

Community-Based Adaptation: Challenge and Opportunity in Indonesia

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Abstract. Climate change is a serious problem mostly caused by human activities but the impacts are felt by all creatures in the world. These conditions are worsened by the rise of ‘dirty industries’ that exceed the environmental carrying capacity. Many studies had showed that people need to do something to cut climate change from individual to state scale. Therefore, community plays an important role to climate change program’s success. It is known as community-based adaptation (CBA). CBA combines indigenous knowledge, community needs, and local conditions so the program is more likely to implement. In Indonesia, climate change adaptation and mitigation are run in community level namely ProKlim. Government also gives the best practiced community with title and prizes. This paper aims to identify and synthesize previous researches related to CBA and challenge and opportunity of CBA practices in Indonesia. The findings of this paper are CBA is proven in shaping resilience on disaster management, aquaculture, food, and water. Moreover, indigenous knowledge, local leader, funding, and government involvement are the important instrument of CBA. Despite the numerous reports on CBA succeed, there are still some challenge and opportunity of CBA practices in Indonesia.

1 Introduction

Climate change is a major problem that significantly affects coral reefs, drought, freshwater resources, agriculture, aquaculture, sea-level rises, wetlands, health, extinction of species, and social and economic life [1-12]. Vulnerable areas such as small islands are more likely affected by the climate change impact [7, 9, 13]. To cope with these problems, adaptation, and mitigation strategies are needed.

Adaptation plans initiated by a formal institution can be more improved by involving the community in the planning process to sync the actual condition and community needs [7]. Adaptation plan requires participation as an essential part of the socio-ecological system [14]. It can be initiated by the community (bottom-up) or formal institutions such as NGOs and government (top-down) [15, 16]. The adaptation strategy initiated by the community is called

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community-based adaptation (CBA). CBA is a grassroots-driven, small-scale, place-based method that has synergies with bigger development goals. In theory, CBA's local-scale focus allows for greater recognition and integration of existing indigenous knowledge, capacities, priorities, and context, as well as enabling impacts to be addressed at the scale at which they experience [13]. Community-based adaptation (CBA) is a common policy response in international development, but often encounters implementation and longevity challenges [17].

In Indonesia, CBA performed on the lowest administrative level: RW and village. The community initiatives are then assessed by the Ministry of Environmental and Forestry (MEF). The community initiatives that passed the assessment will get a title from MEF as a Proklamasi Kampung. It aims to increase community involvement in climate change adaptation and mitigation. Although CBA sounds promising, several studies had shown the barrier to CBA success such as limited funds, human resources, communication, government and institutions, technology, infrastructure, power, and inequality [18, 19]. According to [20], the socio-social setting in Nepal shapes the achievement and disappointment of CBA. Poor people and weak families are reliant upon the higher ranks, elites, and influential people inside the local gatherings for getting profits by the tasks or programs. This paper will discuss the current research on community-based adaptation and challenges and opportunities in Indonesia.

2 Current research on community-based adaptation

2.1 CBA and resilience

In the previous study, CBA plays an important role to create disaster resilience [7, 21-24], agriculture [2, 11-12, 21, 25], aquaculture [26], food [7], and water [11, 25-28] resilience in the community. Moreover, one of the successful CBA planning processes is comprehensively addressing local socio-ecological factors of vulnerability and resilience, including food security, governance, health and education, and indigenous knowledge [2]. CBA is consistent with SDG's goal to empower the community to build resilience on natural disasters and climate change impact [22]. CBA uses disaster risk management to identify the potential disaster risk and find the best adaptation and mitigation scheme according to their community. In aquaculture, CBA is urgently needed to cope with climate change [26]. Research conducted in the Maheni community shows that water resilience was reached by agreement and restrictions on water use.

2.2 Indigenous knowledge

Indigenous knowledge provides insights on how the community dealt with climate change in the past and also what to do in the future [29-31]. Moreover, indigenous knowledge creates an instrumental reason for developing transformation techniques to CBA [23]. Integrating several sources of knowledge and establishing connections between specific sightings can be an effective way to find the best strategy of CBA so it can improve the success of CBA [13, 23]. In the Maharashtra State community in India, indigenous knowledge uses to maintain the sustainable crop system as one of the CBA strategies [21]. In Myemsingh community, they use natural substrate from bamboo, sugarcane, and tree, resulting in a larger number of fish production [21]. To link indigenous knowledge with community-based adaptation strategies, the community needs to understand the situation in the community and communicate with residents in the early stages of decision-making [32]. In Alaska, indigenous knowledge uses as the basis of hazard adaptation and mitigation strategy [29].

