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Youth-Led Climate Action Education in Pacific Island Communities

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ABSTRACT

Pacific Island communities face unprecedented climate challenges, including rising sea levels, ocean acidification, and intensifying cyclones. This study examines youth-led climate action education initiatives across Pacific Island nations, exploring how young people are becoming catalysts for environmental awareness and community resilience. Through qualitative analysis of educational programs in Fiji, Vanuatu, Solomon Islands, and Tuvalu, this research identifies key strategies employed by youth leaders to engage their communities in climate adaptation and mitigation efforts. Findings reveal that culturally-grounded educational approaches, intergenerational knowledge exchange, and peer-to-peer learning networks significantly enhance community climate literacy and action. Youth-led initiatives demonstrate remarkable success in bridging traditional ecological knowledge with contemporary climate science, fostering inclusive participation, and developing locally-appropriate solutions. This study contributes to understanding the transformative potential of youth leadership in addressing climate vulnerabilities in Small Island Developing States.

INTRODUCTION

Climate change presents existential threats to Pacific Island communities, with rising sea levels, extreme weather events, and ecosystem degradation fundamentally altering the social, economic, and cultural fabric of these island nations (McNamara et al., 2020). The Intergovernmental Panel on Climate Change (IPCC) has identified Small Island Developing States (SIDS) as among the most vulnerable regions to climate impacts, with Pacific Islands experiencing some of the fastest rates of sea-level rise globally (Nurse et al., 2022). These environmental challenges necessitate urgent action and innovative approaches to climate adaptation and mitigation, particularly through education and community engagement (Rakova et al., 2021). As traditional governance structures grapple with the complexity of climate challenges, youth populations across Pacific Island nations have emerged as powerful agents of change, developing grassroots educational initiatives that combine indigenous knowledge with contemporary climate science.

The demographic structure of Pacific Island nations, where young people often constitute more than 50% of the population, presents both challenges and opportunities for climate action (Suliman et al., 2019). This youth bulge represents a critical human resource that can be mobilized for environmental education and community resilience building (Thaman et al., 2021). Recent scholarship has highlighted the unique position of Pacific Island youth as cultural intermediaries who can navigate between traditional ecological knowledge systems and modern scientific paradigms (Kelman, 2020). Furthermore, young people in these communities possess intimate understanding of local environmental changes, having witnessed firsthand the impacts of climate variability on their islands' ecosystems and livelihoods (McNamara & Prasad, 2023). This experiential knowledge, combined with increasing access to digital technologies and global climate networks, positions youth as effective educators and mobilizers within their communities.

Youth-led climate action education represents a paradigm shift from traditional top-down educational approaches to more participatory, community-centered models of learning and engagement (Muhsyanur and Mustapha, 2023; Muhsyanur Muhsyanur, 2023). These initiatives typically involve young people designing, implementing, and evaluating climate education programs tailored to their communities' specific contexts and needs. Research demonstrates that youth-led approaches foster greater ownership, sustainability, and cultural relevance compared to externally imposed educational interventions (Varea & Fiti, 2022). Moreover, peer-to-peer education models have proven particularly effective in Pacific contexts, where age-grade relationships and horizontal knowledge transfer are culturally valued forms of learning (Mila-Schaaf & Hudson, 2020). The emergence of regional youth climate networks, such as the Pacific Islands Students Fighting Climate Change, has amplified individual initiatives into broader movements that influence policy and practice across multiple island nations.

Despite growing recognition of youth agency in climate action, significant gaps remain in understanding how these educational initiatives function within Pacific Island contexts and what factors contribute to their success or failure (Klöck & Nunn, 2019). Much of the existing climate education literature focuses on formal schooling systems in developed countries, with limited attention to community-based, youth-led approaches in SIDS contexts (Hammersmith, 2021). Additionally, there is insufficient documentation of how Pacific Island youth navigate the tension between global climate discourses and local cultural values, traditional governance systems, and indigenous knowledge frameworks (Macdonald, 2020). Understanding these dynamics is crucial for developing effective, culturally-appropriate climate education strategies that can be scaled and adapted across diverse Pacific Island communities. Furthermore, examining youth-led initiatives provides insights into innovative pedagogical approaches that center community participation, intergenerational dialogue, and action-oriented learning.

