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Project DINGGIN: Empowering Communities through Risk-Based and Inclusive Cash Transfer in Disaster-Prone Areas in Bangladesh and Philippines

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ABSTRACT

Disaster-prone communities in Albay, Philippines and Bhola, Bangladesh, face recurring typhoons, cyclones, and floods that simultaneously destroy homes, disrupt livelihoods, and threaten food security. Traditional cash transfer programs (CTPs) for disaster relief often lack inclusive, risk-informed design and fail to account for the intersectional vulnerabilities of at-risk groups. Project DINGGIN (Dynamic Inclusive Network for Governance, Guidance, Intersectionality, and Nexus) addresses this gap by developing a risk-based, community-informed cash transfer framework. The approach bridges bottom-up risk data gathered through household surveys, participatory risk mapping, focus groups, and interviews with top-down policy frameworks within a humanitarian-development-peace nexus approach. Data from Albay and Bhola revealed that affected households prioritise simultaneous home rebuilding and income recovery; however, existing cash assistance is fragmented and not well-coordinated. Using a decision-support dashboard, local governments and communities co-developed tailored Cash Transfer Values (CTVs) reflecting each community's specific disaster risks and socioeconomic needs. The results demonstrate that an integrated cash transfer strategy—addressing shelter, food, and livelihoods together—can provide immediate relief while strengthening long-term resilience. For example, households in high-risk zones received larger grants for shelter reinforcement and livelihood restoration, aligning assistance with locally identified needs. This risk-informed, inclusive CTP model improved community ownership and met humanitarian Sphere standards for equity and adequacy. The discussion of Project DINGGIN's pilot indicates strengthened multi-sectoral coordination and highlights areas for improvement, such as providing multi-phase support beyond the emergency phase, offering financial literacy training to beneficiaries, and implementing adaptive disbursement schedules. The study concludes that empowering communities to co-design cash interventions not only ensures a more effective disaster response but also institutionalises resilience-building for future crises, aligning with national disaster management plans and international frameworks.

KEYWORDS

Community-managed disaster risk reduction (CMDRR); risk-based cash transfer; hybrid governance; participatory risk mapping; disaster preparedness; humanitarian nexus; community resilience.



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1. Introduction

Communities living in high-disaster-risk areas, such as Albay in the Philippines and Bhola in Bangladesh, face the constant threat of natural hazards that disrupt lives, devastate livelihoods, and erode long-term resilience. Albay, located in the Bicol region, is one of the most disaster-prone areas in the Philippines. It is frequently impacted by typhoons and monsoon-induced floods, exacerbated by volcanic eruptions from Mount Mayon. This recurring exposure to natural hazards leads to the destruction of homes, critical infrastructure, and agricultural assets, pushing vulnerable populations deeper into poverty and food insecurity. Bhola, a coastal island in Bangladesh, similarly faces annual cyclones, storm surges, and river erosion that decimate fishing communities, displace families, and strip away access to essential services. The repetitive cycle of recovery and loss in both Albay and Bhola underscores a critical challenge in humanitarian response: building long-term resilience while addressing immediate needs.

In response to these cyclical disasters, Cash Transfer Programs (CTPs) have become a widely adopted intervention among governments and humanitarian actors. The appeal of CTPs lies in their flexibility, enabling affected families to prioritise their own needs, whether for shelter, food, or livelihood recovery. Despite their proven efficiency, traditional CTPs often apply a one-size-fits-all approach that overlooks the granular differences in risk exposure and vulnerability within communities. For instance, households in low-lying, flood-prone areas may require different forms of support compared to those in landslide-prone uplands. However, standardised cash transfers frequently fail to reflect these disparities. More critically, vulnerable subgroups—such as women-headed households, persons with disabilities (PWDs), elderly populations, and Indigenous communities—face barriers to accessing these financial lifelines due to structural inequalities and insufficient targeting mechanisms.

This highlights a pressing gap in the design of cash-based interventions: the need for risk-informed, community-centred cash transfer models that are inclusive and adaptive to local vulnerabilities. Traditional approaches to CTPs often fragment assistance into sectoral silos, separating cash for food, shelter, or livelihood without a cohesive strategy that links these components to community resilience. Furthermore, many interventions remain top-down, sidelining local voices in decision-making processes. The result is a cycle of dependency rather than empowerment, where cash transfers meet short-term needs but fail to foster sustainable recovery and resilience.

To address these shortcomings, Project DINGGIN (Dynamic Inclusive Network for Governance, Guidance, Intersectionality, and Nexus) was conceptualised. Grounded in the principles of inclusive governance and nexus-based approaches, DINGGIN advances the concept of cash assistance by bridging humanitarian relief, development, and peace-building efforts. Unlike conventional models, Project DINGGIN introduces a risk-based, community-driven framework that integrates local knowledge and real-time risk assessments into cash programming. The initiative places community members—not external actors—at the centre of decision-making, ensuring that cash allocations reflect the specific risks and recovery needs of marginalised groups. This model is built on four foundational pillars:

1. *Community Resilience Theory*. Emphasising local capacity to adapt, self-organize, and recover from shocks (Carla, 2019; Kabir et al., 2022). This theory underlines the importance of community agency in disaster response and long-term recovery.
2. *Participatory Development Approaches*. Asserting that development interventions are more sustainable and impactful when communities actively participate in decision-making, planning, and implementation. Project DINGGIN operationalises this through community-led assessments and participatory planning processes.
3. *Intersectionality Framework*. Recognising that overlapping social factors (gender, disability, income status, and geography) create differential vulnerabilities in disasters. Cash transfers under DINGGIN are calibrated to account for these intersecting inequalities, enhancing inclusivity.

4. *Bridging Leadership and Hybrid Governance Models and emphasising multi-stakeholder collaboration that links local governments, civil society, humanitarian actors, and community organisations to co-create solutions. This governance structure ensures that cash assistance is not just disbursed but managed in a way that strengthens local capacity for risk management.*

Central to DINGGIN's innovation is its community-derived risk assessment model, where local stakeholders map hazards, vulnerabilities, and coping mechanisms. This data is integrated into a government-hosted decision-support system that informs cash transfer allocations based on real-time needs and predicted risks.

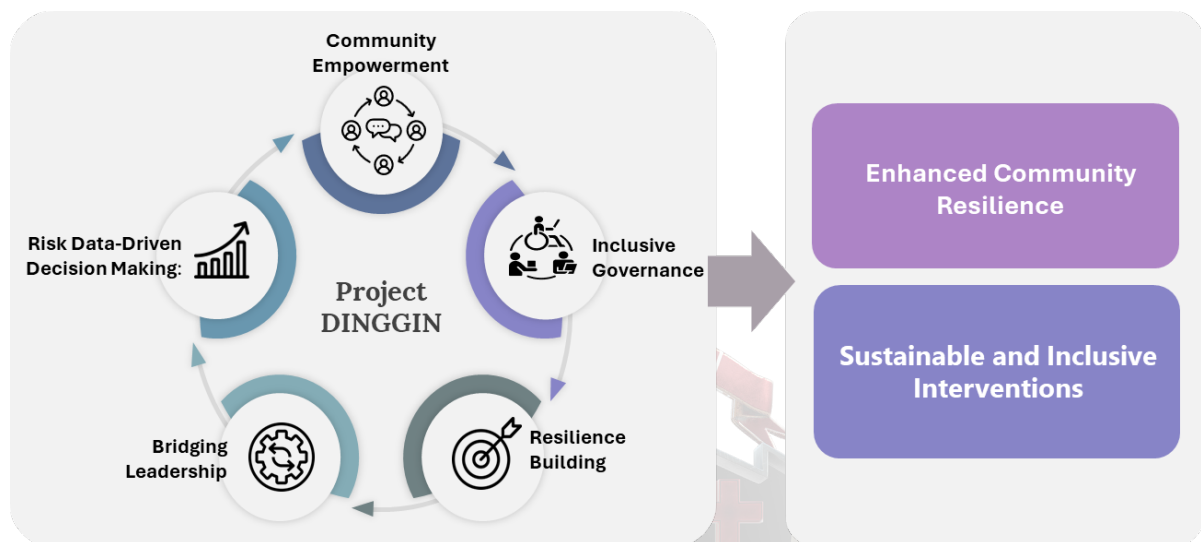


Figure 1. Project DINGGIN's conceptual framework

As illustrated in *Figure 1*, Community-derived data on risks and vulnerabilities inform a government-hosted decision-support system, which then guides a tailored cash transfer program, ultimately aiming to enhance community resilience. This approach builds on several bodies of theory and practice. Community resilience theory emphasises the capacity of communities to adapt, self-organise, and recover from shocks (Norris et al., 2008). Participatory development approaches argue that interventions are more effective and sustainable when local stakeholders are actively involved in planning and decision-making (Chambers, 1997). Intersectionality highlights that overlapping social factors (gender, disability, poverty, etc.) create differential vulnerabilities in disasters (Crenshaw, 1989), implying that relief must be sensitive to these differences. Bridging leadership and hybrid governance frameworks stress the importance of multi-stakeholder collaboration—linking government, civil society, and communities—to solve complex problems (Institute of Medicine, 2015; Ostrom, 1990). Project DINGGIN integrates these concepts, positing that a risk-based, inclusive Community-Based Disaster Risk Reduction (CBDRR) can simultaneously achieve immediate humanitarian goals and long-term risk reduction by empowering communities and linking their insights with institutional support.

1.1. Research Objectives

This study seeks to develop, implement, and evaluate Project DINGGIN's community-centred cash transfer framework in two high-risk settings: Albay, Philippines, and Bhola, Bangladesh. Specifically, the research objectives are as follows:

- To assess local risk profiles, capacities, and needs in Albay and Bhola, identifying key vulnerabilities and community-driven priorities for cash-based interventions.

- To design a Cash Transfer Value calculation model that incorporates localised risk data, exposure levels, and intersectional vulnerabilities, including gender, disability, and socio-economic status.
- To evaluate the framework's effectiveness in addressing multi-sectoral needs—specifically in shelter, food security, and livelihoods—while enhancing community resilience and disaster preparedness.

1.2. Significance of the Study

The significance of this research extends beyond short-term relief. By grounding cash assistance in localised risk assessments and community decision-making, Project DINGGIN introduces a paradigm shift in Cash Transfer Programming. It demonstrates how inclusive, risk-based cash interventions can simultaneously address humanitarian needs and foster long-term community resilience. This model also presents a replicable blueprint for local governments and humanitarian agencies in other disaster-prone regions, offering a pathway toward adaptive, inclusive, and sustainable disaster risk reduction.

