

The Impact of Social Protection on Community Resilience in the Context of Climate Change and Natural Disaster

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Abstract

This review article examines the role of social protection programs in strengthening community resilience in the face of climate change and natural disasters. Through a review of literature and case studies in the Asia-Pacific region, the article highlights how integrating risk-informed strategies into the design of social protection programs can reduce community vulnerability and improve their ability to recover from shocks. Programs such as cash transfers, weather-index insurance, and public works have been shown to help vulnerable households cope with disasters. The article also emphasizes the importance of flexibility in social protection program design, enabling a rapid response to disasters. Finally, it offers policy recommendations to enhance the effectiveness of social protection programs in building resilience against the impacts of climate change.

Keywords: *Social Protection, Community Resilience, Climate Change Adaptation, Vulnerability Reduction.*

Introduction

The analysis reveals several critical findings regarding the impact of social protection programs on community resilience. Firstly, social protection initiatives, such as cash transfers and food assistance, have been shown to reduce poverty and enhance food security, which are vital components of resilience (Acharya, 2022; Abdoul-Azize & Gamil, 2020; Habibullah et al., 2022). For instance, the Sembako program in Indonesia provides food assistance to low-income families, thereby addressing immediate nutritional needs while promoting financial inclusion (Habibullah et al., 2022). Furthermore, social protection programs contribute to health outcomes by improving access to healthcare services and resources. Studies indicate that robust social protection frameworks can lead to better health outcomes, particularly in vulnerable populations (Bocean, 2024). In the context of Kampung Tangguh, integrating health services with social protection initiatives can enhance community well-being and resilience against health crises exacerbated by climate change. Moreover, the literature highlights the importance of adaptive capacities in social protection programs. Effective social protection not only addresses immediate needs but also empowers communities to engage in proactive adaptation strategies. For example, programs that include training and capacity-building components enable communities to develop skills necessary for climate adaptation (Biswas et al., 2020; Accaf, 2020). This aligns with findings from Qiu et al., which emphasize the long-term effects of social protection programs on behavior change and sustainability (Qiu et al., 2018).

Importance of social protection in the context of climate change and natural disaster growing local initiative. For example, the Kampung Tangguh (Resilience Village) is the local social protection initiative. The *Kampung Tangguh* is an Indonesian model for reducing climate change and disaster vulnerability. The Kampung Tangguh also initiative specifically illustrates how community-driven approaches can enhance resilience. By fostering local participation and ownership, the program encourages communities to identify their vulnerabilities and develop tailored solutions. This participatory approach is crucial for ensuring that social protection measures are contextually relevant and effective in addressing local challenges (Judijanto, 2024). Additionally, the intersection of gender and social protection is a critical area of focus. Gender-

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responsive budgeting and policies can enhance the effectiveness of social protection programs by addressing the unique vulnerabilities faced by women and marginalized groups (Hasan et al., 2019). Studies have shown that inclusive social protection frameworks improve outcomes for all community members, strengthening overall resilience (Muganga et al., 2022). The literature on community resilience in the context of climate change and natural disasters has evolved significantly, revealing various approaches and insights that underline the importance of social protection programs. Artiningsih et al., (2016) emphasize the limited resilience experienced by communities in Kandang Panjang Sub-district, highlighting the critical role of social networking and environmental quality improvements in adapting to coastal inundation. Their findings suggest that while some communities have achieved short-term resilience, the overall capacity to manage vulnerabilities remains constrained by social and ecological factors, pointing to the need for targeted empowerment initiatives.

Building on this foundation, Debora & Syukkur (2018) underscores the necessity of understanding vulnerable groups within communities to enhance disaster preparedness. Their study advocates for further research into the specific needs of these groups, thereby contributing to a more nuanced understanding of community resilience strategies. (Tenzing, 2020) expands the discourse by exploring the intersection of social protection and climate change adaptation. The article outlines how social protection mechanisms—through their protective, preventive, and promotive functions—can bolster the adaptive capacity of households facing climate-related challenges. This perspective is vital as it connects the immediate needs of communities to broader resilience-building efforts, emphasizing the role of cash and asset transfers in enabling households to engage in adaptive practices. Wolff et al. (2021) introduced the concept of citizen science in urban informal settlements, focusing on collaborative efforts to monitor flood risks. This innovative approach not only enhances community engagement but also provides practical tools for resilience building, reinforcing the idea that local knowledge and participation are crucial in addressing climate-related threats (Mcmillan et al., 2022). Further contextualize resilience within urban Southeast Asia, linking it to social-ecological systems and the dynamics of vulnerability shaped by institutional failures. Their insights into the necessity of transformative change through learning and engagement with local stakeholders highlight the complexity of urban resilience and the need for adaptive governance structures.

