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Institutionalizing Community Knowledge in Climate Adaptation Policies

Lessons from Urban Small Islands in Bohol

Gelyn S. Puracan & Erwin Bernardo

Executive Summary

Climate change continues to intensify risks in the Philippines, particularly in coastal and small island communities where livelihoods, infrastructure, and local economies depend heavily on marine and coastal resources (ADB, 2021; IPCC, 2022). Rising sea levels, stronger typhoons, coastal erosion, and ecosystem degradation place increasing pressure on local governments to develop effective and locally responsive adaptation strategies. In response, the Philippines has established a comprehensive climate governance framework through the Climate Change Act of 2009 (Republic Act No. 9729), the People's Survival Fund Act (Republic Act No. 10174), and Local Climate Change Action Plans (LCCAPs), which promote participatory and decentralized approaches to climate adaptation.

Despite the existing climate adaptation policies and their commitments to ensuring the mitigation of climate-related risks, a gap remains between formal climate governance and community-level adaptation practices. This provides a limited mechanism for integrating community knowledge into planning and decision-making.

Drawing on qualitative fieldwork conducted in the urban small islands of Nasingin and Banacon in Getafe, Bohol, this policy brief finds that residents actively employ locally developed adaptation strategies, including mangrove management, environmental stewardship, adaptive housing practices, community-based resource regulation, and informal early warning systems. In Nasingin, adaptation initiatives persist despite limited institutional and financial support, while in Banacon, externally driven interventions produced unintended environmental and livelihood impacts.

While the practices reflect extensive local knowledge developed through long-term interaction with changing environmental conditions and have strengthened community resilience to climate-related hazards, these cases demonstrate the limitations of adaptation efforts when local knowledge remains peripheral to formal governance. To address this gap, the policy brief recommends institutionalizing community knowledge in climate planning, strengthening knowledge-sharing and validation mechanisms, fostering collaboration among key stakeholders, and integrating validated local knowledge into formal planning frameworks. These measures can help ensure that adaptation strategies are more context-sensitive, effective, and responsive to the realities of urban small-island communities.

The Policy: Institutional Pathways for Climate Adaptation

The Philippine climate policy framework establishes several institutional pathways through which community knowledge can, in principle, be integrated into climate change adaptation. At its core is the Climate Change Act of 2009, which frames climate change as a cross-cutting development issue and assigns local governments a central role in adaptation planning and implementation. The law emphasizes participatory engagement and the consideration of local vulnerabilities, primarily through Local Climate Change Action Plans (LCCAPs). As locally grounded planning instruments, LCCAPs translate national climate priorities into local initiatives and provide entry points for incorporating lived experiences, community-level data, and everyday adaptation practices into formal governance. This framework is further supported by the People's Survival Fund (R.A. 10174), which enables local government units (LGUs) to implement community-based adaptation programs, including ecosystem-based approaches, livelihood protection, and risk reduction measures in climate-vulnerable areas.

These mechanisms are reinforced by the Philippine Development Plan 2023–2028, which promotes the mainstreaming of climate adaptation and disaster risk reduction across sectors, and by subnational initiatives such as the Bohol Climate Emergency Response Roadmap 2021–2030, which aligns local climate action with ecosystem conservation and sustainable development goals. Together, these frameworks recognize the importance of context-sensitive planning and local participation. However, they provide limited guidance on how community knowledge can be systematically documented, validated, and integrated into adaptation decision-making. As a result, while opportunities for participation exist, community knowledge often remains peripheral rather than embedded in policy. This gap is evident in urban small island communities such as Nasingin and Banacon, where locally developed adaptation practices persist but remain weakly reflected in formal planning instruments.

The Policy Problem: Disconnect Between Formal Climate Policy and Community-Led Adaptation

Despite the Philippines' comprehensive climate policy framework, fieldwork in Nasingin and Banacon islands reveals an enduring gap between formal climate adaptation policies and the current realities of the island communities. While residents actively generate and implement locally grounded adaptation strategies, these efforts remain weakly supported, unfunded, poorly institutionalized, and in some cases, undermined by externally driven initiatives and interventions. The following cases illustrate how this policy disconnect manifests in distinct yet interconnected ways.

Nasingin Island: Community-Led Adaptation Without Institutional Support

In Nasingin, climate adaptation is largely rooted in community initiative rather than formal institutional assistance. Residents have undertaken mangrove planting activities without government funding, motivated by their experiential understanding of mangroves as buffers against storm surges and coastal erosion. When asked about their community initiatives, the respondents said, *"Kanang mananum og bakawan. Ang bakawan maoy nag-save namo, kadtong pag Odette wala'y patay" (*We planted mangroves. The mangroves saved us; no one died during Typhoon Odette*).*

These efforts are complemented by locally developed early warning practices, such as the use of trumpet signals to alert residents of approaching typhoons. One respondent stated, *"Aduna mi trump sa panahon nga kuan naa gyud ba ang signal ug mu-signal sila na bagyo na ba, basta Signal #2 evacuate na gyud" (*We have a trumpet here that we use to announce and give a warning signal when there are typhoons. If it reaches Signal #2, it is time to evacuate*).* Such practice is an example of an accessible and culturally embedded communication system suited to the island's dense settlement pattern.