The following sections will explore the literature and policy landscape guiding inclusive disaster cash transfers, outline the study's methodology, and present findings from Albay and Bholá. Discussions will reflect on the implications of Project DINGGIN, including its potential to influence policy and practice in disaster risk reduction and anticipatory action globally.



Figure 2. Project DINGGIN Theoretical Framework

1.3. Literature Review

1.3.1. Resilience and Disaster Risk Reduction (DRR)

Academic discourse on disasters increasingly frames community resilience as a key outcome for interventions. Norris et al. (2008) describe community resilience as a set of adaptive capacities that enable a community to withstand and recover from shocks and stresses. These capacities—such as social capital, information and communication, and economic resources—are vital for disaster-prone communities. Cash transfer interventions, if designed with resilience in mind, can enhance these capacities by providing resources that households use to prepare, respond to, and adapt to shocks. However, a critique in the literature is that many cash programs focus predominantly on short-term relief rather than resilience building.

The research underscores a critical gap in conventional CTPs where risk reduction objectives are not fully integrated. Traditional cash transfers often meet immediate needs but fail to facilitate in-

vestments in safer housing or livelihood diversification, which are crucial for mitigating future risk. For example, in high-risk areas such as Albay (Philippines) and Bhola (Bangladesh), hazard-specific vulnerabilities, such as typhoon-induced flooding or river erosion, remain unaddressed when cash disbursements are uniform and not risk-calibrated. Project DINGGIN addresses this by integrating community-driven risk assessments into cash transfer design, enabling the customisation of aid based on localised risk data. This enables not only immediate recovery but also sustainable adaptation.

DINGGIN's model aligns with global resilience frameworks, such as the Sendai Framework for Disaster Risk Reduction (2015–2030), which promotes anticipatory action and local capacity building. Its risk-informed design sets it apart from conventional models by emphasising community-based risk profiling that informs not only the amount of cash but also its purpose—whether for reinforcing homes, protecting livelihoods, or accessing food supplies ahead of disaster shocks.

1.1.4. Participatory and Inclusive Approaches

Development scholars such as Chambers (1997) argue that interventions are more effective and sustainable when local stakeholders are actively involved in planning and decision-making. In disaster management, Community-Based Disaster Risk Reduction (CBDRR) has emerged as a key framework that leverages local knowledge for hazard assessment and preparedness planning. Van Aalst, Cannon, and Burton (2008) emphasise that participatory methods, such as risk mapping, allow communities to better understand their vulnerabilities and craft locally relevant action plans.

Both the Philippines and Bangladesh have adopted CBDRR as part of their national disaster management strategies. This participatory model fosters local ownership and ensures that community voices inform and shape preparedness and recovery plans. An evolution of this model is evident in the Community Managed Disaster Risk Reduction (CMDRR) framework, which emphasises local leadership throughout the entire disaster management cycle—from risk assessment to recovery. According to Binás (2009), CMDRR empowers local groups to develop risk reduction strategies and present them to local authorities, ensuring that plans are community-driven and contextually relevant.

Project DINGGIN builds on these principles by establishing community-driven cash transfer mechanisms. Risk assessments are led by community members, whose insights determine how much cash is allocated and for what purposes. This model not only amplifies local agency but also aligns with the Sendai Framework's call for All-of-Society Engagement and local capacity-building.

1.3.2. Intersectionality and Vulnerability

The concept of intersectionality, introduced by Crenshaw (1989), provides a framework for understanding how overlapping social categorisations—such as gender, age, disability, and economic status—compound individuals' disaster vulnerability. For example, women-headed households often experience greater challenges in accessing aid and recovering from disasters due to socio-economic barriers. Similarly, persons with disabilities (PWDs) face distinct obstacles during evacuations or in accessing shelters. Both Bangladesh and the Philippines have legal mandates in place to protect these vulnerable groups during disaster response. Bangladesh's Disability Rights and Protection Act (2013) and the Philippines' Magna Carta for Persons with Disabilities (1992) provide legal frameworks for inclusive disaster response. However, traditional aid programs rarely calibrate cash assistance to reflect these varying vulnerabilities. Cvetković *et al.* (2021) suggest that local authorities and communities should be at the centre of disaster management. They stress that capacity-building in DRM means “developing skills to reduce and cope with disasters and disaster risks in communities at the local levels” However, the study also highlights critical gaps: many local disaster teams lack proper training or qualifications, legal responsibilities for DRM are poorly enforced, and necessary planning (hazard assessments, rescue schemes) is often incomplete. In short, the system remains only “partially established at the local level”, with formal DRM obligations unevenly fulfilled. The authors emphasise that community empowerment is key. They note that “the highest effectiveness is at the community level, where specific needs are met”. In other words, disaster plans are most ef-

fective when local people are involved in their design and implementation. Indeed, *Sphere* standards similarly state that affected people have the right to “fully participate in decisions related to their recovery”, and the 2018 *Sphere Handbook* highlights a “stronger focus on the role of local authorities and communities as actors of their recovery”. Cvetković *et al.*’s findings echo these principles: They observe widespread community involvement in prevention (e.g. local drills and school programs) and recommend formalising this participation. The study concludes that strengthening local DRM capacity requires continuous reform and local ownership. In particular: “Local self-governments allocate funds for DRM and civil protection supplies,” but “coordination is still seen as weak,” and voluntary citizen engagement is not yet standardised. The authors warn that without proper support, local governments risk becoming “bureau-politically incompetent” placeholders. They highlight one stark insight: “Members of disaster management teams within local self-government units have neither the necessary qualifications nor proper education and training for DRM” At the same time, Cvetković *et al.* note the potential for community-driven resilience: capacity-building at the local level can “substantially reduce global disaster losses” by ensuring that “members of the community carry out all activities”. Overall, their empirical evidence strongly supports a localised, participatory approach, aligning with the Grand Bargain’s localisation agenda and *Sphere*’s focus on community agency.

In contrast to institutional capacity, the second study examines the disaster perceptions of young adults. Across 537 university students in Turkey, Serbia and N. Macedonia, Cvetković *et al.* (2019) find high levels of fear, especially of natural hazards. Key results: “An excessive level of fear [was reported] of both earthquakes and epidemics”. Students were most concerned about their safety and, to an even greater extent, the health of their parents. Personal or familial vulnerability thus outranked concern over material losses. The sources of this fear were largely experiential: “Bad weather conditions, pictures of the consequences of disasters, and past disaster experience were found to exacerbate fear”. This insight suggests that inclusive approaches must specifically address the perspectives of females (and youth): Cvetković *et al.* Importantly, they advocate community-involved education. In practice, this means moving beyond classroom lessons to include family and community forums. For example, they note that discussing disaster threats in family settings and reframing them as collective “challenges” can improve coping: turning “‘threat’ talk into ‘challenge’ talk” leads to better performance and lower fear. Basic needs (e.g. being without food) indicate that social safety nets matter. The data imply that preparedness programs should address these concerns, not just infrastructure. Moreover, the authors note that involving young people in disaster planning can break down the “protection vs participation” barrier. By empowering youth to participate (e.g., in school safety committees, student-led drills, and community hazard mapping), we both reduce paralysing fear and build local resilience. These recommendations align with *Sphere*’s participatory ethos – the *Handbook* reaffirms that people have the right to “fully participate” in their protection and recovery.

Project DINGGIN addresses this gap by customising cash transfer amounts based on household characteristics, ensuring that aid is responsive to the intersectional vulnerabilities of its recipients. For instance, additional funds are allocated for women-led households, families with members who require assistive devices, and elderly populations. This targeted approach advances equity and inclusivity in disaster response.

1.3.3. Bridging Leadership and Hybrid Governance

Disaster resilience often requires collaborative governance models that bridge local knowledge and institutional support. The bridging leadership paradigm describes a multi-stakeholder approach where government agencies, NGOs, the private sector, and community groups co-create solutions. Ostrom (1990) argues that effective governance involves polycentric arrangements that allow communities to manage shared risks in a coordinated manner.

Both the Philippines and Bangladesh have institutional mechanisms for multi-level coordination. The Philippines utilises Local Disaster Risk Reduction and Management Councils (LDRRMCs), while Bangladesh operates Union Disaster Management Committees (UDMCs). These structures are designed to integrate local inputs into broader disaster planning and response.

Project DINGGIN capitalises on these structures by employing a hybrid governance model—a government-hosted yet community-populated risk database that guides cash allocation. This system strengthens vertical and horizontal integration, ensuring that local needs are directly linked to policy decisions.