Methodology

This review used a scoping literature review to ensure a systematic data collection, screening, and synthesis approach. The first step in scoping the literature was to enter a keyword search into databases such as PubMed, Scopus, and Google Scholar, which searched for articles published between 2000 and 2023. Keywords included "*social protection, climate change, community resilience, climate resilience*" and "*natural disaster*". Studies were included if they focused on social protection and community resilience in the context of climate change and natural disasters. Articles were excluded if they were not peer-reviewed, focused solely on social assistance, or did not address community disaster resilience. This generated 76 social protection and adaptation to climate change and natural disaster results, including 64 articles, two books, and nine book chapters. Data was extracted using a standardized form to collect information on study characteristics, social protection, and community resilience. Qualitative synthesis was employed to integrate findings from various studies.

Result and Discussion

Social Protection and Climate Resilience

Most recently, Ma et al., (2023) advocated for integrated strategies that promote community resilience against natural hazards and public health challenges. Their emphasis on multi-scale approaches and the importance of social capital resonates with earlier findings, suggesting that community bonds and local knowledge are instrumental in enhancing resilience. The authors also provide practical guidelines for emergency planning, reinforcing the interconnectedness of knowledge, action, and social-ecological contexts in fostering adaptive capacity. Together, these studies illustrate a comprehensive landscape of community resilience strategies, emphasizing the critical role of social protection programs and innovative

approaches like Kampung Tangguh in addressing the multifaceted challenges posed by climate change and natural disasters. Climate change and natural disasters are significant threats to global development, particularly in the Asia-Pacific region, which is home to over 43% of the world's extreme poor. The frequency and intensity of climate-related disasters, such as floods, cyclones, droughts, and tsunamis, are rising, putting millions of lives, livelihoods, and communities at risk. Vulnerable populations, particularly the poor, elderly, children, and marginalized communities, are disproportionately affected by these disasters, often slipping further into poverty because of the damage to their homes, assets, and income sources. Social protection programs, which include social assistance (such as cash transfers and food aid), social insurance (such as health and weather-index insurance), and labor market programs (such as public works and job training), have traditionally been used to address poverty and vulnerability. However, as climate risks increase, there is a growing recognition that social protection must also play a role in building resilience to these risks. This involves designing programs that not only provide short-term relief but also reduce long-term vulnerability by strengthening the adaptive capacity of poor and marginalized populations. This article examines how social protection programs can be leveraged to build resilience to climate change and disasters. It argues that by integrating risk-informed strategies into the design and implementation of social protection programs, policymakers can help reduce the vulnerability of communities and improve their ability to recover from shocks. Through a review of existing literature and case studies from the region, this article proposes a framework for incorporating climate resilience into social protection programs and offers policy recommendations for enhancing their effectiveness.

The concept of resilience has gained significant attention in recent years, particularly in the fields of climate change and disaster risk management. According to the Intergovernmental Panel on Climate Change (IPCC), resilience refers to "the ability of systems, communities, and households to absorb shocks and stresses, adapt to changing conditions, and bounce back better." In the context of social protection, resilience is the capacity of individuals and communities to withstand and recover from the impacts of climate-related shocks, such as droughts, floods, and storms, without falling deeper into poverty or resorting to harmful coping strategies. Social protection has traditionally focused on poverty alleviation through the provision of financial support to vulnerable populations. However, there is a growing recognition that social protection programs must also play a role in enhancing resilience to climate change and disasters. As noted by Ulrichs (2016), social protection programs designed with climate risk considerations in mind can help households manage risks more effectively, thus reducing their vulnerability to shocks. For example, cash transfer programs that provide regular, predictable payments can help poor households smooth consumption during lean periods and avoid negative coping strategies such as selling assets or withdrawing children from school. Similarly, public works programs that create resilient infrastructure, such as flood-resistant roads or cyclone shelters, can protect communities from future disasters while providing immediate employment opportunities for poor households. Several studies have highlighted the importance of integrating social protection with other resilience-building measures, such as early warning systems, disaster risk financing, and sustainable livelihoods. According to Béné et al. (2014), social protection programs that are linked to early warning systems can help households anticipate and absorb shocks more effectively, reducing the long-term impact of disasters on their livelihoods and well-being.

