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Disaster Risk Financing and Insurance in Southeast Asia: Trends, Challenges, and Strategic Approaches

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Trend Report

The ASEAN Secretariat
Jakarta

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Executive Summary

- Southeast Asia is one of the most disaster-prone regions in the world and has incurred substantial direct and indirect losses from disasters. Currently, ASEAN Member States are experiencing a disaster funding gap, as most disaster- related expenditure are insufficient for optimal rehabilitation and reconstruction. Recent estimates by UN ESCAP on disaster-related average annual losses suggest that there is a wider funding gap. Consequently, ASEAN member states have utilised Disaster Risk Financing and Insurance to enhance their financing capacities and transfer certain risks. This trend report presents a review of progress of disaster risk financing and insurance utilisation in each member state, identify challenges, and propose recommendations for further advancement and better utilisation.
- Currently, the level of conceptualisation and utilisation of disaster risk financing and insurance differs greatly between member states. Some member states have utilised pooling funds, cat bonds, and has widely used aquaculture and agriculture insurance, while others are currently in the phase of strengthening the foundations of disaster management. On the other hand, most AMS face similar challenges in low insurance utilisation, low social protection coverage, and natural capital protection. Therefore, current facilities such as the ASEAN Disaster Risk Finance and Insurance and the Southeast Asia Disaster Risk Insurance Facility should be leveraged for regional sharing, capacity building and convening to solve such challenges.
- This report has identified challenges that relate to disaster risk financing and insurance in ASEAN. First, the utilisation of disaster risk financing and insurance differs greatly among some member states. Second, some member states have not utilized agriculture and aquaculture disaster insurance. Third, some members states that have utilized agriculture and aquaculture disaster insurance are incurring high loss ratios, which threaten the schemes sustainability and scalability. Fourth, most AMS have low effective social protection coverage. Fifth, insurance penetration is low in most AMS, this condition is likely affected by the low income per-capita and financial literacy.
- This report outlines recommendations that aim to improve disaster risk financing and insurance utilisation in ASEAN as follows: (i) Existing initiatives (ASEAN Disaster Risk Finance and Insurance and the Southeast Asia Disaster Risk Insurance Facility) could be leveraged to encourage member states to adopt a risk layering approach and leverage more risk financing and insurance instruments, (ii)member states should leverage microinsurance to solve the problems relating to income per-capita and financial literacy, and increase insurance utilisation, (iii)to holistically solve issues relating to development metrics, AMS should focus on economic growth as a long-term solution and improving financial literacy building as a short-term solution, (iv)AMS that have leveraged agriculture and aquaculture insurance should ensure the sustainability of such schemes and (v) consider adopting global disaster risk financing and insurance best practices such as adaptive social protection, a solidarity fund, and natural capital protection initiatives.

TREND REPORT

Disaster Risk Financing and Insurance in Southeast Asia: Trends, Challenges, and Strategic Approaches

Resilience Development Initiative

1. Introduction

1.1 Background, Objectives, and Methodology

Over the past decade (2010-2020), more than 2,900 disasters occurred in Southeast Asia and some of them had substantial impacts such as the 2004 Indian Ocean Tsunami, the 2009 West Sumatra Earthquake, the 2008 Nargis Cyclone (the deadliest cyclone in ASEAN), the 2011 floods in Thailand, and many more (World Bank & GFDRR, 2012). Recently, 2018 saw significant number of casualties from Typhoon Damrey (late 2017), Palu and Lombok Earthquake (2018), Thailand Floods and Tropical Storm Son Tinh (2018), and forest fires in Indonesia and Myanmar (2018). Even now, ASEAN still faces implications of the COVID-19 pandemic which brought significant casualties and economic losses.

Economic losses incurred from disasters are one of the most highlighted aspects in ASEAN's disaster management. ASEAN countries have a flourishing economy with a GDP of USD3 trillion, but disasters may hinder this economic output in the future. In a 5-year period (2015-2020), the ASEAN region contributed 7.68% of global disaster mortalities and lost an estimated USD11.1 billion (AHA Centre, 2021). Moreover, the 2019 Asia Pacific Disaster Report noted that ASEAN Member States (AMS) are losing USD86.5 billion annually, with most (60%) incurred by agricultural drought (UN- ESCAP, 2019). Furthermore, COVID-19 has resulted in lost livelihoods, as an estimated 10.6 million lost their jobs in 2020 (ADB, 2022).

All the disaster losses have resulted in a disaster funding gap among AMS, as fiscal capacity may not be sufficient to finance build back better efforts. For example, Indonesia has stated that they have a disaster funding

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gap based on an annual on- call allocation of IDR4 trillion, and a historic average annual loss of IDR22,8 trillion (Ministry of Finance, 2018). In Viet Nam, government could only fund 21% of the estimated need for disaster-related reconstruction and recovery (World Bank, 2018b). Moreover, governments often focus more on the physical reconstruction needs and less on the effects of slow-onset climate change effects. A wider funding gap may be prevalent for slow-onset climate hazards, such as agricultural droughts and rising heat temperatures.

