

# Prefeasibility Study for a parametric typhoon insurance in the Philippines

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Prepared by CelsiusPro AG, Switzerland in partnership with MAA General Assurance, Philippines

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## **Executive Summary**

This prefeasibility study is compiled by CelsiusPro and MAA General Assurance Philippines to evaluate the viability of introducing a parametric typhoon insurance scheme for the Filipino retail market. In collaboration with their main distribution partner, a national pawnshop operator (PO), the proposed Emergency Cash Product will provide a lump sum payment within days of a severe storm event. The product is designed to target low-income Filipinos, addressing their acute financial exposure to typhoon risks. The provision of immediate liquidity ensures policyholders can manage their expenditure needs, such as emergency goods, transportation, temporary accommodation, or initial repair work. The drafting of this report is supported by grant funding provided by the InsuResilience Solutions Fund.

The report assesses a range of aspects relevant to the introduction of the Emergency Cash Product but pays particular attention to the demand assessment as well as the design and pricing of a concrete index-based insurance product. MAA General Assurance led the efforts to conduct a demand survey with 139 of the national pawnshop operator's sales representatives from across the country. As pawnshop operators, their staff are in regular and close contact with the target group, enabling them to assess the product's appeal. CelsiusPro established the preliminary product structure following the review of available typhoon data and extensive discussions with the (re)insurance market. Finally, the report provides an overview and a roadmap for the implementation of a pilot project to launch the Emergency Cash Product.

The study concludes that there is a strong interest in the Emergency Cash Product among the distribution partner and reinsurers alike. The proposed product fits well within the emergency aid landscape in the Philippines, helping individuals bridge the gap between in-kind emergency relief and possible cash transfers provided by the Government of the Philippines and/or aid agencies. The Government maintains an enabling regulatory framework for the development of the microinsurance sector and has utilised parametric structures to address its own catastrophe exposure. These two aspects bode well for the launch of a parametric typhoon product targeting the low-income sector. The product also occupies a unique position in the current insurance landscape, which is focused on indemnity-based products and bundled microinsurance solutions. However, the retail insurance market in the Philippines has not gained much experience with parametric structures, resulting in a level of uncertainty on how the product will be received. The national pawnshop operator's sales representatives themselves voiced their strong interest in the product and suggested a coverage amount of PHP 1,000 (US\$20). Combined with the preliminary average premium, when covering category 4 and 5 storms, the low cost allows for the product to be sold as an add-on service at the pawnshops. Additionally, clients can purchase these coverages without having to trade off other consumption or investment needs.

CelsiusPro and MAA General Assurance recommend developing digitalised operational and technical structures to enable a smooth roll-out across the country, but to first focus on the regions of Eastern Visayas and Central Visayas to test the market. The demand survey outcomes and technical product analysis identify these two regions as preferable areas to launch a pilot project, with motivated sales staff and an ideal balance between typhoon risk and premium costs. This approach allows for the targeted education and training of the national pawnshop operator's sales representatives, which is a crucial component of successfully launching the product. The report highlights the need to manage the sale of

policies via a dedicated mobile app and to incentivise the adoption of mobile wallets among clients to facilitate rapid payouts following an eligible typhoon.

## 1. Introduction

CelsiusPro (CP) and MAA General Assurance Philippines (MAA) plan to develop and introduce a parametric typhoon insurance scheme for the Filipino retail market. The targeted group is the low-income sector. The aim is to develop an Emergency Cash Product (ECP), providing an immediate lump sum payment after a storm event. The payout could be used by individuals, farmers and micro, small and midsized enterprise (MSME) owners to cover immediate expenses for emergency goods, transportation needs, temporary accommodation, or initial repair work.

The InsuResilience Solutions Fund's (ISF) was established in 2018 as one of the implementing programmes of the InsuResilience Global Partnership. Funded by the German Federal Ministry for Economic Cooperation and Development (BMZ), the ISF has been set-up by the KfW Development Bank (KfW). It acts as a product development facility, supporting the advancement of innovative climate risk insurance products and insurance markets. The Frankfurt School of Finance and Management is commissioned by KfW to manage the ISF and to support its research and advisory activities. The ISF has provided grant funding to CP and MAA to conduct this prefeasibility study related to the development of the proposed ECP.

In the past century, the Philippines has been transformed from an agriculture centered society to an increasingly industrial and service-oriented economy. The declining share of agriculture within the overall GDP has been paired with a low level of productivity in the sector, resulting in the majority of the country's low-income population residing in rural areas and remaining primarily on agriculture. While less pervasive, urban poverty in metropolitan areas remains a further challenge, spurred by rapid urbanisation across the country.

The low-income sector in the Philippines grapples with substantial exposure to natural disasters. The archipelago is among the world's most vulnerable regions and frequently faces a range of disaster events. Typhoons or tropical cyclones (TC) are one of the most damaging perils for the country, with an average of 20 named storms hitting the islands per year.<sup>1</sup> Especially typhoon storms with high wind speeds regularly devastate residential housing and local infrastructure, substantially disrupting local economic activity. The Government of the Philippines (GoP) has introduced the National Disaster Risk Reduction and Management Plan (NDRRMP) to ensure the protection and welfare of the people in times of disaster. While in-kind emergency relief can be provided within days, as the situation and markets stabilise, the benefit to the affected population diminishes. As part of the NDRRMP, the Department of Social Welfare and Development (DSWD) has multiple cash transfers channels at its disposal to support the low-income sector in the aftermath of a typhoon. However, past disasters have shown that the initial cash assistance was received between one to two months after the event occurred.<sup>2</sup> Likewise, most international aid agencies are only able to provide first cash transfers at the earliest within one or two months following a typhoon.<sup>3</sup>

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<sup>1</sup> (Philippine Atmospheric, Geophysical and Astronomical Services Administration 2020)

<sup>2</sup> (World Bank 2018)

<sup>3</sup> (Oxfam 2015)

In the past, initiatives in the Philippines, such as the sovereign catastrophe bond and the provincial catastrophe swap, were launched to ensure cash injections for emergency response and relief can be provided in the aftermath of a typhoon. However, these risk transfer solutions focus on the macro-level of financial resilience and do not directly provide the affected individuals with liquidity following a natural disaster. The private insurance sector offers indemnity-based calamity insurance products targeting the medium to high-income segments of the population, with the drawback of a slow and costly claims adjustment process. Following the occurrence of a typhoon, a vast majority of the small-scale farmers, micro-entrepreneurs, and laborers remain at substantial risk of incurring additional costs due to the physical damages and disruptions caused by typhoons. Precisely this protection gap will be addressed by the proposed ECP, providing the low-income segments of Filipino society with immediate liquidity to recover faster and more effectively following a severe storm.

The ECP falls into the broader realm of climate insurance, which acts as a financial risk management instrument to transfer economic losses caused by extreme weather events from individuals/organisations to insurers or other risk pooling entities. The importance of managing the financial risk posed by extreme weather is becoming increasingly important as events intensify and increase in frequency due to climate change. Climate insurance can take the form of traditional indemnity insurance, which aims to cover the exact damage incurred by the policyholder. Such insurance coverages require a proof of loss to be submitted following a weather event and can, at times, include a lengthy claims adjustment process to determine the exact liability of the insurance company.

Increasingly, climate insurance products are designed as parametric or weather index insurance (WII), applying an entirely different process to determine insurance payouts. Parametric products base claims payouts on a set of pre-agreed triggers, usually when weather events reach a certain severity threshold, with the relevant information provided by independent third-party sources such as meteorological agencies. Once a threshold is reached, a payout is transferred to the policyholder within the first few days/weeks following the event, not requiring the submission of a proof of loss. Such product structures are well-positioned to provide immediate liquidity and can be tailored to address a specific weather risk. However, parametric structures are susceptible to basis risk<sup>4</sup>, the mismatch between a policyholder's incurred losses and the actual payout received.

The proposed ECP will provide the low-income sector with a parametric product targeting severe storms with payouts based on the strength of wind-speeds observed during typhoons. CP and MAA selected this approach due to the assumption that, on average, category 4 and 5 typhoon in the Philippines primarily inflict damages due to their high wind speed.<sup>5</sup> The strong correlation between wind speed and storm surge severity, a further considerable loss driver for typhoons, allows for the former to be used as a proxy for the potential damage of a typhoon. Furthermore, the analysis of historical typhoons in the Philippines shows a trend towards slightly decreasing frequency of storms but an increase in the severe events with higher wind speeds, demonstrating the need for financial solutions addressing category 4 and 5 storms.<sup>6</sup>

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<sup>4</sup> Basis risk in index insurance arises when the index measurements do not match an individual insured's actual losses. There are two major sources of basis risk in index insurance. One source of basis risk stems from poorly designed products and the other from geographical elements. Source: Index Insurance Forum – GIIF World Bank Group

<sup>5</sup> (RMS 2018)

<sup>6</sup> (Cinco, et al. 2016)

For the distribution of insurance policies to the low-income sector, MAA will collaborate closely with a national pawnshop operator (PO) with an extensive network across the Philippines. In the Philippines, pawnshops are considered the “poor man's bank” and are utilised by low-income families to manage their financial needs, providing the PO with a keen understanding of the needs and purchasing behavior of this segment of society. Both organisations have maintained a close partnership for almost a decade, with the PO playing an instrumental role in the sales efforts for MAA’s successful micro accident insurance scheme.

In the aftermath of a disaster, people tend to prioritise the most immediate needs, such as food, basic shelter, primary or emergency health care. An assessment of emergency assistance provided by the World Food Programme (WFP) following Typhoon Haiyan highlights that food was the recipients’ top priority, accessible via functional markets, not offered via in-kind emergency relief. This was followed by expenditures on transportation, education, health/medical care, hygiene items and clothing.<sup>7</sup> Without access to cash, experience has shown that people resort to negative coping strategies such as mortgaging their remaining assets or foregoing spending on education and health.<sup>8</sup> Early cash injection by aid agencies to the low-income sector has frequently been deemed “life-saving” by disaster survivors, with local government officials and community leaders observing an uplifting effect on the population when empowered to meet immediate household needs.<sup>9</sup>

Consequently, CP and MAA see the potential to address the immediate post-typhoon cash needs of the low-income sector in the Philippines with a dedicated insurance product. The proposed ECP provides policyholders with the financial flexibility to bridge the gap between in-kind emergency aid and the cash transfers/financial support received by the GoP and/or aid agencies. Current insurance offerings in the Philippines are mostly indemnity based or address marco-level needs with parametric products, leaving the low-income sector without access to comparable financial solutions. This prefeasibility study aims to provide an assessment of the product appeal and the possible structure of a parametric typhoon insurance coverages targeting the low-income sector. The report contains the following sections:

1. A brief overview of the insurance and emergency aid landscape in the Philippines including the regulatory requirements related to the launch of a new micro-insurance product.
2. The outcomes from a demand survey conducted with the PO representatives to establish the interest in the proposed ECP.
3. The procedure applied to structure the parametric typhoon product and estimate potential premium costs.
4. An initial pilot project proposal including an assessment of impact of Covid-19 on a potential product launch.

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<sup>7</sup> (Kagahastian and Kweyu 2015)

<sup>8</sup> (Oxfam 2019)

<sup>9</sup> (Kagahastian and Kweyu 2015)

## 2. Methodology

For this prefeasibility study, MAA managed the demand survey in the Philippines while the insurance design was provided by CP. The content of the report and the pilot project proposal were jointly agreed on and drafted. Secondary literature and inputs from insurance experts were incorporated as applicable.

### Demand Survey

- **Survey Respondents:** MAA concluded that the PO is best placed to provide an initial assessment of the market demand for a parametric typhoon product in the country. The PO would act as the primary distribution partner for the proposed pilot project. MAA organised two product presentations, one in Makati in February 2020 for the PO's Luzon regional managers and the other in Cebu in early March 2020 to cover Visayas and Mindanao. The product presentation provided an overview of the parametric product concept, the payout process, the differences to traditional insurance, and possible sales methods. The attendees were invited based on each regional managers' sales performance and scope of their assigned areas. Both product presentations were conducted prior to Covid-19 related lock-down measures in the Philippines.
- **Survey structure:** The survey was conducted following the product presentation to the PO staff and aimed to identify the level of interest among the PO's sales staff to distribute a potential parametric insurance product. Furthermore, the survey looked to establish the possible coverage limit, the appeal of such a product, the preferred method of selling, and requested feedback on the product's most appealing feature. The survey questions are included in Annex 3 of the report.
- **Target area:** The demand survey included 139 respondents from the Philippines' three island groups; Luzon, Visayas, and Mindanao. A representative sample of the PO's sales representatives was in attendance, covering the Mimaropa region and the greater Luzon area (including but not limited to Central Luzon) in Luzon, three regions in Visayas and six regions in Mindanao. This selection accounts for 11 of the 17 regions in the Philippines. 50% of the respondents hailed from Mindanao, 35% from Visayas, and 15% from Luzon.
- **Target groups:** PO's client base covers the entire segment of the low-income population in the Philippines, including individuals, farmers, crop and agricultural producers, and MSME owners.
- **Limitations:** While the PO has an excellent understanding of their clients, the survey nonetheless does not directly address the demand and preferences of the final policyholders. There might still be a mismatch between the PO's assumed and Filipino's actual interest in the product. Furthermore, the demand survey indicates the potential coverage limit for the proposed ECP but does not address the potential premium costs associated with it.

### Data and Insurance Product Design

CP's Environmental Monitoring System (EMS) provided the relevant climate data to review and select the main datasets required to structure the ECP. Various sources were assessed, which included typhoon data from the Joint Typhoon Warning Center (JTWC) and the Japan Meteorological Agency (JMA) as well as rainfall satellite data from NASA's Integrated Multi-satellite Retrievals for Global Precipitation Measurement (IMERG) and the Climate Hazards Group InfraRed Precipitation with Station data (CHIRPS). When designing the preliminary insurance product structure, this study focused solely on possible parametric/index-insurance solutions. Indemnity based insurance products were not studied as part of the assessment.



The trigger structure and pricing considerations were designed while balancing the needs of the low-income sector and the ability to secure reinsurance capacity for the product. The soundness of the proposed structure was tested against historical events by conducting an “as if” analysis.

### **The Overall Concept for an Insurance Product**

Intending to provide a comprehensive foundation for a potential pilot project, this report also collected feedback and inputs from potential re-/insurance partners, including the outcomes from the most detailed discussions with an international reinsurer. The premium estimations were based on the product design and initial calculations conducted as part of the prefeasibility study.