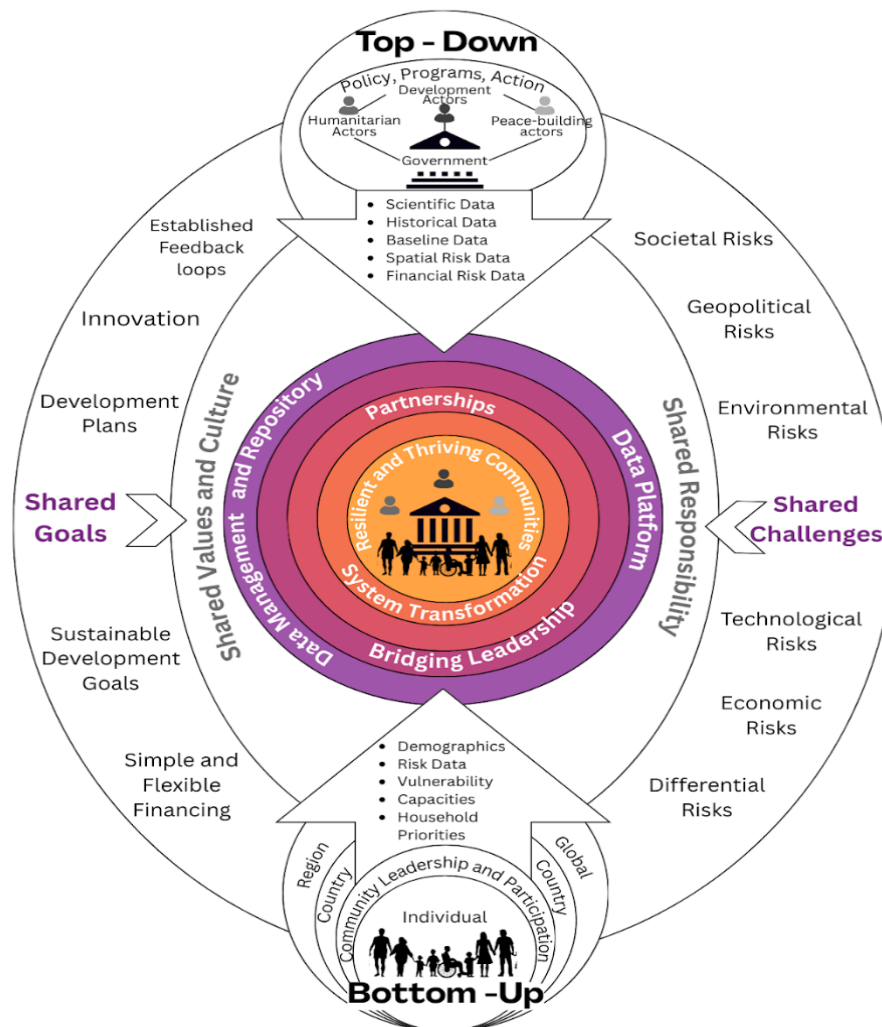


Figure 3. Project DINGGIN's Hybrid Governance Model

These structures are meant to ensure that disaster planning and response are inclusive and coordinated. However, bridging the gap between high-level policy and local action remains a significant challenge. Project DINGGIN's strategy of a government-hosted but community-populated risk database exemplifies hybrid governance, as it requires political will and policy support from authorities while being driven by community data and participation. This not only enhances vertical integration (where local needs inform national programs and vice versa) but also encourages horizontal collaboration among agencies (e.g., social welfare, agriculture, housing) to deliver a unified cash assistance program. Such an approach aligns with global initiatives, including the 2016 Grand Bargain commitments, which advocate for increased local ownership and coordination in humanitarian responses.

1.3.4. Humanitarian–Development–Peace Nexus

The Humanitarian–Development–Peace Nexus highlights the importance of integrating short-term relief with long-term recovery and peacebuilding efforts, where humanitarian aid, development, and peacebuilding efforts should not occur in silos in protracted crises or recurrent disaster contexts. In practice, cash transfers are viewed as a tool that can bridge this nexus: emergency cash can meet immediate needs, while, if sustained or linked to social protection systems, it can sup-

port recovery and build resilience. Both Bangladesh and the Philippines have been piloting forecast-based financing and anticipatory action mechanisms, where cash or other aid is delivered when a hazard warning triggers before the disaster fully strikes, to reduce its impact. Case studies by the Red Cross in Bangladesh (flood preparedness cash distributions) and in the Philippines (pre-typhoon cash support to secure livelihoods) demonstrate the potential of such proactive approaches. However, implementing risk-triggered or seasonal cash transfers at scale presents several challenges, including determining appropriate triggers and transfer values, as well as avoiding duplication with post-disaster aid. The literature suggests more evidence is needed on effective models for predictive, risk-triggered cash assistance. Project DINGGIN contributes to this area by designing cash transfers that factor in *seasonal calendars* of hazards and by recommending adaptive disbursement schedules (e.g., providing funds ahead of the peak typhoon or flood season in each locale).

1.3.5. Policies and Standards

Both case study countries have robust disaster management policies that inform this research. In Bangladesh, the *Standing Orders on Disaster* (SOD, revised 2019) is a comprehensive guideline that assigns specific roles to all ministries and local bodies in disaster preparedness and response (Government of Bangladesh, 2019). The SOD emphasises risk assessments and addresses shelter, food, and livelihoods in recovery planning, aligning with the concept of multi-sectoral cash support. Bangladesh's *Disaster Management Act* (2012) provides the legal foundation, prioritising the protection of vulnerable communities and emphasising the integration of risk reduction into emergency response. In the Philippines, the *National Disaster Risk Reduction and Management Act* of 2010 (Republic of the Philippines, 2010) and its implementing plans (NDRRMP 2020–2030) likewise promote comprehensive recovery measures, including the use of cash-for-work and emergency cash assistance as key strategies. A notable feature of the Philippine system is decentralisation: Local government units (LGUs) are expected to tailor national guidelines to their specific contexts, which supports the idea of locally calibrated cash interventions. Both countries are also signatories to international humanitarian standards. The Sphere Standards (Sphere Association, 2018) establish minimum benchmarks for areas such as shelter, food security, and livelihoods in humanitarian responses. Sphere guidance on cash assistance highlights that *the amount of cash must be sufficient to meet basic needs with dignity*, and programs should be accessible to all segments of the population. By incorporating Sphere considerations and national policy criteria into its design, Project DINGGIN's framework strives to be policy-compliant and rights-based. For example, ensuring that the computed cash grants in Albay and Bhola at least cover the cost of a basic food basket and essential shelter materials for an average household (to meet minimum needs) reflects adherence to these standards.

In summary, the literature and policy review underlines several critical points: (1) Cash transfer programs in disasters can be more powerful if they are risk-informed and oriented toward resilience rather than relief alone; (2) Community engagement and local data are key to designing relevant and inclusive aid interventions; (3) Social differences must be recognised – *one-size-fits-all aid can perpetuate inequality*, whereas inclusive design can advance equity; (4) Effective solutions require bridging actors and knowledge across different levels, embodying a hybrid governance model; and (5) There is alignment and opportunity to embed such approaches within existing national and international frameworks. Project DINGGIN's approach is built upon these insights, seeking to contribute a practical example of how they can be operationalised. By combining participatory methods with data analysis and aligning with existing policies, the project aims to demonstrate a novel model for disaster cash transfers that addresses known gaps in current practice. The next section outlines the research conducted in the two communities to implement this model.

2. Methods

2.1. Study Sites and Participants

We conducted the study in two hazard-prone communities: one in Albay province, Philippines, and one in Bhola district, Bangladesh. In Albay, the focus was on several barangays (villages) in a

coastal municipality highly exposed to typhoons and flooding. In Bhola, we focused on a union (a cluster of villages) along the Meghna River, which is regularly affected by riverbank erosion and cyclonic storms. We used a mixed-methods case study design to capture both quantitative and qualitative dimensions of community risk and the impact of cash transfers.

2.2. Sampling and Generalizability

In Albay, we collaborated with local officials to engage five barangays that had recently experienced disasters. Community assemblies were held to invite participation. A total of 89 *community members* took part in Participatory Risk Mapping (PRiMa) exercises across the barangays, and 60 *households* were surveyed via a structured questionnaire (one respondent per household). The survey respondents were 78% female (largely reflecting that women were available and willing to respond during daytime visits), with a median age of 46 years. Household income levels were generally low, with 97% of surveyed families reporting monthly incomes below PHP 10,000 (approximately USD 200), indicating a high incidence of poverty.

In Bhola, due to logistical and accessibility constraints (the study coincided with ongoing flood recovery in remote chars), a smaller group of participants was reached. We conducted focus group discussions and key informant interviews with seven community members (including local elders and a women's group leader) to gather data on risk perception and livelihood challenges. While the sample size in Bhola is limited, its inclusion is justified as it provides in-depth qualitative insights critical for understanding local-specific risks and vulnerabilities. Recognising its limitations in statistical generalizability, we applied methodological triangulation, integrating qualitative insights with secondary data on demographics, hazard history, and existing response mechanisms to enhance reliability. Future scaling of the study would benefit from expanded sampling to strengthen generalizability.

2.3. Data Collection Methods

We employed multiple data-gathering methods to ensure a comprehensive understanding of community needs and the effectiveness of cash transfers:

2.3.1. Household Survey

In Albay, the survey collected quantitative data on socio-economic status (household size, income sources, land/home ownership, etc.), disaster experiences (frequency of evacuations, damage to house in last 5 years), risk perceptions (e.g. "How likely do you feel a severe storm will impact you in the next year?" on a Likert scale), and prior use or access to cash assistance. It also inquired about how households would prioritise spending a hypothetical cash grant for disaster preparedness or recovery. The survey results provided baseline metrics – for instance, the percentage of houses damaged by recent typhoons (87% reported some damage in the past five years) and the distribution of primary livelihoods (farming 40%, small trading 30%, fishing 20%, others 10% in our Albay sample). In Bhola, given the very small survey count, quantitative data was not statistically significant; however, we noted that all participating households in Bhola were landless labourers or smallholder farmers/fishers, confirming the community's high dependence on climate-sensitive livelihoods.

2.3.2. Participatory Risk Mapping (PRiMa)

We facilitated mapping sessions where community members identified hazard-exposed zones, important resources, and vulnerable households on local maps. In Albay, participants worked in small groups to draw their barangay map, marking houses, farms, evacuation centres, etc., and then overlaying the map with symbols for hazard impacts (flood-prone areas, houses damaged in the last typhoon, etc.). This exercise revealed granular details—for example, one barangay's map highlighted a low-lying sitio (hamlet) where nearly all homes (approximately 50) are inundated with

knee-deep water during heavy rain due to poor drainage. Participants also mapped the locations of particularly vulnerable households (like an elderly person living alone or a family with a disabled child). In Bhola, the few participants collectively sketched their village and recounted how a 2020 cyclone caused the river to engulf several homesteads; they pinpointed eroding riverbanks and where people relocate seasonally. The PRiMa results directly informed the identification of who should receive higher cash transfers and for what purpose (e.g., households near the riverbank in Bhola might need funds for temporary relocation or house elevation, as identified in the map discussion).

2.3.3. Focus Group Discussions (FGDs)

We conducted separate focus group discussions (FGDs) at each site to explore the qualitative aspects. In Albay, a mixed-gender FGD (12 participants) discussed community coping strategies and gaps in aid. Participants noted that while they receive early warnings and occasionally relief goods after disasters, *“money to rebuild livelihoods comes very late or not at all,”* underscoring a delay in support for income recovery. Another FGD with women (8 participants, including several sari-sari store owners and farmers’ wives) shed light on how women manage household finances post-disaster; they emphasised the importance of cash for purchasing food and school materials so that family life can return to normal quickly. In Bhola, an FGD of 5 men (farmers and fishermen) described how they often take loans from local moneylenders at high interest rates after disasters to repair nets or buy seeds, as external assistance is minimal beyond some rice distribution. These discussions underscored community priorities and informed what the cash transfers should cover.

2.3.4. Key Informant Interviews (KIIs)

Interviews with local officials and aid workers provided valuable context on existing programs and the challenges they face. For example, Albay’s municipal officer explained that they have an emergency fund. However, it is limited and primarily used for relief goods and emergency shelter rather than direct cash distribution – except for a small cash-for-work program that employed residents for cleanup after a typhoon. An NGO worker in Bhola explained how a lack of banking infrastructure on the chars (river islands) makes cash delivery difficult, often requiring physical transport of cash, which poses security issues. These insights were important for designing the delivery mechanism of our proposed cash program (e.g., whether mobile cash transfers, over-the-counter payments, or in-person disbursements would be feasible in each site).