Disaster Risk Financing and Insurance (DRFI) is important for ASEAN Member States as the DRFI can support in ensuring financial resources and develop financial protection strategies that increase their ability to respond to disasters. Under the ASEAN+3 cooperation and in partnership with the World Bank, the Southeast Asia Disaster Risk Insurance Facility (SEADRIF) was developed which is a regional platform that provides regional capacity building, protection programmes, insurance pools, modelling tools. ASEAN also has the ASEAN Disaster Risk Financing and Insurance Phase 2 (ADRFI-2) will develop a risk data and assessment platform, set up of a networking advisory group, and conduct capacity building (ASEAN, 2019). Recently, in response to COVID-19, the ASEAN Comprehensive Recovery Framework (ACRF) was also initiated, which serves as the region's consolidated exit strategy from the COVID-19 crisis. The ACRF also has initiatives in disaster risk financing and insurance, mainly through initiatives of strengthe ning social protectionduring disasters, developing action plans to mitigate shocks and slow onset disasters, enhancing capacity of ex-ante disaster risk financing solutions, and designing innovative insurance and risk financing solutions.

Overall, the concept of DRFI has increasingly been adopted in the region. But how is DRFI currently progressing in each AMS? And what are the current challenges, constraints and opportunities? Understanding this will provide better insights on areas that need to be addressed to improve DRFI utilisation. Furthermore, what are the current global DRFI best practices that can be adopted by AMS, and how can current initiatives such as ADRFI-2 and SEADRIF be improved to be more robust? This trend report will aim to answer these questions and provide recommendations for the further development of DRFI in ASEAN.

This report is based on a desk study of peer-reviewed literature, grey literature, news articles, and data from the Emergency Events Database (EM-DAT). The grey literature comprised project reports from governments and non-governmental organizations (NGOs), newsletters, planning documents, and other pertinent non-scholarly publications, such as those issued by ASEAN. A qualitative approach was utilised, namely content analysis which defines the occurrence of specific words or written statements within the extracted text data from the selected publications.

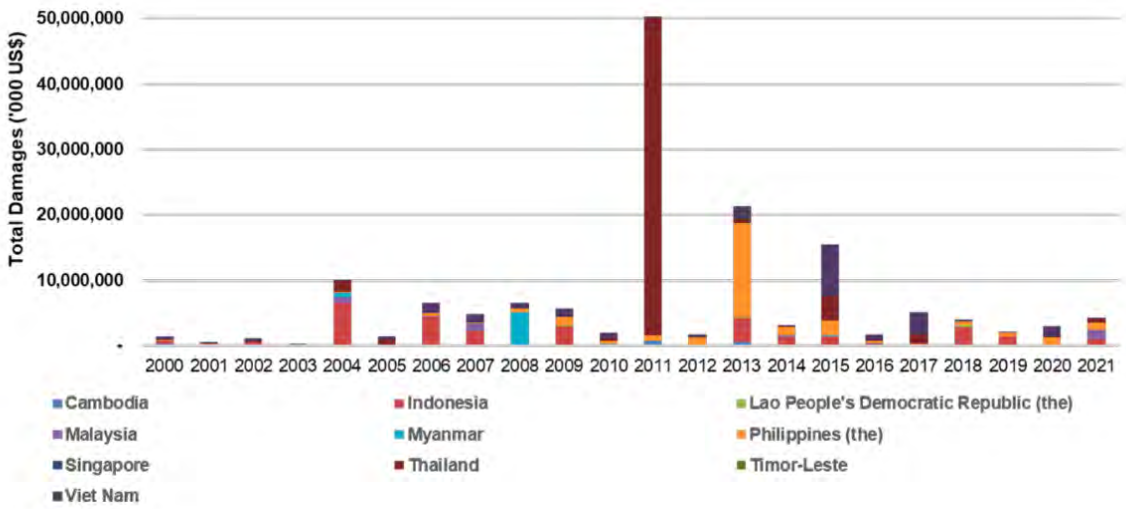
Section 1.
Economic Damages from Disasters in ASEAN

1.1 The Economic Impact of Past Disasters in ASEAN and Their Insured and Uninsured Losses

In the span of 20 years (2000-2021), the Southeast Asia region experienced various hydrometeorological and geological disasters. Some countries were considered disaster 'hot spots' (Thailand, Indonesia, and the Philippines) and were significantly financially affected (Figure 1). Thailand 2011 has the highest, mainly due to the 2011 floods. Damage in the Philippines during 2013 brought about by Typhoon Haiyan, the biggest in recent history, was also significant.

