

Enhancing Adaptive Social Safety Net Parameters in Malaysia: An Initiative to Protect the Vulnerable Population

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Abstract

The COVID-19 pandemic and the increasing frequency of natural disasters have revealed significant weaknesses and gaps in Malaysia's existing social safety net system, particularly affecting low-income communities. This study, with its potential to significantly impact policy decisions, aims to explore the parameters necessary for developing an adaptive social safety net model suited to the local context. A quantitative approach was used through a survey conducted among 391 respondents in four People's Housing Project (PPR) residences around Kuala Lumpur. The findings show that most respondents agree on the parameters for developing an adaptive social safety net system. However, some parameters were found to be more widely agreed upon than others. The results also emphasise the importance of tailoring the system to local needs, particularly in terms of aid delivery efficiency and accessibility. This document critically examines the framework of adaptive social safety nets in Malaysia, with a focus on enhancing their parameters. By exploring various strategies and methodologies, this analysis seeks to identify ways to optimise these safety nets, ensuring they effectively support vulnerable populations. It includes a thorough review of existing practices and highlights innovative approaches that could be integrated to improve overall efficiency and effectiveness.

Keywords

Adaptive social safety nets, low-income households, resilience, social protection, covariate shocks

Introduction

The adaptive social safety net is an innovative framework introduced by the World Bank, designed to implement responsive social protection measures. It plays a crucial role in empowering households to withstand various shocks that can disrupt their livelihoods (Bowen et al., 2020). This concept recognises the profound importance of a social safety net

as a cornerstone of human rights, as emphasised in Articles 22 and 25 of the Universal Declaration of Human Rights (UDHR). These articles passionately assert that every individual in society is entitled to social security and protection through national initiatives, including the fundamental right to a decent standard of living and comprehensive well-being. This ensures that individuals are not left vulnerable but are instead supported in their pursuit of a secure and fulfilling life.

The concept of an adaptive social safety net, as articulated by Davies et al. (2009), offers a groundbreaking framework that seamlessly intertwines climate change adaptation with disaster risk reduction. This innovative approach, referred to as an adaptive social safety net, holds the promise of fortifying households against a myriad of shocks and disasters, ultimately serving as a protective shield for their well-being. In this context, resilience embodies the dynamic capacity of households to not only prepare for and endure unexpected challenges but also to adjust and thrive in the face of adversity. This transformative capability ensures that families are not easily swept into vulnerability, thereby providing a sense of security and protection in unpredictable circumstances (Bowen et al., 2020).

Several nations, including Ethiopia, Mexico, and Pakistan, have effectively implemented the concept of adaptive social safety nets, integrating these systems into their contingency planning frameworks. This approach is specifically designed to be 'shock-responsive,' ensuring that it is activated in response to unforeseen crises and disasters. For instance, these countries have instituted innovative programmes and strategies aimed at establishing a robust protective barrier around households, thereby mitigating the effects of unexpected shocks (Smith & Bowen, 2020). The increasing prevalence of unforeseen calamities and disasters in recent years has exposed significant vulnerabilities within the existing social safety net system. In this context, the role of adaptive social safety nets becomes even more crucial.

A report from the Department of Statistics Malaysia (2020) indicates that a concerning 46.6 per cent of self-employed individuals experienced job loss, while an alarming 94.8 per cent suffered substantial reductions in their monthly incomes as a direct result of the COVID-19 pandemic. This situation has created a critical lack of financial resilience among these individuals, making it challenging for them to regain stability following the crisis. Additionally, many of these individuals lack protection under the Work Act of 1995, which guarantees minimum wage benefits, leaving them particularly vulnerable during times of hardship.

The current social assistance programs implemented by the government are insufficient and fail to address the diverse needs of their intended beneficiaries adequately. A report published by Bank Negara Malaysia (2021) identifies a range of challenges plaguing the existing social safety-net programmes in Malaysia, including bureaucratic inefficiencies, insufficient funding, and suboptimal management practices. These factors significantly obstruct the effectiveness of these initiatives and demand immediate attention. For example, programmes such as *1AZAM* and *e-Kasih* have encountered considerable difficulties in meeting the specific requirements of their recipients. This challenge primarily results from the authorities' lack of effective oversight and management systems that can accurately monitor the progress of participants (Mohd Nor & Khelghat-Doost, 2019).

In light of these challenges, the objective of this paperwork is to integrate the principles of Adaptive Social Protection (ASP) into the social safety net framework. The aim is to identify parameters that are specifically tailored to the unique circumstances of local

communities or households within the B40 income group. This paper examines four out of five critical parameters: government leadership, institutional structure, data collection and analysis, and the efficacy of programme delivery systems. By exploring various strategies and methodologies, this analysis seeks to identify ways to optimise these safety nets, ensuring they effectively support vulnerable populations. It includes a thorough review of existing practices and highlights innovative approaches that could be integrated to improve overall efficiency and effectiveness.

Literature Review

The increasing frequency of disasters and unforeseen events underscores the urgent need for a robust social safety net system, one designed to bolster the resilience of our society (Dewan & Seth, 2022). Resilience, the profound ability of a community to protect itself from a variety of shocks, threats, and dangers, is heavily dependent on the effectiveness of its management systems. Shahpari Sani et al. (2022) suggest that a potent strategy to enhance societal sustainability is to integrate adaptive elements into the social safety net system, thereby strengthening resilience. This transformative approach empowers society to react swiftly and effectively to the constant changes in social, economic, and environmental patterns. Ultimately, it turns challenges into opportunities, enabling communities to absorb, adapt to, and evolve in the face of diverse risks and adversities, thereby reducing their impact (Tenzing, 2020).

The concept of adaptive social protection (ASP), initially articulated by the World Bank, has emerged as a crucial strategy for empowering households and vulnerable communities to enhance their resilience in response to the dynamic ecological and social landscapes. As emphasised by O'Brien et al. (2018), adaptive approaches successfully integrate essential social protection measures with proactive risk management and adaptation strategies tailored to confront climate and environmental changes. This proactive nature of ASP reassures the audience of its effectiveness. This integration highlights the complex interdependencies between these pressing challenges. A significant implementation of this strategy is the adaptive social safety net, which is meticulously designed to alleviate the burdens associated with various adversities, including poverty, food insecurity, unemployment, natural disasters, and health pandemics. These safety nets function as vital support mechanisms for communities, enabling them to navigate and withstand the disruptive forces that jeopardise their quality of life. Consequently, they contribute to the development of a more resilient and secure society.

