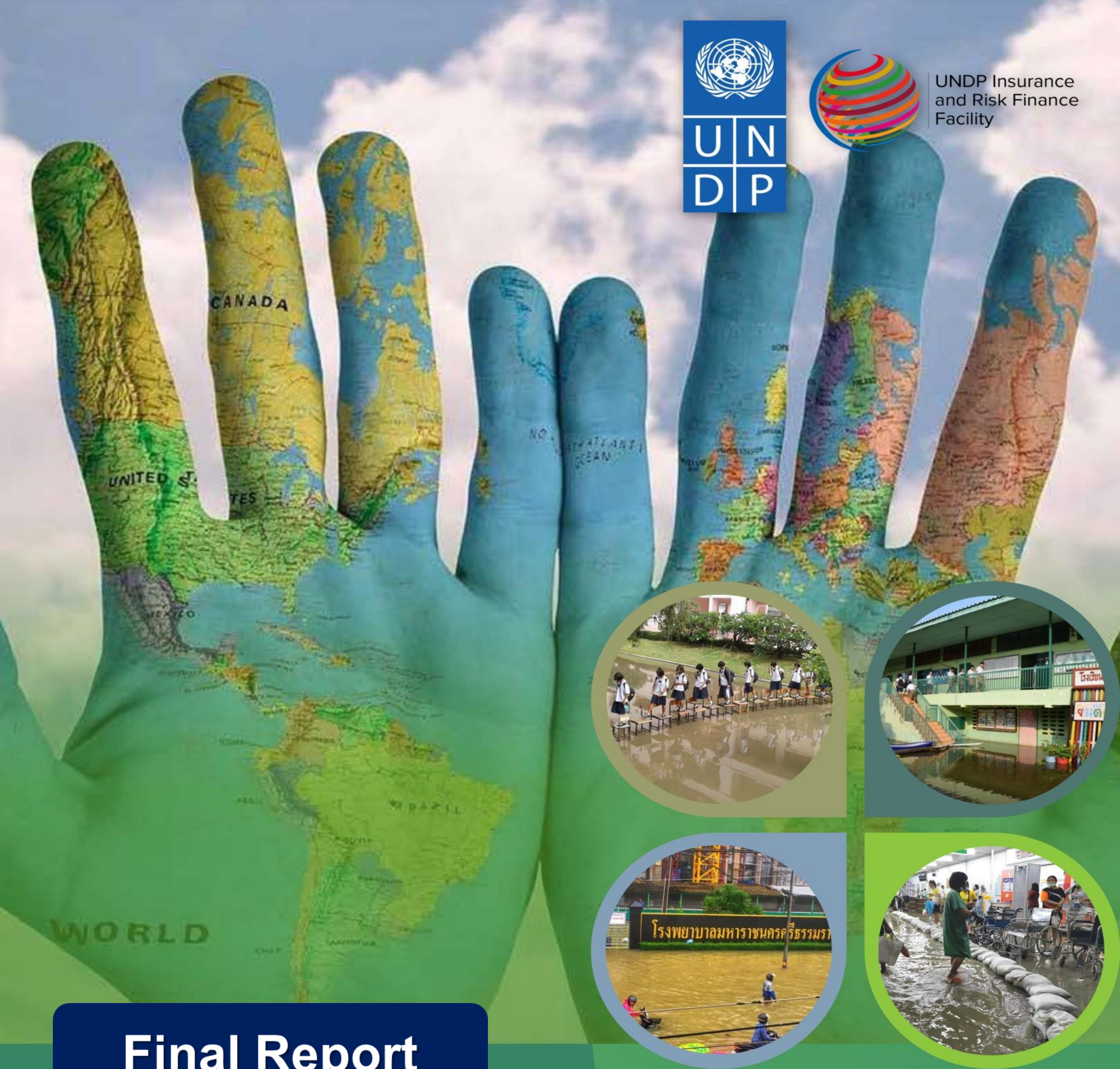

UNDP Insurance and Risk Finance Facility

Final Report

Conducting a Country Diagnostic on Inclusive Insurance and Risk Finance for Thailand

April 2022
Fiscal Policy Research Institute

มูลนิธิสถาบันวิจัยนโยบายเศรษฐกิจการคลัง
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Table of Contents

Executive Summary

This country diagnostic sets the groundwork for UNDP's growing work in inclusive insurance and risk finance in Thailand and aims to summarize the gaps and opportunities for collaboration with key stakeholders. Its scope includes a review of the underlying risks and hazards that impact the country's development, the market conditions and enabling legal and institutional environment for inclusive insurance and risk finance, and the extent to which insurance is integrated into national development frameworks.

Most of Thailand's climate-related disasters have been caused by floods, storms and droughts. From 1989 to 2018, floods caused up to THB161 billion (USD 5.1 billion) in economic damages, the 2011 massive floods caused THB 23 billion (USD 0.7 billion) in damages, affecting 26 provinces and 13 million people. Droughts occur almost every year, affecting more than 10 million people, resulting in average economic damages of THB 0.6 billion (USD 20 million) annually with economic losses of up to 0.1% of GDP. In addition, the country incurs an average of THB 0.2 billion (USD 6 million) annually for damages from storms.

The impacts of climate-related disasters in Thailand are exacerbated by biological hazards and socio-demographic shifts. The COVID-19 pandemic had a worse effect on the economy than the 1997 Asian financial crisis, causing the economy to shrink by 6.2% in 2020. Pandemic restrictions severely affected the tourism sector which accounts for a fifth of the GDP and 20 percent of employment. More than 200,000 people fell into poverty and the poverty rate would have risen to more than 7 percent without the government's large-scale cash transfer programs to support the vulnerable groups.

The inclusive insurance market is still underdeveloped. A comprehensive regulatory framework setting out clear definitions, product features, or distribution requirements has not been developed. The insurance regulator has supported and enabled the insurance industry to offer microinsurance products with low premiums (anywhere from THB 7 to THB 200) and limited coverage. These microinsurance products, have mostly been sold on a seasonal basis, mainly to coincide with the New Year or Song Kran seasons when the occurrence of accidents and perilous incidents are high. Offering other needed products such as health microinsurance poses a low incentive for the insurance industry because existing government social protection schemes provide citizens with their health benefits they need. However, the financial protection needs of informal workers , ageing citizens and micro, small and medium enterprises are not met.

The Royal Thai Government has established the legal and policy foundations for national resilience-building. The Disaster Prevention and Mitigation Act enacted in 2007 is the legal framework for disaster risk management and response. This is supported by the National Disaster Prevention and Mitigation Plan (2015-2020) and by provincial and district disaster risk management plans.

A comprehensive national disaster risk financing strategy has not been developed to support the different phases of disaster risk managemen**t.** Funding mechanisms currently in place allow for immediate response and longer-term rehabilitation and recovery. Financing for ex-ante preparations heavily relies on local and central government budgets and has not been institutionalized. A contingency fund that provides government agencies and local government with advances for immediate disaster relief and emergency assistance has been set up and comprises between 2 – 3.5 percent of the total annual budget. The use of the fund to respond to climate-related disasters has been decreasing since 2003 as government agencies tend to resort to accessing the central budget. As a response to the COVID pandemic, the contingency fund was used only to prevent and mitigate the spread of disease in local communities, support diagnostic testing and building temporary isolation facilities, but bigger expenses required for vaccine procurement were sourced through a government loan. The views on the sufficiency of these funding mechanisms vary and require further inquiry, including as they relate to the need for a dedicated disaster fund.

Opportunities to integrate risk transfer instruments such as insurance into ex-ante financing requires further exploration. The scalability of the national crop insurance scheme as part of the government disaster relief program on agriculture is still unclear. While the mandate on public asset insurance emphasizes self-insurance by government agencies and the compliance and lessons from doing so are not systematically documented.

Key stakeholders, through the facilitation of UNDP, may want to consider the following recommendations:

- Develop a regulatory policy that would support inclusive insurance (microinsurance) market development as part of the broader goal of financial inclusion
- Convene collaborative platforms among government agencies and insurance industry to acknowledge the financial risk protection needs of the underserved and agree on concrete action plans for raising awareness and developing needs-based inclusive insurance products
- Leverage existing government schemes and institutional arrangements within social protection programs for outreach on insurance literacy as part of financial literacy education initiatives
- Support the capacity-building of insurance providers and distribution channels to facilitate tailored product development and delivery
- Facilitate the use of credit-linked insurance in MSMEs more widely to improve business resilience
- Expand crop insurance to cover more variety of agricultural products
- Create tailor-made insurance products for women to improve women's access to appropriate insurance services
- Develop a national disaster risk financing strategy to formalize planning, financing, and monitoring of priorities based on a risk layering approach
- Provide advice to develop appropriate financial mechanisms to ensure sustainability of a disaster fund.
- Develop recommendations on processes to improve the coordination between national and subnational governmental agencies on risk financing.
- Complete a feasibility study to scale up public asset insurance with greater participation by the private sector and by improving data systems

- Develop recommendations on preventive measures and ex-ante financing to manage the disasters risks better
- Align inclusive insuranceandriskfinance promotion initiatives with medium-and long-term plan of Thailand

I. Introduction

In 2015, 193 United Nations Members States pledged to ensure that "no one will be left behind" and that "by 2030 all people will enjoy peace and prosperity" through the Sustainable Development Goals (SDGs). To achieve such noble goals, a large sum of financial resources and diverse sets of skills are needed to transform individual countries by 2030. Over the past five years, the collaboration between the insurance sector and the development sector has grown significantly with key initiatives such as Insurance Development Forum (IDF) and InsuResilience Global Partnership.

The financial impact of economic crises, disasters and health problems can derail the progress of the SDGs. After the 1997 financial crisis, Thailand had not experienced any major economic crisis until the COVID-19 pandemic hit in 2020, leading to a sharp economic contraction of 6.2%. The permanent closure of businesses and subsequent lay-offs turned unemployed persons into the informal sector, with less access to insurance protection. Aside from economic crises, a disaster has profound economic and social impacts on a country. Despite challenges from severe climate changes, Thailand is listed as moderate disaster-risk country[1] where she still occasionally suffers from droughts and floods as seen in the great flood in 2011 and is prone to more volatile and more severe disasters.

Inclusive insurance and risk finance have tremendous potential to help build Thailand's resilience against a rising number of castastrophses and disasters while promoting the advancement of the country's development agenda and the SDGs. Inclusive insurance provides access to and use of appropriate and affordable insurance products for the underserved (e.g., the poor and the vulnerable community groups, farmers and micro, small and medium enterprises (MSMEs)). Inclusive insurance can cover a wide range of products including; health insurance, personal accident insurance, simple asset insurance, life insurance, and credit-linked insurance.

Risk finance centers on disaster risks and how the government addresses its financial needs for disaster risk management. Disaster risks can stem from various sources, for instance, climate change, geophysical activities, and epidemics. Risk finance can evolve at all stages of a disaster , from preventive measures to recovery programs. A risk layering strategy helps to set a framework to analyse the government's requirements for risk finance to cover various types of risk, based on frequency and severity, and to clarify the purposes for the purposes for the financingwhether, for example, it would be for emergency relief or forlonger-term reconstruction.

[1] 2019 Inform Risk Index from Climate Risk Country Profile: Thailand (2021): The World Bank Group and the Asian Development Bank

II. Underlying Risk and Development Information

A. Hazard Profile

Thailand is situated in the heart of Southeast Asia with four distinctive regions. Thailand, with an area of 513,115 square kilometers, is characterized by four geographical regions – Central Thailand, Northern Thailand, Northeastern Thailand and Southern Thailand.[2] The Northern part is mountainous and forested while the Northeast region is situated on a plateau (Korat Plateau). The Central part including Bangkok is in the basin of the Chao Phraya River, the most fertile area of the country. The Southern part is a peninsula connecting the Indian Ocean in the west and the Pacific Ocean in the east and it has the highest rainfall in the country. The coastline of Thailand totals 3,565 kilometers – 2,700 kilometers in the east along the Gulf of Thailand of the Pacific Ocean and 865 kilometers in the west in the Andaman Sea of the Indian Ocean.[3]

Thailand's tropical climate is characterized by two seasonal monsoons, causing a rainy season and a cold season[4] The southwest monsoon brings warm and moist air across the Indian Ocean, and a rainy season from May, while the northeast monsoon carries dry and cold air from China to the Northern and Eastern regions and rain along the southeastern coast from October. Thailand is situated on 14 active fault lines.[5] The major climate-related disasters in Thailand include flooding, droughts, and storms.[6]

The risk of climate change must be closely monitored. Thailand has high risk of flooding due to a complex river system in the country, especially in the central region. Flooding has the greatest economic and human impacts as Thailand is one of the top 10 most flood-affected countries in the world.[7] Storms are another major disaster, stemming from the Northern storms taking place from April to October and the Southern ones between March to November. Landslides can follow after heavy precipitation in the hilly areas in the Northern and Southern parts..

Drought has become one of the major disasters due to the El Niño effect.[8] Thailand has two possible periods of dry spells: from June to September due to the occasional delayed rainy season and from October to May because of possible low precipitation. During the dry season, forest fires can occur in the Northern region. Lastly, Thailand's Northern part is a high-risk zone for earthquake due to active fault lines in the region.