Figure 1. The Total of Disaster-related Damage among Southeast Asia Countries

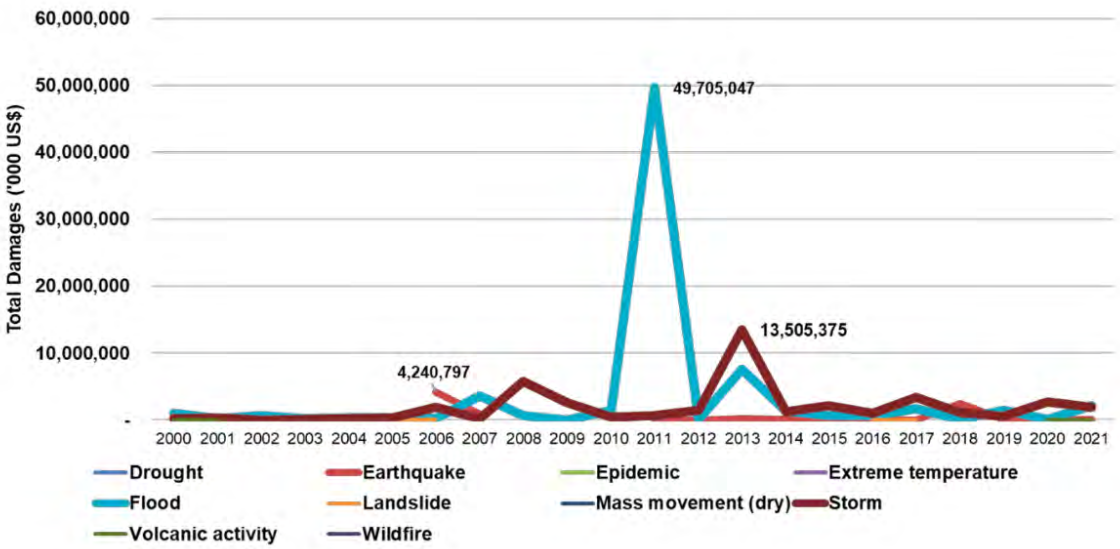
Source: EM-DAT(2022)



Total economic damages varied from around USD2 million to USD40+ billion dollars as seen in Figure 2. In detail, floods, storms, droughts, and earthquakes were the most economically impactful hazards in Southeast Asia. Due to these disasters, funds and state budgets were heavily utilised to support the projects. It also has to be noted, that these losses are mostly physical and direct losses, further examination of indirect or extensive losses may incur larger numbers.

Figure 2. Total Damages by Hazard Types in Southeast Asia

Source: EM-DAT(2022)



Thailand's 2011 Floods

In 2011, Thailand experienced massive floods caused by continuous heavy rains and tropical depression. A total of 66 provinces were affected with more than 13 million people affected, 680 deaths were noted, USD46.5 billion was lost, and GDP growth was also estimated to decrease by 1.1% in 2012 (World Bank, 2012). From the post-disaster assessment, the insurance claim for the 2011 Thai Floods was ranked the 9th costliest, with a USD10.8 billion insurance claim which is considered as a small amount compared to the total economic loss (IAJ, 2013).

The Philippines' 2013 Typhoon Haiyan

This typhoon is one the most powerful tropical cyclones to ever hit the Philippines. The disaster resulted in 6,300 fatalities, a further 1,062 were missing, and 28,688 injuries (Athawes, 2018). The typhoon also incurred USD12.9 billion in losses, the biggest disaster losses in The Philippines (World Bank, 2017c). However, the insured losses were estimated at USD300-700 million and only 5.4% of the total damage.

Indonesia's 2018 Earthquake and Tsunami in Central Sulawesi

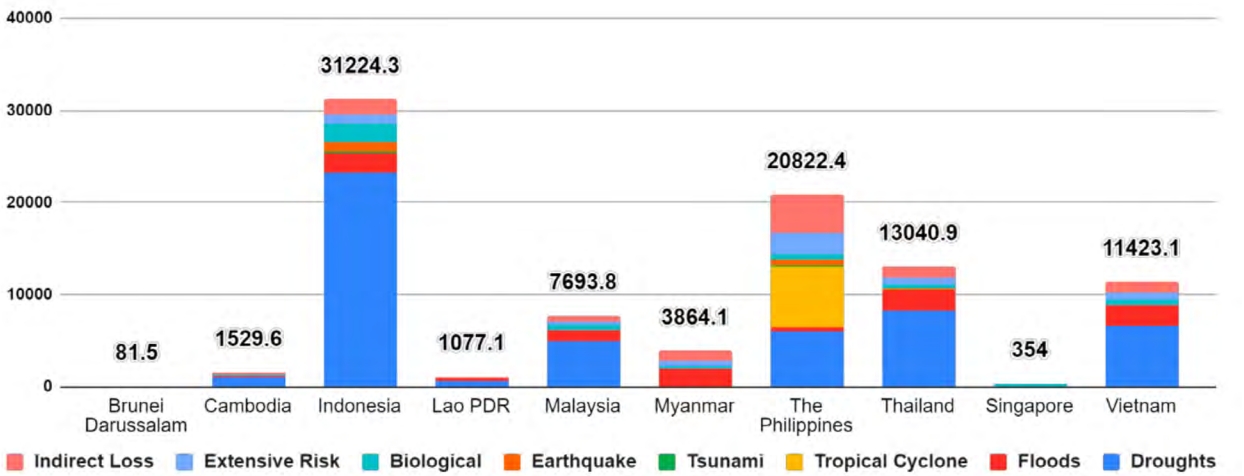
In September 2018, a powerful earthquake with a magnitude of 7,4 hit Donggala regency, Central Sulawesi, Indonesia. Shortly, a tsunami emerged, reaching at least 5-m-high (Safitri, 2018). It affected the regency and its surrounding cities, including the province's capital, Palu City. The total loss was calculated to be IDR13.82 trillion (USD911 million) (Nugroho, 2018), while the build back better framework efforts were estimated at IDR36 trillion (USD2.37 billion) (Nugroho, 2019). Moreover, the government was only able to rapidly disburse IDR4.5 trillion from the on-call fund (Farisa, 2018). During this disaster, only IDR1.4 trillion of losses were insured (Maipark, 2022), accounting for only 10.1% of the total losses.