The term "adaptive" signifies the remarkable capacity to evolve and adjust in response to continuously changing conditions (Teranishi, 2011). This concept is intricately connected to the dynamic interaction between physical and social ecology, both of which consistently evolve to promote the survival and flourishing of life. Within the context of ecological systems, adaptability refers to a profound ability to navigate an ever-shifting environment, enabling the identification of potential risks or disturbances that may arise. Furthermore, when examining adaptability within the framework of social safety nets, it encompasses not only preparedness but also a resilient capability to confront and manage unforeseen shocks

or changes. This empowering nature of adaptability gives households a sense of control, enabling them to seek essential information, comprehend their circumstances, and effectively mitigate the adverse effects of life's unpredictable challenges (Bowen et al., 2020). Ultimately, adaptability embodies the capacity to respond decisively and efficiently in the face of adversity, transforming potential threats into opportunities for growth and resilience.

Risks, unforeseen disasters, and threats—such as poverty, the devastation caused by natural disasters, the silent spread of infectious diseases, and food shortages—present considerable challenges to human existence, our resources, and the infrastructure underpinning our communities. To advance sustainable and flourishing societies, it is crucial for researchers, students, policymakers, and practitioners to understand and implement social resilience (Shahpari Sani et al., 2022). By integrating the concept of adaptability into the framework of social protection, we can establish a robust system for evaluating the efficacy of our social, economic, and ecological systems in responding to change. This adaptability enables these systems to absorb shocks, adjust to new conditions, and evolve in response to increasingly complex threats.

The necessity of this initiative arises from the distinct risks and challenges encountered by each community (Tenzing, 2020). Bowen et al. (2020) define absorptive capacity as the remarkable ability of these systems to sustain their structure and function when faced with infrequent yet impactful risks. Conversely, adaptive capacity reflects the potential of these systems to refine and enhance their existing frameworks, thereby equipping them to address future challenges and recover swiftly from disruptions. Transformative capacity, in contrast, denotes the profound ability of social, economic, and ecological systems to fundamentally reshape their core structures in response to the vulnerabilities they encounter. Collectively, these capacities establish a resilient foundation that empowers communities to thrive in the face of adversity.

The Sahel Adaptive Social Protection Programme (SASSP) commenced its significant operations in 2014, encompassing six countries: Burkina Faso, Chad, Mali, Mauritania, Niger, and Senegal. This innovative initiative is dedicated to strengthening household resilience, thereby enabling communities to endure the profound impacts of climate change better. The programme's primary objective is to equip communities with essential tools to mitigate the adverse effects of natural disasters. It achieves this through a strategically composed combination of interventions, including cash transfer programmes that provide immediate financial assistance, comprehensive vocational training that facilitates employment opportunities, and extensive social assistance initiatives aimed at supporting the most vulnerable populations. The World Bank has substantiated, through its research and empirical observations, the efficacy of these adaptive social safety net strategies in addressing the multitude of challenges faced by communities in the Sahel as they navigate the complex realities associated with climate change (O'Brien et al., 2018; World Bank, 2020). Additionally, findings from Bowen et al. (2020) reinforce the programme's success in fortifying community resilience in their ongoing struggle against climate-related adversities, thereby fostering hope and nurturing a spirit of determination amidst uncertainty.

This experiment highlights the crucial role of an adaptive social safety net in empowering communities. It not only facilitates the provision of comprehensive technical assistance but also fosters the development of innovative programmes aimed at enhancing social capacity. Through dynamic pilot intervention initiatives, the safety net takes a proactive stance in supporting vulnerable households, ensuring they can fulfil their basic

needs and promoting the diversification of their income sources. This strategy equips families to withstand unforeseen challenges better, thereby ensuring they possess the resilience required to navigate unexpected adversities effectively.

Bowen et al. (2020) identified four fundamental components that serve as the foundation for effective adaptive interventions. First, programme structured initiatives specifically designed to address the needs of the community. Second, data and information (comprehensive analyses and insights that inform decision-making processes and monitor progress). Third, institutional and partnership arrangements that act as collaborative frameworks that align various stakeholders toward a shared objective. Fourth, finance - the essential funding mechanisms that enable the support and sustainability of these initiatives. This present study intends to explore in greater depth the parameters derived from these foundational components, with a focus on these parameters:

- 1) *Government leadership*: A proactive stance from leaders who advocate for adaptive intervention programmes and cultivate an environment characterised by innovation and resilience.
- 2) *Institutional programming*: Customised strategies that empower communities, ensuring that development efforts are not only practical but also sustainable.
- 3) *Early warning systems and monitoring databases*: Robust systems established to anticipate challenges, in conjunction with comprehensive databases that provide real-time insights into community dynamics.
- 4) *Strengthening the social safety net*: Enhancing the provision of essential services to guarantee that vulnerable populations obtain the necessary support during times of crisis.

Through this examination, the study aims to elucidate the intricate interplay of factors that contribute to the effectiveness of adaptive interventions within communities.

Methodology

This research employs quantitative methods to enable the systematic collection and analysis of numerical data. This methodological approach not only generates objective findings, ensuring the credibility of the research, but also significantly mitigates the influence of researcher bias. In this study, various meticulously selected variables are analysed to examine the intricate parameters of the adaptive social safety net. The primary objective is to ascertain whether these parameters function as essential components in the development of an effective adaptive social safety net system, thereby enhancing the resilience of low-income households in the face of covariate shocks. Through this investigation, the research aims to illuminate pathways that facilitate greater stability and security for society's most vulnerable populations.

This study aimed to gather insights from 391 adults residing in low-income households within the dynamic neighbourhoods of Klang Valley, situated in proximity to Kuala Lumpur. With a commitment to inclusivity, the researcher specifically targeted the *Program Perumahan Rakyat* (PPR) housing areas, which are recognised for accommodating

low-income B40 families who encounter various daily challenges. The survey was disseminated across four distinct PPR projects: *PPR Pantai Ria*, *PPR Kerinchi*, *PPR Kampung Limau*, and *PPR Batu Muda*, each offering unique narratives and experiences to explore. To ensure fairness and mitigate bias in the selection process, the researcher adopted a systematic random sampling method, a scientifically rigorous approach that enhances the study's credibility. This method commenced with the establishment of specific criteria for selecting the housing units. To promote diverse representation, the researcher concentrated on households located on odd-numbered floor levels and selected only units with odd numbers. This strategic methodology not only facilitated a systematic selection process but also ensured that the selected households represented a diverse cross-section of the community. Consequently, the resulting sample represents a rich tapestry that effectively encapsulates the collective voices and experiences of individuals living within the PPR scheme, each contributing a unique journey to the overall narrative of the neighbourhood.