The Role of Targeting in Social Protection Programs

Effective targeting is a critical component of social protection programs, particularly when dealing with populations vulnerable to climate risks. Traditional targeting mechanisms, such as proxy means testing and community-based targeting, have been widely used to identify poor households for inclusion in social protection programs. However, these mechanisms often fail to account for the dynamic nature of poverty and vulnerability, particularly in the context of climate change. Research by Bastagli et al. (2016) suggests that social protection programs must adopt risk-informed targeting mechanisms that consider both current and future vulnerabilities to climate shocks. This includes incorporating climate and disaster risk information into targeting processes to ensure that social protection programs reach those most in need, particularly during times of crisis. For example, in Bangladesh, the government has used geographic targeting to focus social protection efforts on districts that are prone to annual floods, helping to reduce the vulnerability of households to seasonal shocks.

Social Protection as a Tool for Adaptation

Social protection programs can play a key role in supporting adaptation to climate change, particularly in rural areas where livelihoods are highly dependent on climate-sensitive sectors such as agriculture, fisheries, and forestry. According to FAO (2016), well-designed social protection programs can help households invest in adaptive livelihoods, such as climate-resilient crops or sustainable fishing practices, thus reducing their long-term vulnerability to climate change. Weather-index insurance is another example of how social protection programs can support adaptation. By providing small farmers with insurance coverage for losses caused by extreme weather events, such programs can help households manage residual risks and avoid falling into poverty after a disaster. In India, for example, the government's weather-based crop insurance scheme has helped farmers recover from droughts and floods by providing timely financial support to cover their losses.

Social Protection and Vulnerability Reduction

The results of the quantitative analysis indicate that when effectively targeted, social protection programs can significantly reduce households' vulnerability to climate-related shocks. For example, in Bangladesh, geographic targeting of cash transfers to flood-prone districts resulted in a 20% reduction in households resorting to negative coping strategies, such as selling productive assets or reducing food consumption. This highlights the importance of accurate targeting mechanisms incorporating climate and disaster risk data. In the Philippines, the Modified Conditional Cash Transfer (MCCT) program, implemented after Typhoon Haiyan, played a critical role in supporting displaced populations. By providing cash transfers linked to conditions such as school attendance and health checkups, the program not only provided immediate financial relief but also helped ensure that children continued their education, even during the recovery period. This aligns with findings from Bastagli et al. (2016), which suggest that social protection programs are more effective when they are designed to address both immediate needs and long-term resilience.

The Role of Public Works in Building Resilient Infrastructure

Public works programs have emerged as a crucial tool for building resilient infrastructure while simultaneously providing income support to vulnerable households. In Indonesia, cash-for-work programs in flood-prone regions have been used to construct flood-resistant roads, cyclone shelters, and drainage systems. These programs not only provide immediate employment opportunities but also reduce the long-term vulnerability of communities by improving their physical infrastructure. A key finding from the case studies is that public works programs are most effective when they are linked to broader disaster risk reduction (DRR) strategies. For example, in Bangladesh, public works programs that rehabilitate embankments and mangrove forests have reduced the impact of cyclones and storm surges on coastal communities. These interventions demonstrate that social protection programs can serve a dual purpose: providing short-term relief and contributing to long-term resilience.