The community has also established informal regulations to prevent dynamite fishing within their marine sanctuary, reflecting a strong sense of environmental stewardship and collective governance. However, despite these initiatives, residents consistently highlighted their inability to

effectively monitor and enforce fishing regulations, particularly against outsiders who engage in illegal fishing practices. The stated, *"Ang pagsulod sir dili jud nimo mapugngan kung walay ga bantay. Wa may mu bantay kay wa may sweldo ba. Ang plano ta kay ang baranggay ang mu-sweldo, pero ang baranggay man gud, dugay ang proseso ba. Naa ang baranggay ihatag nga honorarium sa mga mubantay gyud. Naa to'y mga dakong taklobo sir, pero katong pagpista kay gikawatag pito ka buok" (*In terms of regulating entry, enforcement is impossible in the absence of regular patrols and all kinds of monitoring. In fact, no one can do it regularly due to a lack of budget for salaries. The initial plan was for the barangay to assume this responsibility to give honorarium; however, the approval process and implementation are so long and tedious. We had giant clams, but seven were stolen during the fiesta, despite the earlier conservation efforts*).* This shows that the primary constraint is financial: the community lacks the resources to compensate individuals tasked with monitoring and patrolling coastal areas.

Nasingin's case illustrates a key policy problem: while national and local climate policies highlight participation, they often presume that communities can sustain adaptation efforts without adequate financial, technical, and institutional support. In Nasingin, the absence of sustained funding mechanisms and formal recognition, in practice, within municipal climate plans, restricts the effectiveness and durability of community-led adaptation, leaving locally initiated solutions vulnerable to erosion over time.

Banacon Island: When Technocratic Interventions Undermine Local Knowledge

In Banacon, community adaptation practices are deeply embedded in everyday life and informed by generations of local ecological knowledge. Residents have responded to rising water levels by expanding mangrove cover, modifying housing structures into two-storey dwellings to safeguard property during flooding, and implementing innovative solid waste management strategies that simultaneously address waste disposal, land scarcity, and infrastructure needs. These practices demonstrate a sophisticated, integrated approach to environmental management under conditions of limited land and increasing climate stress.

A particularly significant aspect of Banacon's local knowledge lies in ancestral mangrove management practices. Their ancestors deliberately plant mangroves in strategic patterns, leaving open spaces within plantations to allow fish species that do not thrive in mangrove ecosystems to thrive. A resident explained in detail, *"Ang area dira ma'am, kay akong apuhan, mao man gyud to nagtanom didto, katong si Paden. Kana kunong dapita, grabe gyud ang pagkabagaa sa mangroves dira, grabe daw ang isda dira ma'am. Pero ang iyahang pagtanom, naay limit, gibuhatan niyag dalan dalan, maong daghan gihapon ang isda. Sus ang mga tao, nagtanom man ug daghan, wala nay isda dira ron" (*That area was originally planted by my grandfather, Paden. At the time, the mangroves were dense, and fish were abundant. His approach to planting involved setting clear boundaries and intentionally leaving open spaces where fish could thrive. In contrast, mangrove planting practices today often lack such limits and spacing, which has contributed to the decline in fish populations in the area*).* This practice reflects a nuanced understanding of marine biodiversity and habitat differentiation, grounded in long-term observation and lived experiences.

However, this locally grounded knowledge has been systematically sidelined by externally driven interventions, most notably under the National Greening Program (NGP). Fieldwork participants reported that mangrove planting under the NGP was conducted in seagrass areas, leading to habitat loss, declining fish populations, and long-term impacts on livelihoods. *"Sige sad mig dialogue, maong makasabot na sad sila, pero naay uban nga dili ka sabot... dako kaayong kadaot diri. Ang among kinabuhian gyud diri ma'am kay kinhason, pasayan. Ang isda man gyud kay lain lain silag classification asa siya mabuhi, ang katong pataw nga mupuyo sa katunggan adto siya mabuhi, naa say mabuhi sa corals ug sa mga sea grass katong danggit sa sea grass man na" (*We engage in dialogues with experts to ensure that our perspectives are also understood; however, some did not understand us and interventions still fail to reflect local realities and end up causing significant harm. Our livelihoods depend on a range of marine resources, such as seashells and shrimps, and fish species thrive in different habitats, some in mangrove areas, others in seagrass beds, and not exclusively in mangroves alone*).*

