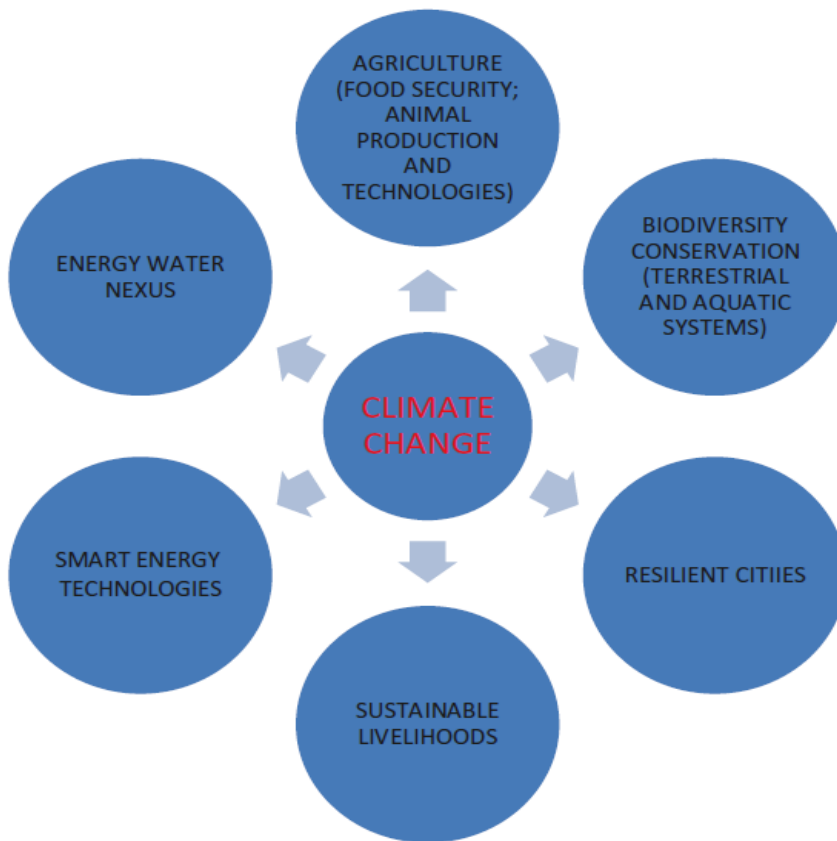
5. **Water Management Program in Plateau State** : In drought-affected regions of Plateau State, a program was introduced to teach communities water harvesting and conservation methods. Training included building rainwater collection systems, water storage solutions, and efficient irrigation techniques, helping communities manage water resources more effectively during dry spells.

These examples highlight how capacity-building initiatives can be customized to meet the specific needs and challenges of Nigerian communities in building climate resilience. By equipping communities with the necessary skills and knowledge to adapt to climate change, such programs play a vital role in fostering sustainable and resilient communities.

### **5.3 Evaluation of the effectiveness of tailored programs**

Assessing the success of customized initiatives within community-driven strategies for enhancing climate resilience in Nigeria is essential to measure their impact and pinpoint areas for refinement (Adetunji et al., 2023; Okunade et al., 2024; Williams et al., 2021). Below are critical components for evaluating their effectiveness:

1. **Achievement of Program Objectives** : Determine whether the program has met its intended goals. This involves evaluating if it has successfully addressed local needs and priorities, strengthened local capabilities, and improved the community's ability to withstand climate-related challenges. Kupika, Mbereko, and Chinokwetu (2020) outlined research themes directly linked to climate change, as illustrated in Figure 6.
2. **Monitoring and Evaluation** : Implement systems to track the program's progress and outcomes. This includes gathering data on key resilience indicators, such as improvements in agricultural output, access to safe water, and levels of community engagement in resilience-building initiatives (Gozes et al., 2020; Stetco et al., 2019).
3. **Community Feedback** : Collect input from community members to gauge their views on the program's impact. Methods such as surveys, focus groups, and interviews can provide insights into how the program has influenced their daily lives and economic activities.
4. **Knowledge and Skill Development** : Assess whether the program has effectively enhanced the community's understanding and abilities related to climate resilience (Choudhury et al., 2021; Meyer et al., 2018; Monroe et al., 2019). This includes evaluating shifts in behavior, practices, and the uptake of innovative technologies and methods.



**Figure 6: Research thematic areas directly related to climate change (Kupika, Mbereko & Chinokwetu, 2020)**

5. Sustainability of the Program : Examine the program’s long-term viability after its initial phase. This involves determining if local capacity has been sufficiently developed to sustain resilience-building efforts and whether adequate resources and support are available for continued activities. By systematically evaluating these aspects, stakeholders can ensure that community-based programs are not only effective in the short term but also sustainable impactful in building long-term climate resilience.