Aside from climate-related disasters, the risk of diseases has become more noticeable and COVID-19 is not the only threat. Thailand, like the rest of the world, has been trying to

[2] Rerngnirunsathit, Phasita (2012). Thailand Country Profile 2011. Department of Disaster Prevention and Mitigation, Ministry of Interior.
[3] Ibid.
[4] Climate Risk Country Profile: Thailand (2021): The World Bank Group and the Asian Development Bank.
[5] UNDRR (2020). Disaster Risk Reduction in Thailand: Status Report 2020. Bangkok, Thailand, United Nations Office for Disaster Risk Reduction (UNDRR), Regional Office for Asia and the Pacific
[6] Climate Risk Country Profile: Thailand (2021): The World Bank Group and the Asian Development Bank.
[7] 2019 Inform Risk Index from Climate Risk Country Profile: Thailand (2021): The World Bank Group and the Asian Development Bank.
[8] Climate Risk Country Profile: Thailand (2021): The World Bank Group and the Asian Development Bank.

cope with the impact of biological hazards, specifically, COVID-19. In addition to COVID-19, Thailand must be aware of vector-borne diseases (e.g. MERS, Zika), re-emerging communicable disease (Tuberculosis) and Malaria at the border areas.

Climate change and an aging society in Thailand will influence the hazard profile in the future. The sea level and temperature in Thailand has risen faster than the global average has. This could magnify the risk of climate change-induced floods, droughts, and storms in Thailand. World Bank data shows that the urban land area of Thailand where elevation is below 5 meters (from sea level) was 0.84 % of the total land area in 2010 (compared to the world average of 0.89%), while the urban population of Thailand living in the areas where elevation is below 5 meters (from sea level) was about 6.29% of the total population (compared to the world average of 6.82%). Although a small portion of urban areas have high risk of rising sea-level, these areas have very high density of population and this pattern coincides with the world average.

Climate change is likely to magnify the risk of flooding and droughts as the pattern of rainfall changes and the sea level rises at a faster rate than that of the global average.[9] It is likely climate change will hit the poor and most vulnerable populations the hardest — adding to the risks these people will face.[10]

Thailand's aging society, characterized by low birth rate and increasing longevity of elder groups, poses higher risks as healthcare burden increases. Thailand became an aged society in 2022 as one in 5 people is 60 years old or older. Per-capita cost of healthcare of old people at 65-69 years old is approximately 2.7 times as much as that of people at 25-29 years old[11] and health care inflation in Thailand is about 5-8% a year.[12]

B. Crisis and Disaster History

The 2011 great flood led to huge losses across sectors, ranging from agriculture to industry and services. From the history of Thailand, most of the major disasters were associated with flooding, storms and droughts. The 2011 great flood alone led to damage and losses in the 26 provinces and affected more than 7.3 million rai[13] of crops, 6.2 million heads of livestock and 177.1 million rai of fishery.[14] Moreover, damage on buildings, equipment and machinery in the industry sector amounted to THB 513.9 billion.[15] The tourism sector, including those providing accommodation services and transport/tour operators suffered from damage and losses of THB 94.8 billion and disaster impact on financial and insurance sector was estimated to be THB 115.3 billion.[16] Figure 1 shows the maximum affected area of floods in Thailand during the great flood.

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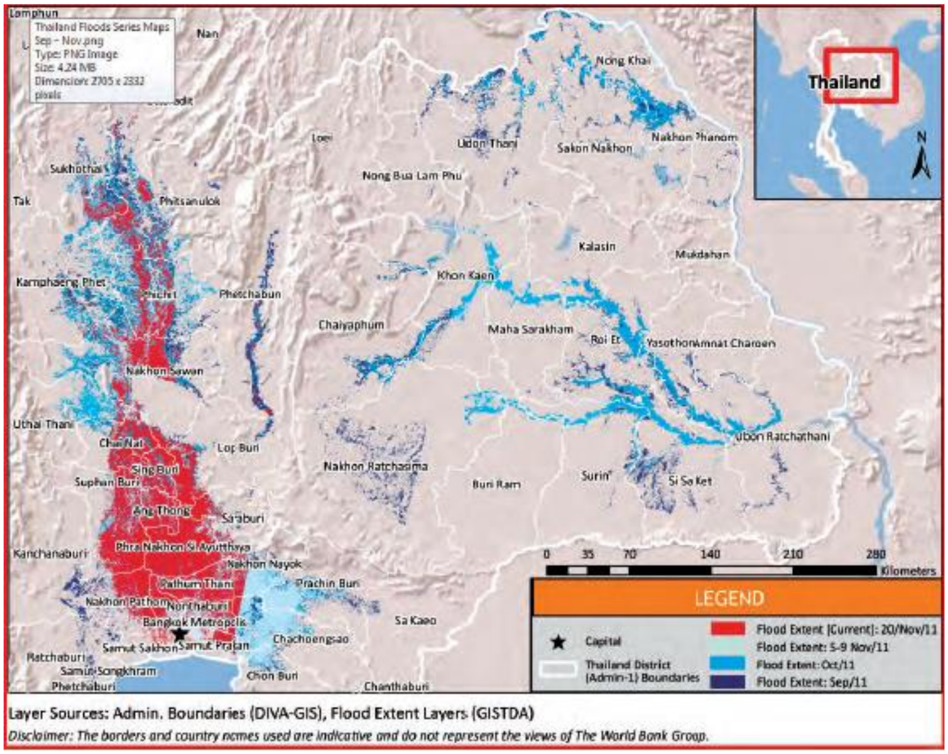
[9] Ibid.
[10] UNDP (2020) Global Human Development Report.
[11] Steven Globerman (2021), Aging and Expenditures on Healthcare, Fraser Research Bulletin.
[12] Department of Older People, https://www.dop.go.th/th/know/15/926
[13] 1 rai is equivalent to 1,600 square meters or .16 hectares.
[14] World Bank. 2012. Thai Flood 2011 : Rapid Assessment for Resilient Recovery and Reconstruction Planning. World Bank, Bangkok. © World Bank. https://openknowledge.worldbank.org/handle/10986/26862 License: CC BY 3.0 IGO
[15] World Bank. 2012. Thai Flood 2011 : Rapid Assessment for Resilient Recovery and Reconstruction Planning. World Bank, Bangkok. © World Bank. https://openknowledge.worldbank.org/handle/10986/26862 License: CC BY 3.0 IGO
[16] World Bank. 2012. Thai Flood 2011 : Rapid Assessment for Resilient Recovery and Reconstruction Planning. World Bank, Bangkok. © World Bank. https://openknowledge.worldbank.org/handle/10986/26862 License: CC BY 3.0 IGO

Figure 1: The Map of Maximum Affected Area of the Floods (September – November 2011)



Source: The World Bank (2012)

Droughts and storms have also inflicted severe damages on Thailand. From 1989 to 2017, droughts primarily caused damage for rice and sugarcane farms of more than THB 19.1 billion (USD 0.6 billion) and in 2005, the drought crisis damages and losses topped THB 7 billion.[17] Between 1989 and 2018, storms had inflicted more than THB 5.8 billion (USD 0.2 billion)[18] of damages to the Thai economy.

From 2016-2021, flooding affected the largest number of villages in Thailand. Data from the Department of Disaster Prevention and Mitigation (DDPM) in Table 1 shows that during 2016-2021 the number of villages declared as disaster-affected areas[19] were highest from flooding, followed by cold temperatures, drought and storm. Flooding is a major disaster that occurs every year during that period. Cold temperatures are disasters that had widespread impact on over 1,500 villages from 2019 to 2020, while forest fires and landslides/mudslides had limited impact.

[17] Ikeda and Palakhamarn (2020), Economic Damage from Natural Hazards and Local Disaster Management Plans in Japan and Thailand, ERIA Discussion Paper Series No. 346

[18] Ibid.

[19] Declaration is made by the Director General of Department of Disaster Protection and Mitigation for Bangkok and by Provincial Governor for other provinces for a sudden event that cause a lot of damages on life, injuries and properties.

Table 1: Number of Villages Declared as Disaster Areas by Type of Disaster (2016-2021)

Year	Number of Villages Declared as Disaster Areas by Type of Disaster (Villages)								
	Flooding	Drought	Storm	Cold Weather	Forest Fire	Fire	Earthquake	Landslide/ Mudslide	Other
2016	4,950	-	-	-	-	-	-	-	-
2017	445	-	1	-	-	-	-	-	-
2018	11	-	98	-	-	6	-	-	-
2019	161	620	227	736	-	2	-	-	-
2020	308	650	14	820	-	1	-	-	-
2021	806	8	449	-	-	1	-	1	-
Total	6,681	1,278	789	1,556	-	10	-	1	-

Source: Compiled by FPRI based on data from the Department of Disaster Prevention and Mitigation (DDPM)

According to the Thai Meteorological Department[20], in the past 20 years, Thailand was affected by 243 earthquakes that originated both in Thailand and other countries. 41 of these earthquakes were considered "Strong" (higher than the magnitude of 6) and only one was located in Thailand. 78% of earthquakes, originating in Thailand, were from the Northern region,[21]which also accounted for 51% of total incidents of forest fire and 54% of total affected forest areas in Thailand on average from 2000-2020. [22]

The COVID-19 pandemic is a health crisis as well as a development crisis given its massive economic repercussion. The current COVID-19 pandemic has severely impacted the global economy. For Thailand, the total number of cases was just over 4 million cases (since 2020). The total death toll was 26,754 or about 0.7 % of total cases over the same period (April 2022). With the preventive government measures, the public healthcare system in Thailand adapted and managed to care for COVID-19 patients. Thailand's economy shrank by 6.2%[23] in 2020, this was worse than the 1997 Asian financial crisis. In 2021, Thailand started to recover from this crisis at a low growth rate of around 1.6%, one of the lowest in the region.[24] The government has pledged a relief and stimulus package of THB 1.9 trillion to absorb the adverse effects of the pandemic, such as the closure of businesses, and this package will have a long-term implication on the fiscal balance of Thailand in the future.

[20] Earthquake Observation Division, the Thai Meteorological Department (in Thai), https://earthquake.tmd.go.th/earthquakestat.html?pageNum_stat=20&totalRows_stat=420
[21] Ibid.
[22] the Department of National Park, Wildlife and Plant Conservation
[23] NESDC
[24] Ibid.

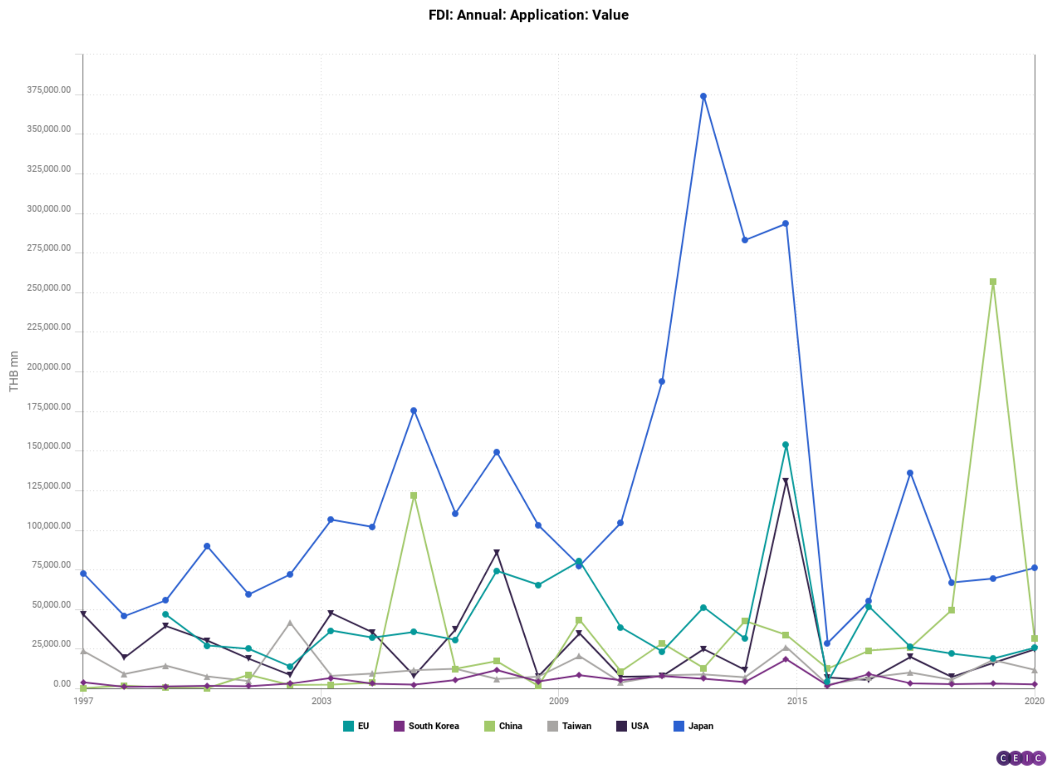
C. Political Economy

The conflict between the conservative and progressive sides is growing due to rising inequality in Thailand, but it does not jeopardize economic activities. Thailand is a parliamentary democracy with a constitutional monarchy. After the coup in 2014, the general election was held in 2019. The rift between conservative and progressive parties has become more apparent, but it still does not affect economic activities including the development of insurance market in Thailand. However, inequality is increasingly becoming a threat to social cohesion. Thailand's Human Development Index declined by 14.3% to an index of 0.686, when adjusted for inequality. Inequality was worsened by the pandemic. This is a factor that has fueled the conflict between the conservative and progressive parties.