Data were collected through a meticulously crafted self-administered questionnaire designed to capture the diverse perceptions and experiences of respondents concerning an adaptive social safety net system. This comprehensive instrument, which included not only demographic inquiries but also a range of questions that addressed four critical dimensions, was inclusive of a wide range of perspectives.

The research team has established specific criteria for individuals who aspire to participate in the survey. To be eligible, respondents must fulfil the following conditions:

- 1) They must be citizens of Malaysia, with a strong identification with their national identity.
- 2) They should reside in the Low-Cost Public Housing (PPR) sector in Kuala Lumpur, a community characterised by its diversity and resilience.
- 3) Participants must be a minimum of 18 years of age, thus entering a stage of adulthood accompanied by its inherent responsibilities.
- 4) They must belong to a B40 household, representing the lowest 40 per cent of income earners, thereby highlighting the economic challenges faced by a significant portion of the population.

Findings

Demographic Findings

Our study, based on data from 391 respondents, reveals a diverse sample. The average age of the respondents is 51 years, with the largest demographic group being individuals aged 51 and above, representing 34.3 per cent of the total sample. This is followed by the 21-30 age group at 22.8 per cent, the 41-50 age group at 19.4 per cent, the 31-40 age group at 16.6 per cent, and finally, the 18-20 age group at 6.9 per cent. A significant 58.1 per cent of respondents are actively engaged in the workforce, primarily within the private sector. Our findings indicate that 278 respondents, equivalent to 71.1 per cent, participate in social security schemes, primarily contributing to the Employees Provident Fund (EPF/KWSP). Some individuals also contribute to the Social Security Organisation (PERKESO), while a smaller group invests in the Retirement Fund (KWAP). Additionally, several respondents

chose to contribute to private schemes offered by banks. However, it is noteworthy that 113 respondents, or 28.9 per cent, do not participate in any social security scheme, a significant percentage that highlights a critical area that requires further attention and engagement.

The findings highlight a significant aspect of community support, revealing that 270 individuals, representing 69.1 per cent of the respondents, have utilised social or government assistance. In stark contrast, 121 individuals, or 30.9 per cent, find themselves without any form of support, despite their household incomes qualifying them for such aid. Among those who have benefited from these vital programmes, an overwhelming majority (65.6%) rely on popular initiatives like *Sumbangan Tunai Rahmah* (STR), *Bantuan Sara Hidup* (BSH), *Bantuan Prihatin Rakyat* (BPR), and *Bantuan Keluarga Malaysia* (BKM). These programmes serve as lifelines for many, providing crucial support during challenging times. In addition, 47 respondents (12.3%) have received *zakat* assistance, reflecting the community's commitment to helping those in need. Another 16 respondents (4.2%) were recipients of food basket aids, ensuring they have access to essential nutrition. The B40 healthcare scheme, which benefits 22 respondents (5.7%), plays a vital role in providing affordable healthcare options for those in lower-income brackets. Moreover, 18 respondents (4.7%) have turned to the Department of Social Welfare (JKM) for support, while two respondents (0.5%) participated in the *Penjana Kerjaya* employment programme, which aims to boost job opportunities. Lastly, nine respondents (2.3%) received assistance from their employers, showcasing the diverse ways in which support networks can manifest in the workplace and beyond, enlightening us about the various forms of support available and making us appreciate the efforts of all involved.

Table 1 Demographic Profiles of the Respondents

	Category	Frequency (n)	Percentage (%)
Gender	Male	155	39.6
	Female	236	60.4
	Total	391	100
Age	18–20 years	27	6.9
	21–30 years	89	22.8
	31–40 years	65	16.6
	41–50 years	76	19.4
	51 years and above	134	34.3
	Total	391	100
Employment status	Full-time (private sector)	142	36.3

	Full-time (government sector)	36	9.2
	Full-time (semi-government)	10	2.6
	Full-time (self-employed)	30	7.7
	Part-time (private sector)	22	5.6
	Part-time (government sector)	2	0.5
	Part-time (self-employed)	27	6.9
	Unemployed	38	9.7
	Housewife	42	10.7
	Retiree	25	6.4
	Student	17	4.3
	Total	391	100
Social contribution status	Contributing	278	71.1
	Not contributing	113	28.9
	Total	391	100
Type of social protection scheme <i>* Multiple selection</i>	EPF (KWSP)	253	60.1
	PERKESO	143	34.0
	KWAP	22	5.2
	Private scheme	2	0.5
	Others	1	0.2
	Total	421	100
Receiving assistance	Receiving assistance	270	69.1
	Not receiving assistance	121	30.9
	Total	391	100

Continue Table 1

	Category	Frequency (n)	Percentage (%)
Type of social protection scheme <i>* Multiple selection</i>	EPF (KWSP)	253	60.1
	PERKESO	143	34.0
	KWAP	22	5.2
	Private scheme	2	0.5
	Others	1	0.2
	Total	421	100
Receiving assistance	Receiving assistance	270	69.1
	Not receiving assistance	121	30.9
	Total	391	100

Type of assistance program			
Cash aid (STR/BSH/BPR/BKM)		252	65.6
<i>*If received assistance</i>			
<i>*Multiple selection</i>			
Employer-provided assistance		9	2.3
Welfare assistance scheme (JKM)		18	4.7
PEKA B40 healthcare scheme		22	5.7
MySalam		13	3.4
Food basket aid		16	4.2
2-Year Exit Program (JKM)		0	0.0
Penjana Kerjaya		2	0.5
Zakat		47	12.3
Others (e.g., community/neighborhood)		5	1.3
Total		384	100

Critical parameters for adaptive social safety-net to protect low-income households from unexpected shocks

This study aims to examine critical adaptive social safety parameters and identify the essential elements required for developing a robust social safety net system, as recommended by the World Bank Group's Social Protection (2020) and drawing on the insights provided by O'Brien et al. (2018). Participants were asked to evaluate statements using a scoring scale ranging from 1 (strongly disagree) to 5 (strongly agree). This section outlines six fundamental parameters that are integral to a comprehensive social safety net system:

- 1) Government leadership that advocates for innovative intervention programs,
- 2) Institutional programming intended to promote effective community development,
- 3) Government measures taken after a disaster occurs,
- 4) Community measures to address unforeseen disasters,
- 5) Early warning system, integrated with information systems, to ensure efficient monitoring and service delivery; and
- 6) The enhancement of social protection service delivery systems to improve accessibility and responsiveness.