## **3. Insurance and emergency aid landscape in the Philippines**

### **3.1 Emergency Cash Payments**

#### **Public Emergency Relief**

The domain of emergency relief lies within the sovereignty of national states, which usually carry most of the burden to manage a country’s disaster risk management efforts. In the Philippines, the GoP has introduced the NDRRMP to manage the risks of natural disasters in the country pro-actively. The NDRRMP is supervised and implemented by the National Disaster Risk Reduction and Management Council (NDRRMC), which is headed by the Department of National Defense. Each of the 81 provincial LGUs are expected to replicate the same model of maintaining council and plan on a local level, enabling a decentralised approach to disasters. The DSWD is responsible for disaster response and the management of emergency relief in the aftermath of an event.<sup>10</sup> The DSWD’s initial response focuses on making a sufficient quantity of in-kind goods available to the population to address immediate survival needs. Since markets for basic goods and services generally recover rapidly, cash becomes the more appropriate support within the first few days of a disaster.<sup>11</sup>

#### **Emergency Cash Transfers**

Cash transfers, by either government agencies or aid agencies/NGOs, are categorised as either conditional cash transfers (CCT) or unconditional cash transfers (UTC). CCT’s include “cash for work” arrangements, which include the affected population into recovery and reconstruction efforts as well as transfers tied to dedicated purposes such as the purchase of construction materials. Such programmes always require the supervision and verification of a government or aid agency.<sup>12</sup> The DSWD mainly provides CCTs, with the most frequently utilised programme focusing on providing cash for the repair and reconstruction of houses. Following Typhoon Haiyan, the programme paid PHP 10,000 – 30,000 in the form of cash or construction material for damaged houses. However, these funds were only distributed to the affected individuals six months after the storm. In most cases, it was received after they had completed or almost finalised the repair or rebuilding of their houses.<sup>13</sup>

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<sup>10</sup> (Government of the Philippines - Commission on Audit 2015)

<sup>11</sup> (Oxford Policy Management 2017)

<sup>12</sup> (Oxfam 2015)

<sup>13</sup> (World Bank 2018)

UTCs, on the other hand, aim to provide immediate liquidity, requiring minimal post-dispersion supervision and allowing disaster-affected individuals to allocate the funds to the most pressing needs as they see fit. In the aftermath of Typhoon Haiyan, a first small NGO was able to launch a first UCT two weeks after the storm made landfall. The other aid agencies began rolling out their UTC programmes only one to eight months after the storm occurred. These latter cash transfer programmes provided monthly supplements of PHP 1,300 to PHP 4,400.<sup>14</sup>

Aid agencies have observed that providing cash transfers to victims of natural disasters allows the local economy to recover more efficiently than when aid is provided in-kind. Furthermore, it gives people a high degree of agency, enabling them to maintain their intact productive assets and avoid negative coping strategies such as taking on debt, selling assets, or foregoing expenditures on education and health.<sup>15</sup> A detailed analysis of the WFP's UTC programme, which was initiated approximately one month after Haiyan made landfall, highlighted that 93% of individuals had access to functional markets again at that stage. 86% of the participants indicated that food was their top priority, followed by transportation (52%), education (45%), health/medical care (32%), hygiene items (29%), and clothing (22%). Local government officials and community leaders also observed how the early cash infusion had an uplifting effect on Haiyan survivors, empowering them to meet their immediate needs and, in psychosocial terms, being assured that they would not be abandoned.<sup>16</sup>

### **Addressing Emergency Cash Needs**

Since the proposed ECP targets the immediate emergency relief needs of the typhoon-affected population, it must be well positioned within the range of activities already undertaken by public entities and aid agencies in the Philippines. The parametric insurance solution is not intended to replace or rival public emergency relief efforts, but rather to act as supplementary effort aimed at strengthening individual financial resilience. By providing immediate liquidity within days of a severe typhoon occurring, the ECP allows individuals to begin addressing their expenditure needs once markets recover. They do not have to await the uncertain arrival of other cash transfer channels or resort to negative coping mechanisms. The limited payout is sufficient to cover initial needs that go beyond the in-kind aid, for example, purchasing specific food or medical items or addressing transportation needs. The potential arrival of larger cash transfers from DSWD and aid agencies in the months following a devastating storm can help address longer-term recovery and reconstruction needs.

## **3.2 Parametric insurance schemes**

### **General Market Dynamics**

The Philippines' non-life insurance industry is considered to be relatively fragmented, with 58 licensed non-life companies registered in the country. Many of the domestic companies are owned either by banks, by groups with banking connections, or by industrial/commercial groups, with the top 10 companies maintaining a 65% market share. The non-life market is dominated by property and motor policies, which each account for approx. 33% of total premium volume. Insurance penetration, the ratio between premium volume and GDP, is low but comparable to peers in South-East Asia such as Indonesia.

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<sup>14</sup> (Oxfam 2015)

<sup>15</sup> (Oxfam 2019)

<sup>16</sup> (Kagahastian and Kweyu 2015)

The microinsurance market represents a bright spot, with the GoP actively looking to increase financial inclusion, with approximately 25% of the population currently covered by at least one microinsurance product. This rate is one of the highest globally and is expected to reach almost 50% by 2022, thanks to the high level of public microinsurance advocacy.<sup>17</sup>

While the overall microinsurance market is large, the products focus strongly on credit-life policies, with non-life coverages mainly targeting disability and personal accident. Crop, livestock, and property insurance only play a marginal role, with only a handful of companies even offering policies in these lines of business.<sup>18</sup> In certain cases, indemnity-based calamity coverages are bundled with other microinsurance policies, usually with flat limits of PHP 4,000-5,000, but this is not a widespread practice. Following Typhoon Haiyan, such microinsurance policies, including but not limited to calamity coverages, required at least one month to process claims from the claims submission date onwards.<sup>19</sup> The same principle of product bundling applies to products offered to micro-entrepreneurs. For example, the German development agency GIZ partnered with AXA insurance and pawnshop operator Cebuana Lhuillier to develop a micro disaster risk insurance product targeting small business owners. Ultimately the product is now being distributed as “Microbiz Protek”, an indemnity-based property coverage which also includes burglary, personal accident, and general liability with fees starting at PHP 540 (US\$ 10.80).<sup>20</sup>

The government manages six major state-owned insurance institutions, which primarily focus on covering government employees and assets. Only the Philippine Crop Insurance Corporation (PCIC) partially competes with private insurance companies, though they tend to focus on different segments of the farming population.<sup>21</sup> The PCIC is mandated to provide insurance protection to agricultural producers, including fisheries, against a range of risks. Their indemnity products target various crops and include coverage against natural calamities, including typhoons. Non-crop products for agricultural assets and livestock exclude disasters from the policy. Claims must be submitted within 20 days of the loss occurring and PCIC aims to settle them within 60 days of submission. Starting in 2014, the government introduced a subsidy scheme for registered beneficiaries to ensure a wider distribution of crop insurance among farmers. Insurance premiums are fully subsidised for eligible households, which make up a majority of the policyholders.<sup>22</sup> At the end of 2018, 2.27 million farmers and fisherfolk, or 34% of the eligible population, had at least one insurance coverage with the PCIC. In 2019, the government officially authorised the PCIC to engage in index-based insurance and reinsurance, however, no parametric agriculture product for farmers in the Philippines has been launched to date.<sup>23</sup>

Filipino’s with the financial flexibility to purchase property coverages from private insurers also enjoy protection from natural disasters. Standard multi-risk coverages, usually only purchased if the property is mortgaged, include the risk of typhoon damages. A recent government initiative has begun reviewing the feasibility of establishing a Philippine Catastrophe Insurance Facility, aimed to ensure local insurance companies can pool their natural disaster risk and incentivise them to offer more calamity coverages to the market. The idea of introducing compulsory disaster insurance coverages for households has also been floated as part of this initiative.<sup>24</sup>

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<sup>17</sup> (Axco 2019)

<sup>18</sup> (MicroInsurance Centre at Milliman 2020)

<sup>19</sup> (The Microinsurance Network 2015)

<sup>20</sup> (Cebuana Lhuillier 2020)

<sup>21</sup> (Axco 2019)

<sup>22</sup> (Reyes, et al. 2019)

<sup>23</sup> (Philippine Crop Insurance Corporation 2019)

<sup>24</sup> (Philippine News Agency 2020)

### **Parametric Insurance Solutions**

The GoP is internationally recognised for its pro-active approach towards addressing natural disaster risks. From a financial resilience perspective, the various measures have been taken to provide emergency relief funds to different government levels and utilise parametric solutions to gain access to funds in the aftermath of disasters. Particularly noteworthy is the first-ever sovereign catastrophe bond in Southeast Asia, issued in 2019 by the GoP with support from the World bank. The US\$225 million bond is structured based on parametric triggers and provides the GoP with protection against earthquake and tropical cyclone risk over three years. A further insurance programme accompanied by the World Bank was renewed in late 2018, providing 25 provincial governments in the country with US\$390 million in parametric insurance against major typhoon and earthquake events via the Philippines Government Service Insurance System (GSIS). Other innovative programmes, such as a city disaster insurance pool for cities initiated by ADB, remain under development.

The GoP's high awareness of financial resilience has not been passed on to the retail sector yet. Parametric policies designed to address the high risk of natural disasters have seen little traction among middle to high-income individuals and commercial entities. From 2014 onwards, certain parametric coverages were introduced to target large banana and sugarcane producers. Unfortunately, none of these products prevailed in the market for very long, usually being withdrawn after only a few months. The marketing of these products was hampered by a lack of efficient distribution channels and limited understanding among crop and agricultural producers on the benefits of insurance.

Given the limited focus of the microinsurance sector on natural disasters risks, it is not surprising that no parametric micro-insurance product has been successfully established among the low-income population. A WII product by Western Guaranty Corporation, a non-life insurer specialised in micro-insurance, was introduced in the market in 2015 with limited success. The product aimed to address the concern of farmers to protect their crops from wind and rainfall damage, with the distribution channelled through private and cooperative entities, bundled with the purchase of fertilisers. Farmer cooperatives acted as the insured, aggregating coverage limits of PHP 250 (US\$5) per enrolment with a maximum of four (4) enrolments per farmer. The coverage period was limited to 120 days per enrolment. The launch of the product was hampered by a lack of awareness among farmers, which viewed the product as a saving instrument, not a tool for financial protection, expecting the premium to be returned if no damage occurred.

### **Addressing the Insurance Gap**

Within the insurance landscape in the Philippines, the proposed ECP occupies a unique position. As a stand-alone typhoon product, it narrowly focuses on the country's most devastating natural disaster. The ECP also provides the low-income sector with access to targeted financial protection without having to opt for bundled solutions. The microinsurance products that are available to the poorest segments of society are indemnity-based, suited to finance restoration and reconstruction efforts, but not the immediate cash needs following a severe storm. The limited focus of the retail insurance sector on calamity coverages leaves the population reliant on the GoP's indirect efforts to organise ex-ante solutions on a marco-level. Furthermore, the private sector gained little traction on parametric covers, while the ECP addresses the need for rapid payouts by utilising such product structures.

The ECP addresses two insurance gaps at once; the limited natural disaster coverages available to the low-income sector and the lack of products able to address the immediate cash needs of the disaster-affected population. The product also benefits from favorable government policies, with the GoP itself laying the groundwork for parametric structures, driving forward the development of the microinsurance market, and also explicitly looking to increase the risk capacity dedicated to natural disaster coverages.

### 3.3 Regulatory landscape

The regulation of micro-insurance products began gaining traction in 2015, when the Office of the Insurance Commission of the Philippines (IC), the insurance regulator, created the Enhanced Micro-insurance Regulatory Framework Team as a joint initiative between the private sector and government agencies. The regulatory efforts helped streamline industry initiatives by formulating guidelines for the promotion of micro-insurance products. The government further emphasised their intention to increase the availability of insurance coverage to the underserved sector of Filipino society with the issuance of the IC circular 2016-63, which provided enhanced performance indicators and standards for the sector. These measures helped the micro-insurance sector in the Philippines grow rapidly in the years that followed, reaching approximately 26 million Filipinos by 2018.

In recent years, insurers have shown an increased interest in micro-insurance, approaching the regulator for a range of micro life and general insurance products. The IC has been supportive of most new product proposals that aim to serve the low-income segments of society. As part of the approval process, policy forms, procedures, and mechanics of the proposed product are reviewed. New product approvals are usually provided within two to three months from the date of submission. The IC bases their approval on the Insurance Code and a range of circulars which cover such topics as product definition, product marketing and distribution, reinsurance, market conduct, disclosure, redress mechanism, consumer education, and consumer protection. As part of any introduction of new micro-insurance products, the corresponding circulars need to be satisfied. The most relevant circulars include:

- a. **Philippine Insurance Commission Circular Letter - CL2015-58** 'Guidelines on the Approval of Non-Life Insurance Policy Forms': Illustrates the guidelines for the approval of the policy form. Item 10.D states that 'Micro-insurance insurance policy form shall be given greater flexibility in the approval due to its purpose and shall be consistent to the existing circulars affecting micro-insurance'. Since the intention of the ECP is to address the needs of the low-income sector, the product approval would be expedited.<sup>25</sup>
- b. **Philippine Insurance Commission Circular Letter - CL2017-57** 'Guidelines on Group Insurance for Life and Non-Life Insurance Companies': Since MAA anticipates that the proposed parametric insurance product will fall under a group insurance scheme, the IC circular 2017-57 needs to be addressed and complied with. Classifying the ECP as group insurance will considerably streamline the administration of the policies, allowing them to be bundled under a dedicated programme managed by MAA. The IC has enabled this approach for insurance policies with individual small coverage amounts.<sup>26</sup>

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<sup>25</sup> (Insurance Commission of the Philippines 2017)

<sup>26</sup> (Insurance Commission of the Philippines 2017)

- c. **Philippine Insurance Commission Circular Letter - CL2014-47** ‘Guidelines on Electronic Commerce of Insurance Products’ Lastly’: In addition to the traditional certificate type of selling over-the-counter insurance product, the intention to launch a mobile application to improve the efficiency of pricing and the determination of location, will require the adherence to the IC circular 2014-47. This document provides guidelines for E-commerce platforms and mobile applications, which would be one of the proposed sales methods.<sup>27</sup>

In the Philippines, local insurance companies can enter into fronting arrangements with foreign unlicensed entities acting as reinsurers, allowing the locally licensed company to sell the product and pass on the assumed insurance risk. However, offshore reinsurance is regulated with foreign reinsurer requiring representation in the Philippines by a resident agent duly registered with the IC. When ceding insurance risks abroad, at least 10% of the outward reinsurance must be offered for cession to the National Reinsurance Corporation of the Philippines (Nat Re), where the government maintains a minority stake of 25.7%. Nat Re must issue a declination letter if it decides not to assume the risk, which must be submitted by the local insurer along with the other requirements when applying for reinsurance placements abroad with the IC.<sup>28</sup>

## 4. Demand survey

### 4.1 Target Groups

A successful insurance programme requires a carefully calibrated combination of the existing risk exposure, resources available to insurers, risk appetite, and the insured’s needs. Consequently, the introduction of a new insurance scheme requires a careful evaluation of the target group’s potential demand for the product.