Thailand is a founding member of the ASEAN and ascribes to the Principle of Non-Interference upheld by the ASEAN to promote stability in the region. This means ASEAN member countries will not intervene in other member nations' internal affairs. However, ASEAN countries cooperate and compete on economic basis.

The emergence of China's political and economic influence in this region has been a positive force for Thai economic development. Japan had been the largest foreign investor during 1997-2015 and China's investment was able to surpass Japan's investment for the first time in 2019 (See Figure 2). This means Japanese firms have been an integral part of the Thai economy. Thus far, Thailand is able to balance the interest of both countries as there have been no conflicts among Thailand, Japan and China.

Figure 1: Value of Foreign Direct Investment Based on BOI Applications 1997-2020 (Millions of THB)



Source: BOI

Uncertainty looms as the Russia-Ukraine war continues and the impact of the war has been felt through high cost of raw materials and commodities**.** Despite no direct involvement in the Russia-Ukraine war, Thailand experienced a high inflation rate of 5.7% in February 2022due to the increase in oil prices. This war has aggravated the impact of COVID-19 on Thailand's slow economic recovery. Recently, the projected economic growth of Thailand for 2022 was revised downward from 3.4% to 3.2% due to the impact of the Russia-Ukraine war.[25]

D. Development Dynamics

Thailand has made progress towards becoming an upper-middle income country and is currently striving to be a high income one.[26] The population of Thailand is 66,171,439 (2021)

[25] Bank of Thailand. https://www.bot.or.th/English/MonetaryPolicy/MonetPolicyComittee/MPR/Pages/default.aspx
[26] The World Bank Group. https://www.worldbank.org/en/country/thailand#:~:text=Thailand%20became%20an%20upper%2Dmiddle,in%20less%20than%20a%20generation.

and gross national income per capita is USD 7,040 (2020). The poverty rate fell from 48.6% in 2000 to 6.2% in 2019.[27] The 20-year National Strategy aims to achieve the high income status in 2036 and promote security, prosperity and sustainability of the country. In 2000, Gini Coefficient[28] of Thailand was 42.8, it reduced to 34.9 in 2020. About 51.43% of the Thai population were in urban areas in 2020, rising from 31.39% in 2000. The concentration of population in Bangkok, the largest city in Thailand, fell from 32.37% in 2000 to 29.36% in 2020.

The services sector has been the main growth engine of Thailand and it was hit the hardest during the COVID-19 crisis. Data from the Office of the National Economic and Social Development Council (NESDC) indicates that tourism-related sectors (such as transport and storage, accommodation, and food services activities) have been the main contributors to the development of the economy since the beginning of the 21st century.[29] The 2011 great flood inflicted damage to the manufacturing sector most as many production facilities in the Central region were hit by flooding. By contrast, services sectors especially those related to tourism sector were most profoundly affected by the COVID-19 crisis that derailed both domestic and international travel for Thailand. As a result, the services sector contracted more sharply than agriculture and manufacturing did in 2020.

Thailand has made progress on gender equality with room for further improvement. The Credit Suiss Gender 3000 Report (2021) indicates that the percentage of women as a CEO in Thailand was 16%(12.5% in 2014), which is ranked fifth in the world and third in ASEAN after Vietnam (17%) and Singapore (16%). Thailand, however, has some challenges on gender inequality. From the Gender Inequality Index (GII), Thailand was ranked 80th out of 189 countries in 2019, compared to Vietnam (43rd) and Singapore (12th). The 2019 GII reflects that, in comparison to East Asia and the Pacific average, Thailand was worse off in adolescent birth rate (Thailand - 44.9 vs. East Asia and the Pacific average - 22.1 births per 1,000 women ages 15-19), female seats in parliament (Thailand - 14.1% vs. East Asia and the Pacific average - 20.2%) and population with at least some secondary education (Thailand - 43.5% vs. East Asia and the Pacific average - 69.4%)

The impact of the COVID-19 pandemic was profound and persistent; Thailand has not fully recovered from the impact as the economy sharply contracted by 6.2% in 2020. Exports in goods and services fell by 6.5% due to weak global demand. The number of foreign tourists dropped from its peak of 39.8 million persons to merely 6.7 million persons by the end of 2020. Private investment dived by 8.2%, while the government was essentially the last economic engine at that time. Unemployment rate jumped immediately to 1.95% in Q2 2020 from 1.03% in Q1 2021 and stayed near 2% until Q4 2021. We witnessed a sign of recovery in 2021 with a growth rate of 1.6%, Thailand's economy still has not reached Pre-COVID-19 levels. Therefore, demand for insurance has and is likely to be weak for the next couple of years. To solve their liquidity problem, some households with insurance policies could resort to insurance redemption and hence lower their security. Moreover, women are affected more severely by the pandemic

[27] Measured by the international poverty line for Upper Middle-Income Countries (UMICs) of US$5.5 per person per day in 2011 Purchasing Power Parity (PPP) rate. World Bank Group. 2021. Thailand Economic Monitor: -. World Bank, Bangkok.
[28]The Gini index, or Gini coefficient, measures income distribution across a population.
[29] See Annex 1

compared to men. Given the higher proportion of female workforce in tourism-related and services sectors, they have faced higher risks of job disruption during COVID-19[30]

An aged society demands high healthcare expenditures. Thailand became an aged society in 2022, where the percentage of the population over 60 years exceeds 20% of the total population. This percentage in Thailand is expected to reach 24.20% in 2030.[31] Older people are prone to higher levels of health risk particularly for noncommunicable diseases (NCD)[32], which leads to high healthcare costs and decreases the quality of life for the elderly. Healthcare inflation is higher than overall inflation in Thailand. Therefore, higher costs of healthcare per head are expected. With low savings in the poor and vulnerable groups, inclusive insurance is needed to assist these people to minimise health needs costs.

Almost all Thai households have access to financial services and Thailand should closely monitor the level of household debts**.** Access to finance is very important for businesses and individuals. The Bank of Thailand survey in 2020[33] indicated that 99.7% of Thai households had access to basic financial services, namely deposits, loans, money transfers and payments. 38.1% of households in the survey had access to non-life insurance, up from 17.2% in 2018, while 19.6% of households purchased life insurance policies, slightly down from 20.1% in 2018. Thai males and females had almost equal access to finance, 99.8% for males and 99.7% for females. The 36-60 years old group of the Thai population had high levels of household debts, while farmers and civil servants led other occupations with high levels of household debts. 68% of the survey correspondents stated that they would not be able to repay debts if their incomes declined by 20%. With the pandemic, the level of household debts also surged to THB 14.35 trillion in Q3 2021 (89.3% of GDP) from THB 13.77 trillion in Q3 2020 (86.6% of GDP). This is second highest household debt level in Asia behind South Korea.

E. Technology

Digital infrastructure is available for most of the Thai population. Technology is a crucial factor to assist with the development of the insurance market. Digital technology can create new demand for insurance and enable the supply side to offer new products. In 2019 the mobile penetration rate was 186.5%.[34] Smart phone penetration was 92% (2018) compared to 79% for the ASEAN and 61% for the World.[35] In 2020, 86.4% of active mobile phones were smart phones.[36] 88.8% of the Thai population used mobile internet and 14.5% of the population utilize fixed-line broadband internet (2019).[37] 79% of the male population have access to the internet, which is marginally larger than 76.8% for the female population.[38]

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[30] This is from the UN's socioeconomic impact assessment of COVID-19 on Thailand.
[31] NESDC (2019) Report of the Population Projections for Thailand 2010-2040 (Revision)
[32] WHO classified noncommunicable diseases (NCD) into groups such as cardiovascular diseases (such as heart attacks and stroke), cancers, chronic respiratory diseases (such as chronic obstructive pulmonary disease and asthma) and diabetes.
[33] Bank of Thailand (2021). Survey of Thai Household's Access to Financial Services 2020
[34] EMIS (2021) Thailand ICT Sector 2021/2022 – An EMIS Insights Industry Report. Mobile penetration rate is defined as mobile subscription over total population.
[35] GSM Association (2019) Mobile Economic Impact – Thailand, Definitive Data and Analysis for the Mobile Industry, GSMA Intelligence
[36] NSO (2020) Survey of Thai Households' ICT Usage.
[37] EMIS (2021) Thailand ICT Sector 2021/2022 – An EMIS Insights Industry Report.
[38] NSO (2020) Survey of Thai Households' ICT Usage. Population is defined as those who are 6 years old and over.

In the Speed Test Global Index (December 2021)[39], Thailand was ranked eighth globally in fixed-line broadband performance, third in Asia behind Singapore and Hong Kong (SAR). For mobile performance, Thailand ranking was down to 40th, seventh in Asia after South Korea, China, Singapore, Taiwan, Hong Kong and Japan.

Thailand is one of the world's leading users of mobile financial applications and is likely to easily adopt mobile insurance applications. Thai people have adopted digital technology well as a new channel for financial services. The 2021 digital report shows that Thailand was ranked first in the world for the third year in a row, for banking and financial service application use. 68.1% of internet users aged 16-64 years old stated that they engaged with these applications every month.[40] Users of mobile banking had grown rapidly from 13.9 million users in 2015 to 60.1 million in 2019 (Table 2). Thailand was ranked second in the world for mobile payments and second for mobile commerce adoption. The Bank of Thailand's survey shows that 21% of money transfers in Thailand was completed via internet and mobile banking. 25-35 year olds group made more e-payments than other age groups. The familiarity of using financial services via mobile phone applications should help the Thai population to easily adopt insurance service application and hence improve access to insurance.

Table 1: The Uses of Mobile Banking in Thailand

Year	2015	2016	2017	2018	2019
Value (billion Baht)	2,800	5,849	9,539	17,501	24,408
Users (Persons)	13,918,815	21,151,583	32,143,467	46,004,931	60,084,145

Source: Insurance Development Plan Vol 4 (2021-2025)

Overall, Thailand still has many challenges in digital competitiveness**.** IMD World Digital Competitiveness Ranking 2021 indicates that Thailand was ranked 38th overall, with relative strengths in the areas of regulatory framework (29th), capital (19th) and technological framework (22nd). Digital skill among population, one of the key indicators of the Skills pillarof the Global Competitiveness Index 4.0, compiled by the World Economic Forum (WEF), can be a good proxy for digital literacy. In 2019, Thailand scored 4.26 out of 7, where 7 indicates "to the great extent" or best digital skill, and was ranked 66th in the world.[41]

F. Data Mapping

The historical data on disasters is available on the website of the Department of Disaster Prevention and Mitigation, but it is not easy to access and the data is not presented in a format

[39] https://www.speedtest.net/global-index
[40] https://www.bangkokpost.com/tech/2062199/thai-internet-users-keep-up-top-banking-app-usage-streak
[41] World Bank Group. https://tcdata360.worldbank.org/indicators/hb0649ed2?country=BRA&indicator=41400&viz=line_chart&years=2017,2019 and World Economic Forum (2019). The Global Competitiveness Report 2019.

that is easy to analyze. The data on the total costs of damage of disasters is fragmented and there is no single unified data source. Similarly, the data on total risk finance budget is not readily available, as not all parts of the risk finance budget are not clearly labeled. The data on microinsurance is limited as this market is tiny and at an early stage. Access to a complete list of microinsurance products from the Office of Insurance Commission (OIC) is not publicly available.

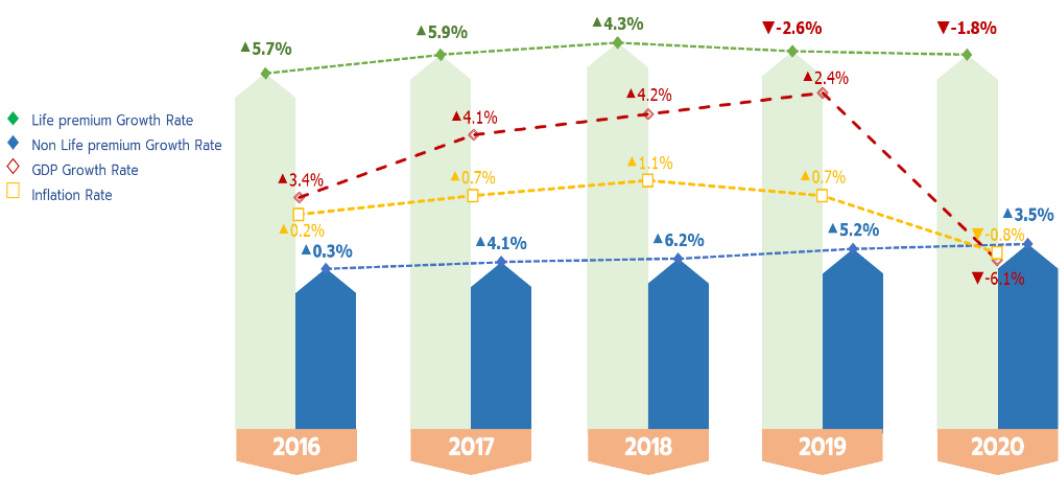
A listing of the kinds and sources of data relevant to inclusive insurance and risk finance can be found in Annex 2.