Furthermore, ecological zoning and classification were undertaken only after extensive planting had already occurred, rendering corrective measures largely reactive rather than preventive. When asked about zoning, a respondent stated, *"Katong nag consultation sila ba ang DENR ma'am nya nganong karon naman*

*na sila nag-zoning nga nahuman na ang project sa National Greening Project (NGP). Awa ha, karon lahi na ang sea grasses, ang coral lain na, murag tulo na ang klase sa ecosystem. Ang ilahang balaod karon kay ang kanang sea grasses, dili na gyud na matamnan, pero human na ang project sa NGP, ningkabag na ug 1000 hectares." (*During the consultation, it was the DENR, ma'am, and we questioned why the zoning was only being implemented now, when the National Greening Program (NGP) project had already been completed. Look at what has happened— the seagrass areas are now different. Under the current regulations, seagrass areas are no longer allowed to be planted, yet after the NGP project was completed, around 1,000 hectares had already been planted*).*

Compounding the issue, some residents participated in the NGP despite recognizing its ecological risks, driven by short-term economic incentives associated with the program. *"Ang nahitabo sa NGP tungod sa money matters man, unya ug ingon nimo ang tao nga magtanom ug bakhaw kay hatagan kag kwarta, mo prefer gyud to kaysa mangisda sa sea grass area kay makakwarta man siya within the month" (*Because money was given emphasis here, when people are asked to plant mangroves they would really do it, especially when they will be compensated. They would really prefer planting than fishing since they can earn more within the month*).* This highlights a critical policy failure: when technocratic, target-driven programs prioritize numerical outputs over ecological and social context, they can create perverse incentives that undermine sustainable adaptation.

Banacon's case underscores a broader institutional gap in climate governance, the failure to integrate community knowledge into program planning and design, initiatives, and implementation. Scientific expertise, while essential, was applied in a manner that treated local knowledge as secondary, resulting in maladaptive consequences that could have been avoided through genuine knowledge co-production.

As clearly reflected in both cases, the central policy problem is not the absence of climate adaptation frameworks, but the gap and disconnect between the policy and practice in urban small island contexts. While R.A. No. 9729, the LCCAPs, and provincial climate frameworks formally recognize participation as a guiding principle, they provide limited direction on how community knowledge should be systematically embedded in planning, financing, and enforcement mechanisms. As a result, locally grounded adaptation practices in Nasingin and Banacon operate parallel to, rather than within, formal climate governance structures—acknowledged in principle but weakly institutionalized in practice. This disconnect constrains the ability of climate policies to respond to place-specific risks, social relations, and long-standing adaptive strategies that are critical for sustainable and context-sensitive adaptation in urban small island communities.

Policy Recommendations

Drawing from the experiences of Nasingin and Banacon islands, and grounded in the existing policy architecture, the following recommendations aim to operationalize the integration of community knowledge into climate change adaptation strategies:

1. *Institutionalize Community-Led Climate Adaptation Practices*

   Local governments should formally recognize local knowledge as legitimate input to climate adaptation planning by embedding its documentation into routine governance processes. This can be done through barangay-level activities such as participatory mapping, focus group discussions, seasonal calendars, and oral history documentation to capture community observations of climate variability, hazard patterns, and coping practices, with inclusive participation from elders, women, fishers, and other key groups.

   In urban small-island communities such as Nasingin and Banacon, this documentation may include early warning systems, mangrove management practices, housing adaptations, and locally developed resource-use regulations. The outputs should feed directly into LCCAPs and municipal planning instruments to inform risk assessments, project design, and resource allocation. Systematic documentation ensures that adaptation programs remain grounded in community lived experiences and protects local knowledge from erosion amid urbanization pressures.

2. *Establish Structured Knowledge-Sharing Platforms*

   It is clear that both islands demonstrate extensive experiential community knowledge in terms of environmental risks; however, these practices are largely undocumented and isolated. LGUs, specifically the municipal and provincial levels, should initiate structured and well-designed knowledge-sharing programs and platforms to ensure that the community's knowledge is being recorded and is available as a reference to other

communities. Through this, other communities may learn from the Nasingin and Bancon's initiatives and may innovate their own ways based on their distinct context. Different key actors, such as non-government organizations (NGOs), the academe, local leaders, and other experts, may serve to validate knowledge for practical use, making a sustainable feedback loop between policy and community practice.