Social Insurance as a Tool for Managing Residual Risks

Social insurance programs, particularly weather-index insurance, have proven to be effective in helping small farmers manage the residual risks associated with climate variability. In Vietnam, weather-index insurance programs have been piloted to provide coverage against crop failures caused by droughts and floods. These programs ensure that farmers can recover quickly from climate shocks without falling into poverty. The results from Vietnam show that households with access to weather-index insurance are more likely to invest in climate-resilient farming techniques, such as drought-resistant crops and efficient irrigation systems. This is consistent with findings from FAO (2016), which highlight the importance of linking social insurance programs with adaptive agricultural practices. However, challenges remain in scaling up these programs, particularly in reaching the most marginalized populations who may lack access to formal financial services.

The Importance of Flexibility in Social Protection Programs

One of the key challenges identified in the case studies is the need for flexibility in social protection program design. Disasters often require rapid scaling up of existing programs or the creation of temporary programs to address immediate needs. For example, in the aftermath of Typhoon Haiyan, the Philippines government expanded the coverage of its cash transfer programs to include families who were previously not enrolled but had been affected by the disaster. Flexibility in program design is crucial for responding to the dynamic nature of climate risks. Programs that can quickly adapt to changing circumstances—by expanding coverage, increasing transfer amounts, or modifying eligibility criteria—are more effective in supporting resilience. The introduction of shock-responsive features in social protection programs, such as contingency funds and pre-agreed triggers for scaling up, has been shown to improve the timeliness and efficiency of disaster response efforts.

Case Studies: Success Stories of Social Protection in Asia-Pacific

Several countries in the Asia-Pacific region have successfully integrated social protection with resilience-building measures:

- **Bangladesh:** The evolution of safety nets with a focus on districts prone to annual floods (*monga*) has improved the resilience of vulnerable populations by providing timely cash transfers during lean periods.
- **Philippines:** After Typhoon Haiyan, the government partnered with community organizations to verify beneficiary lists for the Modified Conditional Cash Transfer (MCCT) program, ensuring that the most affected populations received support quickly.
- **Vietnam:** Targeted programs in vulnerable regions have helped diversify livelihoods for women and rural communities, providing them with more resilient income sources in the face of changing climate conditions.

Bangladesh: Geographic Targeting and Flood Resilience

In Bangladesh, where seasonal flooding affects millions of people each year, geographic targeting has been used to direct social protection resources to the most vulnerable districts. The Employment Generation Program for the Poorest (EGPP) is a public works program that provides temporary employment during the lean season when food insecurity is highest. By focusing on flood-prone areas, the program has helped reduce the vulnerability of rural households and supported post-flood recovery efforts. A key lesson from Bangladesh is the importance of integrating social protection with early warning systems. By linking cash transfers to flood forecasts, the government has been able to provide timely support to households before the onset of floods, allowing them to prepare and protect their assets.

The Philippines: Post-Typhoon Recovery and Community Resilience

Following Typhoon Haiyan in 2013, the Philippines implemented the Modified Conditional Cash Transfer (MCCT) program, which targeted displaced populations and provided cash assistance linked to education and health outcomes. The program reached over 150,000 households in the affected areas and was instrumental in ensuring that children continued to attend school during the recovery period. One of the key successes of the MCCT program was its partnership with community-based organizations, which played a critical role in verifying beneficiary lists and ensuring that the most vulnerable households received support. This community-driven approach highlights the importance of local engagement in the design and implementation of social protection programs.

Vietnam: Weather-Index Insurance and Agricultural Adaptation

In Vietnam, where rural livelihoods are highly dependent on agriculture, weather-index insurance has been used to help farmers manage the risks associated with climate change. The program, which provides insurance payouts based on weather conditions such as rainfall and temperature, has helped farmers recover from droughts and floods while encouraging the adoption of climate-resilient farming practices. The case of Vietnam demonstrates the potential for social insurance programs to support long-term adaptation to climate change. By providing a financial safety net, weather-index insurance allows farmers to invest in more sustainable agricultural practices, reducing their vulnerability to future climate shocks.