The population frequenting the pawnshops across the country consists of private individuals (inc. Filipinos working overseas), farmworkers and worksite laborers, crops and agricultural producers (small landowners), and MSME owners. A rough estimation of the income ranges and share of each target groups are:

- 1) 40% Private individual- income ranges from PHP 10,000 to PHP 20,000 monthly
- 2) 40% Farmworkers and laborers– income ranges from PHP 5,000 to PHP 10,000 monthly
- 3) 10% Crops and Agricultural Producers – income ranges from PHP 20,000 to PHP 40,000 monthly
- 4) 10% MSME owners – income ranges from PHP 10,000 to PHP 20,000 monthly

The Philippines is classified as a Lower-Middle Income country by the World Bank, placing the low-income sector in the country within the scope of the ISF.<sup>29</sup> The Fund focuses on poor and vulnerable households with incomes of less than USD 15 per day (in purchasing power parity - PPP).<sup>30</sup>

<sup>27</sup> (Insurance Commission of the Philippines 2014)

<sup>28</sup> (Chambers and Partners 2020)

<sup>29</sup> (World Bank 2020)

<sup>30</sup> (InsuResilience Solutions Fund 2020)

Using a PPP conversion factor of 20.047 for the Philippines, based on World Bank data, the ISF threshold is the equivalent of PHP 303 per day (threshold x PPP conversion factor) or PHP 9,090 per month.<sup>31</sup> Consequently, the estimated income ranges of a majority of the PO's clients, as highlighted above, fall just around the prescribed threshold.

The income levels and composition of the PO's client base vary across the different provinces in the Philippines. The proposed pilot project for the ECP would help both MAA and the PO identify the demand and price sensitivity of the different target groups within the low-income sector. This would improve the understanding of which coverage limit and premium costs could be applied for a product up-scaling across the Philippines at a later stage.

## 4.2 Target Area

The Philippines consists of three island groups: Luzon, Visayas and Mindanao. Each group consists of multiple regions that are, in turn, composed of several provinces. Metro Manila, which is the capital of the country, is located in the Luzon island group and is considered a vital catalyst of the Filipino economy. For the prefeasibility study, MAA utilised the network of the PO's regional managers to provide an estimation of the demand for the ECP in the market. The demand survey focused on 11 of the most important regions for the PO's business while also ensuring the sample covered the country's varying exposure to typhoons. For the island group of Luzon, the PO representatives hailed from the region of Mimaropa as well as the greater Luzon area (including but not limited to the region of Central Luzon). See Figure 1 for an overview of the different provinces included in the survey.

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<sup>31</sup> (World Bank 2020)

**Survey respondents included representatives from the following island groups, regions and provinces:**

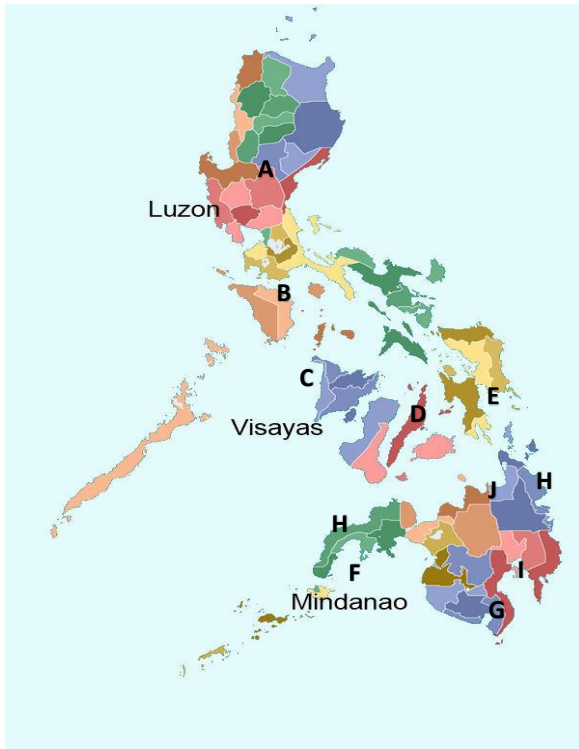


Figure 1 Clustering of different areas in the Philippines

LUZON

A – **Luzon** – Includes the provinces of: National Capital Region (Metro Manila) Batangas, Bulacan, Cavite, Quezon, Bicol Region, Ilocos Province, Pangasinan, Tarlac, Pampanga, Nueva Vizcaya, Nueva Ecija, Aurora, Tuguegarao, Mount Province, La Union.

B - **Mimaropa** – Includes the provinces of: Mindoro, Marinduque, Romblon and Palawan

VISAYAS

C - **Western Visayas** – Includes the provinces of: Panay Island – Iloilo, Capiz, Antique, Aklan, Guimaras and Negros Occidental

D - **Central Visayas** – Includes the provinces of: Cebu, Bohol and Negros Oriental

E - **Eastern Visayas** – Includes the provinces of: Leyte and Samar

MINDANAO

F - **ARMM** – Includes the provinces of: Maguindanao, Lanao, Sulu and Tawi-tawi

G - **SocSarGen** – Includes the provinces of: South Cotabato, Sultan Kudarat and General Santos

H - **Zamboanga** – Includes the provinces of: Zamboanga del Norte, Zamboanga Sibugay and Zamboanga del Sur

I - **Davao Region** – Includes the provinces of: Davao del Oro, Davao del Sur, Davao del Norte, Davao Occidental and Davao Oriental

J - **Northern Mindanao** – Includes the provinces of: Misamis Oriental, Misamis Occidental, Lanao del Norte and Camiguin

K - **Caraga Region** – Includes the provinces of: Agusan del Norte, Agusan del

### 4.3 Demand Survey Outcomes

#### Product Presentation

Following the product presentation to the audience, the 139 participants were prompted to provide feedback on their initial impression. 97% of the respondent had a positive reaction, with 43% confirming that they're very interested. The high level of interest bodes well for a potential pilot project since the PO staff have first-hand experience of their clients' preferences, and intuitively felt the product could be appealing in their respective regions. A majority of the participants were observed to be curious and excited following the product presentation, driven by the additional knowledge gained and the proposed new sales opportunity.

Contrasting the island groups and regions highlights that respondents from Visayas showed the most interest, with 31 (63%) of their representatives, indicating a robust interest in the product (see Figure 2). For island groups of Mindanao and Luzon, a high level of interest was stated by 34% and 23% of their respondents, respectively. Within the island group of Visayas, all seven regional managers from Central Visayas were very interested in the opportunity presented, while in Eastern Visayas five out of seven showed the same level of interest. The high degree of interest within the island group of Visayas can be attributed to this region of the country suffering from an above-average frequency of typhoons. The only other region with a majority of very interested representatives was Northern Mindanao, with five out of eight hinting at their high level of enthusiasm. Only 4 out of 139 (3%) of the participants showed no interest in the product, 3 from Mindanao and 1 from Luzon.



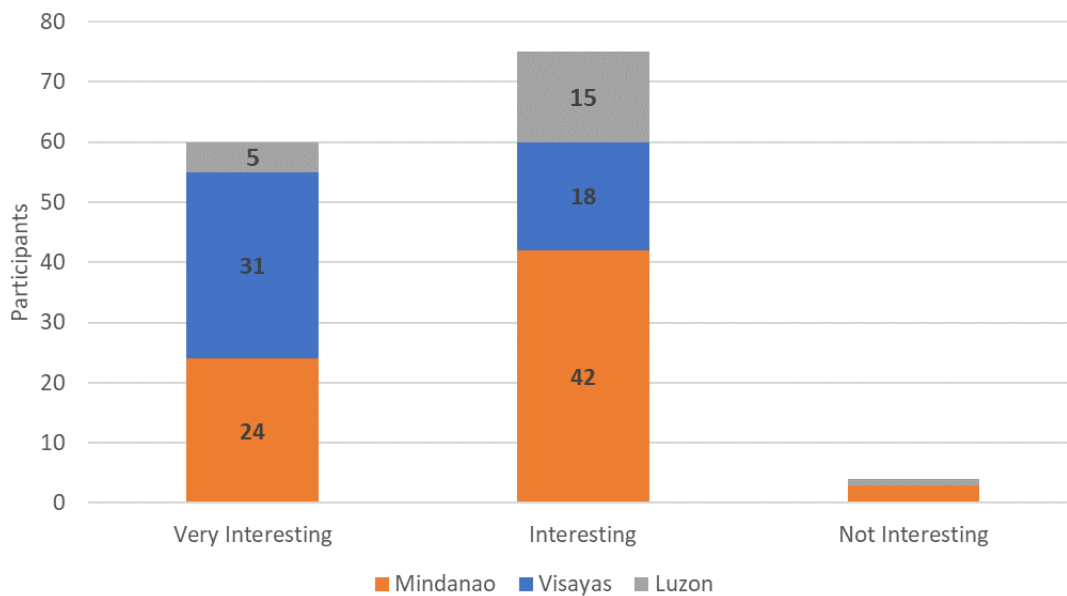


Figure 2 Feedback on Product Presentation per Region

**Suggested Amount of Coverage**

Receiving insights from the PO on the potential coverages for the ECP was seen as a crucial aspect of the demand survey. The emphasis on the coverage limit instead of the premium cost was strategically selected. As the distribution partners, the PO’s staff will need to sell the benefits of the ECP to their clients, which is closely linked to the potential payout. The end clients will purchase the product based on the liquidity level and financial safety they require following a disruptive typhoon, with less importance initially attributed to the cost component during the sales pitch. While the product structure and the technical functionality can be designed remotely, understanding the insurance needs of the target groups requires a first-hand understanding of local dynamics. The regional managers were asked which level of coverage their clients would most likely be interested in.

For this question, the participants were presented with three different coverage options, ranging from US\$20 (PHP 1,000) to US\$60 (PHP 3,000), and the option of suggesting an alternative option. The proposed coverage limits included in the survey were based on the micro accident insurance policies already sold by MAA via the PO. The limits were intentionally kept low, allowing for premium costs to be minimised, which in turn enables the product to be sold as an add-on service at the pawnshops. The intention is not to cover all the damages or income losses incurred by individuals following a typhoon, but rather to provide the affected population with rapid liquidity to address immediate expense needs. While the priority expenditures could differ by target group, the payouts to private individuals, farmworkers and laborers are expected to largely follow the emergency relief needs as highlighted in Section 3.1. Crops and Agriculture Producers, as well as MSME owners, might potentially direct the additional funds more towards additional transportation costs and initial repair works required to restart their business operations, assuming their immediate needs are sufficiently covered.

17% of all respondents made use of the possibility to suggest a different coverage limit, with 12% of them proposing coverage of between US\$2 to US\$10 and a further 5% hinting that coverages should be US\$100 to US\$400. The wide variety of proposed coverages is assumed to partially stem from the parametric product not requiring asset values as the basis for the coverage, making it harder for respondents to determine the appropriate limit. Despite the wide range of selections, the outcome demonstrates an apparent convergence towards the US\$20 coverage limit. As seen in Figure 3, 46% of the respondents opting for the US\$20 limit. Combined the US\$60 and US\$40 options received 31% of the total votes. The results can be interpreted that a US\$20 coverage has the highest sales potential among the low-income sector, however, there is the possibility to consider higher coverages of up to US\$60 during the pilot project.

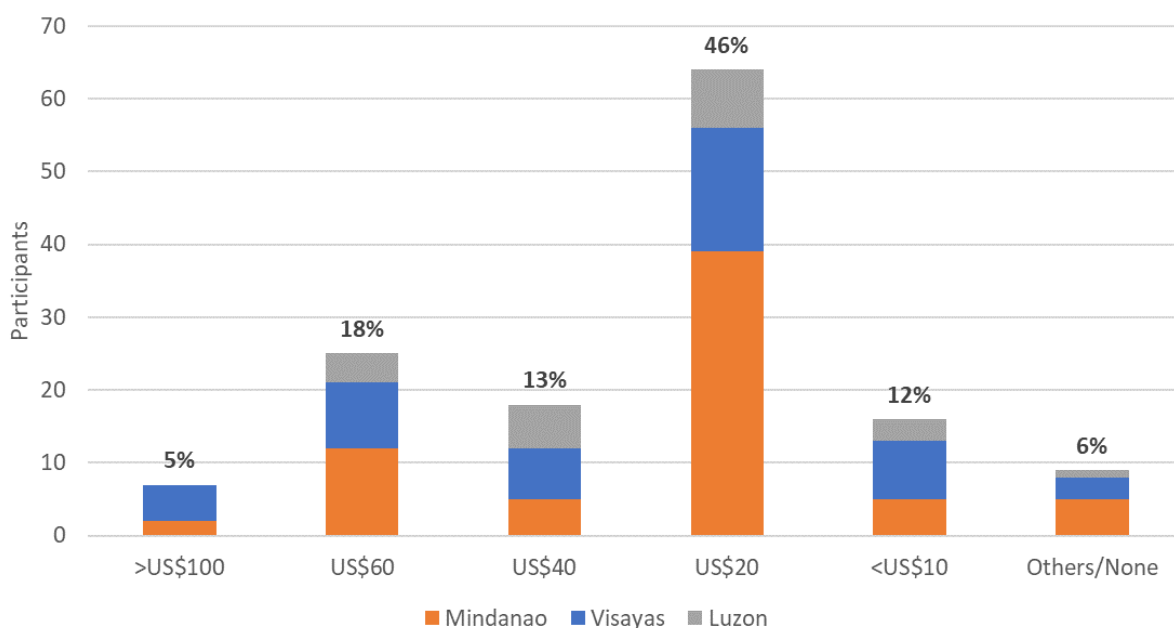


Figure 3 Feedback on Suggested Amount of Coverage.

Across the three island groups, participants from Visayas larger coverages the most frequently, with 43% of their respondents inclined to select a limit above US\$20. The province of Central Visayas seemed to be particularly confident in requiring larger sums insured, with 20 out of 35 participants (57%) suggesting there would be a need for coverages above US\$20 and up to US\$100. Luzon also indicated a willingness for coverages above US\$20, with 48% of the representatives opting for either the US\$40 or US\$60 limit. On the flip side, Western Visayas and SocSarGen (Mindanao) were the only provinces where a majority of the participants decided that an ECP should not exceed a coverage limit of US\$10 or had other/no opinion on the question, virtually ruling them out for the potential pilot project.

**Product Appeal**

When asked for their assessment of the ECP’s product appeal, a substantial majority of 77% of participants were confident of its sales potential. Among the island groups, Visayas and Luzon demonstrated overwhelming confidence in being able to market the product (see Figure 4).