1.2 Average Annual Losses of Disasters and The Disaster Funding Gap in ASEAN

Based on Figure 4, Indonesia incurs the largest AAL of USD31.2 billion, followed by the Philippines (USD20,8 billion), Viet Nam (USD11.4 billion), Thailand (USD13 billion), and Malaysia (USD7.6 billion). Most of the losses are a result of drought and floods, this is a concern as these five ASEAN Member States are also strong agricultural economies. This data suggests that AMS should not only prepare for shocks or rapid onset disasters—such as earthquakes, tsunamis, and others—but also protect themselves against slow-onset disasters such as drought and floods.

Figure 3. Average Annual Losses Incurred by Each Hazard among AMS

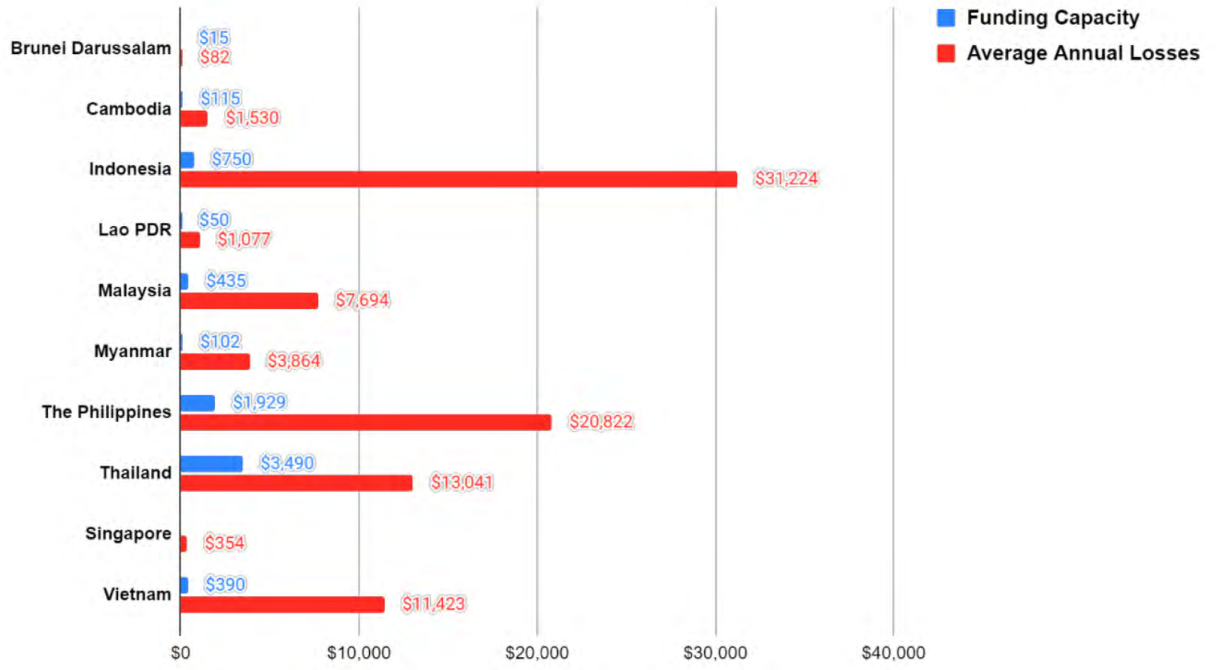
Source: UN-ESCAP, 2021



The disaster funding gap or shortfall is the main reason why AMS should utilise Disaster Risk Financing and Insurance (DRFI). The UN ESCAP's estimation of Average Annual Losses (AAL) calculated indirect impacts and extensive risks, the numbers suggest that losses are higher than previously estimated by each AMS. As seen in Figure 3, the recent funding capacity is not sufficient compared to the AAL, thus suggesting that "build back better" efforts are not optimal due to insufficient funding for indirect and extensive losses. Furthermore, such disasters have taken a substantial amount from the GDP of AMS, for example, AAL in Indonesia of USD31.2 billion is comparable to 3% of the country's GDP.

Figure 4. Disaster-related funding capacity and disaster-related average annual losses (in USD Millions) among AMS

Source: Abbot, 2018; Haris, 2022; Ministry of Finance, 2022; Open Development Cambodia, 2021; UN-ESCAP, 2021; World Bank, 2017a, 2017b, 2020a, 2020b)



Section 2.
Disaster Risk Financing and Insurance in ASEAN

This sub-section outlines how each AMS has utilized Disaster Risk Financing and Insurance (DRFI). First, the sub-section will briefly outline key developments in risk financing in each AMS. Second, the availability of disaster insurance products is identified, will includes agricultural, livestock aquacultural insurance, property insurance, as well as effective social protection coverage. Third, this sub-section outlines insurance utilisation constraints based on the development metrics of each AMS which will also be compared with insurance penetration in each AMS.

2.1 Progress of Disaster Risk Financing in ASEAN Member States

Several countries in ASEAN have made significant steps in improving their risk financing capabilities, particularly in the last decade. Other countries have also made significant steps in ensuring the building blocks for effective disaster management, particularly in governance and financing. This subsection briefly outlines key policies, strategic plans, programmes, and initiatives that each AMS has made in risk financing.