III. Market Conditions for Inclusive Insurance

A. Overview of Current Market

The insurance market in Thailand has been experiencing modest growth in the past five years. The life insurance sector, representing 70% of the market based on gross premiums, has been slightly contracting since 2019. While the GDP contracted by 6.2% in 2020, Figure 3 shows that Thai non-life insurance business grew by 3.5% in the same year. Inflation rate, which can increase the cost of insurance, is moving with economic growth. The recession due to the COVID-19 pandemic in 2020 led to deflation or negative growth of 0.8% during the same period. However, this temporary deflation should not have much effect on the cost of insurance.

Figure 2: Macro Perspectives of Thai Life and Non-Life Insurance Markets



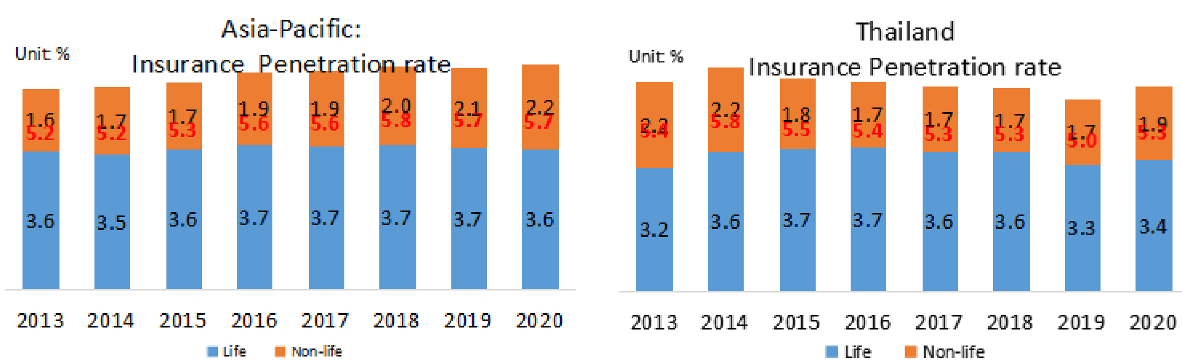
	2016	2017	2018	2019	2020
1. Life Insurance Gross Premium [1/] (Million Baht)	568,260	601,725	627,387	610,914	600,206
(Growth Rate)	5.7%	5.9%	4.3%	-2.6%	-1.8%
2. Non-Life Insurance Direct Premium[2/] (Million Baht)	209,743	218,434	231,990	244,055	252,618

(Growth Rate)	0.3%	4.1%	6.2%	5.2%	3.5%
3. Real GDP Growth Rate[3/]	3.4%	4.2%	4.2%	2.3%	-6.2
4. Inflation[4/]	0.2%	0.7%	1.1%	0.7%	-0.8%

Remark: 1/ Life Insurance Gross Premium includes first year premium, renewal Premium and single premium
Source: 1/ The Thai Life Assurance Association 2/ Thai General Insurance Association
3 and 4/ Office of the National Economic and Social Development Council

Thailand's insurance industry still has room to grow. Both life and non-life insurance markets showed low insurance penetration[42] and density[43] in Thailand. In 2020, insurance penetration for life and non-life insurance markets were 3.4% and 1.9% respectively. The average individual insurance contribution was USD 244 for life insurance and USD 139 for non-life insurance. Compared to the Asia-Pacific regional averages, insurance penetration rates and density in Thailand are slightly lower for both life and non-life businesses (See Figures 4 and 5). In comparison with the global average, in 2020 the insurance penetration rate of Thailand was much lower (Thailand 5.3% vs. global average 7.4%), especially for non-life insurance (Thailand 1.9% vs. global average 4.1%). Similarly, the global average of insurance density was higher than that of Thailand (Thailand USD 383 vs. global average USD 809).

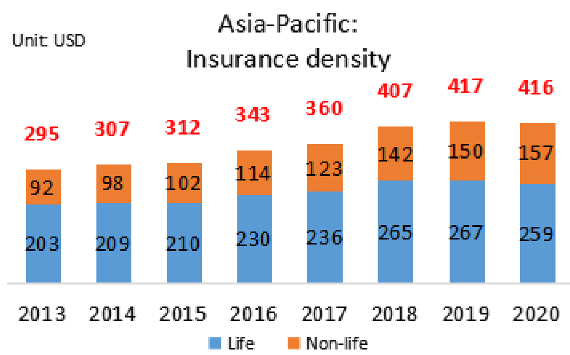
Figure 3: Life and Non-Life Insurance Penetration (%) from 2002-2020

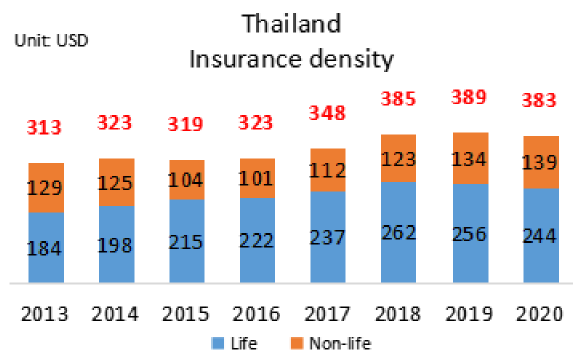


Source: Sigma research, Swiss Re Institute
Remarks: Asia-Pacific includes Australia, Bangladesh, Hong Kong, India, Indonesia, Japan, Macao, Malaysia, New Zealand, Philippines, PR China, Singapore, South Korea, Sri Lanka, Taiwan, Thailand, and Vietnam

Figure 4: Life and Non-Life Insurance Density (USD) from 2002-2020

[42] Insurance penetration is defined as direct premium as percentage of GDP.
[43] Insurance density is defined as direct premium per capita.

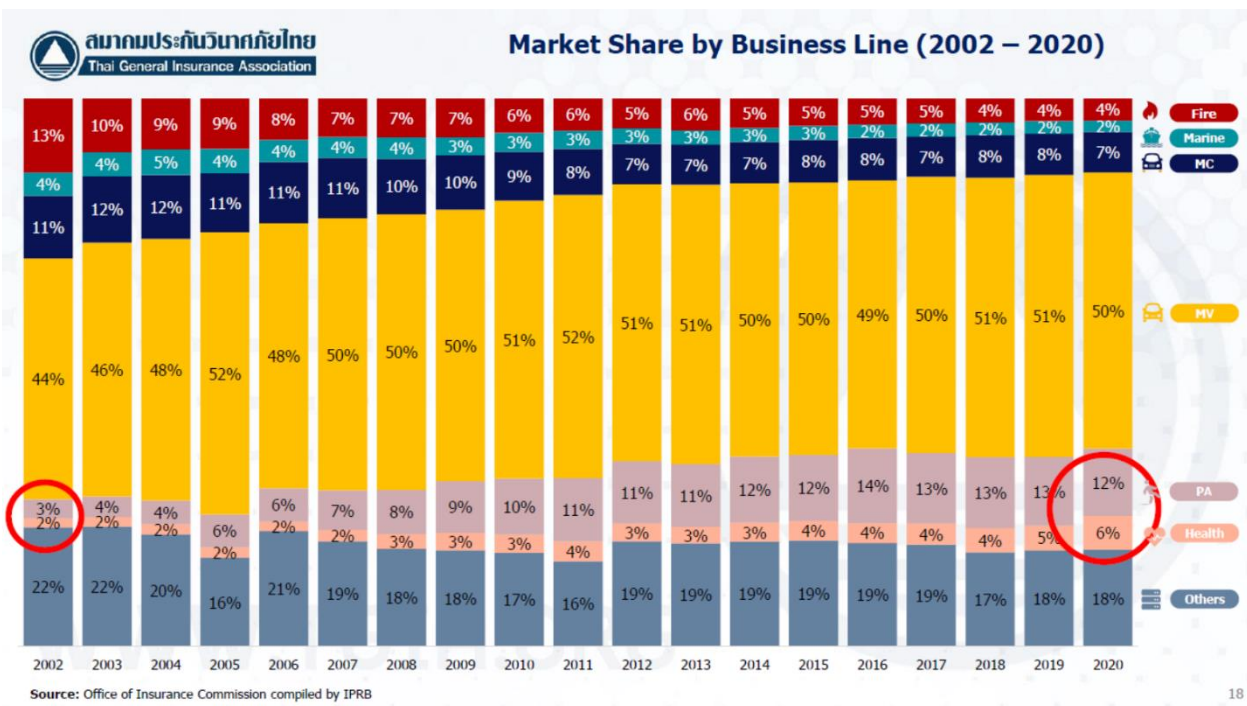




Source: Sigma research, Swiss Re Institute
Remarks: Asia-Pacific includes Australia, Bangladesh, Hong Kong, India, Indonesia, Japan, Macao, Malaysia, New Zealand, Philippines, PR China, Singapore, South Korea, Sri Lanka, Taiwan, Thailand, and Vietnam

The non-life insurance market has been dominated by motor vehicle insurance from 2002-2020. Personal accident and health insurance both have smaller market shares, but with modestly growing premiums (See Figure 5).

Figure 5: Market Share of Insurance Products in Thailand by Business Line (2002-2020)



Source: Office of Insurance Commission Compiled by Insurance Premium Rating Bureau, Thai General Insurance Association

Inclusive Insurance is defined by the International Association of Insurance Supervisors (IAIS) as a broad concept that refers to "all insurance products aimed at the excluded or underserved market, rather than just those aimed at the poor or a narrow conception of the low-income market."[44] In this study, inclusive insurance will also cover the vulnerable group including older people, farmers, riders[45], MSMEs[46], youth and those suffering from gender inequality.

The Thai inclusive insurance remains underdeveloped and micro insurance is introduced as part of inclusive insurance. To provide affordable insurance products for the poor and vulnerable groups, a new sub-category of insurance products, called microinsurance, was introduced to the market. Microinsurance – defined more specifically as "insurance that is accessed by the low-income population, provided by a variety of different entities, but operates in accordance with generally accepted insurance practices" There are five main types of microinsurance products available in the Thai market including; motorcyclist accident, personal accident, student accident, residential fire, and crop insurance. Crop insurance covers rice and maize farmers and is the only type of microinsurance products that the government has subsidized the premiums for since 2011. In 2020, the crop insurance premium was 3,062 million baht while accident insurance and fire insurance combined was only 507 million baht. Without crop insurance, the microinsurance products have shown small growth rate since 2012 and accounted for only an annual 0.2% of the overall market premium. The proportion of microinsurance of 0.2% has been quite stable since 2012 (Table 3 and Table 4).

Crop insurance grew rapidly over 2012-2020 with support from key stakeholders. With strong support and pro-active engagement from various stakeholders such as the Fiscal Policy Office, the Department of Agriculture and Agricultural Extension, the Bank of Agriculture and Agricultural Cooperatives, and the Thai General Insurance Association, crop insurance expanded tremendously. Premium grew from 26 million baht in 2012 to 3,062 million baht in 2020. Therefore, the crop insurance premiums alone pushed total premium of microinsurance products from 507 million baht to 3,570 million baht in 2020 (Figure 7 and Figure 8).

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[44] IAIS (2015) Issues Paper on Conduct of Business in Inclusive Insurance.

[45] **Riders** are defined as persons who ride motorcycles to provide services like carrying passengers and delivering goods such as foods, parcels and documents. The riders working under large food-delivery platforms or big delivering service companies are considered to be in the formal sector. By contrast, those freelance riders, who carries passengers, are considered part of the informal sector.

[46] According to the Ministerial Regulations on the Designation of the Characteristics of Small and Medium Enterprises Promotion Act B.E. 2562 (2019), issued by the Prime Minister , the official definition of MSMEs is on the basis of annual revenue, employment and sectors.