3. *Sustained Multi-Actor Collaborations with the Academe, NGOs, Civil Societies, Experts, and Local Leaders*

   Local government units should institutionalize sustained partnerships with the academe, non-government organizations, civil society organizations, technical experts, and local leaders to support the systematic community and technical validation of local knowledge used in climate adaptation planning. These actors should function as collaborators in validating, documenting, and integrating community knowledge into formal policies while ensuring that local ownership and decision-making remain with the communities. Community validation processes—led by residents and local leaders—should confirm whether identified practices are widely shared, intergenerational, and responsive to current environmental conditions, thereby ensuring their social legitimacy and contextual relevance.

   Complementing this, technical validation should involve planners, scientists, and disaster risk specialists who assess how community practices align with scientific data, climate risk assessments, and policy objectives. Rather than excluding practices that lack formal scientific explanation, the validation process should evaluate their functional contributions to preparedness, risk awareness, and social cohesion. In this collaborative arrangement, the academe can translate validated local practices into policy-relevant inputs for LCCAPs, NGOs, and civil society organizations. This can facilitate sustained field engagement and capacity-building, and technical experts can ensure alignment with climate and design standards. These partnerships position external actors as knowledge intermediaries rather than implementers and may be operationalized through memoranda of agreement, project-based collaborations, or existing governance mechanisms such as the formulation and updating of LCCAPs, thereby enhancing both policy credibility and institutional trust.

4. *Categorize local knowledge for planning purposes*

   Categorizing local knowledge for planning purposes allows policymakers to translate diverse community insights into actionable adaptation strategies. Local knowledge can be classified according to its function, such as predictive knowledge (e.g., environmental signs indicating extreme weather), preventive knowledge (e.g., customary rules governing resource use), and adaptive knowledge (e.g., housing designs or livelihood diversification strategies). This categorization helps planners determine how and where specific forms of knowledge can be incorporated within adaptation initiatives. It also prevents the homogenization of local knowledge, recognizing that different types serve different roles in enhancing resilience, particularly in complex urban small island environments.

5. *Integrate validated local knowledge into formal planning frameworks*

   Integrating validated local knowledge into formal planning frameworks involves embedding community-derived insights into official policy instruments such as Local Climate Change Action Plans, Disaster Risk Reduction and Management plans, and Comprehensive Land Use Plans. This integration ensures that adaptation strategies are grounded in local realities and responsive to the specific vulnerabilities of small island communities. Local knowledge can inform risk assessments, adaptation priorities, and implementation strategies, making policies more context-sensitive and socially acceptable By institutionalizing this integration, local governments move beyond symbolic participation toward meaningful inclusion, strengthening the legitimacy, effectiveness, and sustainability of climate adaptation efforts.

Conclusion

Climate change continues to intensify vulnerabilities in the Philippines, particularly in coastal and urban small island communities such as Nasingin and Banacon. As this policy brief has shown, these communities are not passive recipients of climate risk but active agents of adaptation. Through mangrove management, informal early warning systems, adaptive housing strategies, and ecosystem-based livelihoods, residents draw on long-standing local knowledge to respond to climate threats in ways that are both practical and context-sensitive.

At the same time, the Philippines has developed an extensive climate governance framework that formally recognizes participation and decentralized action through laws, financing mechanisms, and planning instruments such as R.A. No. 9729, the People's Survival Fund, and Local Climate Change Action Plans. While these policies create institutional entry points for local participation, the cases of Nasingin and Banacon reveal that community knowledge remains weakly documented, insufficiently supported, and only superficially reflected in formal planning and implementation. The core policy problem, therefore, is not the absence of climate adaptation frameworks but the persistent disconnect between policy and practice. In Nasingin, community-led adaptation efforts continue with limited financial and institutional support, undermining their long-term sustainability. In Banacon, technocratic and target-driven interventions that sidelined local ecological knowledge produced maladaptive outcomes, harming both ecosystems and livelihoods. In both contexts, locally grounded practices operate alongside, rather than within, formal climate governance structures.

Bridging this gap requires moving beyond symbolic participation toward the systematic integration of community knowledge into climate adaptation governance. Institutionalizing community-led practices, creating structured platforms for knowledge sharing, fostering sustained collaboration among LGUs, communities, the academe, and civil society, and embedding validated local knowledge into formal planning instruments are essential steps toward this goal. Grounding climate adaptation in lived experience strengthens policy relevance, legitimacy, and effectiveness, ensuring that climate governance responds to the realities of urban small-island communities facing accelerating climate risks.

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CENTER FOR INTEGRATIVE AND DEVELOPMENT STUDIES

Lower Ground Floor, Ang Bahay ng Alumni, Magsaysay Avenue
University of the Philippines Diliman, Quezon City 1101

cids.up.edu.ph

Telephone (02) 8981-8500 loc. 4266 to 4268
(02) 8426-0955

Email cids@up.edu.ph
cidspublications@up.edu.ph

Website cids.up.edu.ph