Brunei Darussalam currently has no existing plans for DRFI but has institutionalized its disaster management into its National Disaster Management Centre (NDMC), and other strategic plans that provide pathways for DRFI efforts. Brunei has unveiled the Strategic National Action Plan (SNAP) for Disaster Risk Reduction 2012-2025 and the National Standard Operating Procedures (NaSOP): these two documents prioritize investment in disaster preparedness, mitigation, and response in line with Brunei's commitments under the ASEAN Agreement on Disaster Management and Emergency Response (AADMER) and the Sendai Framework (CFE DM, 2022). Currently, Brunei Darussalam is developing a Disaster Management Strategic Policy Framework (DMSPF) (Ministry of Home Affairs, 2021), which will guide the development and implementation of disaster management policies emphasising an all-hazards and all- agency approach.

Cambodia has not unveiled any strategy or policy regarding DRFI. It already had plans for disaster risk preparedness and response under the responsibilities of the National Committee for Disaster Management. However, there are factors that hampered the implementation of these plans such as weak capacity, lack of resources, insufficient analytics, limited technical knowledge, limited budget allocation for disaster risk management, and limited role from the Ministry of Economy and Finance in disaster risk management (GFDRR, 2017). However, it has strengthened its disaster management in recent years, through the Strategic National Action Plan for DRR (2019-2023), the Cambodia Climate Change Strategic Plan (2014-2023), and strengthening its disaster management coordination with ADB (ADB, 2019; UNDRR, 2019).

Indonesia through its Ministry of Finance unveiled a disaster risk financing and insurance strategy called Strategi Pembiayaan dan Asuransi Risiko Bencana (PARB). This strategy utilises a risk-layering approach which has led to the development of Indonesia's Disaster Pooling Fund, State-Owned Assets Insurance with Maipark Reinsurance, a secured contingency loan of USD500 million from the World Bank, and government subsidised insurance schemes for crop, livestock, and fisheries. The pooling

fund has been established and IDR3 trillion is currently managed by the Indonesian Environment Fund (Badan Pengelola Dana Lingkungan Hidup) where the funding returns will be used for disaster management. Moreover, the state-owned assets insurance has proven to be a success, as the scheme managed to claim IDR50 billion from the January 2020 Jakarta floods (Sidik, 2020). Indonesia also has plans to operationalize Adaptive Social Protection (ASP) which has first been established as a roadmap and aimed to be the integration between social protection, climate change adaptation, and disaster risk reduction.

Lao PDR restructured its disaster management institution throughout 2011-2013 when the National Disaster Prevention and Control Committee (NDPCC) replaced the National Disaster Management Office (NDMO). During 2013-2015 the Lao PDR government established two funds to improve disaster risk financing (GFDRR, 2020). The State Reserve Fund (2013) which includes 3% of the annual budget expenditure, and the Social Welfare fund (2015) to cover disaster emergency relief. Most of the disaster financing has been sourced from the state budget as well as the partnership with the World Bank and SEADRIF.

Malaysia formed its National Disaster Management Agency in 2015 under the authority of the Prime Minister. This institution is the lead agency for disaster management and manages the National Disaster Relief Fund called Kumpulan Wang Amanah Bantuan Bencana Negara (KWABBN). KWABBN was set up in 2016 to aid disaster victims and fund disaster management activities. Malaysia's NDMA is currently developing the eSumbang system, which will be utilised to assist financial coordination between donors and NGOs for disaster victims (Chan, 2021).

The **Myanmar** government has developed the Action Plan on Disaster Risk Reduction (2017) and Climate Change Strategy (2018-2030), alongside other initiatives such as the Myanmar Disaster Loss and Damage Database and the Myanmar Unified platform for Disaster Risk Application (an information platform for disaster informed planning) (Tun, 2020; UNDRR, 2020). Moreover, the government partnered with ADB and Munich Climate Insurance Initiatives (MCII) to develop a risk-layering strategy for Myanmar called Myanmar Disaster Risk Financing (MYDRIF) from 2018 until now (MCII, 2020), the output of this strategy is still being developed.

The Philippines government has made concrete steps to improve disaster risk financing. In 2017, it issued a parametric catastrophe risk insurance policy for national government agencies (World Bank, 2018a). This program has been effective wherein two years from its establishment, it already made pay outs for roughly USD28 million within the contractually agreed time. In 2019, the International Bank for Reconstruction and Development (IBRD) under The World Bank provided the Philippines with financial protection of up to USD75 million and USD150 million for earthquakes and tropical cyclones losses by issuing catastrophe-linked bonds (CAT bonds). This CAT bond collects the proceeds from investors, allowing the Bank to transfer insurance premiums to the investor (World Bank, 2019). Currently, the government is in the final stages of developing the National Indemnity Insurance programme, which aims to transfer the risk of critical public assets to international insurance markets.

Singapore is not at significant risk of major catastrophes, such as tsunamis, earthquakes, or volcanic eruptions, since it is located in a low seismic-hazard region. However, it is prone to the effects of climate change—mainly floods that have historically occurred in Singapore. To mitigate the impact of potential disasters, the Monetary Authority of Singapore (MAS) prepares industries by issuing guidelines on business continuity management and supervising based on these guidelines (OECD, 2015). Singapore currently provides DRFI related services to Asia, through the Natural Catastrophe Data Analytics Exchange (for data exchange), the Global-Asia Insurance Partnership (for knowledge and policy development), and assisting SEADRIF.