1. **Micro enterprises** in manufacturing, trade and services are defined as those enterprises with annual revenue **of not more than 1.8 million baht or has not more than 5 employees.**
2. **Small enterprises in manufacturing** are those enterprises with **more than 1.8 million baht but not more than 100 million bath or has more than 5 employees but not more than 50 employees.** Small enterprises in **trade and service** are defined as those enterprises with **more than 1.8 million baht but not more than 50 million bath or has more than 5 employees but not more than 30 employees.**
3. **Medium enterprises** in **manufacturing** are those enterprises with **more than 100 million baht but not more than 500 million bath or has more than 50 employees but not more than 200 employees.** Medium enterprises in **trade and service are** defined as those enterprises with **more than 50 million baht but not more than 300 million bath or has more than 30 employees but not more than 100 employees.**

Table 2: Microinsurance Products Classified by Type (2012-2020)

Year	Motorcyclist Accident		Personal Accident		Student Accident		Residential Fire Insurance		Crop Insurance	
	Number of Policies	Direct Premiums (Thousand Baht)	Number of Policies	Direct Premiums (Thousand Baht)	Number of Policies	Direct Premiums (Thousand Baht)	Number of Policies	Direct Premiums (Thousand Baht)	Number of Policies	Direct Premiums (Thousand Baht)
2012	40	1,031	205,863	71,740	1,840	113,073	37,861	193,727	1,700	26,621
2013	11	81	531,682	164,381	2,076	117,101	62,123	177,619	55,430	512,851
2014	41	1,477	637,610	202,129	2,145	128,576	58,032	56,374	2,076	198,014
2015	15	75	783,927	255,979	1,917	131,436	63,017	65,243	44,539	280,987
2016	18	55	732,504	238,832	5,872	253,790	2,494	814	13,453	971,718
2017	1,687	5,883	496,275	155,495	57,310	602,048	7,575	28,689	4,794	1,298,566
2018	7	30	441,567	149,991	4,642	255,341	58,705	42,817	10,107	1,308,733
2019	6	21	438,776	163,643	7,311	265,804	12,961	34,897	9,712	1,389,673
2020	8	84	413,543	129,066	6,702	347,255	11,268	31,252	10,906	3,062,605

Source: Non - Life Insurance Distribution Channel Report from Statistics Division of Examination Planning and Development Department, Office of Insurance Commission

Table 3: Proportion of Microinsurance Products to Overall Non-life Insurance Products

Year	Total Microinsurance Products		Overall Non-life Insurance Products		% of total Microinsurance Products to Overall Market		Microinsurance Products (excluding crop insurance)		% of total Microinsurance Products (excluding crop insurance) to Overall Market	
	Total Number of Policies	Total Direct Premiums (Thousand Baht)	Total Number of Policies	Total Direct Premiums (Thousand Baht)	Number of Policies	Direct Premiums	Number of Policies	Direct Premiums (Thousand Baht)	Number of Policies	Direct Premiums (Thousand Baht)
2012	247,304	406,192	51,159,309	181,717,856	0.5%	0.2%	245,604	379,571	0.5%	0.2%
2013	651,322	972,033	69,253,546	203,665,202	0.9%	0.5%	595,892	459,182	0.9%	0.2%
2014	699,904	586,570	62,193,714	205,607,674	1.1%	0.3%	697,828	388,556	1.1%	0.2%
2015	893,415	733,720	63,854,404	210,502,971	1.4%	0.3%	848,876	452,733	1.3%	0.2%
2016	754,341	1,465,309	62,969,607	211,943,906	1.2%	0.7%	740,888	493,591	1.2%	0.2%
2017	567,641	2,090,681	61,385,851	218,883,586	0.9%	1.0%	562,847	792,115	0.9%	0.4%
2018	515,028	1,756,913	63,917,204	233,090,084	0.8%	0.8%	504,921	448,180	0.8%	0.2%
2019	468,766	1,854,039	66,521,149	245,499,634	0.7%	0.8%	459,054	464,366	0.7%	0.2%
2020	442,427	3,570,262	72,584,872	253,174,049	0.6%	1.4%	431,521	507,657	0.6%	0.2%

Source: Non - Life Insurance Distribution Channel Report from Statistics Division of Examination Planning and Development Department, Office of Insurance Commission

Figure 6: Number of Microinsurance Policies and Direct Premium (Including Crop Insurance) (2012-2020)

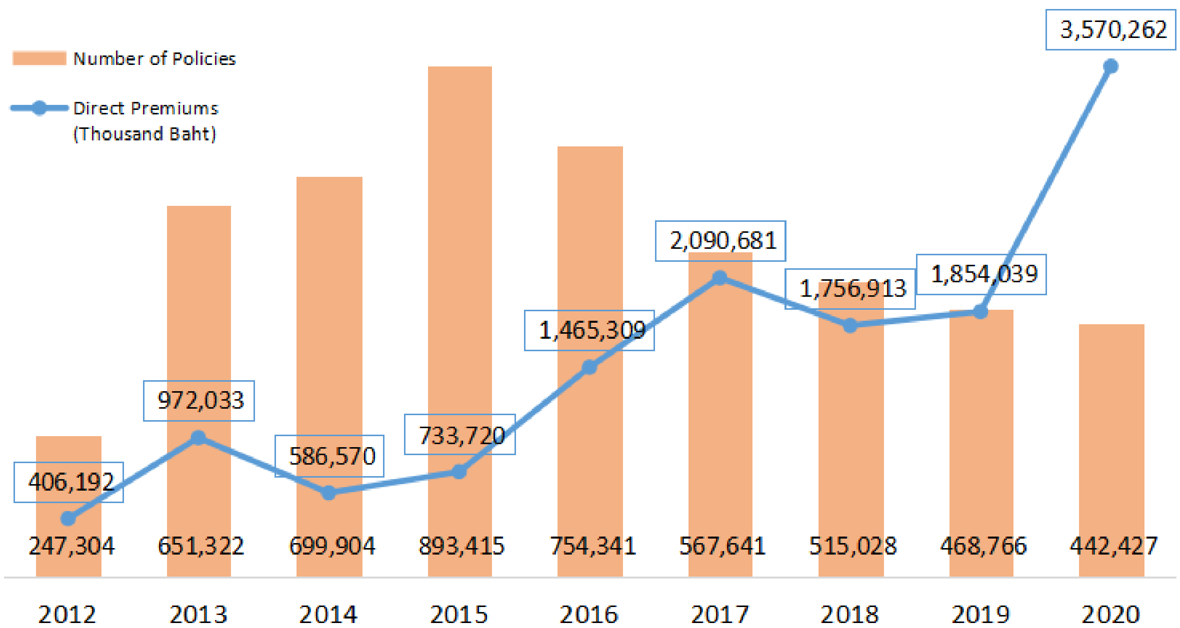
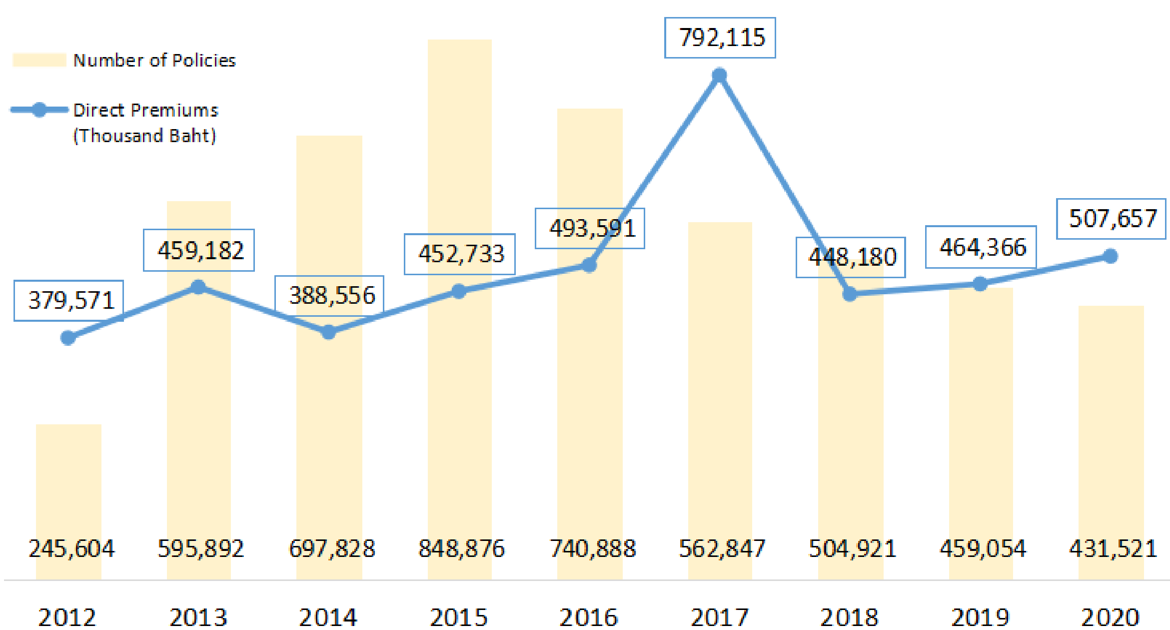


Figure 7: Number of Microinsurance Policies and Direct Premium (Excluding Crop Insurance) (2012-2020)



Unprecedented risk of new variants of the COVID-19 led to huge losses in the Thai COVID-19 insurance market. During the COVID-19 crisis, unexpected underwriting risk in bargain COVID-19 insurance led to huge losses for some Thai insurers. In 2020, Thai insurers issued new COVID-19 products without prior knowledge of new variants, such as Delta and Omicron, which were much more easily to spread. As both the number of new infection cases and the number of claims were rising, sixteen of Thai insurers were affected by these cheap COVID-19 policies. Ten of them were listed in the Stock Exchange of Thailand and reported a total combined loss of THB 5.8 billion (USD 176 million) in Q3 2021.[47] As of April 1, 2022, the Ministry of Finance revoked the business licenses of 4 Thai insurers, as they failed to pay outstanding claims of COVID-19 policies.[48]

B. Legislation, Regulation, Institutional Capacity (the Environment)

Thai insurance business is governed by two main Acts: The Life and the Non-Life Insurance Acts B.E. 2535 (1992). The Acts set out basic regulatory principles including: formation and licensing, restrictions on shareholders and directors, deposit, reserve and capital requirements, restrictions on investment of funds and approval of policy wordings by the regulator. The OIC was established by the enactment of the Insurance Commission Act B.E.2550 (2007) with a mission to regulate and develop insurance business, as well as to protect the insurance benefits and rights of the people. Under the two Insurance Acts, the regulator and Minister of Finance issue various notifications, declarations, and regulations to accomplish the mission. For premium pricing and policy wordings, the OIC adopts "File and Use" regime which applies to certain types of policies including 'microinsurance' which contain rating and wording different from OIC's pre-approved standard policies or which has never been approved by OIC.

Inclusive insurance has modest premium levels based on the risk insured is often referred to as microinsurance. Presently, there is no specific legislation and regulations for inclusive insurance or microinsurance in Thailand. The risk insured under a microinsurance policy is managed by insurance principles and funded by premiums. Premiums can be either privately or publicly funded or a combination of both. Specifically, the scope of microinsurance in this report is the product-driven by private insurers to support low-income earners in addition to government social welfare programs. Crop insurance is one type of microinsurance products that the government and the Bank of Agriculture and Agricultural Cooperatives subsidize premiums. A microinsurance policy not only carries a low premium and limited coverage, but the policies have also simple wordings, a simplified claims process, and are available through convenient channels of sale including counter service or convenience stores. To buy a policy, only national identity card and mobile-phone number are required. Customers receive a confirmation message from the insurer via the phone number after premium receipt.

First personal accident microinsurance was designed to help lower the poor groups' burden from traffic accident during long holidays**.** Despite no specific legislation for microinsurance, the OIC realized that there is very high rate of road accidents during long

[47] https://asia.nikkei.com/Spotlight/Coronavirus/Thai-insurers-face-huge-losses-from-bargain-COVID-policies
[48] https://www.prachachat.net/breaking-news/news-900092

holidays every year and those who are at risk without insurance protection have low incomes. Together with insurance industry, the OIC launched a personal accident microinsurance product for the poor as to relieve the burden of their family members due to losses from accidents.

In collaboration with Thai Life Assurance Association and Thai General Insurance Association, the OIC has developed and promoted the microinsurance products including life insurance, residential fire insurance, and personal accident insurance. For example, "Microinsurance 200" was launched in 2013 for people 20 to 60 years old. The premium was 200 baht per year and provided coverage of up to 100,000 baht, depending on the type of loss as follows: (1) 100,000 baht for accidental death, loss of hand, foot, or eyesight, or permanent disability, (2) 50,000 baht for accidental death, loss of hand, foot, or eyesight, or permanent disability, due to motorcycle accident (whether as the driver or a rider of a motorcycle), or in the case of murder or assault, and (3) 10,000 baht for funeral expenses due to death from illness (after the first 120 days of the policy term).

Government's tax incentives support insurance protection of tax payers. To promote life and health security and long-term saving for Thai nationals, life insurance premiums for policies with at least a minimum of duration of at least 10 years, healthcare insurance premium paid and pension insurance premiums paid are deductible from their assessable income for taxation purpose.

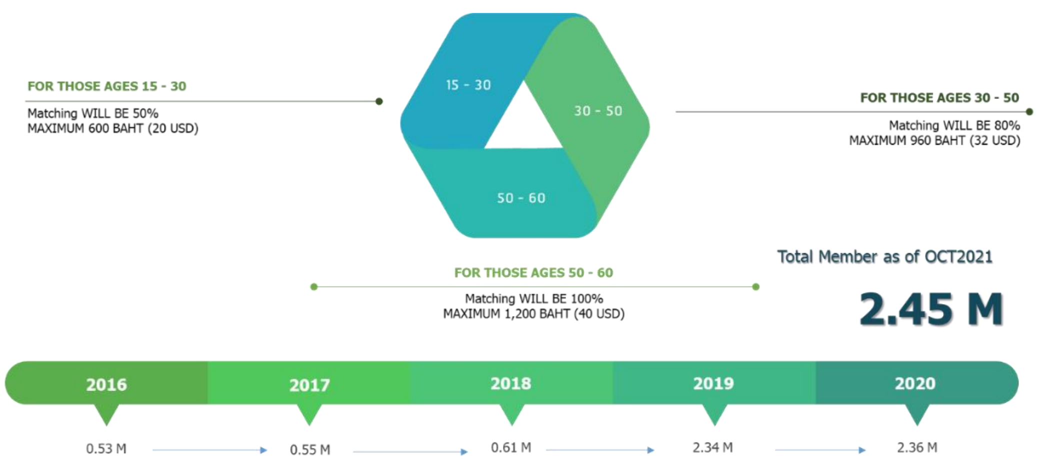
C. Market Demand

Lack of awareness and low levels of insurance literacy are two main reasons that hinder the demand for insurance in the poor and vulnerable groups. The development of the microinsurance market in Thailand has been challenging. With low incomes and lacking an awareness of managing their levels of risk vulnerable groups place a low priority on financial planning especially insurance. The Insurance Development Plan Vol 4 (2021-2025), sets one of its key strategies as " to cultivate a risk management culture for individuals and businesses." OIC has also set a goal to promote and get courses on insurance into education system at all levels.