Assess the program’s influence on vulnerable and marginalized segments of the community. This involves determining whether the initiative has lessened their exposure to climate-related risks and strengthened their ability to cope with such challenges. Additionally, examine the success of collaborations with local governments, non-governmental organizations (NGOs), and other key stakeholders in supporting the



program. Evaluate how these partnerships have contributed to the program's overall impact and long-term sustainability.

Document the lessons learned and successful strategies from the program. These insights can guide the design and implementation of future initiatives and enrich the broader understanding of community-focused approaches to climate resilience. By thoroughly evaluating tailored programs, stakeholders can gauge their effectiveness, pinpoint areas for enhancement, and ensure that future efforts are better designed to foster climate resilience in local communities across Nigeria.

## **6.0 Value of Traditional Knowledge and Practices**

The importance of traditional knowledge and practices in community-driven efforts to build climate resilience in Nigeria cannot be overstated (Chowdhoree, 2019; Leal Filho et al., 2022; Mugambiwa & Makhubele, 2021). Passed down through generations, traditional knowledge provides locally relevant insights and solutions that often align well with scientific methods. Here's how it plays a vital role: Traditional knowledge includes a profound understanding of local ecosystems, weather trends, and natural resources, offering critical guidance for adapting to climate change. It also promotes sustainable approaches to land use, water conservation, and agriculture, which bolster resilience against climate-related threats. Furthermore, traditional systems emphasize community unity and collective support, strengthening the ability to withstand challenges.

Integrating traditional practices into climate resilience plans can increase their effectiveness and relevance to local communities (Choudhury et al., 2021; Fawzy et al., 2020; Thomas et al., 2019). For instance, combining traditional farming techniques that preserve soil and water can improve agricultural resilience during droughts and floods. Similarly, traditional methods for managing natural resources, such as rotational grazing and forest preservation, can sustain ecosystem services essential for climate resilience.

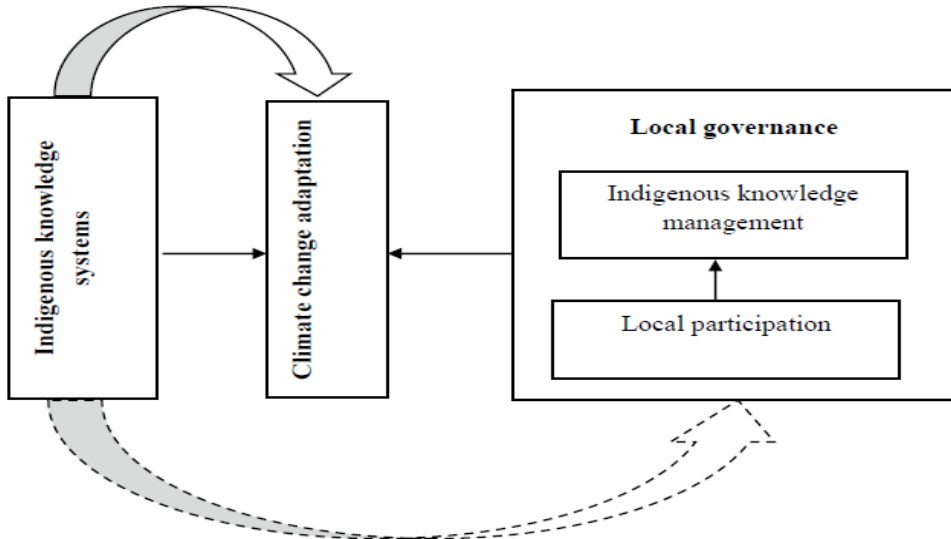
However, challenges exist, including the erosion of traditional knowledge due to modernization and the need to align traditional practices with contemporary scientific principles (Aswani et al., 2018; Fernández-Llamazares et al., 2021; Hill et al., 2020; Zidny, Sjöström, & Eilks, 2020). Despite these challenges, there are opportunities to merge traditional and scientific knowledge systems, creating more comprehensive and effective climate resilience strategies. Key steps include engaging with local communities and traditional leaders, documenting traditional knowledge, and incorporating it into research and policy-making processes. Mbah, Ajaps, and Molthan-Hill (2021) presented

a conceptual framework for Indigenous knowledge systems, climate change adaptation, and local governance in Figure 7.