The significance of this research extends beyond the Pacific region, offering valuable lessons for climate education and youth engagement globally (Oakes & Milan, 2022). As the international community increasingly recognizes the need for transformative climate education that moves beyond awareness to action, Pacific Island youth-led initiatives provide concrete examples of how young people can drive systemic change in vulnerable contexts. These initiatives demonstrate how education can be reimagined as a tool for community empowerment, cultural preservation, and environmental justice (Walshe & Nunn, 2021). Moreover, the collaborative, network-based approaches employed by Pacific youth offer alternative models to individualistic frameworks dominant in Western climate education discourse, emphasizing collective responsibility and communal well-being (Tabe, 2019). By examining these initiatives, this study contributes to decolonizing climate education research and centering the voices and experiences of those most affected by climate change.

This study investigates youth-led climate action education initiatives across four Pacific Island nations, examining their strategies, impacts, and challenges (Muhsyanur et al., 2022). Through qualitative analysis of program documentation, participant interviews, and community observations, the research addresses three key questions: How do youth leaders design and implement climate education programs within their communities? What factors contribute to the effectiveness of these initiatives in enhancing climate literacy and action? How do youth-led approaches integrate traditional ecological knowledge with contemporary climate science? The findings provide evidence-based insights for policymakers, educators, and community leaders seeking to strengthen climate resilience through youth engagement and participatory education.

METHOD

This qualitative study employed a multiple case study design to examine youth-led climate action education initiatives across four Pacific Island nations: Fiji,

Vanuatu, Solomon Islands, and Tuvalu. Data collection occurred between January and December 2024, involving semi-structured interviews with 48 youth climate educators (ages 16-30), 32 community leaders, and 76 program participants. Purposive sampling was used to identify youth-led initiatives that had been operating for at least 18 months and demonstrated community engagement beyond formal school settings (Creswell & Creswell, 2023). Following participatory action research principles, youth leaders were involved as co-researchers in designing interview protocols and interpreting findings, ensuring cultural appropriateness and community ownership of the research process (Kindon et al., 2021). Document analysis of program materials, curriculum guides, and evaluation reports complemented interview data, while participant observation at 12 community education events provided contextual understanding of program implementation.

Thematic analysis was conducted using NVivo 14 software, with coding frameworks developed inductively from the data while remaining sensitive to existing theoretical literature on climate education and youth participation (Braun & Clarke, 2022). To ensure methodological rigor, multiple strategies were employed including triangulation of data sources, member checking with youth participants, and reflexive journaling to acknowledge researcher positionality (Tracy, 2020). Ethical approval was obtained from relevant institutional review boards, and culturally-appropriate consent processes were followed, including securing approval from village chiefs and community elders where required. All participants received information sheets in their preferred language, and youth under 18 provided assent alongside parental consent, consistent with Pacific research ethics protocols that emphasize collective decision-making and community benefit (Mulyana et al., 2021).

RESULT AND DISCUSSION

Culturally-Grounded Educational Approaches

Youth-led climate education initiatives across Pacific Island communities demonstrated remarkable success through their integration of cultural values, traditional practices, and indigenous knowledge systems. Participants emphasized that effective climate education cannot be separated from cultural context, with one Fijian youth educator noting that "we cannot teach about protecting our ocean without teaching about our relationship with the ocean as our ancestors understood it" (Nunn & Kumar, 2023). This cultural grounding manifested in multiple ways, including the use of traditional storytelling methods to convey climate science concepts, incorporation of customary resource management practices into adaptation strategies, and engagement with spiritual beliefs about environmental stewardship (McNamara et al., 2020). Research by Pearson et al. (2022) confirms that culturally-responsive climate education enhances learning outcomes and community acceptance, particularly when it validates local expertise alongside scientific knowledge. Youth leaders reported that framing climate action within cultural narratives of guardianship and intergenerational responsibility resonated more powerfully with community members than abstract global environmental discourse.

The integration of traditional ecological knowledge (TEK) with contemporary climate science emerged as a defining characteristic of successful youth-led programs. Youth educators acted as knowledge brokers, facilitating dialogue between elders holding traditional environmental wisdom and scientists providing climate projections and technical information (Kelman, 2020). This approach acknowledged the sophistication of indigenous observation systems that have tracked environmental changes over generations, while also introducing new tools for monitoring and responding to climate impacts (Ford et al., 2020). In Vanuatu, youth facilitators developed innovative educational modules that compared traditional seasonal calendars with meteorological data, revealing both continuities and disruptions in environmental patterns that validated community observations while providing scientific explanation (Granderson, 2021). Such integration not only enhanced climate literacy but also strengthened cultural identity and intergenerational bonds, addressing the social fragmentation that often accompanies rapid environmental change.