Mindanao provided mixed feedback, with a high rate of 11% explicitly feeling the product couldn't be sold to their client base and a further 25% not providing a clear reaction. This could indicate a certain level of uncertainty towards the project or a limited understanding of the product details. The survey also yielded that Mindanao provinces such as ARMM and SocSarGen with lower literacy rates correlate with the sales representatives holding a negative view of the product appeal. These results indicate that a high level of training and coaching would be required to sell the product to clients with limited literacy. Within Mindanao, only the staff hailing from the provinces of Caraga and Zamoanga seemed overwhelmingly confident in the product's appeal to their client base.

The current product structure seems highly marketable in the Visaya and Luzon island groups, with positive responses extending across almost all of their provinces too. It is also worth noting that some of the respondents in Luzon and Visayas even provided specific numbers of units that they could sell. Especially sales representatives from the provinces of Eastern Visayas, Central Luzon, Western Visayas, Central Visayas, and Zamboanga, in that order, showed the most confidence in being able to achieve high sales figures. The regional managers' assessment of the ECP's appeal should be strongly factored in when selecting the provinces for a pilot, given the importance of their sales experience and skills to the outcome of the project.

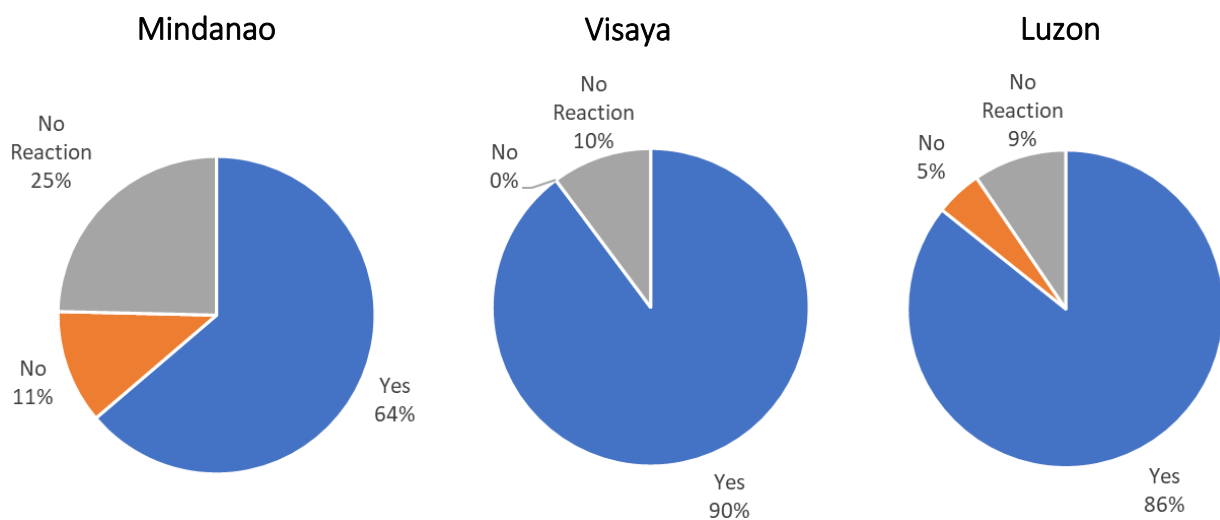


Figure 4 Feedback on Product Appeal

**Sales Method**

The participants were also asked to comment on their preferred sales method. MAA's current micro accident insurance policy are sold by the PO pawnshops via traditional paper-based as well as electronic over-the-counter transactions. To digitalise insurance transaction and provide the sales representatives with correct pricing data for the ECP, MAA has suggested introducing a mobile application which could be utilised by staff when selling the policies to their pawnshop customers. Selling policies via a mobile app would allow for the efficient tracking of registered buyers and provide sales reps with an overview of incurred payouts. Survey respondents were given the option to either select the traditional sales method and/or the mobile app.

While 48% continued to opt for the traditional method of selling, a strong 42% had a clear preference for exploring the new avenue of introducing a dedicated mobile app for the product (see Figure 5). These mixed results highlight that the selection of the sales method for the pilot project won't be straight forward and both methods should be provided to the PO. Pushing the wrong method to sales staff might decrease their motivation and their sales engagement with their client base. 6% of all respondents actively selected both sales options, indicating their willingness to test the sale of the ECP via multiple channels.

A majority of Visayas and Luzon representatives have a clear preference to maintain the traditional model, among their provinces, only Central Visayas shows a balanced opinion with 46% preferring the traditional model, 43% opting for the mobile app and 11% open to trying both. The high preference for the traditional sales method could be grounded in certain skepticism towards technology and/or the desire to stick to established processes. Interestingly, 53% of Mindanao participants are willing to experiment with selling the product via a mobile app, with all provinces showing a high interest in this sales method. Only the province of Caraga shows a majority wanting to remain within the traditional model.

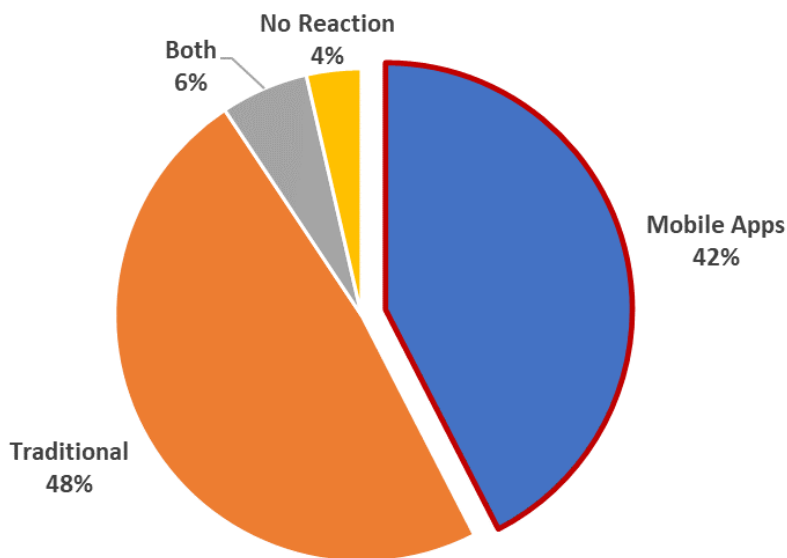


Figure 5 Feedback on Method of Selling

**Product Features**

The high-level functionality and structure of the proposed parametric typhoon product were shared with all participants during the product presentation. Two product features were given a particular focus; the concept of providing emergency cash following a typhoon and the rapid settlement process associated with parametric insurance structures. Both components of the product, a new insurance coverage option and a different payout approach, were new to the regional managers in attendance. When prompted to indicate which feature was most appealing, 41% were particularly attracted to the product concept of emergency cash, while 38% were more interested in the payout settlement feature. The responses highlight the balanced appeal of the proposed product, with both key features receiving strong interest. As noted in Figure 6, 17% of the participants felt both aspects were equally appealing to them, selecting both answer options in the survey.

Mindanao and Visayas largely follow the overall breakdown between the product features, while Luzon respondents seem to have a clear preference for the rapid settlement component, which is particularly driven by representatives from the province of Central Luzon. The provinces of Central Visayas and Caraga showed a balanced opinion of the product’s features, with all three answers (excl. “no reaction”) accounting for between 20-40% of their respective responses.

This survey question helps to indicate which aspect of the product should be given a stronger focus during the pilot project, since promoting the right aspect will ease the PO’s sales effort to the target groups. The results are encouraging in the sense that both components have received a similar level of attention. From a technical standpoint, both the product concept as well as the settlement process are central to the Emergency Cash policy. Provinces such as Central Visayas, ARMM with 26% and 25% of the respondents recognising the importance of combining both components could be of particularly interest for the launch of a pilot project.

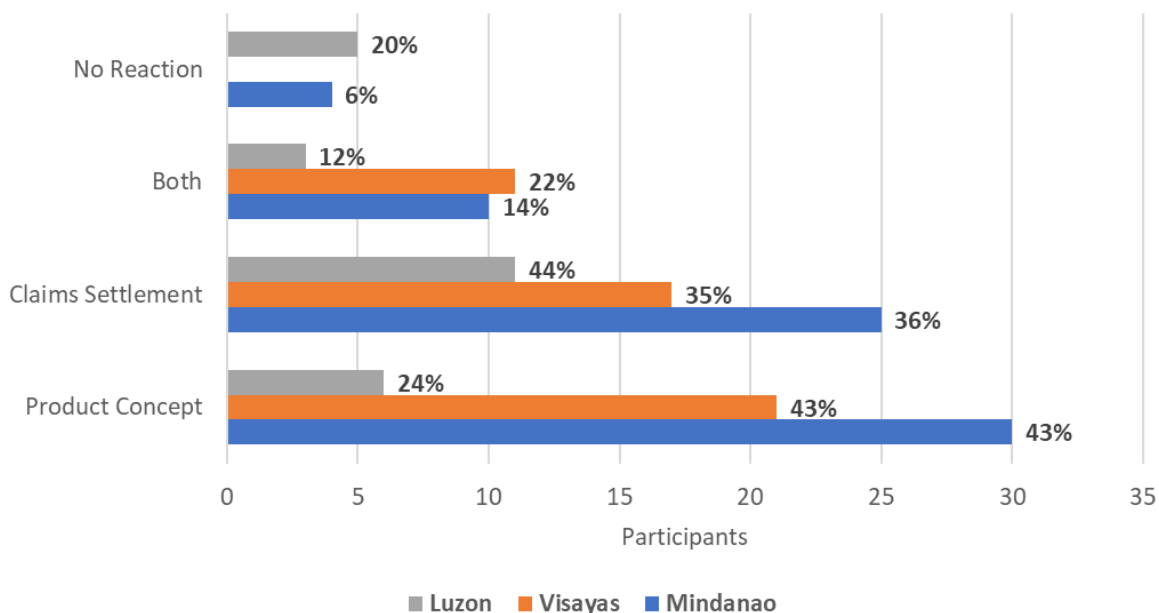


Figure 6 Feedback on the most appealing product features. The percentage indicates the share of each category of the total for each of the three regions.

#### 4.4 Stakeholder and distribution channel analysis

##### Pawnshops

As the primary sales partner proposed for the pilot project, the PO plays a crucial role in the distribution of the ECP. As one of the largest pawnshop operators in the country, the PO has access to a vast network of over 2,200 shops across the country. Next to regular pawnshop operations, the PO provides over 100 services such as foreign and local remittance, bill payments for utilities, topping up mobile balances, courier services, and the sale of insurance policies, many of them in collaboration with MAA. The PO also partners with various local government units to advance human development measures by providing cash grants to the poorest sectors of Filipino society.

MAA and the PO have enjoyed a stable business relationship dating back to 2007 when the MAA Cebu office was approached by the PO regarding insurance coverage for its own properties and protection needs. Soon after, MAA and the PO launched a micro accident insurance scheme via the pawnshops, which significantly contributed to the MAA/PO collaboration reach 8 million clients across the Philippines. The insurance programme was one of the first products sold via their outlets and has grown into a steady source of revenue for the organisation. This pre-existing relationship lays a strong foundation to expand the product range to include parametric typhoon insurance.

The PO has a high level of expertise in understanding the needs and preferences of the low-income sector, having engaged with them through many years of service. In the Philippines, pawnshops are considered to be the poor man's bank, acting as the go-to place when low-income families require emergency funds or require additional funding for small scale investment or consumption needs such as school tuitions, fees for sending relatives abroad etc. The PO's sales staff have built up considerable experience in explaining and selling microinsurance products to clients as an add-on product when they conduct other business in the pawnshops. The past successes with the micro accident insurance demonstrates their ability to engage with the low-income sector and identify their risk management needs as well as their willingness to pay for financial protection. Transparency, the sharing of technical skills and joint emphasis on customer service, has cemented the strong partnership between MAA and the PO as well as their respective staff. In the past, product training conducted by MAA has been marked by a high-level of engagement and interest in the product's functionality from the PO sales staff. CP and MAA are confident that the staff will quickly grasp the key benefits and policy terms relevant to their client base. During the education and orientation of the PO staff, sufficient time needs to be dedicated to crucial climatological aspects related to typhoon and the payout process of parametric coverages, two aspects of the product the PO has no experience with to date.

While any possible pilot project should primarily be managed via the PO, MAA sees a substantial potential to expand the distribution channels and engage with a broader range of stakeholders in the future. As part of its distribution strategy, MAA aims to actively educate the Filipino market on index-based products and expand the application of the ECP.

### **Financial Institutions**

When considering the distribution of insurance in the Philippines, financial institutions such as banks and remittance companies play a crucial role. Such organisations frequently partner with insurance companies to sell insurance policies to their clients, agreeing on specific sales targets and commissions with the insurer. The banks in the Philippines benefit from a wide geographical distribution, maintain numerous staff with high levels of financial literacy and have frequent interaction with clients on financial matters, all of which provide insurance companies with an efficient distribution channel to access potential policyholders. Established central training procedures allow for bank staff to be effectively introduced to the key points and appealing features of any new insurance product, allowing for the rapid scale-up of distribution once an agreement with the bank is found.

Most of the banks in the Philippines have their own insurance broking firm, providing insurance companies with a knowledgeable counterpart, well versed in the respective terminology, and able to raise awareness on the product within the bank. However, distribution arrangements with the banks only become viable once an insurance product is well established, has a proven track record with clients and can achieve high enough sales volumes to entice the banks' participation.

### **Insurance Agents and Brokers**

Insurance agents and brokers represent a further well established distribution channel for insurance companies in the Philippines. Insurance agents, independent individuals, appointed by companies, are frequently utilised to sell life and non-life insurance to retail clients. Their sales approach is strongly driven by commission, and they are known for their capability of making use of various sales channels such as the internet, face-to-face visits to the client, social media etc. Cooperating with insurance agents is particularly appealing for well-established products that require a higher level of customer engagement and explanations, allowing for the insurance company to only incur a cost if the product is purchased.

Insurance brokers are independent organisations with a high-level of subject matter expertise. Not being affiliated with any insurance company allows them to provide professional advice to their clients and support them in their selection of a suitable insurance company and/or product. Especially for complex and/or high-value transactions, insurance brokers begin their client engagement prior to the placement of risk and accompany them throughout the policy period. While insurance brokers are well placed to handle larger-scale international and/or corporate parametric products, MAA sees the potential to utilise local insurance agents and Filipino-owned brokers to scale up the distribution of the ECP to retail clients following the pilot project.