(i) Government leadership that supports adaptive intervention

Programmes

The World Bank has emphasised the crucial role of effective government leadership in establishing adaptive social safety nets, which are vital for addressing the evolving needs of communities in crisis (Bowen et al., 2020). Robust governance frameworks provide the necessary support for implementing dynamic intervention programmes that can adapt over time. The significance of government leadership within these initiatives is profound, as it serves as a foundational element for the development of comprehensive and adaptive social safety net programmes. The first component, titled "Government leadership for adaptive intervention programmes," presents significant findings regarding stakeholder engagement.

Table 2 Government Leadership for Adaptive Intervention Programmes

Statement	Mean	SD
Continuous strategic cooperation between government and communities helps improve living standards.	4.09	0.698
Assistance programs are coordinated with the involvement of all stakeholders.	4.07	0.660
The role of the local community is important to support better governance.	4.19	0.589
Government and private sectors work together to enable households to improve their living standards.	4.02	0.759
All stakeholders work together strategically in planning, providing, and delivering information.	4.05	0.660

A substantial majority of respondents concurred on the necessity of sustained strategic collaboration between government entities and local communities to enhance living standards, as evidenced by an average score of 4.09 (SD = 0.698). This sustained strategic collaboration is not just important, but urgent, to ensure the effective functioning of social safety net initiatives. Furthermore, respondents underscored the importance of coordinating social assistance programs that involve all relevant stakeholders, achieving an average score of 4.07 (SD = 0.661). This coordination is imperative to ensure that the distribution of resources and aid is executed fairly and effectively meets the needs of the beneficiaries. Additionally, the participation of local communities is critical to improving governance within social programmes. Their engagement in existing social systems, programmes, and assistance initiatives provides invaluable insights for developing impactful social programmes and aid strategies. The findings demonstrate a strong recognition of the importance of community involvement in the governance of social programmes, as reflected in an average score of 4.19 (SD = 0.589) among respondents. The subsequent component addresses the critical theme of provision of more sustainable social assistance programmes. A significant number of respondents, reflecting an impressive average score of 4.05 (SD = 0.725), expressed strong agreement that government support agencies should emphasise the delivery of sustainable social programmes over temporary initiatives. This transformative approach empowers beneficiaries to achieve enduring benefits, enabling them to meet their basic needs in ways that are compatible with their daily lives. Moreover, the survey investigated the significant impact of social assistance and government services on improving the quality of life for recipients. The average score, which captures the sentiments of the majority, was 4.02 (SD = 0.737), indicating a strong belief among respondents in the pivotal role of these forms of support in enhancing the living standards of

individuals in need. The findings underscore the need for a consistent and strategic approach to social support, one that fosters resilience and cultivates a brighter future for individuals and families.

(ii) Institutional programming intended for effective community Development

Institutional programming that emphasises effective community development highlights the vital collaboration between government agencies and local communities in disaster management. The data, with an overall mean score of 4.0 (SD = 0.58), validate the significant majority of respondents' recognition of this parameter as essential for building a resilient and adaptive social safety net. The first sub parameter, 'Government actions to ensure that communities are aware of and prepared for disaster risks,' examines the responses of both governmental entities and affected communities in the context of disaster management. A substantial proportion of respondents, with an average score of 4.01 (standard deviation = 0.778), concur that communities identified as at risk must proactively prepare for disasters rather than relying exclusively on government initiatives. There is a prevailing sentiment that disaster preparedness should not rest solely with the government; instead, it should incorporate all stakeholders, including local communities, who must possess awareness and preparedness regarding disaster risks. Furthermore, the findings reveal that the majority of respondents express significant scepticism about the government's effectiveness in disaster recovery planning, as evidenced by an average score of 3.97 (standard deviation = 0.79). This highlights the need for improvement in government's disaster recovery planning, making the audience aware of the existing gaps.

Table 3 Institutional Programming for Effective Community Development

Statement	Mean	SD
The government ensures that communities are aware of and prepared for disaster risks.	4.01	0.778
The government has a disaster recovery plan.	3.97	0.794
The government possesses a strong governance framework that assists communities in addressing and coping with disaster risks	3.92	0.775

(iii) Government measures taken after a disaster

Next sub parameter is about Government measures taken after a disaster occurs. This critical component highlights the strong consensus among respondents regarding the importance of government actions in the aftermath of a disaster. With an average score of 4.10 (SD = 0.647), the respondents underscored the necessity for recovery assistance to be provided at all levels

of government. This viewpoint accentuates the necessity for prompt and effective aid delivery, a crucial aspect that underscores the urgency and importance of everyone's roles, ensuring that support is not solely dependent on central authorities. Furthermore, the respondents expressed considerable support for a collaborative approach, as evidenced by their score of 4.04 (SD = 0.671) concerning the establishment of trained volunteer teams. These teams are envisioned as vital resources during crises, ready to mobilise and deliver essential assistance to communities in need. This strong endorsement reflects a profound belief in the significance of community engagement and volunteerism, thereby enhancing the spirit of collective action in times of adversity. Moreover, participants articulated a firm consensus that the government must be prepared to provide essential health services to communities affected by disasters. The average score of 4.04 (SD = 0.678) underscores the urgent need for responsive healthcare support as a crucial component of recovery efforts. This shared conviction underscores a collective understanding that comprehensive aid is essential, enabling affected individuals to access critical health services and rebuild their lives with confidence and resilience. For the last sub-parameter, which focuses on the government's coordination in distributing necessities to disaster victims, the average score of 4.10 (SD = 0.633) indicates that a significant number of respondents agreed that the government's role in closely monitoring the distribution of necessities is crucial. This assurance of the government's oversight is a key factor in ensuring that victims receive the aid provided. This finding underscores the importance of comprehensive and well-coordinated distribution planning by the government, instilling confidence in the efficient and effective delivery of aid to affected populations.

Table 4 Government Measures Taken After a Disaster Occurs

Statement	Mean	SD
The government provides disaster recovery assistance at all levels of administration (e.g., federal, state, and local).	4.10	0.647
The government has trained volunteer teams to assist disaster victims.	4.04	0.671
The government provides appropriate health services and assistance that meet the needs of disaster victims.	4.04	0.678
The government coordinates the distribution of basic necessities to disaster victims.	4.10	0.633