In **Thailand**, the government issued the National Strategy for Security, Prosperity and Sustainability, and Water Resource Management Master Plan for 2018-2037. This policy instrument covers a framework to guide public investment to finance floods mitigation, building smart farming, and develop an agricultural insurance system. The extent to which the framework is interpreted into concrete action is subject to further review. To further support disaster resiliency through financing, Thailand government also renewed the 2022 insurance programme for main crops, i.e., rice and corn covering 28.5 million rai for rice and 2.1 million rai for corn commodity (Iemsam-arng, 2022).

The Government of **Viet Nam** has made some progress in strengthening disaster financing. In 2005, the World Bank approved USD86 million for the initial financing of the National Disaster Risk Management programme which was expanded in 2010 with an additional USD75 million (GFDRR, 2015). Viet Nam also established a Natural Disaster Prevention and Control Fund (NDPCF) as an off-budget state financial fund used for relieving and supporting natural disaster response activities beyond the existing capacity (CFE DM, 2021). Viet Nam also updated its National Strategy for Natural Disaster Prevention and Control through 2030, which focuses on DRR and damage reduction.

2.2. Progress of Disaster Insurance and Social Protection Utilization in ASEAN Member States

Currently, most AMS have adopted disaster insurance schemes. However, there are some countries that have not implemented them, excluding Singapore (due to not having any agricultural produce). Brunei Darussalam, Malaysia and Lao PDR currently do not have any widely available agricultural insurance, posing a threat to each country's food security and livelihoods dependent on agriculture. On the other hand, Myanmar, Thailand, and Malaysia are economies with substantial fish production, ranking second, third, and fifth in terms of production volume in ASEAN (SEAFDEC, 2019). However, these countries have no widely available aquaculture insurance. Slow onset climate change effects such as rising sea temperatures threaten to lower fish production and disrupt the livelihoods of aquaculture farmers. Thus, protecting them through insurance is crucial.

Table 1. Availability of Disaster Insurance and Effective Social Protection Coverage among ASEAN Member States

ASEAN Member States	Crop/ Vegetation Insurance	Livestock Insurance	Aqua-culture Insurance	Plantation/ Forestry Insurance	Property Insurance	Social Protection (Effective Coverage)
Brunei Darussalam	No	No	No	No	Available	34.1%
Cambodia	Available	No	Pilot / Planning / Preparation	Available	Available	6.2%
Indonesia	Available	Available	Available	No	Available	27.8%
Lao PDR	No	No	No	No	Available	12.1%
Malaysia	No	No	No	Available	Available	27.3%
Myanmar	Available	No	No	No	Available	6.3%
Thailand	Available	Available	No	No	Available	68.0%
The Philippines	Available	Available	Available	Available	Available	36.7%
Singapore	No	No	No	No	Available	100%
Viet Nam	Available	Available	Available	Available	Available	38.8%

Source: Chantanusornsiri & Paweewun(2018); Eurocham Myanmar(2020); GIZ (2021a); ILO (2022); Khmer Times(2022); Khoi et al.(2017); Ministry of Finance (2018); Olano (2019); PCIP(2022); Phanet (2022); Takaful Brunei (2017)

AMS with existing disaster insurance products also face their own challenges of financial sustainability. Some countries have reported that disaster insurance schemes have incurred high loss ratios. Indonesia for example has crop insurance with loss ratios exceeding 75%, livestock insurance exceeding 100%, as well as aquaculture insurance subsidies which are temporarily discontinued due to loss ratio and COVID-19 budget re-allocations (Ministry of Agriculture, 2022; Ministry of Marine Affairs and Fisheries, 2022). The Philippines also faces a similar problem, particularly in crop insurance, the PCIC noted a loss ratio of 97% in 2019 (Department of Finance, 2021). Viet Nam also previously had difficulties with their aquaculture insurance pilot, with a 306% loss ratio (Nguyen & Pongthanapanich, 2016). This is mainly due to issues such as adverse selection (selection bias towards high-risk participants), and low awareness from low-risk participants to purchase such insurance products.

Most AMS have poor social protection coverage with only Thailand and Singapore covering more than half of their populations with at

least one social protection scheme (excluding health). There are higher concerns for Myanmar and Cambodia as social protection coverage in these two countries was lower than 7%. Social protection provides various schemes that protect against death, personal accidents, and livelihood losses (or unemployment) that may be caused by disasters. Protecting the population, especially those that are vulnerable (poor, women, disabled, etc.) is a must in a region prone to disasters.

Table 2. Insurance Penetration and Related Development Metrics among ASEAN Member States

ASEAN Member States	Insurance Penetration (%)	GDP Per-Capita 2021 (US$)	Inclusion (% of age 15+ that owns a financial account)	% of age 15+ using digital financial transaction
Brunei Darussalam	2.26% (2020)	USD31,722.7	No data	No data
Cambodia	1.1% (2021)	USD1,591	33%	15%
Indonesia	3.52% (2021)	USD4,291.8	52%	23%
Lao PDR	0.33% (2017)	USD2,551.3	37%	33%
Malaysia	5% (2022)	USD11,371.1	88%	52%
Myanmar	0.24% (2018)	USD1,187.2	48%	48%
Thailand	5.5% (2022)	USD7,233.4	96%	70%
The Philippines	2.03% (2020)	USD3,548.8	51%	39%
Singapore	9.9% (2021)	USD72,794	98%	69%
Viet Nam	2.4% (2018)	USD3,694	No data	No data

Source: Diep(2019); Global Data (2021); Insurance Asia (2022); Mathew (2022); Monetary Authority of Singapore (2022); Nitta & Htway (2019); OECD (2022); OJK (2021); Philippines Government (2022); World Bank (2020c, 2022)

Insurance utilisation should also be examined, as one of the DRFI concept's advantages is that it utilizes private capital to protect from disasters. Currently, insurance penetration among AMS is below 10%, with certain AMS having lower insurance penetration. This has been noted to have correlations with development metrics of income per capita and financial literacy (Lee et al., 2018). As income directly relates to the ability to purchase insurance, while literacy relates to the awareness and the prevention of asymmetric information issues.