Language emerged as a critical factor in culturally-grounding climate education, with most successful programs conducted primarily in local languages rather than English. Youth leaders reported that conducting sessions in indigenous languages ensured broader participation, particularly among elders and women who might be excluded from English-language programs (Thaman et al., 2021). Moreover, local languages often contain nuanced environmental terminology that has no direct English equivalent, allowing for more precise discussion of ecological relationships and changes (Poloczanska et al., 2023). One Solomon Islands youth educator explained that "when we talk about climate in our language, we use words that already carry our relationship to the land and sea, so people immediately understand it's about their lives, not some distant problem." This linguistic approach also facilitated the preservation and revitalization of traditional environmental knowledge that might otherwise be lost as younger generations become increasingly educated in colonial languages (Gegeo & Watson-Gegeo, 2022).

The incorporation of customary governance and decision-making structures proved essential for program legitimacy and sustainability. Youth leaders who engaged with traditional chiefs, church leaders, and community councils from the outset reported significantly higher participation rates and longer program persistence than those who operated independently (Rakova et al., 2021). This engagement required youth to navigate complex intergenerational dynamics, demonstrating respect for authority while also asserting their expertise and right to lead on climate issues. In several communities, youth successfully proposed the establishment of new customary roles or committees focused on environmental stewardship, effectively institutionalizing climate action within traditional governance frameworks (Campbell & Barnett, 2020). These innovations illustrate how youth-led initiatives can strengthen rather than undermine traditional systems, creating hybrid governance models appropriate for contemporary challenges while maintaining cultural continuity.

Cultural protocols and ceremonial practices were deliberately incorporated into educational programs, transforming climate education from purely informational to deeply meaningful community experiences. Youth organizers described beginning sessions with traditional prayers or protocols, conducting beach cleanups as communal work parties with customary food sharing, and timing activities to align with cultural calendars and significant events (Mila-Schaaf & Hudson, 2020). These practices honored cultural values of reciprocity, collective action, and spiritual connection to environment, making participation feel like cultural obligation rather than optional activity. Such approaches demonstrate the power of embedding climate education within existing cultural frameworks rather than presenting it as external intervention, a strategy that anthropological research has long identified as essential for sustainable community development (Nunn et al., 2021).

Peer-to-Peer Learning Networks and Knowledge Exchange

The establishment of peer-to-peer learning networks emerged as a powerful strategy for scaling youth-led climate education across Pacific Island communities. These networks operated both within and between islands, creating horizontal knowledge flows that bypassed traditional hierarchical educational structures (Petersen & Tschakert, 2021). Youth participants reported that learning from peers felt less intimidating and more relatable than instruction from adult authorities or external experts, fostering environments where questions and experimentation were encouraged. In Tuvalu, a youth-led climate club model spread across six islands within 18 months, with young people from established clubs mentoring peers starting new chapters, creating a multiplier effect that dramatically expanded reach (Barnett & Waters, 2021). This peer model proved particularly effective for sensitive topics like climate-induced migration, where young people felt more comfortable discussing fears and aspirations with age-mates who shared similar experiences and perspectives (Mulyana et al., 2021).

Digital technologies facilitated the expansion of peer networks beyond geographic boundaries, connecting youth across vast oceanic distances. WhatsApp groups, Facebook communities, and video conferencing platforms enabled real-time sharing of educational resources, problem-solving, and mutual support among youth educators working in isolated contexts (Suliman et al., 2019). One regional network coordinated monthly virtual knowledge exchanges where youth leaders presented their programs, discussed challenges, and collaboratively developed solutions, effectively creating a distributed community of practice (Klöck & Nunn, 2019). These digital connections not only enhanced individual program quality but also fostered regional identity and solidarity, with participants describing feeling part of a broader movement rather than working in isolation. However, connectivity challenges and digital divides remained significant barriers in some remote communities, highlighting ongoing inequities in access to enabling technologies (Macdonald, 2020).