Research in Bangladesh found that indigenous knowledge is used as a CBA strategy to cope with climate change [33]. Indigenous knowledge combined with science can use as an adaptation strategy in CBA [34].

2.3 Community leadership

The previous study has shown that community leaders had an influential ability to succeed in the CBA project. According to [35], community leaders know about social, communication, and personal networks. To simplify, community leaders become a bridge for community members and formal institutions (government, NGO). Furthermore, strong leadership is stated as a key role of CBA success [1].

2.4 Funding

Funding plays a key role in CBA implementation [7, 24, 36]. The increasing of funding is urgently needed to support the CBA project [31]. Research in 20 communities in Pacific Islands shows that the locally funded CBA shows better results than internationally funded CBA [13]. It is because locally sponsored programs are more likely to be created and led by people who are familiar with local contexts and socio-cultural nuances. The research on a low-lying island in the Philippines found that not all of the community members received stilted houses due to limited funds [7]. Research conducted by [37] showed that external funding was often needed to support CBA strategies.

2.5 Government involvement

Although the CBA process is not mandatory, a community still needs support and share power from the government [22, 38]. The recent study found that one potential way for tending to administration challenges at the community level is to include a different scope of partners of different scales including government, to catalyst socio-social and institutional change, prompting enhancements in assistance conveyance and comprehensiveness [20]. Government involvement along with NGOs, community-based organizations, and related stakeholders may help the community to plan and implement the CBA strategies [7, 25-26, 39-40]. Moreover, the strength of the specific rhetoric of the international development community and the limited involvement of the government have had negative effects on the strength of decision-making mechanisms at community levels [17].

3 CBA challenge and opportunity in Indonesia

Indonesia is one of the countries that put serious attention on climate change and is proactively involved in an international meeting on the environment. It also has an office under the MEF authority that specialized in controlling climate change called DitjenPPI. In CBA, MEF has launched a CBA program in 2016 called Climate Village (ProKlim). This program is fully initiated and designed by the community, so the program fits with the community's needs and local conditions.

3.1 Challenge

Unlike the CBA program in another country [7, 13], CBA programs in Indonesia (ProKlim) are often community-funded. Community members will gather some amount of money to

fund their programs. Due to the limited fund, the community cuts the number of their strategies or swaps it into the low-cost strategy such as recycling. On the other hand, some ProKlim strategies may need an infrastructure to support their programs. Research in ProKlim Tangkerang Labuai showed that the lack of infrastructure delayed community member participation [41]. On the other hand, there is not any evaluation and monitoring after the community gets the ProKlim title. This brings out the uncontrolled effects that the community will no longer practice their programs.

Most of ProKlim's strategies are held by a group of community members, but since the pandemic of COVID-19 in 2020 some ProKlims are no longer active. To cope with this, the community along with MEF needs to find an alternative strategy at household level.

3.2 Opportunity

Some studies about ProKlim in Indonesia had reported that ProKlim has positive impacts on environmental, social, and economic [41-44]. It is reported that ProKlim has succeeded embellish the community environment by their planting flowers and vegetable program. In some areas, the community gets additional funding from their 3R waste management. ProKlim requires the community to dig their indigenous knowledge, strength, weakness, and their needs. Therefore, ProKlim shapes communities to have a better understanding of their community and resources. From these CBA practices, ProKlim can develop their climate change programs to eco-tourism programs. Furthermore, the community can engage the private company in their CBA program to gain more funding and succeed in their implementation programs.

4 Conclusion

Climate change affects all aspects of our lives and changes how we behave and see the world. Climate changes also trigger various disasters such as floods and drought. Small islands are reported to be the most vulnerable area to climate change-related sea-level rises. Community-based adaptation as a grassroots and indigenous adaptation plays an important role in climate change adaptation. This paper reviews recent research on community-based adaptation and discuss challenge and opportunity in Indonesia. The finding is community-based strategies are proven to build community resilience in disaster management, aquaculture, food, and water. To more engage with the community, indigenous knowledge is often used as one of the community-based adaptation strategies. The local leader also plays an important role to conduct and control the strategy implementation and also as a 'bridge' between community members and formal institutions. Funding is also important for the community to implement and develop their community-based adaptation strategies. Government support is also important since the community often needs support and share power from the government. In Indonesia, community-based adaptation strategies as known as ProKlim under the Ministry of Environmental and Forestry authority. The challenge of ProKlim practices is funding, infrastructure, and social limitation activity because of the COVID-19 pandemic. On the other hand, ProKlim opportunities are a positive impact on the environmental, social, and economic, providing a better understanding for the community member, partnering with a private company and developing their strategy into ecotourism.

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