### **Global Hub / Mobile Solutions Providers**

Mobile solution providers are a newer distribution channel for insurance companies. With the establishment of mobile payment via smartphones, the processing of insurance policies can technically be shifted to the digital space. The development of user-friendly mobile applications by the insurance company or the placement of policies within popular applications, provides insurers with immediate access to their clients. Such solutions are also highly scalable for insurers interested in stepping up their distribution. However, the development of the technological solution requires a certain level of financial and organisational commitment before the sale of the product.

Online quotation services, also known as aggregators, provide clients with a centralised platform to calculate insurance premiums within minutes from a range of different insurers. Interested clients can then request a formal quotation from the insurance company directly via the website, with the aggregator receiving a standard commission for each concluded policy.

For the past three years, MAA has had an exclusive business partner in place with a group engaged in providing mobile solutions. The existing agreement allows MAA to sell insurance products such as Accidental and Liquid Damage, Extended Warranty, Accident Insurance, and Contractual Liability Insurance policies related to the use of mobile phones, gadgets, and appliances. The premium growth derived from this partnership has grown exponentially thanks to the surging demand for mobile phones, gadgets, and tablets across the Philippines.

The product structure of the ECP is well suited to be managed within a mobile application. Such a dedicated solution would allow clients to visualise the typhoon coverage on a map, receive updates of relevant storm events, and be immediately alerted of potential payouts following an eligible typhoon event. The development of a first mobile app allowing THE PO staff to demonstrate the product to clients and track the sold policies is highly recommended for the pilot product. In a second step, the mobile app could be rolled out directly for the end client or tied into the service offering of a potential distribution partner.

**Summary**

Table 1 provides an overview of the four different distribution channels portrayed for the ECP in the Philippines. Furthermore, a brief assessment of the potential of each option is included. When targeting the low-income sector in the Philippines with a novel product structure, pawnshops clearly act as the preferable distribution partner. Mobile solutions should be driven forward in parallel, while financial institutions and insurance agents can be utilised once the product is scaled up to target the middle to upper-income segments as well as the commercial sector.

*Table 1 Overview of Distribution Channels*

<b>Distribution Channel</b>	<b>Strength</b>	<b>Weakness</b>	<b>Potential</b>
<i>Pawnshops</i>	<ul style="list-style-type: none"> <li>• Direct and frequent interaction with the low-income sector</li> <li>• Experience in distributing micro-insurance products and other “low-cost” services</li> <li>• Extensive rural coverage with branches across the country</li> </ul>	<ul style="list-style-type: none"> <li>• Insurance is not their primary business</li> <li>• Increased risk of misunderstandings on technical concepts (e.g. basis risk)</li> <li>• Selling micro-insurance as an “add-on” product limits the coverage/premium per policyholder</li> </ul>	<ul style="list-style-type: none"> <li>• Most feasible distribution partner for micro-insurance products in the Philippines</li> <li>• In the case of PO, the pre-existing relationship with MAA acts as a strong foundation</li> </ul>
<i>Financial Institutions</i>	<ul style="list-style-type: none"> <li>• High level of financial literacy across all staff</li> <li>• Direct and frequent access to the middle and upper-income sector</li> <li>• Knowledgeable counterpart for insurers and clients</li> </ul>	<ul style="list-style-type: none"> <li>• High sales volume required</li> <li>• Product needs to be well-established and standardised</li> <li>• The low-income sector is not in their scope</li> </ul>	<ul style="list-style-type: none"> <li>• A viable partner once the ECP product structure is tested and well established</li> <li>• Suitable partner to target the middle and upper income sector</li> </ul>
<i>Insurance Agents &amp; Brokers</i>	<ul style="list-style-type: none"> <li>• Insurance experts with a high-level of knowledge</li> </ul>	<ul style="list-style-type: none"> <li>• Strongly commission driven, might downplay the risks of the product</li> </ul>	<ul style="list-style-type: none"> <li>• A potential partner for the scale-up of the product across the retail sector</li> </ul>



	<ul style="list-style-type: none"> <li>• Ability to engage with clients on more complex and/or new insurance products</li> <li>• Able to sell high volumes on a stand-alone basis</li> </ul>	<ul style="list-style-type: none"> <li>• “Agency Problem”, so diverging interests between the principle (insurer) and agent</li> <li>• Preference for well-established products due to high sales volume needs</li> </ul>	<ul style="list-style-type: none"> <li>• Expertise and dedicated client engagement is a useful attribute for a novel product structure</li> </ul>
<i>Global Hub / Mobile Solutions Providers</i>	<ul style="list-style-type: none"> <li>• Highly scalable and efficient distribution channel</li> <li>• Lowest recurring commission among the distribution options</li> <li>• Ability to tie distribution with digital payout process</li> </ul>	<ul style="list-style-type: none"> <li>• Highest up-front investment to develop</li> <li>• Requires access to mobile payment wallets, limiting distribution</li> <li>• Limited direct client engagement resulting in misunderstandings</li> </ul>	<ul style="list-style-type: none"> <li>• Can be developed in parallel and/or in collaboration with the pawnshop distribution</li> <li>• Not seen as a suitable single distribution channel for the low-income sector</li> </ul>

## 5. Data and insurance product design

### 5.1 Historical disaster events

The Philippines is significantly exposed to various types of natural disasters. An analysis of the most severe disasters in the Philippines between 1993 and 2018 highlights that storm events (typhoons) have had the most substantial impact on livelihoods and the economy. Figure 7 provides an overview of the ten most devastating natural disasters in the Philippines across the 26-year period, with storms accounting for eight out of the ten events listed.

Name	Type	Year	damage ('000 US\$)	Totals deaths	Total population affected
Typhoon Haiyan (Yolanda)	Storm	2013	10,000,000	7,354	1,61,06,870
Flood	Flood	2013	2,190,000	1,901	62,46,664
Typhoon Chan-Home	Storm	2015	1,500,000	1,619	49,01,763
Typhoon Bopha	Storm	2012	898,352	1,439	47,85,460
Typhoon Rammasun (Glenda)	Storm	2014	820,576	1,399	46,54,966
Flood	Flood	1995	700,300	1,126	44,78,491
Tropical Storm Ondoy (Ketsana)	Storm	2009	585,379	882	44,51,725
Typhoon Pedring	Storm	2011	344,173	737	41,50,400
Typhoon Fengshen	Storm	2008	284,694	644	39,02,424
Typhoon Megi	Storm	2010	275,745	512	38,42,406

Figure 7 Most severe natural disasters in the Philippines between 1993 and 2018, Source: The Emergency Events Database – Université catholique Louvain (UCL).

According to the Philippine Atmospheric Geophysical and Astronomical Services Administration’s (PAGASA) statistics for TCs / typhoons entering the Philippine Area of Responsibility (PAR), between 1948 and 2019 an average of 20 typhoons affect the area per year. Approximately 40-45% of these storms affect at least one of the Philippines’ islands every year. The occurrence of typhoons in the Philippines is subject to seasonal fluctuations, with nearly 70% of the typhoon affecting the country between July and October alone. Figure 8 highlights the monthly average TC frequency in the PAR based on the data from 1948 to 2019 is shown. Long-term observations of typhoon activity highlight a slightly decreasing trend in the number of landfalling typhoons across the PAR. However, time series analysis notes that the country shows a slightly increasing trend towards more extreme events with higher windspeeds in the recent decades.<sup>32</sup> While considerable uncertainties remain with regard to the impact of climate change on typhoon projections, more so than for other disaster perils, the trend towards fewer but more severe storms is in line with current expectation.<sup>33</sup>

<sup>32</sup> (Cinco, et al. 2016)

<sup>33</sup> (Intergovernmental Panel on Climate Change 2018)

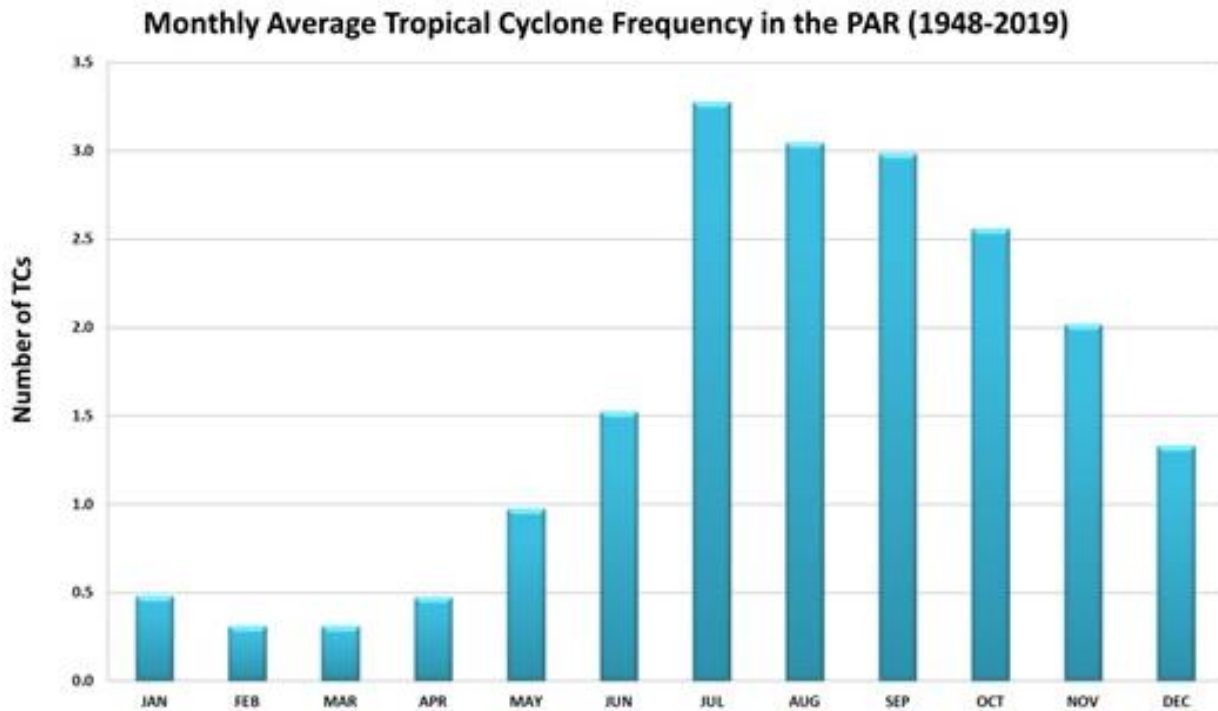


Figure 8 Monthly Average Tropical Cyclone Frequency, Source: PAGASA

The impact of typhoons on a population and economic activities are determined by combination of the wind speed and flooding induced by heavy precipitation and/or storm surge. The interrelation between these three loss drivers are complex and also depend on storm size, wind speed, the topography, ocean depth and changes to the wind speeds as a storm makes landfall.<sup>34</sup> Tropical storms and relatively weak tropical cyclones have shown to primarily induce precipitation related damages, which nonetheless can be considerable, even a storm does not make landfall. Storm surge induced flooding represents a further typhoon related risk, which considerably drove the devastation caused Typhoon Haiyan in 2013.

In the Philippines, probabilistic risk models indicate that tropical cyclone related floods (precipitation and storm surge) can be expected to account for a majority of the damages for storm up to category 3. However, for high wind speed events classified as category 4 or 5, the damages caused by wind are expected to outweigh floods (see Figure 9).<sup>35</sup>

<sup>34</sup> (AIR 2018)  
<sup>35</sup> (RMS 2018)

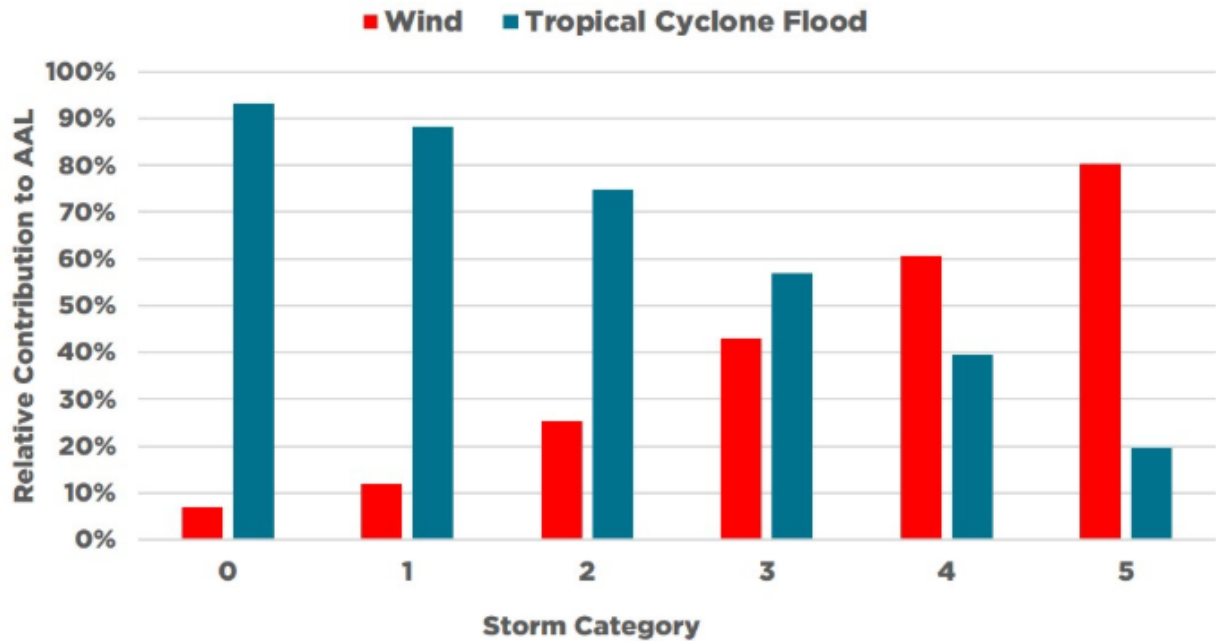


Figure 9 Relative contribution to tropical cyclone gross average annual loss (AAL) to the industry exposure database (IED) by Saffir-Simpson category for tropical cyclone wind and tropical cyclone flood (inland and surge) perils Source: (RMS 2018)

Despite the wide range of variables influencing the occurrence, severity and damage potential of typhoons, certain evidence is available on the strong correlation between wind speed and storm surge triggered by a tropical cyclone. In the past, the Saffir–Simpson scale<sup>36</sup> assumed a linear association that higher category typhoons (at landfall) will typically generate larger storm surges. This approach was abandoned after certain category 3 storms and those with larger sizes were observed to have generated considerably higher storm surges than anticipated. Current evidence, based on US hurricanes, finds the strongest correlation between storm surge heights and pre-landfall wind speeds, 18 hours reaching land, although the relationship is non-linear.<sup>37</sup>

Based on the prevalent threat of typhoons to the Philippines, the destructive potential of high-wind speeds and requests received from clients over the years, CP and MAA propose to focus the ECP on the severe storms. With a high degree of confidence, it can be assumed that the wind speed of category 4 and 5 typhoons, and associated storm surge, result in the most significant emergency relief needs for the low-income sector. Consequently, the product aims to support the rapid recovery following such devastating events.