The government's promotion of the national savings agenda has been recognized as progressing well. The National Savings Fund (NSF) has registered 2.45 million enrollees in 2021 from 400,000 in 2016 this represents 3.7% of the population. The size of NSF reached THB 7,194.92 million. The largest group of members are farmers, (47.51%), self-employed (30.21%) and students (6.62%). All members contribute, these contributions are matched by the government's by making a 50%-100% of member's contribution (See Figures 9 and 10). Participation in the NSF aims at promote savings for retirement at an early age, however, it cannot adequately provide financial protection against such risks as loss of livelihood. The NSF allows for members to receive death benefits from the funeral welfare fund, the NSF does not provide basic income security cover. Financial protection against loss of income is a great need especially for informal workers, whose basic health risks are at least covered through the Universal Coverage Scheme (UCS).

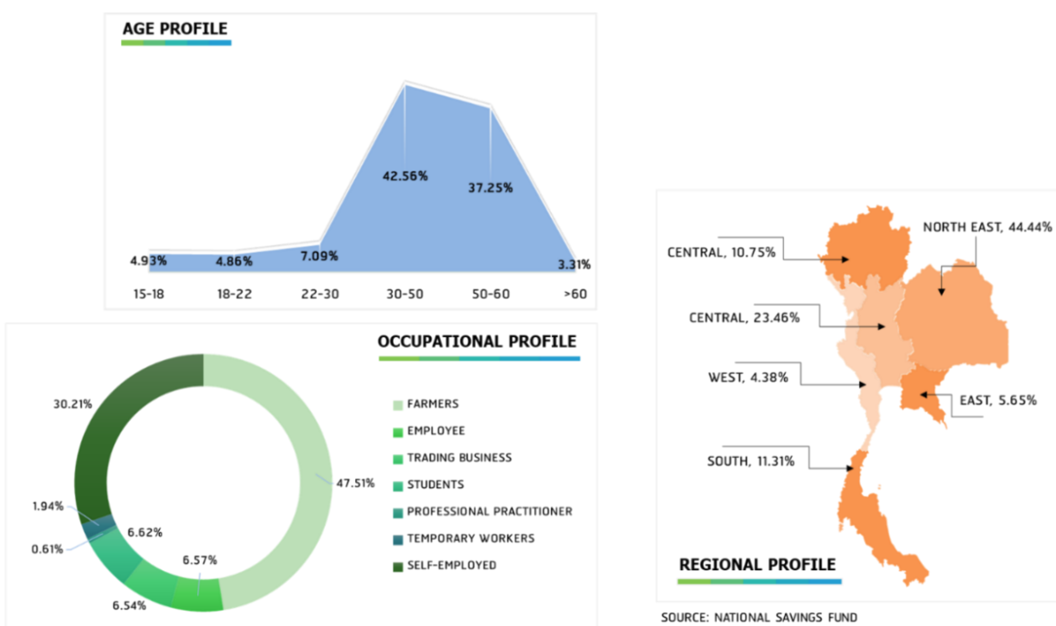
The need for insurance literacy for their members is an integral part of an overarching financial literacy framework. Therefore, the adoption of a holistic policy on microinsurance as part of a broader goal of financial inclusion should be promoted. Collaborative efforts between government entities and private insurers through associations should be facilitated in creating microinsurance awareness and proper product designs to increase inclusive insurance demand and boost future market development

Figure 8: Total Number of National Saving Fund Members and Matching Fund by Age of Member



Source: National Saving Fund

Figure 9: Profile of National Saving Fund Members by Age, Occupation and Region



Source: National Saving Fund

Customized insurance products for women is preferred. Given Thailand's endeavors to reduce gender inequality, there is no evidence of a gender-bias in common insurance products. Disaggregated data on the insurance penetration across gender is not available, it is recommended that more gender specific insurance products should be developed to ensure more gender equality is developed. Currently, there are few insurance products for women including health insurance products that will cover most common cancers in women.

Digital technology is promising in transforming the microinsurance market. The advent of digital technology could change the landscape of microinsurance in Thailand. It can help reduce the operating costs for insurers and increase access for the poor and vulnerable groups to insurance services through the insurer's platform. Many of the stakeholders point out that a mobile-based platform is the most promising new deliverable channel for insurance industry. Thailand is a global leader in mobile banking usage and recent government support and relief measures are implemented through mobile applications. Many organizations share their success stories in training their clients to adopt their mobile applications. Currently, these applications provide many services such as premium payment, insurance policy information checking and hospital finder. However, some groups of the poor and the vulnerable groups still do not have access to reliable internet connection, do not have smart phones and have low levels of digital literacy.

D. Supply, Providers

The insurers in Thailand still hesitate to enter the microinsurance markert. There are 55 general insurance companies in Thailand (October 31, 2021) comprising 50 non-life insurance, 4 healthcare and 1 Reinsurer. Four of the general insurance companies are foreign owned branches. The insurance companies are weighing up the potentially large untapped insurance market of the poor and vulnerable groups versus the viability of this business. Although insurers rely on "the law of large numbers" to manage their portfolio risk. Low margins and relatively high operating costs of microinsurance products make the microinsurance market less attractive. It would help for the initial development of the microinsurance market for the government to aid the poor and vulnerable groups with proper protection against risks to enhance their welfare. However, government resources are limited. Therefore, the private sector must take responsibility to help to provide better access to tools to better manage financial risk.

The poor and vulnerable groups need tailor-made insurance products. Given a wide range of customers' demands for insurance products, the insurers should design products that fit the specific needs of the end users The design of desirable products for the poor and vulnerable groups should have the following features: affordable price or premium, small size, simple contract, short-term, flexible payment options. The poor and vulnerable groups e.g. farmers need help to adopt insurance products from those whom they trust such as community leaders, familiar officers of specific financial institutions or cooperatives.

Heath Insurance

Thailand has a set of government programs that is aimed at creating health security for all Thai people.[49] Access to health insurance in Thailand is provided through social security programs and are available to all citizens at any income levels. These government programs are : 1) Universal Coverage Scheme (UCS) administered by the National Health Security Office (NHSO), 2) Social Security Scheme (SSS) administered by the Social Security Office, and 3) Civil Servant Medical Benefit Scheme (CSMBS) administered by the Comptroller General's Department. Each program has different structures and scopes and covers different groups of beneficiaries (See Table 5).

Thai government cannot meet all demand for microinsurance, while private insurers need more incentives to provide microinsurance products. In 2019, 99.9% of Thai people were covered by government healthcare-related programs.[50] Given the large role of government as an insurer for health-related risks, and with a large sector of the population not able to afford premiums and a low awareness of benefits of insurance private insurers have less incentives to innovate and offer pure health microinsurance product that suits low-income segment and penetrate the market. As coverages under the basic income security for persons of active age and income compensation coverage for sickness are heavily concentrated among government employees and formal-sector workers, the informal workers needs are not being met by the government schemes. Refer to Appendices 5 for a summary of the Public Health Care System in Thailand

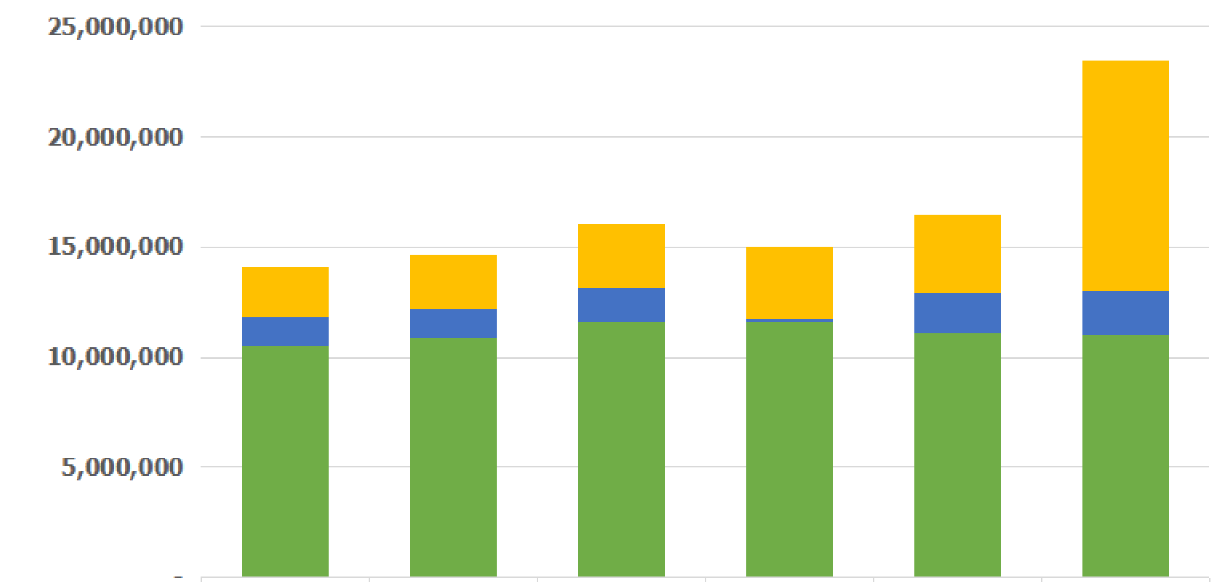
Each government program provides healthcare services to specific groups of population and is funded differently. Refer to Appendices 5 for a summary of details on the UCS scheme.

[49] Migrants in Thailand are provided health protection by different measures. Migrants can be largely divided into 2 groups which are (1) Stateless people, and (2) foreign labourers. Stateless peoples are provided health protection through cabinet approvals of Ministry of Public Health proposal which would be proposed regularly (Normally on annual basis) with benefits similar to those provided in the Universal Coverage Scheme. On the hand, health protections for foreign labours in Thailand are comprised of those employed formally and registered to the Social Security Scheme, and those registered to work in informal sector works such as maid or daily workers in construction sites. Those in Social Security system are eligible to get heath protections similar to those provided to Thai labours, while those in the informal section or employment are required to purchase health insurance to ensure health protection during their stay in Thailand. This scheme is also administrated by Ministry of Public Health of Thailand.

[50] Thailand Social Protection Diagnostic Review, Social Protection Mapping and Vulnerability Analysis, ILO, UNICEF, IOM, UN Women 2021

Figure 10: Members of Social Security Scheme Classified by Type

Unit: Persons



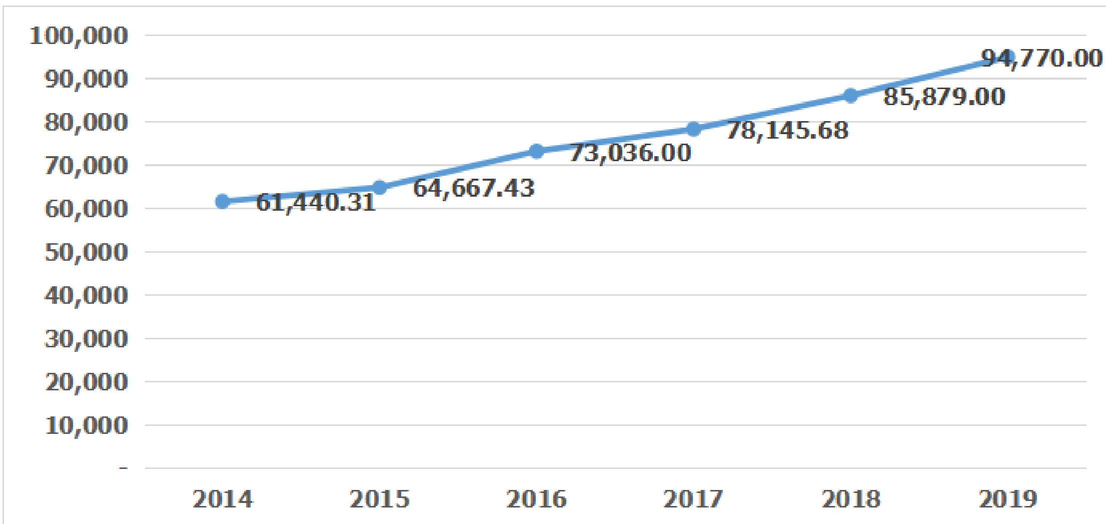
	2016	2017	2018	2019	2020	2021 (Sept)
Section 40	2,243,727	2,432,927	2,833,960	3,242,579	3,508,970	10,449,333
Section 39	1,286,133	1,373,595	1,561,293	148,118	1,799,786	1,955,743
Section 33	10,511,821	10,840,579	11,599,338	11,626,393	11,124,209	11,037,147

The three health protection programs are among the top highest government expenditures.[51] An Increasing aging population, emerging diseases, sharp increase in health care costs together with limited fiscal space are key factors that raise concern on sustainability of the government programs. The total compensation of SSS continues to grow with the compound annual growth rate (CAGR) of 9.05% a year (See Figure 12), which can jeopardize the social security fund in the future. Meanwhile, CAGR of total expenditure for the UCS is at 2.87% a year as shown in Figure 13. Interestingly, we witness a slowdown in the rise of expenditures in the Civil Servant Medical Benefit Scheme implying the government's attempts to control this expenditure through various measures such as drug list for direct disbursement and budget cap to maintain sustainability of the CSMBS. (See Figure 14). One way to maintain sustainability of the government program while keeping the same level of basic protection is to create areas for private participation in health insurance.