(iv) Community measures to address unforeseen disasters

The next parameter, titled "community measures to address unforeseen disasters," underscores the essential role of local community members in proactively assessing their needs and establishing an emergency fund for instances of natural disasters or unforeseen crises. A considerable proportion of respondents, with an impressive average score of 3.99 (SD = 0.781), express a strong consensus regarding the urgent need to establish a dedicated emergency fund. Additionally, a significant majority resonates with the concept of a collective

savings system within the community—such as cooperatives, funeral benefit funds, or rotating savings schemes—functioning as a reliable safety net to provide financial support during challenging times, as corroborated by the average score of 4.03 (SD = 0.733). Moreover, community awareness emerges as a prominent theme, with respondents assigning it a commendable average score of 4.04 (SD = 0.755). This heightened awareness is not just a tool, but a transformative mechanism, equipping households with effective intervention strategies that can substantially mitigate the adverse effects of disasters, thereby ensuring that community members feel informed and prepared. For the next two sub-parameters, the findings underscore the significant potential that banks hold in supporting individuals affected by disasters during vulnerable periods. The results indicate that respondents somewhat disagreed that banks sufficiently promote low-interest financial loans to disaster victims, as reflected by the mean score of 3.85 (SD = 0.955). Similarly, findings show a recorded mean score of 3.84 (SD = 0.944), suggesting that respondents also somewhat disagreed or held mixed perceptions regarding the extent to which banks provide flexible repayment options. These findings point to a lack of awareness among communities about the specific financial assistance programmes available, as such information may not be widely communicated. They may also reflect concerns about unequal access, as not all disaster victims may meet the eligibility requirements or have the means to apply for these schemes. However, these results also highlight the potential for improvement and the role that banks can play in enhancing transparency and outreach regarding the availability and conditions of financial support, to ensure that affected communities are better informed and able to benefit from such assistance in times of crisis.

Table 5 Community Measures to Face Unforeseen Disasters

Statement	Mean	SD
The community is aware of the importance of having dedicated savings for emergency needs.	3.99	0.781
The community has a collective savings system (e.g., cooperatives, funeral funds, rotating savings) to help financially during disasters.	4.03	0.733
The community is aware of and prepared with safety measures during floods.	4.04	0.755
Banks promote low-interest financial loans to disaster victims.	3.85	0.955
Banks promote flexible payment methods to disaster victims.	3.84	0.944

(v) Early warning system and monitoring database system

This crucial parameter ensures the successful establishment of a social safety net programme that is both responsive to disasters and adaptable to changing circumstances. Its effectiveness is assessed through two key components – early warning system and database and monitoring system - that provide a comprehensive understanding of its impact and functionality. The research findings revealed a strong consensus among respondents, with a significant majority expressing scepticism regarding the effectiveness of early warning systems and databases in establishing a responsive social safety net. This consensus serves as a reassurance of the validity of the research findings. Despite the inherent potential of

these tools, many respondents perceived them as inadequate in delivering the necessary support to adapt to evolving circumstances.

Table 6 Early Warning System and Monitoring Database System

Parameter	Mean	SD
1. Early warning system	3.97	0.72
2. Database and monitoring system	3.98	0.73

(a) Early warning system

This component analyses the significant role and functionality of the early warning system (EWS) within communities during periods of disaster. The findings indicate a prevalent sentiment among respondents, with an average score of 3.98 (SD = 0.766), suggesting a widely held perception that Malaysia lacks an effective EWS. A considerable number of individuals are unaware of the well-established mechanisms designed to alert the public during crises. Moreover, data reveal that a substantial majority of respondents, with an average score of 3.97 (SD = 0.792), express significant scepticism regarding the EWS's capability to provide timely warnings about impending disasters to vulnerable communities, highlighting the need for increased trust in the system. This study underscores a notable disconnect, as participants do not perceive the early warning system as a reliable source of essential information that should safeguard their communities during periods of peril. In addition, a significant number of respondents indicate that the government's capability to identify populations vulnerable to specific disasters remains inadequate, as reflected by an average score of 3.97 (SD = 0.790). This highlights that the performance of the government and affiliated agencies in protecting vulnerable populations during disasters still requires improvement and re-evaluation. Next, the average score of 3.95 (SD = 0.790) indicates that the respondents perceived a lack of risk assessments to evaluate the impact of disasters on vulnerable groups. This finding highlights the need for the government to take responsibility and strengthen its risk assessment evaluations of the vulnerable group to ensure that they are adequately identified and protected. This also calls for the government to enhance and implement systematic risk assessment designs that have more effective interventions, thereby fulfilling its duty to protect the vulnerable groups.

Table 7 Early Warning System

Statement	Mean	SD
The government has an early warning system (EWS) (e.g., Public Warning System, Malaysian National Tsunami Early Warning System) that functions during disasters.	3.98	0.766
The early warning systems in the country are effective in providing disaster alerts to the community.	3.97	0.792
The government is capable of identifying populations that are vulnerable to specific disasters	3.97	0.790
The government conducts risk assessments to evaluate the impacts of disasters on vulnerable groups	3.95	0.790

(b) Monitoring system databases

The component highlights the crucial need for a comprehensive, centralised national database that encompasses information on affected victims, assistance programmes, and high-risk areas. The findings reveal an average score of 3.95 (SD = 0.80), suggesting that the majority of respondents do not perceive the existence of an effective centralised database system within the country. Furthermore, an average score of 3.98 (SD = 0.81) indicates that respondents generally hold a somewhat negative view regarding the country's encouragement and promotion of digital platforms for early warning systems, information dissemination, and e-participation initiatives. This scepticism may be attributed to the relatively low digital literacy among older individuals, which can hinder their ability to access vital disaster-related information. On the other hand, a significant proportion of respondents, with an average score of 4.01 (SD = 0.79), acknowledged the need for a monitoring system. This system is capable of filtering out false or inaccurate information, a feature that is essential for ensuring transparency in disaster management efforts.

Table 8 Monitoring System Databases

Statement	Mean	SD
The country has a comprehensive centralised database system (e.g., victims, assistance programmes, risk areas) related to disasters.	3.95	0.80
The country promotes the use of digital platforms for alerts, information sharing, and e-participation (e.g., registration and application for aid).	3.98	0.81
The monitoring system can filter false or inaccurate information, which is crucial to ensure disaster transparency.	4.01	0.79

(vi) Strengthening the social safety net service delivery system

The parameter of strengthening the social safety net service delivery system highlights the imperative need to enhance the efficiency and effectiveness of service delivery mechanisms. Such improvements facilitate easier access for communities to social safety net assistance and services. The study first investigates whether essential social services should be provided at no cost or a minimal fee. The mean score recorded was a commendable 4.04 (SD = 0.748), indicating that a significant majority of respondents advocate for the elimination of any fees associated with accessing social assistance or services. Should fees be deemed necessary, they ought to be low and fixed, thereby ensuring that financial barriers do not impede access for those in need. This issue is particularly pertinent, as many recipients frequently incur additional costs merely for registration or eligibility verification related to assistance or services. The financial barriers that impede access for those in need highlight the need for change and reform. Moreover, there exists a robust consensus among respondents that the social safety net must guarantee that support reaches the individuals

most in need—particularly those affected by disasters—swiftly and effectively. This perspective is underscored by the high average score of 4.07 (SD = 0.776), which highlights the urgent necessity for a system that facilitates timely access to essential support for the most vulnerable segments of society.