<sup>36</sup> The Saffir-Simpson Hurricane Wind Scale is a 1 to 5 rating based on a hurricane's sustained wind speed. This scale estimates potential property damage. Hurricanes reaching Category 3 and higher are considered major hurricanes because of their potential for significant loss of life and damage. Source: US National Weather Service

Category One Winds: 74-95 mph (64-82 kt or 119-153 km/hr) - Very dangerous winds

Category Two Hurricane: Winds 96-110 mph (83-95 kt or 154-177 km/hr) - Extremely dangerous winds

Category Three: Winds 111-129 mph (96-112 kt or 178-208 km/hr) - Devastating damage

Category Four: Winds 130-156 mph (113-136 kt or 209-251 km/hr) - Catastrophic damage

Category Five: Winds 157 mph or higher (137 kt or higher or 252 km/hr or higher) - Catastrophic damage

<sup>37</sup> (Needham and Keim 2014)

## 5.2 Data availability

To structure and design a parametric typhoon insurance product in the Philippines CP identified the following key data sets: typhoon wind intensity and track information, satellite-based rainfall information, weather station-based rainfall, and wind data. While typhoon wind intensity and track information and satellite-based rainfall information are available from several providers, weather station data is only available from PAGASA. To reduce the complexity of the insurance product, CP and MAA recommend focusing on the damages inflicted by a typhoon’s high wind speeds. A simplified and commonly adopted assumption is that the high correlation of wind speed and storm surge allows the former to be used as a proxy for the potential damage of a typhoon.<sup>38</sup> This holds particularly true for high category storms where the damage potential is primarily driven by wind speed and, to a lesser extent, storm surge, with lower relative damages caused by heavy precipitation. Typhoon induced rainfall and the resulting floods can be added as an additional product component at a later stage. Consequently, this report recommends focusing the pilot project on accurately analysing the typhoon wind intensity data.

An overview of all potential datasets and their suitability for an index-based insurance product is provided in the following section.

### **Typhoon wind intensity & track data - Joint Typhoon Warning Center (JTWC)**

The JTWC is one of the Regional Specialized Meteorological Centers (RSMCs) in the southern hemisphere appointed by the World Meteorological Organization (WMO) for the region of the Philippines. JTWC archives best-track data by performing a post-season analysis of TC position and intensity. The JTWC uses a 1-minute averaging period to calculate the Maximum Sustained Wind (MSW) values, with 155 knots as the maximum MSW. Converting the MSW into the Saffir-Simpson tropical cyclone scale, results in the following categorisation:

<b>SAFFIR-SIMPSON SCALE</b>	<b>JTWC MSW</b>
<b>1</b>	64-82 kts
<b>2</b>	83-95 kts
<b>3</b>	96-112 kts
<b>4</b>	113-136 kts
<b>5</b>	>= 137 kts

The JTWC data includes the following key attributes:

**Parameter:** Cyclone Intensity, TC best track

**Regional coverage:** Southern Hemisphere

**Temporal resolution:** 6 hours

**Period:** 1956 - now

**Update frequency:** daily

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<sup>38</sup> (Asian Development Bank 2019)

CP recommends using JTWC as the base data set for the proposed ECP. The long historical track record and well-established accuracy related to storm intensity ideally positions JTWC as the data source for a parametric product focused on strong winds. The proposed insurance structure is based on “Tropical Cyclone Cat in a Circle (TC CiC)” concept (further details provided in section 6.3).

**Typhoon wind intensity & track data - Japan Meteorological Agency (JMA)**

The JMA is a further RSMCs, with a focus on the western pacific, covering the entirety of the Philippines and archiving the best-track data by performing postseason analysis of TC position and intensity. The JMA uses a 10 minutes averaging period to calculate the MSW values, with 140 knots maximum MSW. Depicting the JMA MSW in the Saffir-Simpson Scale results in:

<b>SAFFIR-SIMPSON SCALE</b>	<b>JMA MSW</b>
<b>1</b>	62-73 kts
<b>2</b>	74-80 kts
<b>3</b>	81-91 kts
<b>4</b>	92-105 kts
<b>5</b>	>= 106 kts

The JMA data includes the following key attributes:

**Parameter:** Cyclone Intensity, TC best track

**Regional coverage:** West Pacific basin

**Temporal resolution:** 6 hours

**Period:** 1977 - now

**Update frequency:** daily

Similar to the JTWC, the JMA data could be used for TC CiC products focused on strong winds. However, for the pilot project, the JMA data should only act as a fallback option. The JTWC provides a longer track-record of typhoons and includes a higher maximum MSW, allowing for a more granular distribution of typhoons into the Saffir-Simpson Scale.

**Rainfall Satellite Data – IMERG**

The Global Precipitation Measurement (GPM) mission is an international network of satellites that provide the next-generation global observations of rain and snow. Building upon the success of the Tropical Rainfall Measuring Mission (TRMM), the GPM concept centers on the deployment of a core-satellite carrying an advanced radar/radiometer system. This system measures precipitation from space and serves as a reference standard to unify precipitation measurements from a constellation of research and operational satellites. Among many GPM products, the Multi-Satellite Retrievals for GPM (IMERG) is most appealing for insurance applications since it delivers the best precipitation estimates by combining data obtained from all available microwave and infrared platforms of the GPM satellite constellation.

The IMERG data includes the following key attributes:

**Spatial resolution:** 10\*10km

**Period:** 2000 – now

**Temporal resolution:** daily

**Update frequency:** daily

IMERG data is frequently used for Weather-Index Insurance (WII) products, allowing for excess rainfall or a shortfall of precipitation to be covered with a parametric trigger. However, including excess rainfall induced by a typhoon adds considerable complexity to the product structure. Following the pilot project, MAA could consider providing immediate liquidity following post-typhoon flooding or excess rainfall. IMERG data should be used for any product extension covering excess rainfall due to its daily update frequency, a crucial factor for a parametric product structure.

#### **Rainfall Satellite Data – CHIRPS**

Excess rainfall data can also be retrieved from the Climate Hazards Group InfraRed Precipitation with Station data (CHIRPS), a 30+ year quasi-global rainfall dataset. Spanning 50°S-50°N (and all longitudes) with a historical record dating back to 1981, CHIRPS incorporates 0.05° resolution satellite imagery with in-situ station data to create gridded rainfall time series for trend analysis and seasonal drought monitoring.

The CHIRPS data includes the following key attributes:

**Spatial resolution:** 5\*5km

**Period:** 1981 – now

**Temporal resolution:** daily

**Update frequency:** monthly

CHIRPS data provides a high spatial resolution and a relatively long historical view. These inputs are very valuable for the analysis of historical typhoon-induced flood events. However, the monthly update frequency disqualifies CHIRPS as the basis parametric insurance products.

#### **Weather Station Data - PAGASA**

The Philippine Atmospheric Geophysical and Astronomical Services Administration (PAGASA) is the national weather service and the official provider of Automated Weather Station (AWS) data in the Philippines, which can be access in a raw format for a flat fee. The ground weather stations are distributed across the country. PAGASA does not officially report a specific number of AWS, but based on the official website there are between 50 and 100 of them in the Philippines. The weather stations usually provide data on an hourly basis on:

- The date of measurement
- The name and location of the reference weather station
- The amount of rainfall and the wind speed for the location of the weather station
- Other meteorological parameters depending on the equipment of the weather station

A well-functioning network of weather stations with better coverage could act as an accurate basis for a typhoon or excess rainfall product. The risk lies in insufficient coverage and/or technical difficulties limiting the availability of wind speed and rainfall data. PAGASA could be used as supportive data to provide additional information on the exposure of different regions to damaging wind speeds and excess rainfall. However, the basis of a parametric product should be remote sensing satellite data due to the consistent data reporting, regular update frequency and trust of the international reinsurance market in the globally established data providers.

### 5.3 Preliminary insurance product

The proposed insurance product is based on the concept of a parametric typhoon product providing “Emergency Cash” / liquidity to the insured. The policyholder would receive a rapid payout after the occurrence of a devastating storm, with the additional liquidity enabling the insured to secure his/her livelihood, keep a business running or immediately begin restoration/reconstruction activities.

The proposed design is based on the "CAT in a circle (CiC)" parametric cover, where the center point is the address of the insured. Coverage is provided for a pre-defined circle around the Insured Location, with a payout being received when a named storm of a particular TC category intersects with the circle. Several payouts may be triggered during the policy period, however, the maximum payout across the policy period is capped at a defined limit. The ECP could be linked to the typhoon season, with the policy period limited to the four most storm-prone months in the year. As data sources such as JMA or JTWC are updated daily, the loss adjustment process can be considerably simplified, and the appropriate payout amount can be wired to the policyholder’s bank account or mobile wallet within days of the disaster occurring. The ideal payout progress comes with a caveat, since as of 2017, account ownership at a financial institution or with a mobile money provider stood at 35% for the Filipino population aged above 15, compared to 49% in Indonesia and 31% in Vietnam. For the poorest 40% of the population this value stood at 18% in 2017, leaving the Philippines below both Vietnam at 20% and Indonesia with 37% of their low-income population.<sup>39</sup> While these shares have undoubtedly increased over the past few years, CP and MAA will have to assume that a large share of the PO’s clients will prefer to receive cash payouts following the occurrence of an eligible typhoon.

Both JMA and JTWC publish the 6-hourly position of the center of a storm and the maximum sustained wind speed. The proposed product design includes two main uncertainties centered around the basis risk, which is based on a weak correlation between the storm data recorded and the damages witnessed on the ground. The first uncertainty is related to the distance between the Insured Location and the TC track with the maximum wind intensity, represented by the 6-hourly data points of the center of the storm. The selected radius of the circle is of crucial importance to ensure a strong correlation between storm data and damages. An excessively large radius could lead to higher premium costs and potentially to payouts without damages being inflicted. A small radius could see the insured suffering damages without receiving a payout. With sufficient historical data and experience on the type and extent of damages for past TC storm tracks in the vicinity, the optimal radius can be selected, and the basis risk can be kept rather low.

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<sup>39</sup> (World Bank 2018)



The second uncertainty is related to the movement of the storm between the six-hourly data points, since storms represent a dynamic system which can deviate from anticipated positions and change its intensity. To increase the number of data points, a linear interpolation could be done between the six-hourly measurement points. However, this would not increase the accuracy of the storm data itself, as no additional information would be incorporated. This measure would increase the complexity and reduce the transparency of the product for the potential buyer, as the raw data would be modified compared with the official published data. For the ECP, transparency and the rapid identification of payouts should outweigh the uncertainty of storm tracks between two six-hourly data points.

The inclusion of data derived from on the ground weather stations could theoretically reduce the uncertainties and the associated basis risk. Unfortunately, the density of the automated weather station (AWS) network in the Philippines is not sufficient, and the risk of technical difficulties delaying payouts is high. The remaining basis risk and the desire to develop a more complex structure need to be weight against the simplicity and transparency of the proposed product. In its current form, the product structure can be easily understood by the sales staff and the target group alike, an essential factor for the distribution of the product.

The critical question for the product design is the payout structure itself, as it has a significant impact on the expected premium. The payout structure in percent of insured value depends on the related typhoon category. The basis for the expected premium is the calculation of the Burning Cost (BC)<sup>40</sup>. In discussion with MAA and the PO, it has been clearly stated that the product has to be affordable for the target group. At the same time, given the high frequency of typhoons crossing the Philippines, the existing disaster risk is substantial and directly correlated with a high BC for a potential product. The balance between the level of coverage and costs is an iterative process, where the BC for different product structures needs to be tested.

#### **BC calculation for different product structures**

To facilitate the potential roll-out of the product in the Philippines, CP has coordinated the proposed product structure with the reinsurers (see section 6.1) and agreed to base the BC calculation on a province level. Consequently, separate calculations were conducted for each of the 81 provinces in the Philippines (see Figure 10), resulting in a uniform price per province.

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<sup>40</sup> The ratio of actual past (re)insured losses to a ceding company's subject matter premium (written or earned) for the same period. Used to analyze past (re)insurance experience or to project the future. Source: Guy Carpenter <https://www.guycarp.com/the-company/media-resources/glossary/b.html>



Figure 10 Districts in the Philippines as the basis for the BC calculation

Figure 11 is an example of an Insured Location near the City of Legazpi on a Cat-in-a-Circle basis with a radius of 50 km. The green marker is visualising the geolocation of the insured. Since the green marker is set within the province of Albay, the price charged for this coverage will be the same as if the Insured Location was set in Tabaco City (Albay).

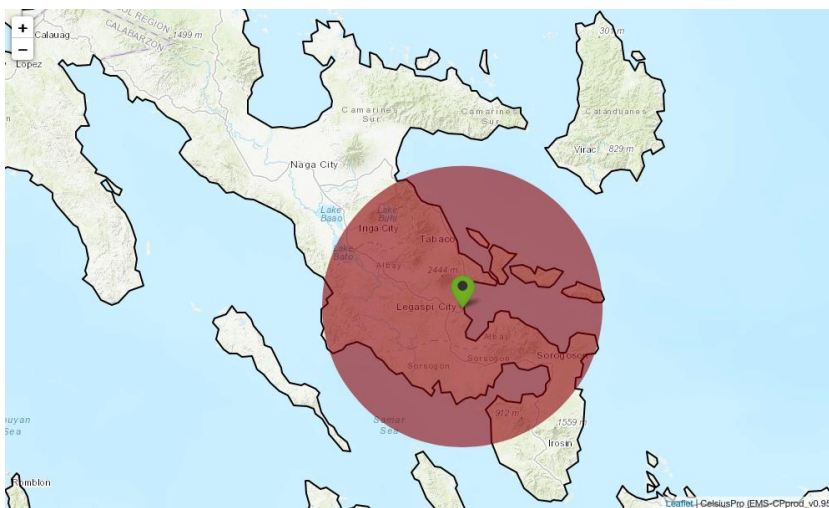


Figure 11 Example for an Insured Location on CiC basis with a 50km radius

The price per province was carefully derived by applying a rigorous process. To get a better understanding of the risk situation per province, CP applied a regular grid with a resolution of 10x10km as the basis. Every center point of a grid cell was used as a center point of a CiC Insured Location. For example, as shown in Figure 12, the right-hand side of the graphs highlights the province of Albay, split into 23 aggregated circles for which individual BC calculations were conducted. As a next step, each 10x10 grid cell CiCs circles were intersected with all historical typhoon tracks reported by JTWC for the BC calculation.