[51] The five social protection programs with the highest expenditures are: 1) CSMBS 2) UCS 3) SSS 4) Social Welfare Card, and 5) Old-Age Allowance. Thailand Social Protection Diagnostic Review, Social Protection Mapping and Vulnerability Analysis, ILO, UNICEF, IOM, UN Women 2021

Figure 11: Total Compensation of Social Security Scheme

Unit: Millions Thai Baht



Remarks: Total compensation includes expenditures on 7 benefits covered by the Social Security Scheme namely sickness, pregnancy, invalidity, death, unemployment, child allowance, and old-age. It excludes administration cost, and other expenditures of the social security funds. Employers and employees contribute equally at 5% of salary and wages, but not exceeding 750 THB a month for each employee.

Figure 12: Total Expenditure for Universal Coverage Scheme

Unit: Millions Thai Baht

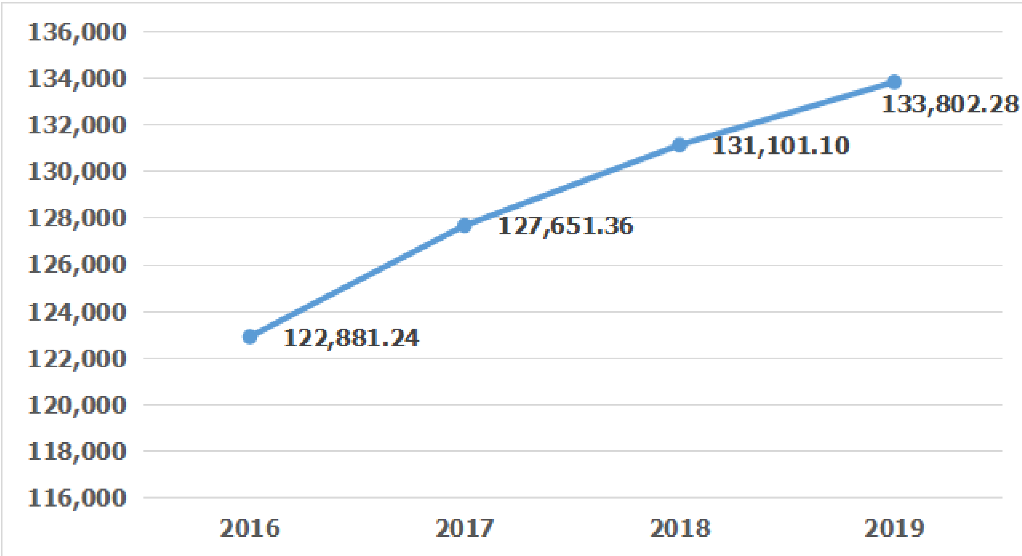
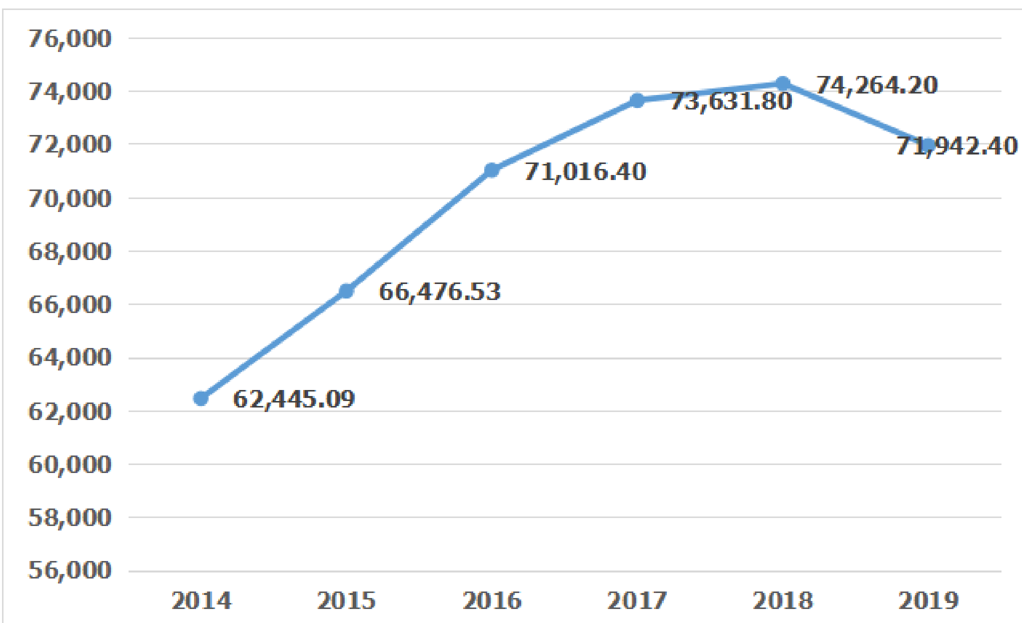


Figure 13: Total Expenditure for Civil Servant Medical Benefit Scheme

Unit: Millions Thai Baht



Microinsurance:

There are five main microinsurance products available in the market including motorcyclist accident, personal accident (PA) , student accident, residential fire, and crop insurance. Personal accident is the most popular microinsurance product with the highest number of policies sold. This section will focus on personal accident product.

PA microinsurance products are event-based and insurers have been voluntarily offering them since 2012 with support from the OIC. They are targeted towards lower income earners, usually have a one-year policy coverage and are distributed by insurance companies through agents, counter services, brokers, the Government Savings Bank and post offices. For example, Sukjai-Plus policy, launched in March, 2022, were offered by 18 non-life insurers and 1 life insurer.

Table 6 shows selected event-based microinsurance policies from 2016-2020, that covered death, dismemberment, eyesight, and total permanent disability from the accidents (except those incurred from riding or traveling by motorcycle). The sale period of these products correspond either to the New Year or the Songkran Festival (Thai New Year) and policy coverage varies between 30 days to 1 year. Microinsurance penetration significantly spiked in 2020 because products included COVID 19 and vaccine side effects coverage with a low premium (THB 10) and including a lump sum payment of THB3,000, in addition to the sum insured limit of THB 100,000.

The characteristics and historical uptake of event-based microinsurance products reflect the limited understanding and prioritization of insurance as a risk transfer mechanism. It is well-known that incidences of traffic accidents increase during long holidays such as Songkran or the New Year which would presumably encourage the adoption of insurance as a risk protection tool. Data from the OIC (Table 3) show, however, that policies sold have been decreasing in the past five years although premiums have generally increased. It is inferred that the demand for such products has not increased and that it is of low priority for the target low-income and vulnerable consumers. Private insurers have expressed the perception that the microinsurance market is not profitable and suggest that the government should take a leading role in filling the gap in this market.[52]

Table 4: Selected Microinsurance Policies from 2016-2020

Year	Microinsurance Policy	Premium (Baht)	Sum Insured (Baht)	Coverage	Total Policy Sales (Unit)
2016	**1. Songkran Sukjai** Sale Duration: 30/03/2016 - 30/04/2016 Insurance Period: 1 year	100	100,000	Death, Dismemberment/ Loss of	NA

[52] From interview with Thai insurers

<table>
<tr><th>Year</th><th>Microinsurance Policy</th><th>Premium (Baht)</th><th>Sum Insured (Baht)</th><th>Coverage</th><th>Total Policy Sales (Unit)</th></tr>
<tr><td></td><td>2. Wan Prakanpai Sukjai
Sale Duration:
15/09/2016 - 15/10/2016
Insurance Period: 1 year</td><td>100</td><td>100,000</td><td rowspan="8">Eyesight, and Total Permanent Disability from Accident

Excluding
Murder/
Assault and Accidents from Riding or Traveling by Motorcycle</td><td>NA</td></tr>
<tr><td rowspan="2">2017</td><td>1. Songkran Sukjai
Sale Duration:
15/03/2017 - 30/04/2017
Insurance Period: 1 year</td><td>100</td><td>100,000</td><td>63,069</td></tr>
<tr><td>2. New Year Sukjai
Sale Duration:
15/12/2017 - 31/01/2018
Insurance Period: 1 year</td><td>222</td><td>100,000</td><td>14,006</td></tr>
<tr><td rowspan="2">2018</td><td>1. Songkran Unjai
Sale Duration:
01/04/2018 - 30/04/2018
Insurance Period: 30 days</td><td>10</td><td>100,000</td><td>1,327,193</td></tr>
<tr><td>2. New Year Unjai
Sale Duration:
15/12/2018 -31/01/2019
Insurance Period: 30 days</td><td>7</td><td>100,000</td><td>NA</td></tr>
<tr><td rowspan="2">2019</td><td>1. Songkran - Tukjai
Sale Duration:
01/04/2019 - 31/05/2019
Insurance Period: 30 days</td><td>7</td><td>100,000</td><td>724,506</td></tr>
<tr><td>2. Unjai New Year Plus
Sale Duration:
15/12/2019 - 31/01/2020
Insurance Period: 30 days</td><td>7</td><td>100,000</td><td>568,947</td></tr>
<tr><td>2020</td><td>Songkran – Unjai New Normal Super Plus &
Covid-19
Sale Duration:
01/04/2020 – 31/05/2021
Insurance Period: 30 days</td><td>10</td><td>100,000
& Lump Sum Payment Covid 19: 3,000
& Covid 19 Vaccine Side Effects: 300 Baht per Day (Maximum 20 Days)</td><td>8,515,064</td></tr>
</table>

Insurance for MSME

Micro, small and medium enterprises (MSMEs) are also considered as vulnerable groups. In 2020, MSMEs accounted for 99.5% of the total number of Thai enterprises and their employment covered 71.2% of total employment. Furthermore, MSMEs generated approximately 34.2% of Thailand's GDP. Usually, they have limited access to finance and markets and suffer from shortage of labor. Compared to their large enterprise counterparts, they lag behind in adopting technology due to their limited ability to invest in R&D and innovation. They tend to have high costs of doing business. Since they are striving to survive especially during COVID-19 crisis, they put low priority on voluntary insurance.

The Thai government recognizes MSMEs as the foundation of the economy and provided a set of measures including insurance products to assist MSMEs during the pandemic crisis. To provide insurance for MSMEs against operational risks, the Office of Small and Medium Enterprise (OSMEP) identified that before the COVID-19 crisis, the Bank of Thailand (BOT), the Export-Import Bank of Thailand (EXIM) and OSMEP had offered the Export-Risk Insurance to mitigate exchange rate risk but it was not well-received by SMEs.[53] The OSMEP had acknowledged the absence of insurance products that can protect MSMEs against such shocks as business interruption, which many have experienced due to the pandemic. Feasible insurance products for MSMEs should be considered. These include insurance products with income protection or loan protection feature, an insurance product which is tailor-made for women-owned MSMEs. Insurance literacy promotion through digital platforms such as mobile phones should also be explored to support the risk management efforts of MSMEs.

A credit linked insurance or credit life insurance could be another option for MSMEs to protect their business and family of owners. Currently, this product is readily available at several commercial banks and financial institutions in Thailand, but it is not widely used among SMEs and mid-to-low income earners.[54] This product is designed to pay off borrower's outstanding debts if the borrower dies or is permanently disabled, so the business can continue, and the remaining family members do not need to be responsible for the outstanding debts. Moreover, the remaining insurance payout after loan pay-off can be used by the family members. Credit life insurance can be applied to business credit, and mortgages. Usually, the borrower or the MSME owner needs to pay insurance premium on top of their loan payments.

Crop insurance

Thailand has made crop insurance scheme available for rice farmers who registered their plantations with the Department of Agricultural Extension since 2011. In 2011, the scheme provided the payment of claims for farmers who voluntarily buy insurance whose crops are totally destroyed by 6 perils including; flood, drought, cold weather, wind storm, hail, and fire. The insurers have now expanded perils to cover for pest and elephant invasion to suit needs of government and farmers. The crop insurance policies including policy wordings, premium rating and sum insured have been modified overtime based on needs of stakeholders and past claims experiences (Table 7). Insured areas of rice insurance scheme have increased from 1 million rais in 2011 to 43.5 million rais accounting for 72.3% of total plantation in 2021 (Table 8). The

[53] From an interview with key stakeholders
[54] Based on our interview with some banks that serve SMEs and mid-to-low income clients, they still do not have this product to their clients.

maize insurance scheme was developed by the same rationale of rice insurance scheme in 2019 (Table 9).