In summary, acknowledging and integrating traditional knowledge and practices into community-based climate resilience efforts in Nigeria can improve the effectiveness, sustainability, and cultural relevance of these strategies. Combining traditional and scientific approaches can lead to more inclusive and holistic solutions to climate change challenges.

Partnerships and collaborations are also essential in supporting community-based approaches to building climate resilience in Nigeria. They unite diverse stakeholders, including communities, governments, NGOs, and other organizations, to achieve shared objectives. Key aspects of partnerships include (Adegun & Olusoga, 2020; Choko et al., 2019; Jaiye & Benjamine, 2021)

Pooling diverse expertise, resources, and networks to enhance the effectiveness and sustainability of community-based initiatives. Facilitating the exchange of knowledge, best practices, and lessons learned, fostering innovation and continuous learning. By leveraging partnerships and integrating traditional knowledge, stakeholders can develop more robust and inclusive strategies to address the impacts of climate change in Nigeria.



**Figure 7: Conceptual framework: Indigenous knowledge systems, climate change adaptation and local governance (Mbah, Ajaps & Molthan-Hill, 2021).**

## 7.0 Partnerships and Collaborations

Collaborations promote a sense of ownership and empowerment within communities by actively engaging them in decision-making and implementation processes. These partnerships also strengthen resilience networks, linking communities and stakeholders to provide mutual support during climate-related crises. Table 2 illustrates a typology for participation in community-based climate change adaptation, as outlined by Nkoana, Verbruggen, and Hugé (2018). The partnership between local communities, NGOs, and government agencies in the Niger Delta region to implement climate-resilient agriculture practices, leading to improved food security and livelihoods (Ariom, et. al., 2022, Chete & Chete, 2021, Lipper, et. al., 2021). Collaborations between local governments, NGOs, and international organizations to provide training and resources for communities to implement sustainable land management practices, reducing vulnerability to droughts and floods. Partnerships between community-based organizations, academic institutions, and private sector entities to develop and implement renewable energy projects, reducing reliance on fossil fuels and enhancing energy security. Establish clear goals, roles, and responsibilities for each partner, ensuring mutual understanding and commitment (Caiado, et. al., 2019, Fitzgerald, et. al., 2020, Maki, 2023, Mattesich & Johnson, 2018). Foster open communication and trust among partners, facilitating information sharing and problem-solving. Ensure inclusivity and equity in partnerships, considering the needs and perspectives of all stakeholders, especially marginalized and vulnerable groups. Develop and maintain formal agreements or memoranda of understanding (MOUs) outlining the terms of the partnership and mechanisms for resolving conflicts. Regularly evaluate the partnership's progress and impact, using feedback to make necessary adjustments and improvements. Secure long-term funding and support for partnerships, ensuring sustainability and continuity of efforts. By fostering partnerships and collaborations, stakeholders can enhance the resilience of communities to climate change and build a more sustainable and resilient future for Nigeria.

## 8.0 Scaling Up Successful Approaches

Scaling up successful approaches for community-based capacity building for climate resilience in Nigeria requires a strategic and collaborative effort involving multiple stakeholders (Graham, 2020, Greenwalt, et. al., 2020, Makate, 2019, Oni, Lawanson & Mogo, 2021). Lessons from local initiatives can guide this process and ensure that scaling up is effective and sustainable. Here are key steps to scale up successful approaches: Identify community-based approaches that have been successful in building climate resilience in Nigeria. These approaches should have demonstrated positive outcomes and

be adaptable to other communities. Evaluate the scalability of successful approaches by considering factors such as cost-effectiveness, feasibility of implementation in other contexts, and potential for impact at a larger scale (Broutet, et. al., 2022, Klaic, et. al., 2022, Moore, et. al., 2021, Zamboni, et. al., 2019). Develop a comprehensive strategy for scaling up successful approaches. This strategy should outline clear goals, target communities, timelines, and resource requirements. Forge partnerships with government agencies, NGOs, academic institutions, and other stakeholders to support the scaling-up process. Collaborate with these partners to leverage their expertise, resources, and networks. Figure 8 shows the scaling up adaptation process and its enabling factors as presented by Mfitumukiza, et. al., 2020.