Peer education proved particularly effective in addressing gender dimensions of climate vulnerability and action. Female youth educators reported that peer-to-peer approaches created spaces where young women could discuss climate impacts on their lives—including concerns about water collection, food security, and safety during disasters—without judgment or dismissal (McNamara & Prasad, 2023). All-female peer groups in several communities developed into powerful advocacy networks that successfully influenced local climate adaptation planning to address women's specific needs and incorporate their knowledge (Pearson et al., 2022). These groups also challenged traditional gender roles that excluded women from environmental decision-making, with young women leveraging their climate expertise to claim seats on village councils and national youth delegations to international climate negotiations. Such outcomes demonstrate how peer networks can serve as platforms for broader social transformation alongside environmental education (Muhsyanur and Mustapha, 2023).

The peer learning model facilitated rapid innovation and adaptation of educational approaches, as youth educators learned from each other's successes and failures in real-time. Unlike formal curricula that take years to revise, peer-shared resources were continuously refined based on community feedback and emerging needs (Varea & Fiti, 2022). Youth participants described this as "living education" that evolved with their understanding and their communities' changing circumstances. For example, when Cyclone Harold devastated Vanuatu in 2020, youth networks immediately shared disaster preparedness materials adapted for COVID-19 contexts, demonstrating remarkable agility in responding to compounding crises (Granderson, 2021). This adaptive capacity represents a significant advantage of decentralized, peer-led models over rigid institutional programs, particularly in dynamic contexts like Small Island Developing States facing multiple, intersecting challenges.

Peer networks also served critical psychosocial support functions for young climate educators, many of whom experienced eco-anxiety, grief about environmental losses, and frustration with slow institutional responses to climate threats. Having peer spaces to process these emotions and share coping strategies proved essential for sustaining youth engagement over time (Hammersmith, 2021). Participants described their peer networks as "families" that provided belonging, purpose, and hope amid overwhelming challenges. This emotional dimension of peer networks is often overlooked in climate education literature but emerged as fundamental to participant well-being and program longevity in this study, suggesting that supporting youth climate leaders requires attention to mental health alongside capacity building (Oakes & Milan, 2022) (Mulyana et al., 2021).

Intergenerational Knowledge Exchange and Community Engagement

Successful youth-led climate education initiatives deliberately fostered intergenerational dialogue, recognizing that sustainable climate action requires collaboration across age groups rather than youth working in isolation. Youth

leaders described intentionally creating spaces where elders could share traditional environmental knowledge while learning about climate science from younger generations, reversing typical knowledge flow directions (Thaman et al., 2021). In Fiji, intergenerational "knowledge circles" brought together village elders, middle-aged community members, and youth to collectively analyze environmental changes and develop adaptation strategies, with each generation contributing distinct expertise (Nunn et al., 2021). These exchanges validated elders' lifetime observations while helping them understand the accelerated pace and novel nature of current changes, building shared understanding that strengthened community cohesion and collective action.

The research identified specific strategies youth employed to navigate age-based hierarchies respectfully while asserting their leadership on climate issues. Most commonly, youth positioned themselves as facilitators rather than experts, framing their role as organizing opportunities for community learning and action rather than instructing elders (McNamara et al., 2020). This approach honored cultural protocols requiring deference to elders while still enabling youth to drive educational agendas and outcomes. In several communities, youth partnered with progressive elders who served as champions, legitimizing youth initiatives within traditional governance structures (Campbell & Barnett, 2020). These elder-youth alliances proved crucial for overcoming initial skepticism and securing resources and permissions for educational programs, demonstrating the strategic importance of intergenerational coalition-building.

Intergenerational programs revealed important differences in climate perceptions and priorities across age groups that, when acknowledged, enriched rather than impeded collective action. Elders tended to frame environmental changes within longer temporal scales and emphasized spiritual and cultural dimensions of environmental relationships, while youth focused more on scientific explanations and future projections (Gegeo & Watson-Gegeo, 2022). Rather than viewing these differences as contradictory, successful programs treated them as complementary perspectives that together provided more comprehensive understanding. Table 1 illustrates the diverse contributions different generations brought to climate education initiatives, highlighting the value of truly integrative approaches.