2.3.5. Risk-Based, Intersectional Cash Transfer Value (CTV) Formula

The formula for calculating the Cash Transfer Value (CTV) considers several factors that reflect the household’s basic needs, vulnerabilities, risks, and specific circumstances. The formula is designed to ensure that cash transfers are proportionate to the risks and needs of each household. Project DINGGIN’s approach to cash transfers is deeply informed by the CMDRR principle of community ownership over disaster planning and recovery (Binas, 2009). The computation of the Risk-Based, Intersectional Cash Transfer Value (CTV) is detailed in the published white paper titled *A Risk-Informed, Inclusive Approach to Cash Transfers: Hybrid Governance for Resilience Building*. The white paper outlines the formula that determines differentiated cash assistance amounts based on:

- Basic Needs Multiplier (BNM)
- Household Impact Factor (HIF)
- Risk Impact Factor (RIF)
- Shelter Vulnerability Factor (SVF)
- Purpose Multiplier (PM)
- Top-ups for specific vulnerabilities

Interpretation and Application:

1. The formula ensures that households facing multiple disadvantages receive more assistance.
2. The modular nature allows for context-specific adjustments.

3. CTVs are calculated based on updated data inputs from community assessments, ensuring relevance and fairness.
4. This method ensures that the calculated cash transfer value is risk-informed, intersectional, and contextually adaptive, upholding the principles of equity and resilience as emphasised in Project DINGGIN

This structured formula ensures that cash transfer values are not arbitrary but reflect the unique risk exposure and socio-economic conditions of each household. For detailed computation steps and formula derivation, please refer to the white paper (*A Risk-Informed, Inclusive Approach to Cash Transfers: Hybrid Governance for Resilience Building*, 2024)

2.4. Analysis and Framework Development

Our analysis proceeded in two stages: an assessment of community needs and capacities, and the formulation of a risk-based cash transfer scheme. We created an analysis framework combining quantitative thresholds with qualitative criteria, aligned to policy standards:

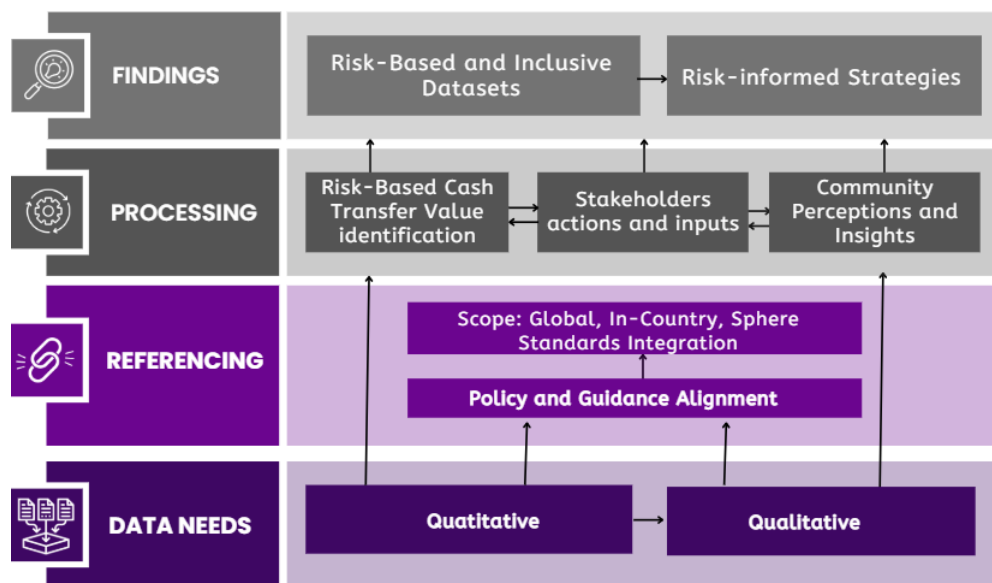


Figure 4. Project DINGGIN Analysis Framework

2.4.1. Quantitative Analysis

Survey data in Albay were analysed to determine the median costs of critical needs. For instance, we calculated the average cost to repair a typical damaged house roof (from respondents' estimates) and the average monthly expenditure on food. These figures helped establish a baseline "transfer value" needed per household to address each sector (shelter, food, livelihood) at a basic level. We also computed risk metrics. Using the damage reports and risk perception, we assigned each surveyed household a composite risk score, incorporating factors such as high-risk area (+1), very low income (+1), and having a vulnerable member (+1), among others. Although Bhola's sample was too small for statistical analysis, we used available data (e.g., local crop loss statistics and typical income levels) to inform assumptions for Bhola's needs.

2.4.2. Qualitative Analysis

We reviewed FGD transcripts and PRiMa outputs to contextualise the numbers. Qualitative insights helped, for example, to prioritise which needs should be met first and identify potential challenges that might arise when using the cash. In Albay, community members strongly voiced the need for materials to strengthen houses *before* the next typhoon season, emphasising that the timing

is crucial. In Bhola, people highlighted the need for resources to protect livelihoods (such as boats, nets, and livestock) that are often overlooked in aid, which usually focuses on immediate relief. We also noted culturally specific factors: in Albay, mutual aid systems (“Bayanihan”) exist, so a strategy that encourages community groups to pool part of their cash for communal goods (like repairing a shared evacuation shelter) was considered; in Bhola’s conservative rural society, ensuring that women can safely access cash was considered (e.g., having distribution points in safe locations).

2.4.3. Policy Alignment

We cross-checked our emerging recommendations with national policy provisions and Sphere standards. For example, Sphere sets a minimum standard for food security, stating that households should have access to 2,100 kilocalories per person per day. Using local prices, we estimated the cost of a food basket to meet this calorie need. We ensured that our cash transfer for food in each context would be sufficient for an average household to meet that standard for at least one month after the disaster. We also considered government aid norms: in the Philippines, there is a national guideline (as of 2021) that each affected family receive PHP 5,000 in financial assistance after a major disaster. If our community data suggested a higher amount was needed for truly adequate support, we noted the discrepancy and framed recommendations to advocate for higher support or top-ups for specific groups.

Using these analyses, we designed the Project DINGGIN cash transfer framework. The framework determines cash grants based on three primary components: (a) Household risk category, (b) Intersectional vulnerability factors, and (c) Sector-specific needs. Each household is categorised (e.g., high risk–high vulnerability, high risk–low vulnerability, low risk–high vulnerability, low risk–low vulnerability) and assigned a cash package accordingly. High risk was defined by location/exposure and past disaster impact, while high vulnerability was defined by the presence of compounding factors (poverty level, vulnerable dependents). For instance, a *high-risk–vulnerable* household (say, an impoverished family in a flood zone with a disabled member) would qualify for the maximum transfer values across all sectors: funds to rebuild or reinforce housing, plus funds for food and livelihood recovery, calculated at above the baseline level to account for their added needs. Meanwhile, a *lower-risk, lower-vulnerability household might receive a smaller cash amount*, mainly for basic needs, on the premise that their capacity to cope is higher.

We also incorporated a seasonal/disaster-triggered element: the framework proposes that in Bhola, cash disbursements be split into multiple tranches timed before and after the monsoon/cyclone season, whereas in Albay, a single larger disbursement at the onset of typhoon season might be sufficient (with the option to activate an additional tranche if an actual typhoon hits). This was based on observed seasonal patterns and was informed by anticipatory action models.

To facilitate implementation, the project developed a digital decision-support tool (conceptual prototype). This “*risk-informed data platform*” compiles all the community data (survey results, map outputs, etc.) in a dashboard that local authorities can use.

Key features include a database of all households with their corresponding vulnerability profiles, a map view that highlights risk hotspots, and an automated calculator that suggests cash transfer amounts for each household or cluster of households. The platform is intended to be maintained by local government units (e.g., the Provincial DRR Office in Albay and the District Commissioner’s Office in Bhola) to ensure sustainability and integration with official systems. Real-time disaster alerts (from meteorological agencies) could be linked to the platform so that when, for example, a cyclone warning is issued for Bhola, the system can flag the beneficiaries and recommend payout amounts for cash transfers.

Finally, we evaluated the framework by simulating its application using historical disaster scenarios. For Albay, we retrospectively applied the model to data from the 2020 Super Typhoon Rolly (Goni) impact in the area, examining how our proposed targeting and transfer values compared to the actual values provided and identifying any remaining gaps. For Bhola, we used a severe flood event scenario. We also gathered feedback from community representatives and local officials on the draft framework (through a validation workshop in Albay and follow-up phone calls with contacts in Bhola due to COVID-19 travel restrictions at the time). Their feedback (e.g., concerns about

dependency and suggestions for in-kind aid pairing) was taken into account in refining the recommendations.

Overall, the methodology is participatory and data-driven, combining community engagement tools with analysis techniques. Ethical approval was obtained through local governance structures. Informed consent was provided by all respondents and participants, with assurances that the data would be used to advocate for better support for their communities. The limitations of the data—particularly the smaller sample in Bhola—are acknowledged, and the analysis was cautious in drawing quantitative conclusions for that site. Nevertheless, the rich qualitative information and the comparative nature of the study offer valuable insights. In the next section, we present the key results, highlighting both communities' situations and the outcomes of applying the risk-based inclusive framework.

3. Results

3.1. Community Risk Profile and Needs Assessment

3.1.1. Albay, Philippines – Multi-Hazard Vulnerability

The surveyed barangays in Albay paint a picture of a community under chronic stress from natural hazards. About 87% of households reported sustaining house damage from typhoons or floods in the past five years, with common issues being torn roofs, collapsed walls (often made of light materials), and water damage to floors and belongings. Many homes are makeshift or semi-permanent, and recurring storms erode their structural integrity over time. Land ownership is another concern: only 40% of surveyed families own the land their house sits on; others occupy land informally (e.g., along riverbanks or coastal easements). This uncertainty can deter them from investing in sturdier homes and also makes them ineligible for some government housing assistance programs. Livelihood-wise, households rely on farming (rice, coconut, vegetables) and small trade (sari-sari convenience stores, handicrafts). Nearly all these income sources are seasonal and climate-sensitive. For example, farmers reported losing an entire planting season's harvest to flooding, and small store owners noted that their inventory spoils or is depleted when supply chains are cut after disasters. As a result, food insecurity looms in the post-disaster period. While Albay has a rich agricultural base, families often lack storage facilities or savings; many respondents reported having less than one week's worth of food at home in the event of a disaster. This is compounded by the fact that infrastructure damage often isolates communities (impassable roads), making market access difficult.