Figure 12 Creating multiple CiC, left an example for one CiC for a center point of a 10x10km grid, on the right the province of "Albay" with 23 circles as basis for the BC calculation

Given the novelty of the product in the Philippines and the feedback received from the reinsurance sector (see section 6.1), a conservative pricing approach was selected. To simplify the product sales approach, CP and MAA have decided to offer only one price per province. This target price is based on the 10x10km grid cell with the highest BC result. While this approach increases the province-wide price of the product, it ensures the anti-selection effect can be avoided, which refers to the danger of the most exposed areas in the province purchasing a disproportionately high share of the policies if the price is too low.

The BC calculations also required an event coverage table to be defined (see Table 2), which summarises the payout structure for a potential product. Usually, the basis for the storm categories is the Saffir-Simpson TC scale, which is also used by the raw data providers. However, PAGASA uses a different scale, which is referred to across all institutions and organisations in the Philippines. Figure 13 provides an overview of the PAGASA scale and the associated wind speeds. To align the storm categories used for the ECP, CP has converted the JTWC data into the PAGASA scale as used for Table 2 below.

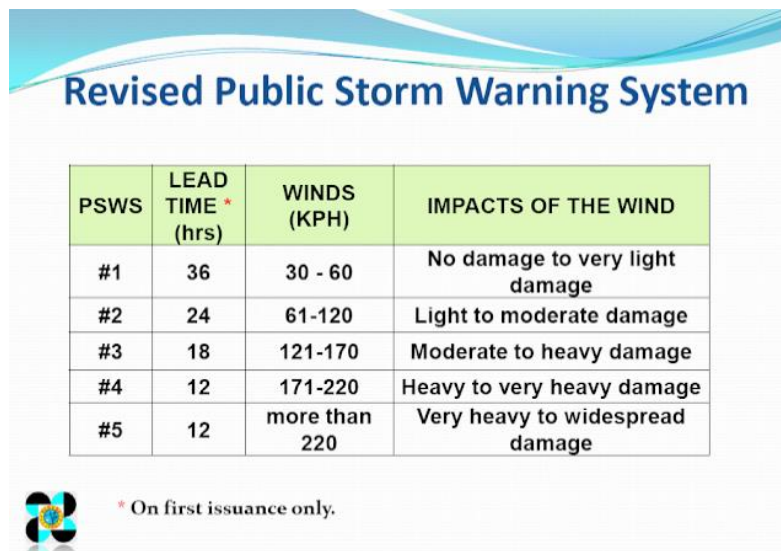


Figure 13 Typhoon categories defined by PAGASA

After the iterative process of determining the most suitable product structure based on the BC Analysis per province, CP identified two possible product options. As shown in Table 2, the two product options differ in their payout structure, with Product A paying out 25% for a category 4 storm. The Insured Value covered by the policy is the maximum 100% payout per Insured Location.

Table 2 Event Coverage Table

Layer	Name	From (km/h)	To (km/h)	Product A) % of Insured Value	Product B) % of Insured Value
1	CAT 1	30	60	0	0
2	CAT 2	61	120	0	0
3	CAT 3	121	170	0	0
4	CAT 4	171	220	25	0
5	CAT 5	> 220		100	100

Determining the applicable storm category is crucial to any parametric insurance product since payouts are triggered on this basis. Given the potential for disputes and misunderstandings, it is important to ensure a transparent approach towards determining the storm category following a typhoon intersecting with a CiC circle. The common practice applied in the (re)insurance market and for the proposed ECP requires the highest wind speed value of the following data points to be applied:

- a) The last measurement point before the track intersects the Insured Location
- b) Any measurement point within the Insured Location
- c) The first measurement point after the track has left the Insured Location

Figure 14 depicts a typhoon moving from the east to the west and intersecting with the Insured Location. The temporal difference between the three measurements is six hours each. Including the first measurement before and after the circle, ensures a payout can be provided without having a recorded wind speed measurement from within the radius. Merely a record of the storm track intersecting with the CiC circle and a strong enough wind speed in the vicinity of the radius is sufficient to conclude that the insured would have suffered damage. In the example provided in Figure 14, Product A) would have paid out 25% of the insured value if either measurement a), b) or c) recorded wind speeds of between 171km/h to 220km/h or the full 100% if one of the measurements reached above 220km/h (see Table 2).



Figure 14 Determination of the relevant TC category

## Summary and Results

For the ECP, CP has proposed to apply the following parameters for the BC calculation. The risk and margin loading are included when determining the final premium charged for the product:

Aggregated Limit per year:	100%
Minimum BC:	2%
Number of years:	74 (1945-2018)
Risk Loading:	0 St. Dev. (added later)
Margin Loading:	0% (added later)

Next to defining the parameters for premium calculations, the process of establishing the proposed product structure provided the following outputs for each province:

- The details of all circles with the center points of the 10x10 grid cells for each province
- The calculated average BC and Standard Deviation (sd) per grid cell and for the overall province
- The minimum and maximum BC and sd values of the circles within each grid cells and for the overall province
- A timeseries of all historical events since 1945 which have intersected with any circle of each province per year
- A timeseries of all events compared with the number of events which paid out per year.

For the example of Albay, the BC\_max value represents the 10x10km grid cell with the highest exposure to typhoons and will be selected as the base BC for the entire province.

The results also indicate that 13 out of 23 grid cells would have seen at least one payout over the last 75 years, and an average of nine payouts across all circles would have occurred. Figure 15 highlights that only two recorded typhoons would have been classified as a category 5 event, resulting in a full payout of the product. Therefore, the BC for Albay is mainly driven by recurring 25% payouts from category 4 events, which affected the province more frequently in the past.

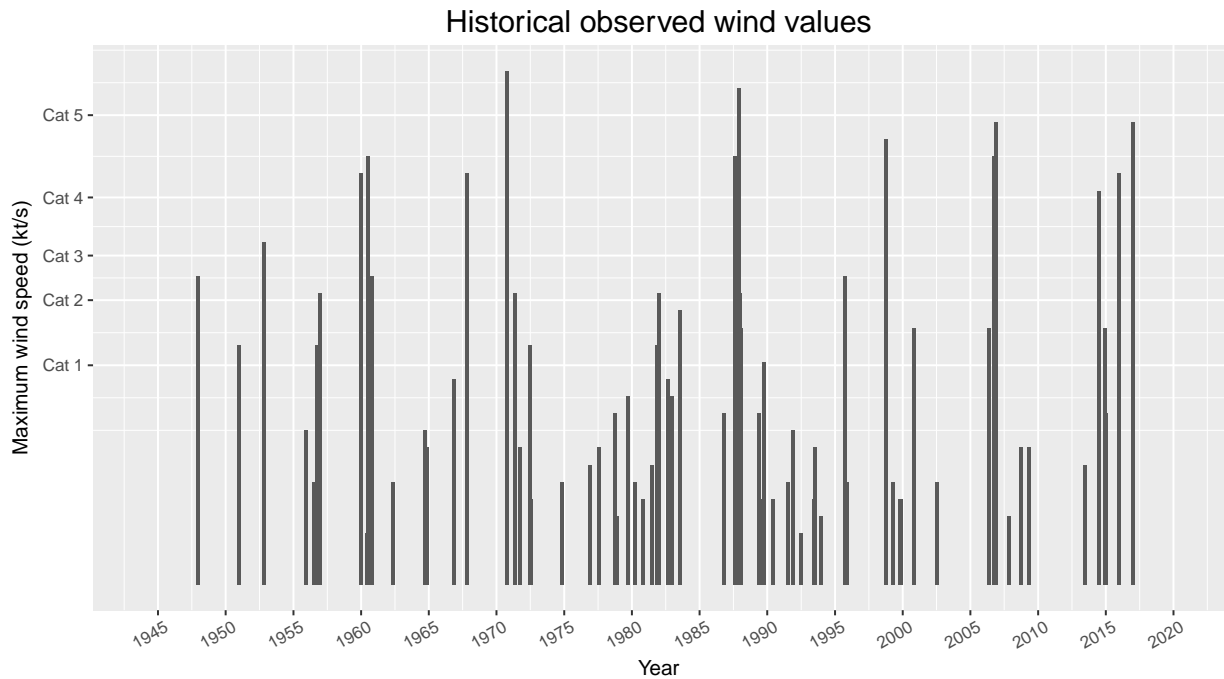


Figure 15 Timeseries of all historical events intersected with any circle within the province of Albay

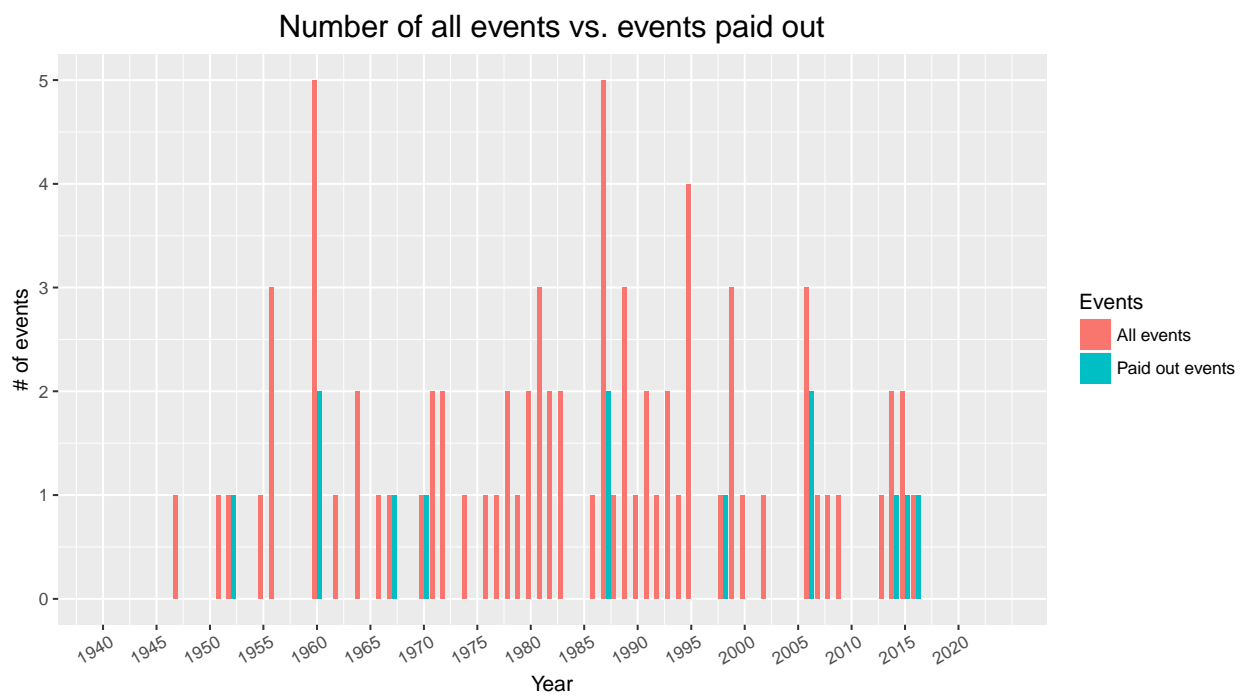


Figure 16 Timeseries with the number of all events (red) versus the events which paid out per year (green) in the province of Albay

The overall outcome after the iterative process of defining different product structures and calculating the BC for all the districts with the described methodology can be seen in Figure 17 for the two favored products. The target was to limit the BC to approximately 10%, even for the highly exposed provinces in the North-East. For all other product options with partial payouts for lower storm categories, the BC increases significantly, resulting in the product not being affordable anymore.

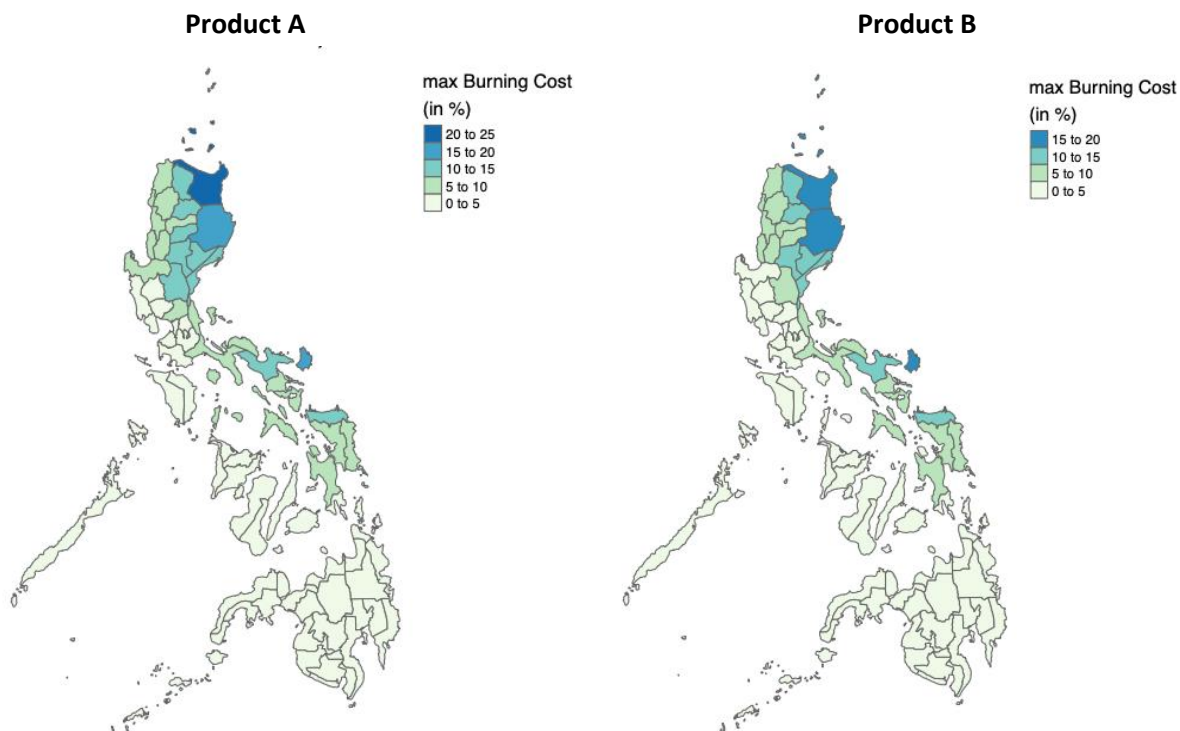


Figure 17 Maximum BC per district for Product A (left) and Product B (right)

It is challenging to find official publicly available loss data on a district level. This, in turn, limits the ability to conduct an as-if-analysis comparing payouts of the suggested product structure with damages caused by past events. Official data should be available from the NDRRMC, but there is no data accessible on their website. However, some data can be retrieved from the Red Cross’ (IFRC) online platform for disaster response and preparedness "IFRC GO". The platform has an inventory of historical events with some additional information derived from the NDRRMC and reports for dedicated events. Using the example of Typhoon Nock-Ten, which crossed the Philippines end of December 2016, the website has a dedicated event report, including NDRRMC data. The typhoon made landfall and caused most damages in the province of Catanduanes with a maximum wind speed of 185 kph and gusts of 255 kph, according to the report. Figure 18 highlights the impact on the population, demonstrating the considerable effect of the storm. The IFRC also notes that damages to agriculture and infrastructure is estimated at PHP 753 million (US\$ 15 million) and PHP 109 million (US\$ 2.3 million), respectively.<sup>41</sup>

Provinces	Affected				Evacuation Centre			Houses damaged	
	Cities & Municipalities	Barangay	Families	People	#	Families	People	Totally	Partially
30	-	785	212,565	950,518	531	44,026	182,410	19,107	50,408

Figure 18 Data from the NDRRMC for typhoon Nock-Ten as of December 29th 2016.