Most ASEAN countries (except Brunei Darussalam, Singapore, Malaysia, and Thailand) have low GDP per capita. A general rule in the effects of GDP per capita and insurance penetration is that it will grow in a country with a USD3,000–5,000 GDP per capita (Enz, 2000). This would mean that a GDP per capita above USD7,000 would be needed to incur insurance penetration above 5%. However, Brunei Darussalam has a USD31,722 but only 2.26% insurance penetration.

Financial literacy among AMS is low, as seen in Table 2, with only Singapore, Thailand and Malaysia having a higher financial account usage and digital finance utilisation, while other countries are substantially lower. Moreover, Insurance literacy is always lower than financial literacy. Such literacy problems can cause trust issues, limited willingness to pay, and asymmetric information - all of which cause low insurance demand (Surminski et al., 2019).

Section 3.
Potential Uptake of DRFI Initiatives by and for ASEAN based on Best Practices and Emerging Risks

There are several initiatives and global practices in DRFI that ASEAN could utilise, both collectively as a region or individually (by each AMS). Moreover, there are several good practices amongst AMS that could be replicated as they face similar risks and have similar development profiles. Furthermore, the emerging risk that has been less noticed could also be addressed by AMS. Best practices and initiatives that AMS can adopt and utilise are outlined below:

3.1 Adaptive Social Protection

Indonesia is in the final phases of its Adaptive Social Protection Roadmap (ASP Roadmap) formulation, which is the first ASP Roadmap ever formulated globally. The ASP itself will be a combination of social protection, disaster risk reduction and climate change adaptation. The ASP will be an integral part of the Indonesian Government's social protection reform, as mandated in the National Mid-Term Plan for 2020-2024.

ASP will be a comprehensive approach that helps individuals, households, and communities at risk of covariate shocks. Here, ASP makes an important contribution to strengthening the resilience of people at-risk systemically, through social insurance, social reliefs, and other social programmes that are robust to climate and disaster risks. In the long run, ASP will contribute to overall well-being by empowering individuals, households, and communities to maintain and improve their quality of life (in the event of no disasters) and provide a more robust system for building back better activities (in the event of a disaster).

3.2 Solidarity Fund

The EU Solidarity Fund is a regional solidarity fund that was built for financing disaster management which was established in 2002, as a reaction to severe floods in Central Europe, and has since been used to fund more than 100 disaster response, rehabilitation, and reconstruction efforts. The funds can be requested by affected states, the commission evaluates the request, then the European council approves the request, and funds are disbursed to be used by the requesting state. ASEAN could create and utilise the same type of fund for disaster response and post-disaster efforts.

3.3 Natural Capital Protection

Natural capital protection is becoming an increasingly important issue, due to the on-going effects of climate change. As stated in previous sections, AMS are collectively losing close to USD100 billion of GDP annually from disaster related AAL. Slow onset hazards such as rising sea temperatures, floods, and droughts pose a risk to ASEAN's marine and agricultural economy. On the other hand, ASEAN is also home to a third of the world's mangrove area, half of tropical peatlands, and the one third of the world's coral reefs (Bertomeu & Prag, 2022; GIZ, 2021b; Global Mangrove Alliance, 2022). All of which are at risk from slow-onset hazards. Consequently, the protection of ASEAN's natural capital is not only a regional priority but also a global one.

ASEAN can explore, work with, or adopt the model brought by the Restoration Insurance Service Company (RISCO), which is a social enterprise working on mangrove restoration. It is currently planning a pilot in the Philippines, with plans to also pilot in Indonesia and Malaysia (Mazza, 2019). Through SEADRIF, ASEAN could also establish a similar enterprise which focuses on corals or peatlands.

Section 4.
Conclusion and Recommendations

Throughout this report, key challenges are identified. First, DRFI utilisation has differed among AMS, with some countries adopting risk layering approaches and DRFI instruments while others are still refining the foundations of their disaster management. However, this posed challenges for collaborative learning among AMS. Second, some AMS have not utilised disaster insurance, particularly for primary sector protection (agriculture and aquaculture). Third, countries that have utilised agriculture and aquaculture insurance have incurred high loss ratios, which threaten the sustainability and scalability of said insurance products. Fourth, effective social protection coverage in most AMS are below 40%, particularly below 10% in certain member states. Social protection works as a social safety net in emergency phases, and as assistance in post disaster recovery phases. Fifth, insurance penetration in most AMS is low, which are likely due to low income per-capita and financial literacy.