Table 1. Generational Contributions to Youth-Led Climate Education Programs

Generation	Primary Knowledge Contributions	Educational Role	Engagement Barriers	Facilitation Strategies
Elders (65+)	Traditional ecological knowledge, long-term	Knowledge holders, cultural validators,	Mobility limitations, skepticism of youth	Home visits, integration of cultural ceremonies, elder advisory

Generation	Primary Knowledge Contributions	Educational Role	Engagement Barriers	Facilitation Strategies
	environmental observations, cultural protocols, spiritual frameworks	program legitimizers	leadership, language barriers with technical terms	councils, translation of concepts
Adults (35-64)	Resource access, institutional connections, implementation capacity, livelihood knowledge	Resource mobilizers, institutional liaisons, logistics coordinators	Time constraints due to livelihood demands, limited climate literacy	Evening/weekend sessions, linking climate action to economic benefits, practical skill-building
Youth (15-34)	Climate science knowledge, digital skills, energy and creativity, peer networks	Program designers, facilitators, innovators, communicators	Limited authority in traditional structures, resource constraints, competing education/work demands	Peer mentorship, digital platforms, school integration, recognition ceremonies, stipends/incentives
Children (<15)	Enthusiasm, family influence, behavioral flexibility, future stake	Household messengers, behavior change agents, program participants	Developmental capacity, limited autonomy, safety concerns	Age-appropriate activities, family engagement, school partnerships, creative/play-based learning

The table demonstrates how each generation contributed distinct assets while facing specific barriers to participation, requiring tailored engagement strategies. Youth leaders who successfully navigated these differences created more resilient programs with broader community ownership (Ford et al., 2020). One particularly effective strategy involved youth training children as "climate ambassadors" who shared lessons with their families, leveraging the powerful influence children exert in Pacific households to promote behavior change among adults (Poloczanska et al., 2023). This multi-directional knowledge flow—elders to youth, youth to adults, children to parents—created dynamic learning ecosystems that engaged entire communities rather than isolated demographic segments.

Intergenerational programs also served important functions in cultural preservation and transmission, as youth-led climate initiatives often revitalized

traditional practices that had declined. In Solomon Islands, youth working with elders to document traditional weather prediction methods not only enhanced climate adaptation capacity but also reinvigorated cultural practices and languages at risk of disappearance (Rakova et al., 2021). Elders reported feeling valued and relevant as knowledge holders, addressing social marginalization that often accompanies aging in rapidly modernizing communities. Youth participants described gaining deeper appreciation for their cultural heritage and stronger connections to place through these exchanges, outcomes with significance far beyond climate education alone (Kelman, 2020). These cultural co-benefits suggest that climate education initiatives can simultaneously address environmental and social sustainability, strengthening community resilience across multiple dimensions.

The long-term sustainability of youth-led initiatives often depended on establishing ongoing intergenerational governance structures rather than treating engagement as one-time events. Several communities created "climate councils" with guaranteed representation across age groups and genders, institutionalizing collaborative decision-making on environmental issues (Pearson et al., 2022). These structures outlasted individual youth leaders' tenures, ensuring program continuity even as young people aged out or relocated. Youth participants emphasized that their goal was not to maintain permanent leadership but to catalyze systemic changes that would persist beyond their involvement, viewing success as creating community capacity rather than personal prominence (Mila-Schaaf & Hudson, 2020). This orientation toward collective, sustained impact rather than individual achievement reflects cultural values of communalism and demonstrates mature understanding of social change processes.

Action-Oriented Learning and Community Resilience Outcomes

Youth-led climate education programs distinguished themselves through emphasis on action-oriented learning that moved beyond information transmission to tangible community projects and behavior changes. Every program examined incorporated practical activities such as mangrove planting, waste management systems, water conservation infrastructure, or renewable energy installations alongside educational sessions (Barnett & Waters, 2021). Youth leaders explained that "we don't just talk about climate change, we do something about it together," recognizing that action builds efficacy and hope while demonstrating concepts concretely. This experiential pedagogy aligned with Pacific learning traditions emphasizing practice and participation over abstract instruction, enhancing cultural appropriateness and effectiveness (Granderson, 2021). Moreover, tangible projects provided visible evidence of program value, building community support and attracting resources more effectively than awareness campaigns alone.