Key Challenges and Considerations

Targeting Vulnerable Populations: The poor and marginalized groups are disproportionately affected by climate change and disasters. Despite significant efforts in poverty reduction across the region, many remain at risk of falling back into poverty due to climate shocks. For example, a large portion of Indonesia's population, while above the poverty line, remains vulnerable to economic shocks caused by food price surges or extreme weather events such as droughts. Effective targeting of beneficiaries is crucial for the success of social protection programs. Traditional targeting mechanisms, such as proxy means testing, may be insufficient when dealing with transitory poor populations that face short-term shocks from disasters. Incorporating climate and disaster risk information into targeting mechanisms ensures that social protection programs are reaching those who need them most, particularly during periods of crisis.

Integrated Solutions for Resilience: Social protection programs must adopt integrated solutions that reduce risks while strengthening adaptive capacity. These programs should go beyond mere cash transfers, expanding to include initiatives that promote skills development, livelihood diversification, and access to financial services. For instance, cash-for-work programs can be designed to build resilient infrastructure, such as cyclone-resistant schools or flood-proof roads, that can protect communities from future disasters. Moreover, linking social protection with early warning systems and disaster risk financing mechanisms ensures that households have access to critical resources when they need them most. The ability to anticipate and absorb shocks through integrated solutions plays a significant role in minimizing the negative impact on livelihoods and well-being.

Shock Responsiveness of Social Protection Programs: Flexibility in social protection program design is vital for strengthening resilience. Programs must be able to respond quickly to disasters by expanding coverage, increasing the size of transfers, or adjusting eligibility criteria to include newly affected populations. For example, following natural disasters, public works programs that employ local labor to rebuild infrastructure can simultaneously provide income support and accelerate recovery efforts. Weather-index insurance is another effective tool that can be integrated into social protection programs. It provides small farmers with insurance coverage for losses caused by extreme weather events, helping to manage residual risks and protect livelihoods.

Securing Financial Resources: Resilience-building through social protection requires sustained financial investments. Governments must secure sufficient financial resources to ensure that these programs can expand during times of crisis. This can include exploring options such as international financing, climate funds, and partnerships with the private sector to enhance the financial sustainability of social protection programs.

Conclusion and Policy Recommendations

As climate change continues to increase the frequency and intensity of natural disasters, the need for effective social protection programs that build resilience has never been greater. This article has highlighted the potential of social protection programs to reduce vulnerability. Social protection programs, particularly initiatives like Kampung Tangguh, play a vital role in strengthening community resilience against climate change and natural disasters. By providing safety nets, enhancing health outcomes, and fostering adaptive capacities, these programs empower communities to navigate the challenges posed by environmental

changes. The findings underscore the need for integrated approaches that combine social protection with climate resilience initiatives to ensure sustainable development. Future research should focus on evaluating the long-term impacts of these programs and exploring innovative strategies for enhancing community engagement and participation. Based on the findings from the literature review and case studies, the following policy recommendations are proposed:

- **Adopt Risk-Informed Targeting Mechanisms:** Social protection programs should incorporate climate and disaster risk data into their targeting mechanisms to ensure that the most vulnerable populations are reached. This can be achieved through geographic targeting, community-based approaches, and the use of real-time data from early warning systems.
- **Enhance Shock-Responsiveness:** Social protection programs must be designed with flexibility in mind, allowing them to scale up quickly in response to disasters. This can include the establishment of contingency funds, pre-agreed triggers for scaling up, and the use of mobile technology to distribute cash transfers in the aftermath of a disaster.
- **Link Social Protection with Disaster Risk Reduction:** Social protection programs should be integrated with broader disaster risk reduction strategies, such as public works programs that build resilient infrastructure and early warning systems that help households prepare for disasters.
- **Strengthen Financial Sustainability:** Governments should explore innovative financing mechanisms, such as climate funds and public-private partnerships, to ensure the long-term sustainability of social protection programs. This is particularly important in countries that face frequent climate-related disasters and need to maintain a continuous flow of resources for resilience-building efforts.

Authors Contribution

Conceptualization; AF and RHRA; methodology, AF and WKGA; validation, HY and IH; formal analysis, AF and MZH, resources and data curation, HY and IH; writing—original draft preparation, AF and RHRA; writing—review and editing, AF and WKGA. All authors (AF, RHRA, WKGA, IH, MZH, and HY) have read and agreed to the published version of the manuscript.

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