**Table 2:** Typology for participation in the context of community-based climate change adaptation (Nkoana, Verbruggen & Hugé, 2018)

<b>Stages of Participation (i.e., Degree of Participation/Rungs of Arnstein’s Ladder</b>	<b>Main Purpose of Participation (i.e., Objectives of Participation)</b>	<b>Characteristics of the Stage (i.e., Direction of Communication Flows)</b>	<b>Characteristics of the Stage (i.e., Direction of Communication Flows) Type of Participation (i.e., Theoretical Basis/Pragmatic Participation etc.)</b>
Information-sharing	Information	Information flows in one direction from the practitioners to the local community	
Consultation	Extraction	Information flows in one direction from the local community to the practitioners	Passive participation
Co-decision	Co-development (characterized by reciprocity of actions)	Flow of information is arranged in both directions: from the local community to the practitioners and vice versa- in a process of shared learning	Interactive participation
Decision	Ownership	The local community becomes responsible for the planning, design and implementation of climate adaptation action plans	Active participation/ self-organization/ citizens control

Empower communities to take ownership of the scaling-up process. Involve community members in decision-making, planning, and implementation to ensure that the approach is locally driven and sustainable (Colloff, et. al., 2024, Lamont, et. al., 2022, Schreuder & Horlings, 2022). Provide training and capacity building support to communities and local stakeholders involved in the scaling-up process. This will help ensure that they have the knowledge and skills to effectively implement the approach. Establish a monitoring and evaluation framework to track the progress and impact of the scaling-up process. Use this data to make informed decisions and adjustments to the approach as needed.



**Figure 8: Scaling up: The adaptation process and its enabling factors (Mfitumukiza, et. al., 2020).**

Share lessons learned from the scaling-up process with other communities, organizations, and policymakers. This will help inform future efforts and contribute to a broader understanding of effective community-based approaches to climate resilience. By following these steps, stakeholders can scale up successful community-based approaches to capacity building for climate resilience in Nigeria and contribute to building more resilient communities across the country.

## 8.1 Importance of scaling up successful models to other communities

Expanding successful frameworks can amplify the benefits of community-driven strategies for building climate resilience, enabling these approaches to benefit a greater number of individuals and communities (Alpizar et al., 2019; McNamara et al., 2020; Ziervogel et al., 2022). This not only maximizes the advantages of these strategies but also strengthens broader efforts to enhance resilience. Replicating proven models is often more efficient and economical than creating new solutions from the ground up. Since these models have already been tested and demonstrated to work, they minimize the risks and uncertainties typically associated with untested initiatives.

Scaling up successful frameworks also facilitates the sharing of knowledge and best practices across different communities. This encourages learning and innovation, as communities can modify and refine existing models to better fit their unique circumstances (Bommasani et al., 2021). Additionally, expanding these models can lead to more sustainable results. When successful approaches are replicated, they are more likely to be adopted into local policies, practices, and institutions, ensuring their enduring impact.

Furthermore, scaling up successful models helps create networks of resilient communities (Sachs et al., 2019; Singh et al., 2020). These networks enable the exchange of resources, knowledge, and experiences, thereby strengthening the resilience of all participating communities. On a broader scale, the replication of successful models can shape policies at local, national, and international levels. When policymakers witness the positive outcomes of community-based strategies, they are more inclined to endorse and advocate for these approaches through supportive policies and programs.

In summary, scaling up successful models of community-based climate resilience initiatives is crucial for maximizing their impact, efficiency, and sustainability (Aggarwal et al., 2018; Alpizar et al., 2019; Salvo et al., 2021). This process represents a vital step toward fostering more resilient communities and societies in the context of climate change.

## 8.2 Challenges and opportunities in scaling up community-based approaches

Scaling up community-based initiatives often faces obstacles due to limited financial, human, and technical resources. Many local projects depend on external funding, which may be inadequate or unsustainable for expansion to broader communities (Bulthuis et al., 2020; Lambin et al., 2020; Omann et al., 2020). Strengthening the capabilities of communities and local stakeholders to adopt and maintain these approaches demands

significant time, effort, and resources. While it is crucial to equip communities with the knowledge, skills, and support needed to replicate successful models, this process is often fraught with difficulties. Variations in geographic location, socio-economic conditions, and cultural practices among communities can influence the suitability and effectiveness of scaled-up strategies (Aswani et al., 2019; Jago et al., 2023; McCrabb et al., 2019). Tailoring successful models to fit diverse contexts requires thoughtful adaptation, which can present additional challenges.

Expanding community-based approaches from local to regional or national levels necessitates meticulous planning and coordination (Castro-Arce & Vanclay, 2020; Mfitumukiza et al., 2020). Large-scale projects often encounter logistical complexities, requiring strong management and governance systems. The absence of supportive policies and institutional frameworks can further hinder scaling efforts. Without government backing and formal recognition, these initiatives may struggle to gain momentum and achieve long-term impact.

However, scaling up community-based approaches also offers significant opportunities for knowledge exchange and collaboration among communities, organizations, and stakeholders. By learning from successful examples and sharing insights, the effectiveness and sustainability of expanded initiatives can be enhanced. Establishing partnerships and networks involving communities, governments, NGOs, academia, and the private sector can streamline the scaling process. Such collaborations can pool diverse expertise, resources, and networks to bolster scaled-up efforts.