The action-oriented approach yielded measurable resilience outcomes across multiple domains. Environmental benefits included restoration of degraded ecosystems, improved waste management reducing pollution, enhanced food

security through climate-adapted agriculture, and strengthened disaster preparedness (McNamara & Prasad, 2023). Social outcomes encompassed increased community cohesion through collective action, strengthened governance capacity, enhanced pride and identity, and reduced outmigration as youth saw possibilities for contributing locally (Klöck & Nunn, 2019). Economic benefits emerged from livelihood diversification, reduced resource expenditures through conservation, and attraction of external funding to support community projects. Youth participants emphasized that these tangible outcomes were essential for maintaining community engagement over time, as visible results motivated continued participation and validated the time invested in programs (Varea & Fiti, 2022). The multiplicity of co-benefits also meant programs remained relevant even as priorities shifted, enhancing adaptability and sustainability.

Youth leaders demonstrated sophisticated understanding of how to sequence activities to build capacity progressively, typically beginning with small, achievable projects that built confidence before advancing to more ambitious initiatives. Initial activities often focused on immediate, visible improvements like beach cleanups or school gardens that required minimal resources and generated quick wins (Suliman et al., 2019). Success with these foundational projects built trust, skills, and relationships that enabled more complex undertakings like community-wide renewable energy systems or integrated coastal management plans. This scaffolded approach recognized that building community agency and efficacy is as important as technical outcomes, particularly in contexts where colonial histories and development failures have undermined communities' confidence in their capacity for self-determination (Nunn et al., 2021). Several youth leaders explicitly described their strategy as "rebuilding belief in ourselves" through cumulative successes that demonstrated community capability.

The programs also cultivated critical consciousness about structural drivers of climate vulnerability, moving beyond individual behavior change to engage with political and economic dimensions. Youth facilitators incorporated analysis of historical emissions inequities, climate justice frameworks, and the responsibilities of high-emitting nations, contextualizing local impacts within global power dynamics (Oakes & Milan, 2022). This political dimension was particularly pronounced among youth involved in international climate negotiations and advocacy, who brought insights from global forums back to community education programs. By connecting local experiences to global processes, these educational initiatives empowered communities to claim their rights to climate finance, technology transfer, and loss and damage compensation rather than accepting victimization passively (Campbell & Barnett, 2020). Such politicization of climate education represents significant departure from technocratic approaches dominant in many formal educational settings and reflects youth leaders' understanding that climate change is fundamentally an issue of justice and equity.

However, the research also identified challenges and limitations in translating education to sustained action and resilience outcomes. Resource constraints

frequently prevented youth from implementing planned projects, creating frustration and disillusionment when communities mobilized but lacked means to act (Hammersmith, 2021). Youth leaders described constant challenges of fundraising, navigating bureaucratic barriers to access government support, and competing with established NGOs for limited climate funding. Additionally, some community members participated in one-off activities like planting events without adopting broader behavior changes, raising questions about depth and sustainability of impact (Macdonald, 2020). Structural constraints including limited livelihood alternatives, poor infrastructure, and weak governance created ceilings on what community action could achieve, sometimes leaving youth feeling they were "bailing water from a sinking ship" despite their best efforts. These realities underscore that while youth-led education can catalyze important changes, it cannot substitute for necessary national and international climate action and support for vulnerable communities.

CONCLUSION

This study demonstrates that youth-led climate action education represents a powerful strategy for building community resilience in Pacific Island contexts, achieving success through culturally-grounded approaches, peer-to-peer networks, intergenerational collaboration, and action-oriented learning. Youth leaders have developed innovative educational models that bridge traditional ecological knowledge and contemporary climate science, creating inclusive programs that engage diverse community members in meaningful climate action. The findings reveal that effective youth-led initiatives honor cultural protocols and languages, establish horizontal learning networks that enable rapid knowledge exchange and adaptation, deliberately foster intergenerational dialogue that values all age groups' contributions, and emphasize tangible projects that build agency alongside awareness.

While resource constraints and structural barriers limit what community-level action can achieve alone, youth-led education has catalyzed significant resilience outcomes across environmental, social, and economic domains while strengthening cultural identity and community cohesion. These initiatives offer valuable lessons for climate education globally, demonstrating the transformative potential of participatory, community-centered approaches led by those most affected by climate change. Supporting and scaling these youth-led efforts through adequate resourcing, institutional recognition, and policy integration represents a critical strategy for enhancing climate resilience in Small Island Developing States and beyond.

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