However, such challenges can be solved through existing regional DRFI facilities such as ADRFI and SEADRIF. ASEAN Member States can explore formulating plans and enact certain policies, or learn from each other. They could also leverage SEADRIF to establish entities or enterprises that can enhance disaster funding capacity and natural capital protection. A further explanation on such recommendations, are outlined below.

1. Encourage Member States to Leverage Risk Layering and Existing DRFI Instruments Through ADRFI and SEADRIF Initiatives

Different AMS has achieved different levels of DRFI utilisation, some have been more advanced and vice versa. AMS such as Cambodia, Brunei Darussalam and Malaysia are still refining their disaster management system. Lao PDR and Myanmar have gotten into the early stages of DRFI utilisation. Indonesia, Thailand, the Philippines and Viet Nam have achieved higher DRFI utilisation. However, this situation can be leveraged for AMS to learn from each other, especially member states that have utilised a risk-layering approach.

Learning among AMS can be done through ADRFI and SEADRIF, as both provide capacity building initiatives. Such learning can focus on integrating the risk-layering approach to AMS disaster management frameworks and utilise various instruments such as the disaster pooling fund (Indonesia), cat-bonds (the Philippines), index- insurance (Thailand), contingency loans (Indonesia) and reserve funds (various AMS) and others. Consequently, AMS can all advance towards higher utilisation of DRFI.

2. Promote Microinsurance Schemes to Improve Insurance Utilisation

One way to solve the problem of low income per capita among AMS and the corresponding problem of insurance affordability is to leverage micro-insurance. Microinsurance schemes are more affordable and suited for low GDP per

capita ASEAN Member States. Microinsurance also solves literacy, trust, fraud, and asymmetric information issues due to their design which is affordable, simple, and easy. Microinsurance premiums are usually paid once per annum or even once a lifetime. Moreover, policies or contracts are designed to be as simple as possible with simple parametric requirements. Thus, pay-outs are usually given directly with less scrutiny. Indonesia and the Philippines are at the forefront of microinsurance and disaster microinsurance development. Benchmarking these two AMS could provide further insight into microinsurance development. Such benchmarking and capacity building for the utilisation of micro-insurance can be done through ADRFI and SEADRIF.

3. Promote Economic Growth as A Long-Term Solution and Financial Literacy Building as A Short-Term Solution

There is no short way to solve barriers related to income per capita amidst various risk drivers in ASEAN, thus long-term efforts should focus on quality and resilient economic growth. Long-term efforts should ensure that the vulnerable groups can have better income so that they are able to afford to purchase insurance or other risk transfer means. Alongside long-term efforts, AMS can leverage technology to improve insurance awareness and literacy, which is much more feasible in the short term. Financial technology is currently developing rapidly in ASEAN (Fernandez & Rakotomalala, 2021) - this means more people are connected to the internet and consuming information on a daily basis. It is also easier than ever to share information related to insurance education. Besides literacy, technology has improved insurance inclusion as seen from the development of InsurTech in each AMS.

4. Ensure Sustainability of Existing Disaster Insurance Schemes

In this trend report, government-subsidised insurance schemes in Indonesia and Viet Nam were found to be financially unsustainable. To solve this, the basic insurance principle of "The Law of Large Numbers" needs to be fulfilled. In this case where, the insurance scheme needs to widen the participation to low-risk participants, ensuring enough number of homogenous low-risk participants to incur lower loss ratios. However, efforts in this area should be done alongside those to improve disaster insurance awareness. Additionally, efforts that focus on improving data collection, asset monitoring, claim procedures, and other improvements to reduce moral hazards should also be done. Capacity building on ensuring the sustainability of existing disaster insurance schemes can be done through the ADRFI and SEADRIF initiatives.

5. Consider Adopting Global DRFI Best Practices Such as ASP, The Solidarity Fund, and Natural Capital Protection

In the previous section, the report has outlined that ASP, the solidarity fund, and natural capital protection initiatives could be adopted by ASEAN. Detailed discussions on how each of such adoption could be done is outlined here. Such adoption processes could leverage the existing ADRFI and SEADRIF platforms.

Knowledge sharing for ASP development can be done through ADRFI and SEADRIF initiatives, as both provide programmes for capacity building. Such capacity building can push AMS to adopt their own ASP roadmap and reform their existing social protection frameworks. This initiative should also ensure that social protection coverage is increased, particularly in Cambodia, Myanmar and Lao PDR.

The solidarity fund could be adopted and operationalized through the SEADRIF initiative. SEADRIF has established SEADRIF Co. as an insurer, and if need be, could also establish a "SEADRIF fund" manager for the solidarity fund. Current SEADRIF members could pool funds which will then be managed and reinvested to grow the fund. If a disaster occurs, the returns from the fund could be used to aid response, rehabilitation, and reconstruction efforts under co-designed review and approval mechanisms. Natural capital protection can also be done through the SEADRIF initiative, as SEADRIF can connect with global insurers and reinsurers to formulate schemes to insure certain highly important natural capital (such as peatlands, coral reefs, etc.).

The payment for the insurance premiums can be paid via the previously mentioned solidarity fund. SEADRIF could also establish enterprises that work on natural capital restoration, by leveraging carbon markets. Natural capital protection can also be done via strengthening regulations, ADRFI or SEADRIF are both initiatives that can convene member states to deliver stronger regulations on natural capital protection (as well as rehabilitation, if already damaged).

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