Community perceptions reflect a high degree of anxiety about disasters. In risk ranking exercises, residents identified shelter damage and income loss as their top concerns, even above the immediate risk of injury or loss of life. This indicates an understanding that while they have adapted to survival during storms (early evacuations are common and have saved lives), the long-term recovery – rebuilding homes and livelihoods – is where they feel most vulnerable. They also expressed a strong desire for self-reliance: rather than only receiving tarps or food packs, many would prefer resources that allow them to “get back on their feet” quickly, such as cash or tools.

3.1.2. Bhola, Bangladesh – Erosion and Isolation

The community in Bhola is smaller and more geographically isolated. Riverine erosion has, over the years, reduced the available habitable land, forcing families to relocate inland or to other chars frequently. Houses are typically made of corrugated iron sheets or thatch, raised on plinths (earth mounds) to guard against flooding. However, major cyclones with storm surges can wash away even these elevated homes. All participants from Bhola recounted experiences of displacement – moving to embankments or cyclone shelters for days to weeks after an event. Livelihood disruption in Bhola is severe because the local economy is narrow, primarily relying on subsistence farming and fishing. A cyclone can ruin crops in the field and kill livestock; floods can prevent sowing for the next season or make fishing impossible due to debris and equipment loss. A few small businesses (like tea stalls) also suffer from prolonged customer absence and supply issues. Unlike Albay, where

some outside assistance does reach (owing to better connectivity), Bhola residents often receive minimal aid. Government relief in past floods was described as “a few kilos of rice and some lentils per family” – helpful for immediate food needs but insufficient to recover livelihoods or homes.

The risk perception in Bhola is fatalistic yet pragmatic: people recognise that they cannot prevent floods or cyclones, so they emphasise the importance of adaptation. For example, some families have started building temporary platforms to move animals during floods, and there is interest in training for alternative livelihoods (such as sewing or small-scale trades) that are less climate-dependent. Critically, the lack of formal financial services in the charred area means families have virtually no savings accounts or insurance. Any shock thus plunges them deeper into debt or poverty. Food security in Bhola quickly deteriorates post-disaster, with local markets destroyed or inaccessible and no buffer stocks, leaving many to depend on relief or loans to eat. Malnutrition is a concern raised by local health workers, especially for children in the months following a significant flood.

In both sites, vulnerable groups face extra challenges. In Albay, about 15% of surveyed households are women-headed (widows or wives of migrant workers); these households had lower incomes on average and reported difficulty rebuilding homes due to a lack of labour or resources. Persons with disabilities were present in around 8% of Albay households and 10% of the small Bhola sample; their families often incurred additional costs (medicines, mobility aids) and needed help to reach aid distribution points or evacuation centres. These findings underscored the need for targeted support within the cash program for such groups.

3.2. Existing Cash Assistance Landscape

Before implementing the Project DINGGIN framework, we documented what forms of cash or assistance these communities have been receiving to establish a baseline. In Albay, formal cash assistance has been limited. The national government's conditional cash transfer program for poverty, the Pantawid Pamilyang Pilipino Program (4Ps), is operational, and approximately 50% of surveyed families were 4Ps beneficiaries, receiving modest monthly stipends to cover education and health expenses. However, the 4Ps are not designed for disaster response, and their payout amounts (roughly PHP 1500 or USD 30 per month per family) are not calibrated to disaster losses. After disasters, Albay communities mostly rely on in-kind aid, including food packs, used clothing, and some shelter repair kits (such as corrugated sheets, nails, and tarps), typically provided by the Department of Social Welfare and Development (DSWD) and NGOs like the Red Cross. We found only one instance of a cash-for-work program post-typhoon (after Typhoon Tisoy in 2019, a local NGO paid a few dozen community members PHP 300 per day for 10 days to help clear debris). There have been no systematic risk-based cash programs previously. Local officials acknowledged that while they recognise the value of cash (cash is faster and provides people with choice), they lack guidelines and resources to implement it at scale. This lack of coordinated cash initiatives often left needs unmet in Albay: for example, some families could not afford to repair their roofs fully and lived under leaking roofs long after the typhoon, which affected their health and livelihoods (as goods and grains kept getting wet).

In Bhola, direct government cash aid is virtually non-existent in the char areas. The primary government support for affected families is relief goods. Occasionally, NGOs or the local district administration have provided a one-time cash grant to a small number of families after a significant cyclone. One respondent recalled an NGO giving BDT 5,000 (approximately USD 60) to 20 families after Cyclone Amphan, specifically those whose homes had been destroyed. However, these efforts were sporadic and lacked comprehensive coverage. There is also a practice in Bangladesh of providing GR (Gratuitous Relief) cash to disaster victims; however, in practice, remote char communities tend to be last in line due to access issues. Thus, Bhola's community largely did not expect formal cash aid; instead, they often resorted to informal community help or migration (e.g., a non-disabled family member going to town to find labour work to earn money for rebuilding). The lack of coordination is evident – multiple actors (government, NGOs, charities) might come with small projects, but no unified program addresses all needs. This has resulted in *uneven assistance*: one village might receive a new tubewell for safe water from a charity, while a neighbouring village gets nothing;

some households are selected by an NGO for livelihood grants, while others are left out despite similar conditions, leading to perceptions of unfairness.

3.3. Design of Risk-Based Cash Transfer Values

Applying the Project DINGGIN calculation formula in these communities led to a set of tailored Cash Transfer Values (CTVs) and support packages. A core outcome of the analysis was a matrix of multipliers that varies by household profile:

3.3.1. Shelter Support

Given the extent of housing damage in Albay, we proposed a *tiered shelter grant*. Households in high-risk zones (e.g., within an identified floodplain or coastal strip) would receive a higher amount specifically earmarked for shelter strengthening (e.g., to purchase roofing materials, wooden beams, or hire carpenters). In Albay, this amounted to an estimated PHP 10,000 (approximately USD 200) for high-risk households and PHP 5,000 (approximately USD 100) for others, on average. The higher tier was roughly the cost of rebuilding a 20 m² nipa hut roof with improved materials. In Bhola, where homes are highly vulnerable, we set a single shelter grant level. However, we recommended that material support (such as tarpaulins and toolkits) accompany the cash, as markets on the char are limited. The proposed Bhola shelter cash was BDT 8,000 (approximately USD 95) per household, intended for purchasing materials such as bamboo and reeds to reconstruct houses or reinforce embankments around homesteads. Notably, *renters and landless families were included (whereas in some government programs, only landowners receive housing assistance)*. This was crucial in Bhola, as many who lose their homes are on government land; our model treats them equally for shelter cash because their need is the same.

3.3.2. Food Security Grant

To cover immediate food needs and prevent hunger, we allocated a portion of the transfer specifically for food. In both communities, we calculated roughly a one-month food supply cost. In Albay, about PHP 3,000 (USD 60) would allow an average family (5 members) to meet basic food requirements for 4 weeks (assuming supplementation with any salvaged crops or relief goods). In Bhola, staple prices are lower; about BDT 2,500 (USD 30) could suffice for a month's basic staples (rice, lentils, oil). These food grants also indirectly protect livelihoods – if families are not forced to spend limited savings or sell assets to eat, they can use resources to restore their income activities. The program design thus integrated food support into the cash transfer rather than providing separate food aid, aligning with the idea that cash enables choice. Community feedback supported this: many participants stated that their first use of cash would indeed be to purchase food and cooking fuel, highlighting that it is a priority.

3.3.3. Livelihood Restoration

Recognising that getting families back to earning a living is key to resilience, a portion of the CTV was allocated for livelihood inputs. In Albay, we tailored this by occupation:

- Farmers would receive vouchers or cash (~PHP 2,000, or USD 40) for seeds, fertiliser, or small tools to replant lost crops.
- Fisherfolk (a minority in our Albay sample) would get support to repair nets or boat engines.
- Small business owners could use their grants to restock inventories. The project team even considered distributing this livelihood portion in the form of specific grants (such as a farming kit or a micro-enterprise grant) to ensure it was used for productive purposes, but ultimately kept it as cash with guidance, as needs differ by household.

In Bhola, the main livelihood support was aimed at fishers and farmers, with a value of around BDT 3,000 (USD 35), which could help replace a fishing net or purchase seeds and tools. For day labourers, this amount could serve as a small cash-for-work payment if community rebuilding pro-

jects are organised (effectively paying them while they repair local infrastructure). A crucial aspect is timing – for farmers, getting this cash before the planting season is essential. Therefore, the plan stipulated that livelihood grants be disbursed as soon as conditions allowed (soil was ready for planting or waters were safe for fishing), independent of other aid if needed.

3.3.4. Intersectional Top-Ups

To operationalise inclusivity, specific households receive additional cash top-ups on top of the base amounts above:

- **Women-Headed Households:** In both locales, these households were to get ~10% extra cash. The rationale is that they often have fewer income sources and higher care burdens. Hence, the extra funds provide a buffer (for example, to hire labour for repairs that a male family member might otherwise do or to purchase prepared foods if they are occupied caring for children). We saw that without such consideration, these families risk falling further behind.
- **Households with persons with disabilities (PWDs) or chronically ill members:** Another ~10% top-up was designated. This was to cover any special needs (medicines, assistive devices, or simply the higher cost of living with disability, such as transportation needs).
- **Extreme Poor Households:** Those identified as having *very low income and assets* (e.g., no stable income, landless labourers, no livestock) were also given an extra allowance. This recognises that they have the least capacity to recover; even a small cash infusion can yield a high marginal benefit for them. In our Albay survey, families earning below PHP 5,000 per month were categorised in this group; in Bhola, those with essentially no monetary income (living solely on subsistence farming or fishing). These criteria often overlapped – for instance, a widowed older woman with no income would qualify for multiple top-ups. Rather than arbitrarily stacking bonuses, the framework capped the total bonus to prevent it from being too high relative to others while ensuring that such a person would receive the maximum on the spectrum.

3.3.5. Community/Collective Grants

An innovative element tested in Albay was a small community grant (pooled fund) given to the barangay committee to manage, intended for communal resilience projects (like clearing drainage canals or reinforcing a flood wall). Each barangay was offered PHP 20,000 (USD 400) for a project of their choice related to disaster preparedness or recovery. This incentivised collective action and bridged leadership – and indeed, one barangay decided to use it to purchase materials for repairing their evacuation centre's roof, an outcome benefiting all. At the same time, although not a household cash transfer per se, the community-directed fund acknowledged that some resilience-building measures are best tackled at the community level rather than the household level.