A robust social safety net service delivery framework, closely integrated with various agencies, underscores the significance of inter-agency collaboration in reaching individuals who require support. The majority of respondents align with this perspective, as evidenced by a commendable mean score of 4.03 (SD = 0.745). This score reflects a strong consensus among respondents that the government collaborates effectively with other organisations to enhance the delivery of social safety net services. Moreover, the design of the social safety net service delivery system prioritises accessibility for targeted populations, ensuring that eligible individuals can apply for, register for, and receive the necessary assistance or services with minimal difficulty. A considerable number of respondents concur, achieving an average score of 4.02 (SD = 0.768), that the social safety net system is not only navigable but also user-friendly for all eligible individuals. This finding emphasises the critical importance of establishing straightforward procedures and intuitive platforms to engage with vulnerable populations effectively.

Table 9 Strengthening Social Safety Net Service Delivery System

Statement	Mean	SD
The social safety net service delivery system is free or offered at an affordable cost.	4.04	0.748
The social safety net service delivery system provides urgent needs for target groups.	4.07	0.776
The social safety net service delivery system has strong networking with other agencies.	4.03	0.745
The social safety net service delivery system is easily accessible to target groups.	4.02	0.768
A social security service delivery system that is accessible to target groups and responsive.	3.94	0.779
A social safety net service delivery system that is fair and equitable	3.91	0.870
A social safety net service delivery system with minimal bureaucracy	3.94	0.781
A social safety net service delivery system that takes into account the services provided to target groups.	3.98	0.756

Moreover, it is crucial to note that a significant number of respondents, with an average score of 3.91 (SD = 0.870), perceived that the social safety delivery system lacks fairness and equity. This underscores the urgent need for policymakers to address the systematic gaps in the distribution of assistance or services in a more transparent and just manner. Strengthening the social safety net service delivery system, with an average score of 3.94 (SD = 0.781), indicates a mixed reaction. This highlights that while some respondents may perceive progress, a notable proportion still faces bureaucratic hurdles that can hinder timely and effective service delivery. Improving bureaucratic practices will help ensure that assistance reaches the intended beneficiaries more efficiently and with fewer obstacles,

ultimately strengthening the impact of the social safety net system. Furthermore, the findings underscore the importance of a social safety net service delivery system that considers the specific needs of target groups. Respondents, with an average score of 3.98 (SD = 0.756), clearly express their expectation for services to be more responsive and tailored to the actual conditions and challenges faced by beneficiaries. This highlights the crucial role of policymakers and affiliated agencies in ensuring that programmes are well-targeted and inclusive, making every individual feel valued and considered.

Discussion

The findings reveal a compelling truth; not all parameters identified are created equal; some wield far more significance in the quest to develop a responsive social safety net system. Among the various factors analysed, two stood out prominently, resonating with the respondents and scoring notably high. The unwavering support from government bodies and allied agencies for adaptive intervention programs acts as a sturdy backbone to these initiatives. At the same time, government measures taken after a disaster occurs shows a perceived as significant ideal parameter in developing adaptive social safety net systems.

Robust government leadership is fundamental to the effectiveness of adaptive intervention programmes, particularly in the context of social safety nets. These essential programmes serve as a critical support system for vulnerable communities, equipping them with the necessary resources to foster resilience and protect their livelihoods in the face of unforeseen crises. The urgency of such interventions is strikingly evident in South Asian nations, including India, Bangladesh, Pakistan, and Nepal, where innovative and adaptive social safety net initiatives have been implemented to mitigate the adverse effects of climate change-related disasters. In these countries, the transformative impact of government-supported interventions is observable, as they create a safety net that enhances community resilience. Consequently, numerous low-income neighbourhoods have witnessed significant reductions in poverty gaps, transforming lives and instilling hope in regions historically burdened by hardship (Singh & Singh, 2023). Furthermore, research conducted by Hebbar and Shehab (2020) underscores the positive outcomes of these programmes, which fortify households against life's unpredictable challenges, empowering them to navigate difficulties with increased agility and fortitude. In this context, governments must prioritise and invest in the establishment of adaptive social safety net systems. By adopting clear and strategic intervention approaches, they can lay the groundwork for enduring sustainability and a more promising future for all communities, underscoring the importance of careful planning and execution in policy implementation.

Government intervention after a disaster occurs is crucial for the resilience of the affected community, as it ensures that communities receive immediate relief and support for recovery. By strengthening post-disaster response mechanisms, the government can help reduce the long-term impact of disasters and enhance the resilience of affected populations. A study conducted by Lee and Lee (2024) highlights that swift government action in delivering aid is crucial, as delays can lead to unnecessary social costs and further physical, economic, and psychological harm to victims. Such delays can also erode trust between communities and the government. Accordingly, governments must urgently establish

systematic and strategic response plans to minimise the adverse effects of disasters on affected communities and to uphold trust in public governance. This is further supported by Yang et al. (2023), who assert that enhancing infrastructure systems to mitigate disaster damage can significantly strengthen a community's capacity for adequate recovery.

Moreover, institutional arrangements that foster community development serve as the lifeblood, essential for nurturing a thriving support system. These two elements are not mere details; they are the cornerstones upon which an effective adaptive social safety net is built. Furthermore, the World Bank's 2020 report reinforces this assertion, underscoring that the active participation of governments and the strength of institutional frameworks are pivotal in ensuring that social safety net systems operate effectively. It emphasises the necessity of inter-institutional cooperation in designing, monitoring, and governing adaptive social safety net programmes, painting a vivid picture of a collaborative landscape where institutions unite for a common cause.

Building effective community development is fundamentally anchored in institutional programming, which serves as a critical cornerstone for establishing adaptive social safety net programmes. This approach promotes active community involvement, enabling residents to contribute to interventions that directly address their specific needs and provide essential support during disasters or significant disruptions. According to Gisevius et al. (2025), the key pillars of strong community resilience—including dynamic leadership, active engagement, robust social networks, and transparent governance—require cultivation and reinforcement through supportive policies and infrastructure at higher levels of governance. When these components are aligned, they empower communities, instilling a sense of hope and optimism, to create intricate networks, involving local stakeholders at every stage of the process, from generating innovative solutions to meticulous planning, implementation, and monitoring of effective programmes that demonstrate long-term sustainability.