In Figure 19 the track of Typhoon Nock-Ten is shown with the 6 hourly measurement points as reported by JTWC. The color of the points indicates the intensity of the typhoon. When it made landfall at the province of Catanduanes it was turning from a category 5 into a category 4 typhoon based on the Saffir-Simpson Scale.

<sup>41</sup> (IFRC Go 2018)



Figure 19 Track of Typhoon Nock-Ten, December 2016 in the south based on JTWC data

For the as-if-analysis the Event Coverage Table of Product B is used, intersecting the historical track data of Typhoon Nock-Ten with the circles (center points of the circles on a 10 x10 km grid) as explained in Figure 12. The results are aggregated on a provincial level, identifying each province where at least one circle has triggered the full payout for a CAT 5 event (be aware that a CAT 5 event in the defined Event Coverage Table of Product B is not equal to a category 5 event on the Saffir Simpson Scale). The result is shown in Figure 20 and highlights in which region a client would have received a payout following Typhoon Nock-Ten in December 2016. All the heavily affected provinces (colored and listed in Figure 20) in the eastern part of the Philippines would have received a payout. The provinces in the very western part of the Philippines but on the same latitude such as Oriental and Occidental Mindoro and Marinduque would not have received a payout, which matches with the decrease of Typhoon Nock-ten to a category 2 event on Saffir-Simpson scale as shown in Figure 19. At the same time, the provinces with the payouts match the provinces mentioned in the IFRC report and the NDRRMC on the most severely affected provinces.



ISO3	admin	name	id
PHL	1	Catanduanes	22
PHL	1	Camarines Sur	19
PHL	1	Albay	4
PHL	1	Sorsogon	68
PHL	1	Quezon	61
PHL	1	Masbate	45

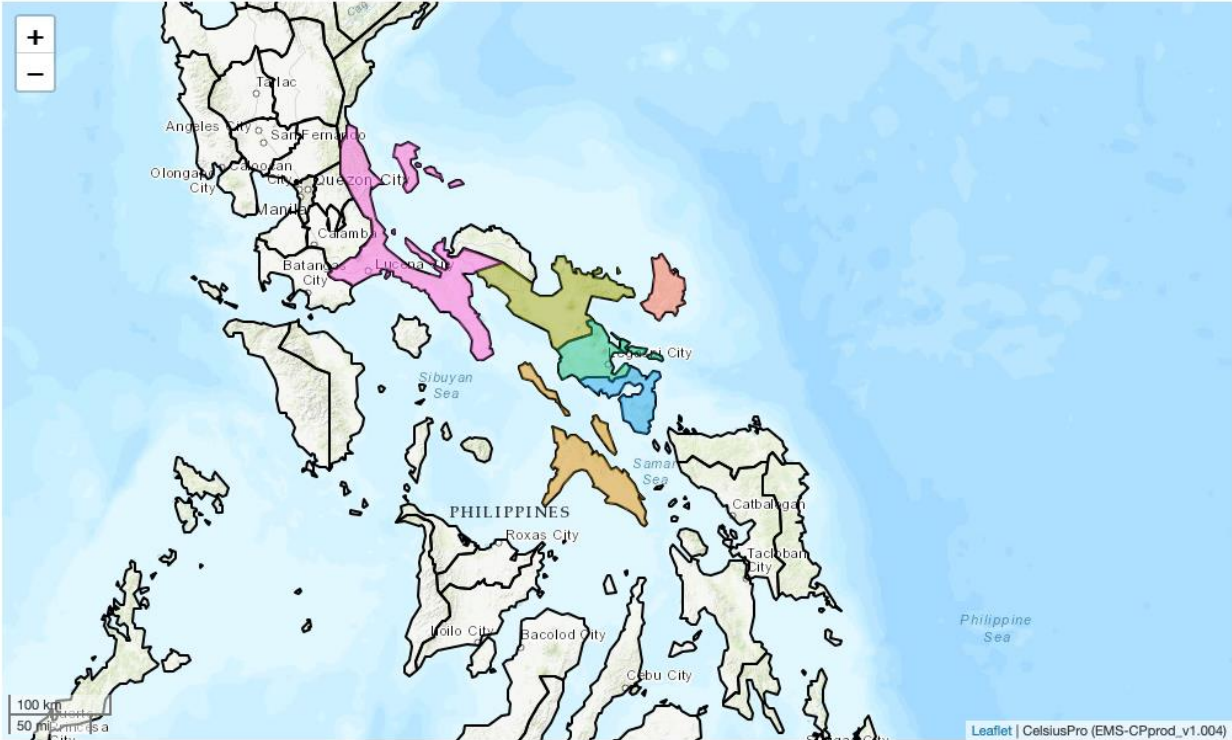


Figure 20 Provinces with locations which would have received a 100% payout based on Product B

## 6. Overall concept for an insurance product

### 6.1 Risk Partner

During the process of determining the proposed product structure, CP discussed the entire approach, the product concept and the methodology of calculating the BC with a number of international reinsurers. In general, all of them would have the capacity for such a product in the Philippines and are supportive of the product approach and product structure. A detailed pricing discussion was difficult to have as they expect a detailed market assessment and business plan from the client before dedicating efforts towards modeling. The outcome of this prefeasibility study helps address these pre-conditions and enable detailed follow-up discussions with the reinsurers. The feedback from the reinsurers is of importance since MAA will need to partner with the reinsurance market to launch the potential ECP and the reinsurers need to be comfortable with the product structure and pricing approach. Following various dialogues with the sector, CP has reflected inputs from reinsurers in the product structure. The most detailed discussions were held with an international reinsurer. All relevant departments were involved in the discussions such as the actuary department, the underwriting team, the local branch office as well as the catastrophe

modeling team. The detailed feedback received from the international reinsurer can be split into four main sections:

### **Technical pricing via historical cyclone track information**

The international reinsurer's Group Risk Management Modelling Department successfully validated the pricing scheme submitted in a probabilistic modeling environment. The international reinsurer concluded that the empirical approach adopted by CP appeared reasonably sound and comprehensive, no technical restrictions were identified for the pricing methodology.

## **6.2 Success factors and key challenges**

Launching an innovative insurance product in the Philippines will require CP and MAA to build on crucial success factors and pro-actively address a range of challenges. As further steps are taking towards devising a comprehensive pilot project, the following non-exhaustive list of factors should be taken into consideration.

### **Success factors**

- **Raising awareness.** Due to the novelty of parametric insurance in the retail sector, a strong emphasis needs to be placed on educating the PO sales staff on the technical functionality of the product. Such an education effort should be paired with raising awareness among the target groups on the benefits and objectives of insurance, the financial risks posed by typhoons and the importance of rapidly recovering from a natural disaster.
- **Distribution Channel.** Past attempts at introducing parametric insurance solutions in the Philippines have, among other factors, failed due to insufficient attention being paid to the distribution channel. Originating new business in the retail sector requires a dedicated and motivated distribution partner with an excellent understanding of the target group to be selected.
- **Appreciation of the product.** Partners and the end clients need to fully appreciate the benefits of the insurance product, clearly understanding the financial protection provided by the proposed financial instrument. In the case of the ECP, the low-income sector needs to be extensively instructed on the structure of the product, the immediate liquidity it can provide, and how the payout process will be handled.
- **Affordability and ease of purchase.** An important lesson learned from the launch of the micro accident insurance was that small policy limits allow clients to purchase some financial protection without incurring substantial upfront costs. While such coverages leave a considerable portion of the risk uncovered, it provides basic coverage and some financial certainty in case of a adverse event. By providing only limited coverages, such micro policies can be efficiently sold over the counter in pawnshops, without requiring the client to devote a large share of their limited disposable income towards a comprehensive coverage.

## Challenges

- **Limited success of parametric insurance.** The launch of a new product will have to address some of the skepticism in the market related to parametric insurance in the Philippines. The limited success of such products in the retail market has an adverse effect on the prospect of any new product launch.
- **Limited financial literacy.** The low-income sector in the Philippines suffers from a lack of financial literacy, potentially limiting the understanding of policyholders of the ECP's functionality. Marketing material and sales pitches will need to be phrased in an understandable manner without the use of technical jargon.
- **Economic crisis.** Any economic crisis or downturn has a detrimental effect on the low-income sector. Subdued growth due to Covid-19 could further limit the affordability of the proposed product among the target group.
- **Internet connectivity.** The limited internet access in parts of the rural areas of the Philippines poses a challenge to the aim of digitalising large parts of the insurance process. This hurdle needs to be provided sufficient consideration during the planning of the pilot project.
- **Fluctuating prices.** Frequent adjustments to the pricing terms of the ECP could lead to frustration among the distribution partner and target group. Large price increases due to incurred losses or adjustments to the pricing methodology are difficult to substantiate and it is advised to preferably set the price on a higher level initially and then lower them following a successful launch.

## 7. Proposed Pilot Project Set-Up

### 7.1 Covid-19 impact and outlook

On March 17, 2020, President Rodrigo Duterte placed Luzon (including the capital Manila) under an Enhanced Community Quarantine (ECQ) in response to the impending threat of Covid-19 spread, by suspending the business activities in the country except for essential industries i.e. food, banking, deliveries. A week after the presidential declaration, the whole country was on complete lockdown. ECQ measures have paralysed the economy, intending to control the transmission of the virus.

The most affected sector was the daily wage earner, despite the government's Social Amelioration Program (SAP) channeling funds to the poorest of the poor. The amount provided via SAP is not sufficient to cover the livelihood expenses of the low-income sector. The Philippines had a 16.7% poverty rate in 2018 (approx. 17.7 million people), which includes low-income families whose per capita income is insufficient to meet the basic food and non-food needs. The employees of small businesses received cash grants under the Small Business Wage Subsidy (SBWS) programme, a joint programme of the Department of Finance (DoF), Social Security System (SSS) and Bureau of Internal Revenue (BIR). As a remittance partner of the SSS, the PO was given the task of distributing the cash grants. Beneficiaries were notified by SMS and picked up their cash allocations at the nearest PO branch. Consequently, the PO's pawnshops remain a crucial focal point for the financial needs of the Philippines' rural population, even during lockdown measures. The Philippines has slowly been easing quarantine restriction, which has helped the economy recover slightly but not yet to the level before the lockdown. Business has been slowly returning,

with safety protocols put in place in the absence of an available vaccine. The returning overseas foreign workers will be a potential problem for the growing unemployment in the country.

Products are being increasingly sold via digital platforms. For example, MAA has recently begun issuing insurance certificates electronically, digitalising the process of selling, documenting, and reporting on the coverages sold via pawnshops. The current process adjustment has already been implemented in 20% of the PO branches and is expected to be rolled out across all branches in the coming months. However, the challenge of intermittent internet connectivity hampers the flow of business, requiring manual processes to be maintained as back-up. Increasing the reliability of the internet coverage has been declared a priority for the government. Education and teaching will undergo substantial realignments due to the need for instructions to be provided without any physical contact or proximity. The spread of Covid-19 remains a threat for the country while the basic services are resuming their respective operations. Healthcare and food are increasingly seen as a priority expense for the low-income sector and the middle-class. This prioritisation of expenses could prove to be an obstacle for the scalability and interest in the proposed ECP.

The market outlook for the ECP looks slightly less optimistic in the coming 12 to 18 months unless a vaccine is made available in the country. However, the possibility of a severe typhoon occurring still poses a serious threat to the lives and financial stability of every Filipino family and will remain an important factor for the low-income sector. Furthermore, low-income families will continue to strongly rely on their local pawnshop to manage their financial needs, providing a continuously attractive distribution venue for the proposed ECP.

## **7.2 Pilot project details**

The objective of this feasibility study is to assess the possibility of launching a parametric typhoon insurance product in the Philippines. CP and MAA conclude that they see the opportunity to support the country's low-income sector in building financial resilience by providing them with a micro coverage triggered by a severe typhoon event in their vicinity. The rapid payout envisioned for the ECP enables the insured individual, farmer, or MSME owner to support their immediate livelihood needs, transportation expenses, or begin initial repair work following a devastating event.

The research and analysis conducted as part of this study attest that an ECP based on wind speed is technically feasible and can be expected to receive the backing of the international (re)insurance market. Furthermore, the report indicates that there is a genuine interest in the market for innovative insurance solutions and that a supportive regulatory environment can be expected for the introduction of a new micro-insurance product. However, while parametric insurance coverages have been utilised on a macro-level in the Philippines, the concept is almost entirely novel in the micro-insurance sector. Launching such a product would require considerable dedication towards providing comprehensible marketing material and training sales staff on the benefits and challenges of a parametric structure. Finally, while the conducted demand survey highlights the interest and possibility to test such a product within the Filipino market, the price sensitivity of the low-income population to different premium levels will still need to be established as part of the pilot project.

To test the ECP in the market, CP and MAA aim to launch a comprehensive pilot project in collaboration with the PO as the distribution partner. The anticipated timeline expects the preparation phase to be completed by the end of December 2020, which includes the product preparation, technological implementation, and training efforts. The marketing and sales period for the pilot project would take place between January 2021 and June 2021.

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# Annex – Survey Questions

## PARAMETRIC INSURANCE

Survey Form

**How did you find the presentation?**

- Very Interesting
- Interesting
- Not Interested

**What level of coverage would you suggest per availment?**

- 1,000 php
- 2,000 php
- 3,000 php
- Other:

**DO YOU THINK YOU CAN SELL THIS PRODUCT?**

If YES, how many? \_\_\_\_\_

If NO, why? \_\_\_\_\_

any suggestions? \_\_\_\_\_  
\_\_\_\_\_

**What medium of sale would you recommend? \***

- Mobile Apps
- Traditional Certificate

**What part of the product is appealing to you? \***

- Product Concept
- Method of Claim Settlement



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