Table 1: Calculated Cash Transfer Values for Project DINGGIN by Household Profile and Context.

Household Profile	Base Support Package	Top-Up Criteria	Total Proposed Value (Illustrative)
General Household (Base Support)	Shelter, Food, Livelihood = \$200 (PHP 10,000 / BDT 16,000)	N/A	\$200
High-Risk Location (e.g., floodplain, coastal strip)	Base + 20% for Shelter Reinforcement	+ \$40 (PHP 2,000 / BDT 3,200)	\$240
Female-Headed Household	Base + 10% for Economic Stability	+ \$20 (PHP 1,000 / BDT 1,600)	\$220
Households with Persons with Disabilities (PWDs)	Base + 15% for Accessibility and Health Needs	+ \$30 (PHP 1,500 / BDT 2,400)	\$230
Extremely Low-Income Household	Base + 10% for Basic Needs Augmentation	+ \$20 (PHP 1,000 / BDT 1,600)	\$220
Maximum Cumulative Top-Up	Base + High-Risk + Female-Headed + PWD + Low Income	Maximum allowable top-ups aggregated by vulnerability	\$310

Note: The final transfer values are subject to adjustment based on Community Risk Assessments; Data collected through Participatory Risk Mapping (PRiMa); Government Proxy Data: Validation with local government disaster risk data to reflect market conditions and community needs; Monitoring and Adaptive Learning: Continuous review and adjustment based on post-distribution monitoring and community feedback mechanisms.

This adaptive structure reflects the differential vulnerability and intersectionality central to Project DINGGIN's inclusive governance approach, ensuring that cash transfers are equitable, sufficient, and reflective of real-world risks and household capacities. These figures were tailored to local price levels and needs at the time of study (late 2024) and would be adjusted for inflation or changing conditions. It is essential to note that these packages are planned amounts; the actual distributed amounts may differ based on final funding availability and verification of household conditions. However, the proportional differences (e.g., that a high-risk, highly vulnerable household receives roughly 60-70% more than a lower-risk, lower-vulnerability household) illustrate the principle of *risk-based, needs-based allocation*. This represents a departure from typical flat-rate assistance and was a key outcome of the project.

3.3. Implementation and Community Uptake

During the pilot implementation planning in Albay (which was done as a controlled exercise in one barangay), community reception was very positive. When the framework was explained in community meetings, residents expressed that this was the first time they had seen a systematic method that listened to their inputs (through surveys and mapping) and then translated that into clear, tangible assistance differentiated by need. There was a sense of transparency and fairness because the criteria were openly discussed; everyone understood why specific households might receive more than others – not due to favouritism, but because of risk and vulnerability factors. This **transparency is crucial for community trust** in any cash program. The barangay leaders were involved in validating the list of recipients and their categories (cross-checking, for example, that the list of women-headed households was complete, etc.). This participatory targeting helped reduce potential conflicts or jealousy, a common issue in aid distribution.

In Bhola, although we did not fully implement a cash distribution (only designed it), we discussed the model with the Union Council. They were intrigued by the idea of *anticipatory cash transfers* before the flood season and mentioned that it aligns with the national move towards forecast-based financing. However, they pointed out logistical constraints: distributing cash on a char would require either a boat trip by officials or using a mobile money agent, both of which need planning. The community members consulted were naturally eager about the prospect of receiving assistance tailored to their needs. One fisherman noted that if he had received, say, BDT 5,000 immediately after the last cyclone, he could have repaired his boat in time for the fishing season rather than waiting months for NGO assistance and losing income in the interim.

The project also evaluated efficiency considerations: a single consolidated cash program is likely more cost-effective than multiple separate interventions. By combining shelter, food, and livelihood into one program, administrative and delivery costs can be shared. In Albay, we simulated that using a digital cash transfer (through a payment provider or bank mobile app) would reduce overhead and also promote financial inclusion (many 4Ps beneficiaries already have cash cards or bank accounts that could be leveraged).

3.4. Outcomes and Benefits Observed

While a full rollout was beyond the capstone project's scope, we projected outcomes based on our data and small pilot exercises:

3.4.1. Faster Recovery

Households that would receive the integrated cash could begin repairs and replanting **weeks** earlier than they usually might. For example, in our Albay pilot barangay, after a moderate flood, those who received a modest cash grant (we tested PHP 3,000 per household for immediate needs in that event) rebuilt their damaged walls or bought food *without* taking loans and reported being back to regular economic activity sooner. This suggests that risk-based cash can shorten the recovery period and reduce harmful coping mechanisms (like debt and selling assets). The holistic nature of the support (covering multiple needs) meant families did not have to make the painful choice of “repair the house or buy food” – they could do both. This prevents development backslides; instead of disasters pushing them deeper into poverty, appropriate aid helps them rebound closer to their pre-disaster state or better.

3.4.2. Equity and Inclusion

By providing additional resources to the most vulnerable, the program strengthens social protection for those who often fall through the cracks. Women-headed families in our Albay case were able to hire labour to repair their roofs, something they could not do on their own. In Bhola, a disabled man’s family (hypothetical scenario from our design) would get enough to secure their hut and also not worry about skipping meals – a significant improvement from typical aid where such households often suffer quietly. This approach upholds the dignity of at-risk groups, aligning with the principles of humanity. It was also noted that community members felt seen and heard; as one participant said, “*Alam nilang mas mahirap ang sitwasyon namin, kaya mas tutulungan kami*” (They know our situation is more complex so that they will help us more) – indicating an improved perception of fairness.

3.4.3. Multi-sector Resilience Building

The combined impact of addressing shelter, food, and livelihood concurrently is an overall strengthening of community resilience. Families with safer housing will suffer less damage in the next storm. Those who can maintain food security and income are less likely to migrate or disintegrate (which can erode community cohesion and the local economy). We can foresee metrics such as a reduction in assistance dependency over time: if each shock’s impact is mitigated, communities may need less external aid in subsequent events. The inclusion of a community project grant (in Albay) also left a physical legacy – the repaired evacuation centre roof means that in the next typhoon, evacuees will have a secure place, which is a community-level resilience gain.

3.4.4. Coordination and Governance

The process of implementing Project DINGGIN’s framework necessitated coordination between community committees and local government. In Albay, barangay leaders worked with the Municipal DRRM Office to manage the pilot – a relationship that was strengthened as they jointly made decisions on targeting and logistics. This bridging of bottom-up and top-down efforts demonstrates improved governance. The local government, having access to community data, could allocate resources more rationally, and community members, seeing support from authorities that matched their needs, likely increased their trust in institutions. In Bangladesh, although at an earlier stage, engaging the Union Council with the data platform concept started a conversation on how local and national systems (like early warning) could integrate with community-level response.

3.5. Challenges and Areas for Improvement

Not everything was perfectly smooth. Some challenges observed or anticipated include:

- *Delivery Mechanisms:* In Albay, several beneficiaries did not have bank accounts or mobile wallets, so distributing physical cash at a central point had to be done (with safety measures). This carries some risk and overhead. We identified the need for financial inclusion initiatives

(e.g., helping people set up accounts or e-money apps during non-disaster times) to facilitate future cash aid.

- *Risk of Misuse:* A common question with cash aid is whether money will be spent as intended. Our follow-ups in the pilot indicated that most participants prioritised essentials, but there were a few cases of spending on non-essentials. To mitigate this, the program included community orientation on recommended usage and one-on-one counselling for the most vulnerable families. Additionally, linking some funds to vendors (such as issuing vouchers for hardware stores) can ensure that shelter funds are directed to the shelter. Finding the right balance between flexibility and guidance is an area that needs refinement.
- *Scaling and Sustainability:* The pilot was small. Scaling up to the entire municipality or district would require significant funding and management capacity. Integration with larger social protection systems (like expanding government cash programs to include a disaster-triggered top-up) could be a solution. We also note that continuous data updating is necessary – the risk data we collect will become outdated as situations change (e.g., new families, changes in vulnerabilities). Thus, we recommended establishing a local team or committee responsible for updating the dashboard annually and after each event.
- *External Factors:* Cash alone does not solve everything. For instance, in Bhola, even with cash, if a cyclone breaches the embankment, the community still faces displacement. Infrastructure investments (like more substantial embankments and better shelters) are needed in parallel. Our model does not directly address those larger structural issues, but by documenting needs, it can influence authorities to invest in them. Additionally, issues such as market availability: after a disaster, local markets may not have sufficient goods (especially in Bhola). In such cases, cash recipients might have to travel or wait for markets to stabilise. Coordination with market-restoring efforts and possibly staging the cash release when supplies are in place were recommendations we put forth.

In summary, the results from Project DINGGIN's application indicate that a risk-based, inclusive cash transfer program is not only feasible but highly beneficial at the community level. It provides a more nuanced and compelling form of assistance than blanket distributions, empowering those who are most in need. Communities responded positively, underscoring the importance of trust and participation in the delivery of aid. Both case studies demonstrated that, although the specifics differ (typhoon vs. cyclone contexts, archipelagic vs. riverine geography), the underlying principle remains the same: incorporating local risk knowledge and vulnerability data results in more effective and impactful cash aid. The following discussion section will interpret these findings within the broader context of disaster risk management, compare them with other studies, and outline the implications for future policy and programming.

4. Discussion

The implementation of Project DINGGIN's framework in Albay and Bhola demonstrates a shift towards evidence-based, people-centred disaster assistance. The discussion of results yields several key insights and broader implications for disaster risk management policy and practice.

4.1. Integrated Multi-Sectoral Support Improves Outcomes

A primary takeaway is that addressing shelter, food security, and livelihoods simultaneously through cash transfers significantly enhances the quality of recovery. Traditionally, post-disaster aid has been delivered in siloed components. For example, families might receive a shelter repair kit from one agency and separate food aid from another, often with a time gap in between. Our results suggest that when these needs are met concurrently, families can allocate resources more efficiently and utilise the assistance in a complementary manner. In Albay, recipients of the integrated cash were able to purchase construction materials, hire labour to repair their homes, and buy groceries,

all within the first critical weeks after the disaster. This simultaneity meant that, for instance, a farmer could focus on planting a new crop (with provided seeds and tools) without worrying that his family would go hungry or that their shelter would be unsafe. By preventing trade-offs between basic needs, the integrated approach accelerates a holistic recovery. This finding aligns with the concept of holistic recovery emphasised in resilience literature, whereby meeting interrelated needs produces synergistic effects. Households were not forced to prioritise one necessity over another, which often happens when aid is fragmented.