The findings also show that community preparedness and measures to address unforeseen disasters indicate a mixed perception among the respondents. This highlights an important gap, as vulnerable groups, in particular, appear to lack adequate protection and preparedness for effective disaster management. Consequently, communities need to urgently strengthen their capacity to mitigate the impacts of unforeseen disasters through adaptive response measures (Xu et al., 2024). Furthermore, Xu et al. (2024) emphasise that enhancing community preparedness efficacy is essential for increasing community resilience. This includes improving knowledge of appropriate response actions, securing financial resources, and safeguarding critical assets to better withstand and recover from disasters. Strengthening social networks and fostering collective action can also enhance community resilience by ensuring that vulnerable groups receive timely support during emergencies. The community's capacity to respond to and recover from disasters also relies on proactive engagement, identifying vulnerable populations, and adequate pre-planning for unforeseen events (Walton et al., 2021).

The findings present insightful evaluations concerning the effectiveness of various critical parameters within social safety net systems. While these scores demonstrate considerable merit, they remain slightly below the benchmark of four, suggesting a degree of uncertainty among respondents regarding their efficacy. Nonetheless, the significance of these two parameters is paramount; they represent essential components that ought to be integrally incorporated into a resilient and adaptive social safety net system. A study conducted by Bowen et al. (2020) highlighted the crucial role of an early warning system, a

comprehensive database, and a practical social service delivery framework. These elements, along with the integrated information system, collectively constitute the foundation of an effective social protection system or assistance scheme, which not only responsive but also adaptable to the challenges posed by disasters or unforeseen crises.

The early warning system (EWS) and monitoring database system, as outlined by Bowen et al. (2020), represent the foundational pillars of an adaptive social protection programme. These systems are designed to collect crucial information regarding at-risk populations, vulnerable regions, and their capacity for resilience in the face of disasters. Nonetheless, a recent study conducted by Sa'adi et al. (2024) revealed a disconcerting finding; a significant number of individuals who have experienced flooding expressed uncertainty regarding the efficacy of the EWS. However, it is important to remember the potential of these systems, which have been proven effective in numerous situations. Moreover, a considerable portion of these individuals was unaware of the available EWS resources or mobile applications that could assist them in managing disaster-related risks. This discrepancy emphasises an urgent need for enhanced community engagement and awareness initiatives about Malaysia's early warning system, particularly for residents in high-risk areas. In addition to the concerns regarding community perception, the importance of monitoring databases cannot be overstated. Bowen et al. (2020) emphasise that these databases are vital for identifying affected households and predicting high-risk disaster zones, thereby improving preparedness efforts. By ensuring the timely and accurate collection of risk-related data, these systems empower communities to respond effectively and minimise the impact of potential disasters.

To enhance the effectiveness of the social safety net service delivery system, it is crucial to recognise and address the significant need for improvement. The findings clearly indicate this need, as a large number of respondents expressed dissatisfaction with the existing programmes. However, many participants also acknowledged the key components identified for enhancement. A robust and well-integrated social safety net service system, closely aligned with various agencies, underscores the critical importance of collaborative efforts in delivering impactful services and support to those in need. Bird (2023) exemplifies this principle with instances from India, where strategic partnerships with private sector entities such as banks, mobile network operators, and technology innovators have effectively facilitated the execution of social safety net initiatives through the Direct Benefit Transfer (DBT) mechanism, reaching millions of individuals with impressive efficiency.

Moreover, our findings reinforce this view, as a significant proportion of respondents agreed that the social safety net service system must ensure the prompt and effective delivery of aid to its intended recipients, especially in times of disaster. The timely and efficient delivery of social safety benefits has the potential to significantly improve the lives of recipients, as demonstrated by Kalemile and Msomba (2021). The positive outcomes are clear in families gaining access to essential healthcare services, achieving food security, and stabilising their household income.

The findings also indicated a significant consensus among respondents, asserting that the fees which impede access to essential social assistance, or services should be abolished. Many participants also advocated for implementing minimal, fixed charges for any necessary registration or verification processes. Lasky-Fink and Linos (2024) identified a critical issue

- a substantial number of eligible low-income households across the United States remain uninformed about the benefits available to them. This considerable disparity often arises from a lack of awareness and the overwhelming complexity associated with the required documentation and procedures. To effectively serve those in need, the system must urgently dismantle these barriers, thereby facilitating a more navigable experience for potential recipients. By providing a user-friendly registration, application, and processing environment, we can ensure that assistance is readily available to all individuals who need it.

Conclusion

In conclusion, this study elucidates the complex dynamics that are essential in the formulation of an effective adaptive social safety net system. While all identified factors are significant, certain elements emerge as particularly critical. Robust government leadership, distinguished by vision and decisiveness, alongside supportive institutional frameworks, form the foundational pillars of this system. These elements provide a comprehensive structure for policy direction, strategic resource allocation, and efficient coordination among a diverse array of stakeholders. Furthermore, the study underscores the paramount importance of establishing community-based institutional arrangements. Such frameworks, which are integral to the effectiveness of the system, ensure that interventions are not merely imposed from a top-down approach, but are instead authentically aligned with the needs and aspirations of the communities they are intended to serve. By promoting local ownership and empowering residents, these arrangements foster enduring resilience and adaptability within the community. It is imperative to engage the community in the development of an adaptive social safety net programme, as this engagement is not only advantageous but also essential. Communities possess profound insights into their specific circumstances, allowing them to identify and address their unique challenges effectively. By harnessing this local knowledge, it becomes possible to create a safety net that is not only responsive but also deeply rooted in the lived experiences of those it seeks to support.

Additionally, the mean scores for the early warning system and monitoring system databases, as well as for the social safety net service delivery mechanisms, were found to be unsatisfactory, indicating a marginal underperformance. Nevertheless, these components are critical for safeguarding the welfare of vulnerable populations. The uncertainty reflected in the responses underscores significant deficiencies in public awareness, operational capabilities, and accessibility that require immediate attention. All stakeholders must understand the full potential of these elements, as their interdependence is crucial for overall success. This underscores the need for collaboration and a shared understanding among all stakeholders. Consequently, these two parameters should be incorporated into an adaptive social safety net programme or system, as their synergy is vital to achieving optimal effectiveness.

Last but not least, a comprehensive and adaptive social safety net system cannot thrive solely on top-down interventions. It necessitates strong and visionary government leadership, combined with proactive and tailored social safety measures that address the distinct needs of individual communities. Engaging local populations in meaningful and relevant ways is imperative, as is leveraging data-driven insights to inform decision-making

processes. This approach ensures that services are not only well-coordinated but also precisely calibrated to reach the most vulnerable segments of the population, particularly during unforeseen disasters or widespread crises. By addressing these critical deficiencies, adaptive social safety nets can emerge as powerful lifelines, safeguarding communities against the adverse impacts of climate-related catastrophes, unexpected pandemics, and the harsh realities of economic downturns. The adaptability of these systems ensures that we are prepared for any future challenges, fostering resilience and hope for a more promising future.