Technological advancements and innovation present additional avenues for scaling up community-based approaches more efficiently. Digital tools, data analytics, and remote sensing technologies can improve monitoring, evaluation, and decision-making processes. Successfully scaling up models can also influence policy and decision-making at various levels, from local to international. Advocating for supportive policies and institutional frameworks can create an enabling environment for these approaches to flourish and expand.

Scaling up community-based approaches empowers communities to take charge of their development and resilience-building efforts (Abenir, Manzanero, & Bollettino, 2022; Amarnath et al., 2023; Ramalho, 2019). By actively engaging in decision-making and implementation, communities can drive sustainable change and foster resilience from within. Addressing these challenges and capitalizing on opportunities requires a unified effort from all stakeholders involved in scaling up community-based approaches for climate resilience in Nigeria. By overcoming these hurdles and leveraging available



opportunities, communities can build more resilient societies and better adapt to the impacts of climate change.

### **8.3 Recommendations for policymakers and practitioners**

To effectively scale up community-based approaches for building climate resilience in Nigeria, policymakers and practitioners should consider the following recommendations. First, create and enforce policies that encourage community-driven climate resilience initiatives. This includes introducing incentives, regulations, and institutional frameworks that empower communities to take proactive measures. Additionally, prioritize investments in capacity-building programs for local stakeholders and communities to ensure they can effectively implement and sustain these approaches. Offering training, technical support, and necessary resources will help strengthen their skills and knowledge.

Collaboration is key to success. Encourage partnerships among communities, government bodies, NGOs, academic institutions, and the private sector to facilitate the expansion of proven models. By combining diverse expertise, resources, and networks, the impact of community-based efforts can be significantly amplified. Securing adequate financial, human, and technical resources is also critical. Policymakers should explore funding opportunities from government programs, international donors, and other stakeholders to ensure the long-term sustainability of these initiatives.

To measure progress and effectiveness, establish strong monitoring and evaluation systems. Data-driven insights can guide decision-making and improve the outcomes of community-based strategies. Promote a culture of knowledge exchange by sharing lessons learned and best practices among communities, practitioners, researchers, and policymakers. This will help refine future efforts and strengthen community resilience.

Adaptability and innovation are essential. Encourage the customization of community-based approaches to fit varying contexts and evolving climate challenges. Support the integration of technology and innovative solutions to enhance the efficiency and sustainability of scaled-up initiatives. Ensure these approaches are inclusive and equitable, addressing the needs of all community members, particularly vulnerable and marginalized groups. Empower communities by involving them in decision-making processes and ensuring their perspectives are valued. Advocacy plays a crucial role in creating an enabling environment. Raise awareness about the significance of community-based approaches to climate resilience and garner support from policymakers and stakeholders at local, national, and international levels. Commit to long-term investments and sustained support for these initiatives, recognizing that building resilience is an

ongoing process requiring continuous effort and collaboration. By adopting these recommendations, policymakers and practitioners can effectively scale up community-based approaches to climate resilience in Nigeria. Such efforts have the potential to enhance communities' adaptive capacities, foster resilience to climate change impacts, and contribute to the development of more sustainable and resilient societies.

## 9. Conclusion

Community-driven strategies for enhancing climate resilience in Nigeria have demonstrated significant success, offering important insights for future climate adaptation efforts. Key takeaways from local initiatives highlight the critical role of active community involvement, the effectiveness of customized capacity-building programs, the relevance of indigenous knowledge and practices, and the importance of partnerships in bolstering community-led actions. A strong appeal is made for increased investment in community-based methods for building climate resilience. Policymakers, practitioners, and stakeholders are urged to prioritize and champion these approaches, acknowledging their potential to strengthen adaptive capabilities and foster resilience at the grassroots level. Funding these initiatives can result in more sustainable and impactful climate resilience projects that benefit both communities and ecosystems.

There is also considerable potential to replicate successful Nigerian models in other regions within the country and internationally. By exchanging lessons and best practices, communities can learn from one another and tailor strategies to their unique contexts. This replication can facilitate the expansion of community-based approaches, contributing to wider global efforts to combat climate change and enhance resilience. In summary, community-based approaches to climate resilience capacity building in Nigeria provide valuable lessons that can guide and motivate global climate adaptation efforts. By investing in these strategies and fostering collaboration and knowledge exchange, we can move closer to creating more resilient communities and a sustainable future for everyone.

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