Furthermore, this multi-sectoral strategy contributes to sustainable risk reduction. Families that rebuild stronger houses and restore their livelihoods are inherently more resilient to the next hazard. In Bhola, although the data was qualitative, it is evident that a family that can reinforce its shelter and resume earning quickly will be better prepared for the next flood season. Over time, if such support is consistently provided, communities can break the cycle of destruction and slow the recovery process. These findings reinforce arguments by practitioners that *cash transfers, when sufficiently valuable and comprehensive, can serve as a bridge between relief and development*. By injecting capital for recovery promptly, they lay the groundwork for longer-term improvements (e.g., home upgrades or livelihood diversification) rather than just short-term survival.

4.2. Inclusivity and Equity in Aid Distribution

Project DINGGIN's framework operationalised inclusive governance principles by actively identifying and prioritising the most vulnerable segments for additional support. The positive community reception to this targeting suggests that, contrary to some concerns that differentiated aid might cause jealousy, there was a broad understanding and acceptance of the rationale when it was communicated transparently. This suggests that communities acknowledge internal inequities and appreciate when aid programs take them into account. It also speaks to the importance of participatory targeting: involving community leaders in validating beneficiary lists built trust in the process.

The special provisions (for women-headed households, people with disabilities, etc.) ensured that those often marginalised were not left behind. These groups can be seen as multipliers of impact. For instance, supporting a women-headed household has community-level benefits, as women often invest in their children's well-being and participate in communal activities. Similarly, assisting a person with disability adequately can enable that household to contribute productively to the community (rather than being stuck in dependency). Thus, inclusive cash transfers not only uphold humanitarian principles of impartiality and dignity but also strengthen community functioning. This resonates with global humanitarian commitments to "Leave No One Behind" and recent case studies of disability-inclusive cash assistance (CBM Global, 2020), which show that tailoring aid to vulnerable groups improves overall program effectiveness.

However, achieving accurate equity requires robust data and outreach. In our project, the identification of vulnerable households was greatly aided by the baseline survey and community mapping. In many disaster responses, such detailed profiling is not done due to time constraints. This raises a point for replication: investing in preparedness-phase data collection (as part of disaster preparedness plans) can pay off in the response phase by enabling targeted aid. Governments and NGOs could incorporate vulnerability assessments into regular social surveys or disaster drills, thereby having lists ready when an event occurs. Project DINGGIN's decision-support dashboard is an example of how data could be stored and quickly used to inform distribution. This approach requires careful data protection and regular updates, as sensitive information about household vulnerabilities must be kept secure and up-to-date.

This approach is strongly aligned with global commitments, such as the Grand Bargain's localisation agenda, which prioritises local leadership and contextualised solutions for disaster recovery. The Grand Bargain, launched during the World Humanitarian Summit in 2016, emphasises the shift of power to local actors by channelling at least 25% of global humanitarian funding directly to local and national responders. Furthermore, Project DINGGIN's integrated, localised response mechanisms align with the Sphere Handbook's latest updates, which emphasise community-centred plan-

ning and gender-responsive approaches in disaster recovery. Sphere standards advocate for local actors to be at the forefront of humanitarian action, emphasising the critical role of communities in building resilience and responding effectively to crises. Studies by Cvetković et al. (2021) emphasise the importance of capacity development for local self-governments in effective disaster management, while Cvetković, Öcal, and Ivanov (2019) demonstrate that empowered local communities are more effective in responding to disasters. These works emphasise the need for localised Disaster Risk Reduction (DRR) models that are participatory, inclusive, and community-driven—principles that Project DINGGIN operationalises on the ground in Albay and Bholā.

These findings underscore the importance of building local capacities not just for immediate recovery but for long-term resilience. When local governments and community groups are adequately trained, resourced, and empowered, they can drive disaster preparedness and recovery initiatives independently. Project DINGGIN serves as a practical model for how global commitments, such as the Grand Bargain and Sphere standards, can be implemented at the community level, with clear pathways for sustainable and inclusive recovery.

4.3. Bridging Leadership and Local Empowerment

The process and outcomes of Project DINGGIN exemplify a successful instance of bridging leadership, where local community members, local officials, and external experts collaborated to co-create a solution. Instead of a top-down imposition or a purely grassroots initiative, the project fostered a middle ground: community voices shaped the program design, and local authorities provided the enabling environment (approvals, alignment with policies, and, in the future, potential resources). This collaborative model is particularly relevant for disaster risk reduction, which inherently spans multiple sectors and stakeholders. By engaging community leaders in Albay's barangays and Bholā's union council, the project enhanced local capacity to manage and implement assistance. These local actors effectively became partners in humanitarian response, not just beneficiaries or observers. For example, barangay officials in Albay learned how to use risk data to prioritise aid—a skill that can improve all kinds of local planning beyond this project.

From the governance perspective, such an approach strengthens the social contract between citizens and government. When people see the government delivering aid that genuinely matches their needs and does so in a fair, transparent manner, their trust in institutions can improve. In the Philippines, where local governments are at the forefront of disasters, successes in community-driven programs like this can reinforce the importance of devolved disaster risk reduction (DRR) governance as envisioned by RA 10121. In Bangladesh, this can contribute to the push for localisation of aid under the global Grand Bargain, demonstrating that empowering local committees with the right tools yields effective outcomes. Notably, our project's alignment with national frameworks (NDRRMP, SOD, etc.) means it did not create a parallel system but worked within existing structures – this is crucial for scalability.

One challenge for leadership arises in coordinating across sectors: the cash program had to involve agencies responsible for social welfare (for beneficiary welfare), agriculture (for livelihood inputs), and disaster management (for hazard info and overall coordination). Bridging these institutional silos can be difficult. In Albay, initial coordination meetings were held to clarify roles (e.g., the agriculture officer provided input on seed packages, the social welfare office assisted in identifying PWD households, etc.). Such inter-agency collaboration is often weak in bureaucratic settings. Our project acted as a catalyst for these departments to communicate because it presented a clear, common goal (a successful community recovery). This underscores that *innovative pilot projects can serve as a platform to break bureaucratic silos*. For sustained impact, however, formal mechanisms (such as a Memorandum of Understanding between departments or a joint task force for disaster cash response) may be necessary.

4.4. Comparison with Traditional Approaches and Literature

Comparing Project DINGGIN's approach to traditional disaster aid approaches yields important contrasts.

4.4.1. Speed vs. Precision

Traditional approaches often prioritise speed (blanket distribution of standard relief) at the cost of precision (targeting and tailoring). Our approach sacrifices some speed upfront (due to the need to collect and analyse data) to achieve precision. The question is whether this is acceptable in fast-onset disasters. One solution is to conduct data collection during the *preparedness phase*, as noted so that when a disaster strikes, the framework can be quickly activated. In our pilot, having baseline data allowed us to simulate a response plan within 48 hours of a disaster using the dashboard. This is comparable to or faster than the timeline of many government relief efforts, which sometimes take a week to roll out assistance fully. Thus, having pre-crisis information is key – a finding in line with the concept of **anticipatory action** and forecast-based financing literature, which emphasises early investment in data and planning.

4.4.2. Effectiveness

The integrated cash approach appears to achieve more with the same or slightly more resources. While it might seem costlier because vulnerable households receive more, consider that in a traditional scenario, the same household might receive multiple rounds of different aid (food packs, then shelter materials, then a livelihood program), often delivered by different agencies with their overheads. By consolidating aid, Project DINGGIN can reduce duplication and overhead. A rough cost-benefit analysis in Albay indicated that for every PHP 1 spent on the program, the “value” of outcomes (in terms of house repairs achieved, income restored, etc.) was higher than the value achieved per PHP 1 spent in a prior disaster where aid was provided in kind. This aligns with global research showing cash transfers can be more cost-efficient than in-kind aid (because they cut logistical costs and allow beneficiaries to bargain hunt). Moreover, by preventing losses (such as avoiding asset sales and malnutrition), cash aid has secondary benefits that are not captured in immediate output metrics.

In the literature, some studies have criticised cash programs for not always considering social dynamics – for example; they may exclude women's control or overlook community power imbalances. Our approach aimed to mitigate this by involving women in planning and ensuring they could access and control their aid (e.g., by paying them directly). This aligns with recommendations from gender analyses of cash programs, which advocate for women's empowerment in aid delivery. Early indications in our pilot showed women did indeed often become the decision-makers on spending the cash (which tends to lead to better household welfare outcomes, as studies in development economics suggest).

We also compare our findings with research that focuses on intersectionality. A gap highlighted by researchers is that humanitarian programs rarely disaggregate assistance sufficiently to meet the needs of marginalised groups. Our project provides a working example of how to operationalise that disaggregation. If anything, a further step could be to *tailor communication and training*, along with cash; for example, ensuring that disabled persons receive messaging in accessible formats or that women are informed of services like childcare during livelihood activities. We touched on training (financial literacy) in recommendations, which leads to the next point.

4.5. Recommendations for Improvement and Scaling

While the results are promising, we identified several areas for improvement to enhance the framework's long-term impact:

4.5.1. Linking Relief to Resilience (Multi-phase support)

As noted, one-off cash grants address immediate recovery, but long-term resilience building requires sustained engagement. We recommend a multi-phase cash transfer scheme: an emergency tranche (as we implemented), followed by a second tranche several months later aimed at resilience investments. This second tranche could be conditional or designated for specific uses, such as retrofitting homes or investing in climate-resilient livelihood equipment. For example, after families have stabilised, providing another grant for, say, purchasing flood-resistant rice varieties or constructing household rainwater tanks could help them move beyond recovery into development gains. This idea aligns with the “build back better” principle in Disaster Risk Reduction (DRR). It ensures that the momentum gained in recovery is not lost, allowing households to make improvements that reduce future risk. Donors and governments would need to plan budgets not only for immediate relief but also for subsequent support. Over time, as communities become more resilient, the need for considerable relief might diminish, justifying the investment.

4.5.2. Integrating Capacity Building

Money alone can be insufficient if people lack knowledge on how to utilise it to reduce future risk. Cash transfers should be accompanied by financial literacy and livelihood training. In Albay, we conducted a seminar on budgeting post-disaster income and prioritisation, which participants found helpful. We propose institutionalising such training (even integrating it into regular community meetings or 4Ps family development sessions for the Philippines). Additionally, sharing best practices – for example, demonstrating how to rebuild a house more safely (such as tie-down techniques for roofing and elevating storage for food) – can help beneficiaries use cash effectively for mitigation. In both countries, existing extension services (such as agricultural extensions) could be mobilised to provide advice coinciding with cash disbursement. For livelihoods, training on alternative income streams (such as backyard poultry, craft-making in Albay, or drought-resistant farming in Bhola) could help utilise the cash more sustainably by diversifying how it is invested.