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References

Bank Negara Malaysia. (2021). *Economic, monetary and financial developments in 2020*. https://www.bnm.gov.my/documents/20124/3026377/emr2020_en_box1_socialprotection.pdf

Bird, N. (2023). *Expanding and improving social safety nets through digitalization* (IMF Notes No. 2023/007). International Monetary Fund. <https://doi.org/10.5089/9798400257940.068>

Bowen, T., Del Ninno, C., Andrews, C., Coll-Black, S., Gentilini, U., Johnson, K., Kawasoe, Y., Kryeziu, A., Maher, B., & Williams, A. (2020). *Adaptive social protection building resilience to shocks*. <https://www.worldbank.org/ext/en/home>

Davies, M., Guenther, B., Leavy, J., Mitchell, T., & Tanner, T. (2009). Climate change adaptation, disaster risk reduction and social protection: Complementary roles in agriculture and rural growth? *IDS Working Papers, 2009*(320), 1-37. https://doi.org/10.1111/j.2040-0209.2009.00320_2.x

Department of Statistics Malaysia. (2020). *Report of special survey on effects of COVID-19 on economy and individual (Round 1)*. <https://www.dosm.gov.my>

Dewan, S., & Seth, P. (2022). *Competitiveness and resilience through social security: Toward a more inclusive system* [Policy brief]. Centre for Policy Research. <https://cprindia.org/briefsreports/competitiveness-and-resilience-through-social-security-toward-a-more-inclusive-system/>

Gisevius, K., Niesters, L. M., & Braun, B. (2025). The role of community leadership in building community adaptive capacity to coastal hazards – Insights from neighbourhood

networks in Semarang, Indonesia. *Environmental Science and Policy*, 163.
<https://doi.org/10.1016/j.envsci.2024.103963>

Hebbar, M., & Shehab, S. (2020). *Shock-responsive social protection in Bangladesh: Literature review*. Oxford Policy Management.
<https://www.opml.co.uk/files/Publications/a0608-shock-responsive-social-protection/srsp-bangladesh-literature-review.pdf>

Lasky-Fink, J., & Linos, E. (2024). Improving delivery of the social safety net: The role of stigma. *Journal of Public Administration Research and Theory*, 34(2), 270–283.
<https://doi.org/10.1093/jopart/muad021>

Lee, D. W., & Lee, D. S. (2024). Government disaster relief services and disaster conflict. *International Journal of Disaster Risk Reduction*, 106, 104461.
<https://doi.org/10.1016/j.ijdr.2024.104461>

Kalemile, D. M., & Msomba, G. M. (2021). Productive social safety net (PSSN) programme in supporting vulnerable households' welfare Iramba District in Singida, Tanzania. *International Journal of Research in Social Science*, 11(12), 1–13.
<https://ssrn.com/abstract=4454034>

Mohd Nor, R., & Khelghat-Doost, H. (2019). 1AZAM programme: The challenges and prospects of poverty eradication in Malaysia. *International Journal of Academic Research in Business and Social Sciences*, 9(1), 490–500. <https://doi.org/10.6007/ijarbss/v9i1/5420>

O'Brien, C., Holmes, R., & Scott, Z. (2018). *Shock-responsive social protection systems research: Synthesis report*. Oxford Policy Management.
<https://www.humanitarianlibrary.org/sites/default/files/2022/03/srsp-toolkit.pdf>

Sa'adi, Z., Ramli, M. W. A., Wan Ahmad Tajuddin, W. A. N., Arman, N. Z., Che Hassan, C. H., Ramzan, M. A., Yusop, Z., & Alias, N. E. (2024). Evaluating flood early warning system and public preparedness and knowledge in urban and semi-urban areas of Johor, Malaysia: Challenges and opportunities. *International Journal of Disaster Risk Reduction*, 113. <https://doi.org/10.1016/j.ijdr.2024.104870>

Shahpari Sani, D., Heidari, M. T., Tahmasebi Mogaddam, H., Nadizadeh Shorabeh, S., Yousefvand, S., Karmpour, A., & Jokar Arsanjani, J. (2022). An assessment of social resilience against natural hazards through multi-criteria decision making in geographical setting: A case study of Sarpol-e Zahab, Iran. *Sustainability*, 14, 8304.
<https://doi.org/10.3390/su14148304>

Singh, J., & Singh, M. (2023). Does financial inclusion impact socio-economic stability? A study of social safety net in Indian slums. *International Journal of Social Economics*, 50(8), 1060–1084. <https://doi.org/10.1108/IJSE-04-2022-0261>

Smith, G., & Bowen, T. (2020). *Adaptive social protection: The delivery chain and shock*

response. World Bank Group.

<https://documents1.worldbank.org/curated/en/799281603376140118/pdf/Adaptive-Social-Protection-The-Delivery-Chain-and-Shock-Response.pdf>

Tenzing, J. D. (2020). Integrating social protection and climate change adaptation: A review. *Wiley Interdisciplinary Reviews: Climate Change*, 11(2), e626.
<https://doi.org/10.1002/wcc.626>

Teranishi, J. (2011). *A conceptual framework for social safety nets: Individualization of society and risk management*. Institute of Developing Economies.
<https://www.mhlw.go.jp/topics/2011/03/dl/h04.pdf>

World Bank. (2020). *Adaptive Social Protection and Disaster Risk Management: A Case Study of Japan*. <http://documents.worldbank.org/curated/en/479311601537929130>

Walton, A. A., Marr, J., Cahillane, M. J., & Bush, K. (2021). Building community resilience to disasters: A review of interventions to improve and measure public health outcomes in the northeastern United States. *Sustainability*, 13(21), 1-31.
<https://doi.org/10.3390/su132111699>

Xu, Y., Stephens, K. K., Carlson, N. H., Lieberknecht, K. E., & Leite, F. (2024). Moving toward community preparedness efficacy: Uncovering barriers in communities disproportionately impacted by flooding. *Journal of Contingencies and Crisis Management*, 32(1), 50-61. <https://doi.org/10.1111/1468-5973.12524>

Yang, X., Yao, Y., Tian, K., Jiang, W., Xing, Q., Yang, J., & Liu, C. (2023). Disaster response strategies of governments and social organizations: From the perspective of infrastructure damage and asymmetric resource dependence. *Heliyon*, 9(10), 1-18.
<https://doi.org/10.1016/j.heliyon.2023.e20432>