4.5.3. Seasonal and Hazard-Specific Adjustments

Our framework included the concept of timing cash before known seasonal peaks. Formalising seasonal cash transfer schemes could greatly benefit places with predictable lean or hazard seasons. In Bangladesh, the concept of monsoon response cash can be linked to forecast models. If river levels reach a critical threshold, the system automatically triggers cash transfers to registered households, helping them evacuate or protect their assets. This is akin to forecast-based action pilots by the Red Cross, which have shown success in early distribution. Similarly, in typhoon-prone areas, having pre-disaster cash for preparedness (e.g., to buy plywood to board up windows or stockpile food) can reduce damage and losses. Project DINGGIN’s data-driven approach can inform what those amounts should be and for whom (not everyone might need it; focus on high-risk groups). For scaling, working with meteorological agencies and integrating triggers into the dashboard would automate this process. It moves humanitarian response into the realm of disaster risk financing, where funds are released based on risk indicators before a disaster entirely unfolds—a cutting-edge practice.

4.5.4. Data Management and Information Systems

The creation of the risk-informed data platform is a valuable output, but its maintenance is critical. We recommend that local governments institutionalise this dashboard as part of their disaster risk reduction (DRR) information systems. This means allocating personnel (e.g., a GIS officer or DRR analyst) to update data regularly and utilising the platform not only for cash programs but also for general planning (it could map all hazard risks in the area, not just for cash). Interoperability with national databases (like the Disaster Management Information Systems in each country) will ensure longevity beyond the project. Additionally, data from each disaster event should be fed back into the system to improve it (learning which households remained at risk, etc.). Protecting privacy is also essential – guidelines on data protection (perhaps following principles similar to those out-

lined in the GDPR, adapted to the humanitarian context) should be followed when sensitive information is collected.

4.5.5. Policy Integration and Advocacy

To sustain and replicate such frameworks, it is important to embed them in official policy or contingency plans. For instance, the provincial government in Albay could adopt a resolution that in the event of disasters, they will implement an inclusive cash transfer program guided by the data collected, effectively making Project DINGGIN's approach the standard operating procedure. In Bangladesh, advocacy to include char communities in social safety nets (perhaps using our data as evidence) could yield funding for our proposed interventions. Also, sharing the success story with national authorities can influence resource allocation; if central governments allocate special funds for anticipatory cash or adaptive social protection, local units like Bhola's could tap into them to execute this approach.

It is also worth linking with global initiatives, such as the Anticipatory Action program and the World Bank's adaptive social protection programs, which are actively seeking models to connect relief with development. Our findings support their case with micro-level evidence. International NGOs and donors might also be interested in funding scale-ups, given that the approach aligns with the modernisation of aid (localisation, cash, data-driven).

5. Conclusions

This study, through Project DINGGIN, has demonstrated that risk-based and inclusive cash transfer programming is not only possible in disaster-prone areas but also highly effective in addressing the complex needs of affected communities. By actively involving communities in assessing their risks and needs and by using that information to tailor cash assistance, we effectively bridged the gap between what people require and what aid delivers. In both Albay, Philippines, and Bhola, Bangladesh, the approach empowered local stakeholders. It provided timely, adequate support that helped families rebuild their homes, secure food, and revive their livelihoods in the wake of disasters.

Crucially, the Project DINGGIN framework contributes to a shift in disaster management paradigms – from a one-size-fits-all relief model to a data-driven, people-centric model. It aligns with and reinforces national disaster management policies (such as the Philippines' NDRRMP and Bangladesh's SOD) by operationalising their calls for risk-informed and inclusive practices. It also advances global humanitarian commitments to enhance the effectiveness of aid (as outlined in the Grand Bargain) and to ensure that no vulnerable group is left behind. Households that historically might have been overlooked or under-served (like those of women, people with disabilities, and the ultra-poor) received enhanced support, embodying principles of social justice and humanitarian equity.

The success of these case studies provides a compelling case for scaling up and replicating similar models elsewhere. The ingredients that made it work – strong community engagement, pre-disaster data collection, flexible cash instruments, and coordination across governance levels – can be introduced in other disaster-prone regions. Each context will have its nuances, but the core lesson stands: when aid is informed by granular risk and social data, it becomes more impactful. Communities are not monolithic, and treating them as such in aid programs can lead to inefficiencies and injustices. Instead, embracing community heterogeneity and complexity leads to more efficient allocation of resources and better outcomes.

From a policy perspective, integrating this approach into standard disaster response protocols could significantly improve national resilience. For instance, governments could establish “cash preparedness” systems, where vulnerable households are identified and even pre-registered for emergency cash transfers, much like early warning systems exist for hazards. Doing so would institutionalise the gains of Project DINGGIN. It would also exemplify the humanitarian-development nexus in action: using what is essentially a relief mechanism (cash aid) in a way that supports development goals (poverty reduction, empowerment, capacity building).

5.1. Limitations and Future Research

While discussing the positive outcomes, we must acknowledge limitations. The Bhola case's small sample means our results there are more tentative and qualitative; a larger pilot in Bangladesh would strengthen the evidence. Future research should test the framework in various contexts (e.g., urban disasters and drought scenarios) to assess its adaptability. There is also a need to track *long-term impacts*, as our study primarily captured immediate to short-term results. A longitudinal study following families for a year or two could reveal if the cash assistance had lasting effects on income, asset building, or reduced disaster losses in subsequent events. Measuring community-level outcomes (like overall poverty rate changes or infrastructure improvements) would also tell us if scaling up yields developmental benefits.

Additionally, *a cost-effectiveness analysis at scale would be valuable. While we have qualitatively argued for efficiency, a rigorous analysis could quantify the return on investment of risk-based inclusive cash versus traditional aid.* This would be persuasive for policymakers and donors if it shows significant savings or benefits. Another interesting angle is the social dynamics: Does receiving differential aid have any adverse social consequences (envy, dependency, changes in community cohesion)? Our initial observation was that good communication mitigated envy; however, this should be closely monitored in larger implementations. Some cultural contexts might respond differently.

Finally, the role of technology (mobile money, digital IDs, etc.) in enhancing such programs is a frontier to explore. In Bangladesh, mobile financial services are widely available on the mainland; extending them to chars might revolutionise aid delivery there. In the Philippines, digital disbursements are increasingly used; linking our dashboard with an e-payment system could expedite cash transfers once triggers are hit. Research on the most user-friendly yet secure tech solutions for last-mile delivery will complement the framework.

In conclusion, Project DINGGIN demonstrates a transformative approach to supporting communities affected by disasters. By listening to communities and responding with flexible yet structured support, we not only help them recover but also equip them to face future adversities better. The empowerment felt by the participants – knowing they had a say in their recovery and receiving the means to drive it themselves – is perhaps one of the most valuable outcomes, as it fosters self-reliance and hope. As climate change and other factors intensify disaster risks globally, adopting risk-based, inclusive approaches to cash transfer programs will be essential in enhancing the resilience of the most vulnerable populations. This research contributes a practical model for doing so, and it calls on practitioners and policymakers alike to build on and expand these findings, ultimately striving for a humanitarian system that truly “hears” the voices of communities and acts on them for a more resilient future.

Author Contributions: The statement below outlines the individual contributions of each author to the completion of this research article, titled “Project DINGGIN (Dynamic Inclusive Network for Governance, Guidance, Intersectionality, and Nexus): Empowering Communities through Risk-Based and Inclusive Cash Transfer.”

Rhinadel M. Cañete:

As the technical expert for Cash Transfer Programming in Project DINGGIN, I contributed to the design of a research framework that integrates community priorities with co-owned solutions. I facilitated community consultations to ensure that cash transfer values accurately reflect the diverse needs of marginalised groups, including single-headed households and individuals with disabilities. My role involved analysing differential risks, emphasising that vulnerability is not about incapacity but rather the proximity to hazards and the specific elements at risk, such as children, homes, or livelihood assets, that may be exposed and impacted. I also supported the development of a data-sharing platform designed as a decision-making tool, bridging top-down and bottom-up systems while enabling communities to co-own data with government, humanitarian, development, and peace actors. This approach ensures that cash assistance is context-specific, inclusive, and empowering, amplifying local agency and decision-making. Ultimately, the research highlights the importance of collaborative, evidence-based solutions in fostering resilience and promoting sustainable recovery.

Samantha Kay L. Lisay:

As the shelter and design expert for Project DINGGIN, my role was to provide a shelter lens to the project. I contributed to gathering literature on the perspectives of the shelter sector regarding the use of Cash Transfer Programs, as well as collected data from key informants at shelter agencies. I also played a crucial role in developing and implementing the methodologies in the Philippines and helped interpret the data gathered from both Albay and Bhola. My goal was to support the research framework by collecting and interpreting information from various sources, including the literature, household and practitioner surveys, key informant interviews, and community consultations. Based on the research findings, I led the initial concept design process for a data-sharing platform that will serve as a decision-making tool for the government and humanitarian actors, as well as an opportunity for communities to share information on their risks. My role also involved creating presentation visuals with the team, ensuring that Project DINGGIN would be presented well and could obtain buy-in from stakeholders. Ultimately, I complemented the team's expertise with my own technical and design background to produce a research and capstone project that will empower communities and support decision-makers in building resilience for Albay and Bhola.

Md. Nazmus Sayadat:

As a professional banker, I contributed to examining Project DINGGIN from a financial perspective, including private sector engagement in the banking industry. My focus was on Shelter, Livelihood, and Food Security and how cash transfers or equivalent mediums contributed to disaster situations. In my primary focus area, **Bhola, Bangladesh**, particularly in Char Fasson and Monpura, I analysed how disasters impacted these locations, the frequency of such events, and local coping mechanisms. Through site visits to housing projects, vulnerable areas, and local government offices, I gained insights into the compatibility of government measures, the interventions of NGOs, and local perspectives on coping strategies. My research highlighted that many residents living below the poverty line face challenges accessing digital financing, as they rely heavily on government grants and NGO support. I contributed to identifying alternative sources of stable earnings, as suggested by community consultations, and integrated these recommendations into the study to support the continuity of Project DINGGIN in Bangladesh. These findings provide a deeper understanding of vulnerabilities in Bhola, offering guidance for future resilience-building initiatives and external actor engagement.

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