The current crop insurance scheme is an extension of the Thai government relief program. The crop insurance scheme is called 'top up scheme' because it completely relies on the government disaster relief program under which farmers are paid a fixed allowance for compensation of their cost of cultivation (See Figure 15). For example, the total cost of rice cultivation in 2021 was around THB 3,968.21 per rai. Rice farmers whose crops are totally destroyed by weather events or pests will be compensated from the government for THB 1,340 per rai or around 33 percent of total cost of production. As mentioned, crop insurance program established for rice and maize farmers provided a top-up payment for insured farmers by using the same loss assessment procedure of government disaster relief scheme. In 2021, the basic sum insured (Tier 1) was THB 1,260 per rai and additional sum insured (Tier 2) was THB 240 per rai (See Figure 16). Costs of claims administration is borne internally by the Department of Agriculture and Agricultural Extension who acts as a loss adjustor of the government disaster relief scheme. Premiums are subsidized by government. In addition, farmers who are loan clients of with the Bank of Agriculture and Agricultural Co-operatives (BAAC) have further premium subsidy.

Table 5: Development of Rice Insurance Scheme in Thailand (2011-2021)

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021*
Peril Coverage	6 Perils : Flood, Drought, Cold, Wind Storm, Hail, Fire,	7 Perils : Flood, Drought, Wind Storm, Hail, Fire, Cold and Pest							8 Perils : Flood, Drought, Wind Storm, Hail, Fire, Cold, Pest, and Elephant Invasion		
Premium Rate (Baht/Rai) (excluding Duty & VAT)	120		120 - 475 Based on 5 Risk Zones		120 - 450	100	90	90	85	58/210/230 Based on 3 Risk Zones	55/210/230
Sum Insured	Below 60 days: 606 Baht/Rai and Over 61 days: 1,400 Baht/Rai	THB 1,111 / Rai Only Pest THB 555 /Rai					THB 1,260 / Rai Only Pest THB 630 /Rai				
Net Premium (Baht)	136,564,533	87,102,870	43,193	264,004,655	491,200,343	2,286,601,964	2,015,681,164	2,177,106,660	2,167,071,396	3,297,818,959	3,212,930,09
Loss Paid	760,546,825	256,638,005	31,108	128,074,589	152,786,859	822,452,144	2,097,391,144	1,796,888,476	4,825,957,027	520,537,610	1,530,332,709
Loss Ratio (%)	556.9%	294.6%	72.01%	46.7%	30.8%	35.5%	103.6%	82.1%	222.7%	15.8%	47.63%

Source: Thai General Insurance Association
Remarks: * means Preliminary data

Table 6: Coverages of Rice Insurance Scheme in Thailand (2011-2021)

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021*
Total Plantation Areas (Rais)	62,696,040	64,990,047	62,079,904	63,211,788	49,481,505	56,505,471	56,659,833	53,863,069	61,119,256	58,088,725	60,175,321
Insured Areas (Rais)	1,059,131	872,440	120	830,696	1,512,072	27,176,735	26,117,855	27,600,571	30,859,069	44,362,517	43,503,613
Penetration Ratio (%)	1.7%	1.3%	0.0%	1.3%	3.1%	48.1%	46.1%	51.2%	50.5%	76.5%	72.3%
Insured Farmers (Persons)	NA	45,716	NA	54,775	90,377	1,571,857	1,756,933	1,917,720	2,024,480	3,301,111	3,406,840

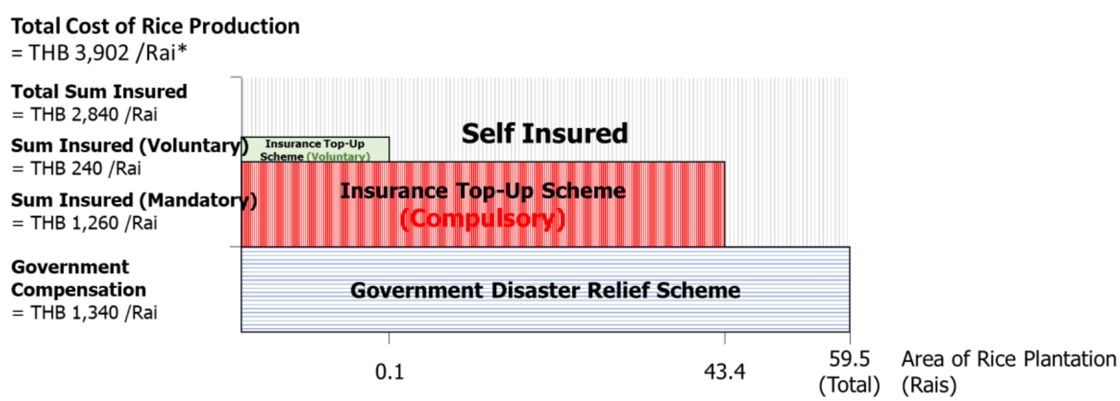
Source: Thai General Insurance Association
Remarks: NA means no data available
* means Preliminary data

Table 7: Coverages of Maize Insurance Scheme in Thailand (2019-2021)

Year	2019 (Rainy Season)	2019 (Dry Season)	2020 (Rainy Season Only)	2021 (Rainy Season Only)
Plantation Areas (Rais)	2,834,640	664,195	5,341,487	5,285,506
Insured Areas (Rais)	1,402,975	461,162	2,139,244	1,488,068
Penetration Ratio (%)	49.5%	69.4%	40.4%	28.2%
Insured Farmers	89,192	53,249	111,858	82,194
Net Premium (Baht)	64,902,404	11,304,149	228,752,893	170,072,508
Premium / Rai (Baht)	59	59	160	150 – 550
Loss Paid (Baht)	347,893,430	729,942	34,340,500	39,835,004
Loss Ratio (%)	536.0%	6.5%	15.0%	23.42%

Source: Thai General Insurance Association

Figure 14: The Structure of Total Sum Insured of Rice Insurance



Source: Office of Agricultural Economics

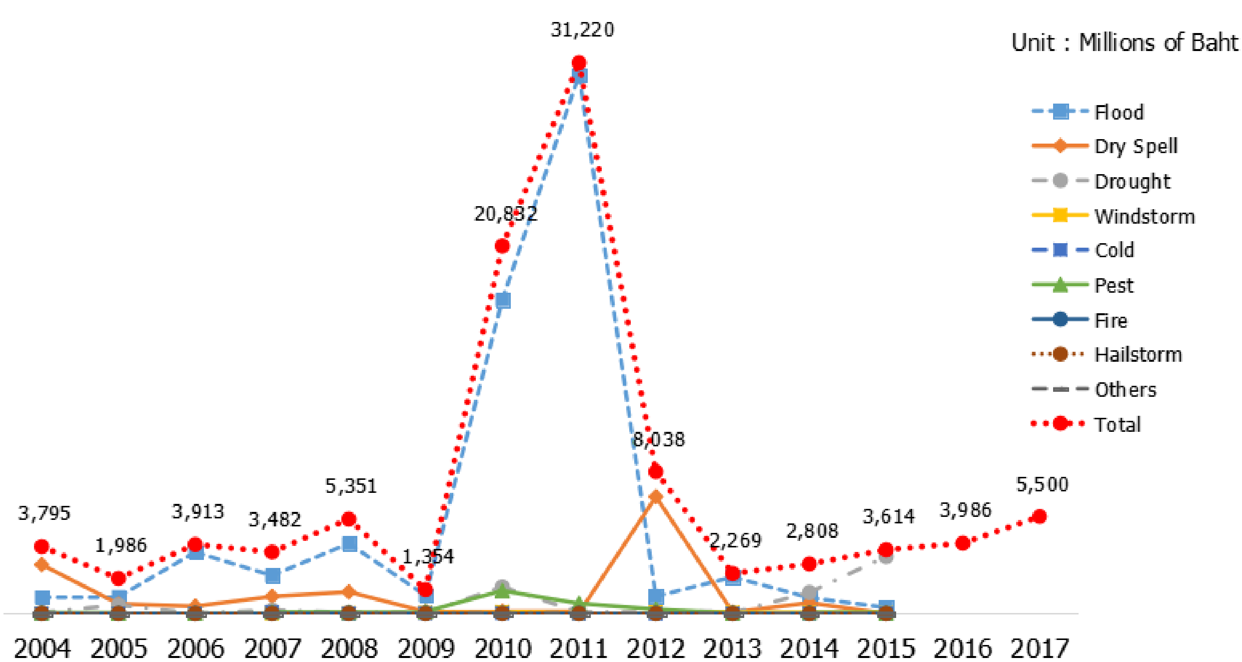
Figure 15: *Total Costs of Cultivation of Main Crops in Thailand*

	Government Subsidy (THB/Rai)	Insurance Protection		Self Insured by Farmers	Total Costs of Cultivation (Baht/Rai)
		Tier 1	Tier 2		
Rice	1,113 (USD37.1/0.395 acres)	1,260 (USD 42/rai)	240 (USD 8/rai)	1,372.47 (USD 45.7/rai)	3,985.47 (USD 133)
Maize	1,148 (USD 38.2/rai)	1,500 (USD 50/rai)	240 (USD 8/rai)	1,759.47 (USD 58.6/rai)	4,647.47 (USD 155)
Cassava	1,148 (USD 38.2/rai)	-	-	5,467.79 (USD 182.3/rai)	6,615.79 (USD 221)
Sugar Cane	1,148 (USD 38.2/rai)	-	-	10,353.24 (USD 345.1/rai)	11,501.24 (USD 383)
Rubber Tree	1,690 (USD 56.3/rai)	-	-	11,719.39 (USD 390.6/rai)	13,409.39 (USD 447)

Source: Office of Agricultural Economics; Exchange rate at USD 1 = THB 30

Under this disaster relief program, the fiscal burden on crop sector compensating during 2004-2017 was at THB 98,148 million (around USD 3,262 million) as shown in Figure 17. To improve the crop insurance scheme, private insurers are willing to support this initiative but only with resource commitments from the government.

Figure 16: Total Disaster Relief Expenses on Crop 2004-2017



Source: Department of Agricultural Extension and Thai General Insurance Association

Insurance for women

Specific insurance products for women are now available in the market. Due to different natures between males and females, there exists an insurance market, especially for women. Insurance products in this market include healthcare insurance, tailored made for diseases found in women such as breast cancer and cervical cancer. For example, life insurance with additional healthcare insurance covers cancers affecting women and surgical treatments of accidents and burn injuries.[55] Also, there is an insurance product that offers extra benefits for most cancers in women.

IV. Market Conditions for Risk Finance

A. Existing Assessments of Disaster Risk

In Thailand, assessments of disaster risk are performed at national and sub-national levels. At the national level, the Department of Disaster Protection and Mitigation (DDPM) oversees the disaster risk assessment, while the Fiscal Policy Office (FPO) is responsible for fiscal risk assessments.[56] As part of the Disaster Risk Reduction Strategy, DDPM runs the Central Disaster Management Centre, which is responsible for conducting overall disaster risk assessment and supporting assessments at each level of Thailand's administrative structure as well as for relevant agencies. The guidelines of disaster risk assessment areas aim to: (1) encourage and support risk assessment process (2) strengthen the capacities of local districts and provinces in exposure and vulnerability assessment and (3) strengthen and improve national capacity for disaster risk assessment for risk management. The assessment looks into the status of disaster risks, hazards, exposure of populations and geographic areas, vulnerability, loss and impacts and cost effectiveness.

FPO analyzes the impact of disasters on the Thai economy and government's fiscal balance (e.g., revenues, expenditures, and fiscal debts). The impacts of these events are assessed for the government, off-budget funds, state-owned enterprises, and local administrations. FPO also determines the size of fiscal space using revenue sensitivity analysis, scenario analysis and fiscal early warning system. Foregone revenues are estimated from adverse effects of the disasters on businesses and people along with the consequences of the government's disaster relief programs. In addition FPO is the secretariat of the Fiscal Discipline Committee, which determines the ratio of the Central Fund for Emergencies or Immediate Needs to the total budget. This ratio can influence the size of the budget available for disaster management.

At the sub-national level, Sub-district Administrative Organizations (SAO) conduct risk assessments as part of the process of developing disaster management plans. A set of

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[55] Some insurers in Thailand have already provided this women-specific product like AIA (https://www.aia.co.th/th/our-products/critical-illness-protection/lady-care.html) and Cigna (https://www.cigna.co.th/our-plans/critical-illness-insurance/ca-lady)

[56] The Fiscal Policy Office (FPO) within the Ministry of Finance (MoF) is responsible for (1) recommending fiscal policies in the areas of revenues, expenditures, fiscal balance, asset management and public debts, (2) monitoring, evaluating and reporting fiscal situation and (3) giving advice on fiscal discipline and fiscal risk management. FPO conducts assessments of fiscal risks, stemming from various factors such as macroeconomic condition, financial system, government policies and performance of government agencies.

guidelines[57] on the development of subdistrict disaster management action plans has been set out for use by more than 5,300 SAOs. The SAO Chief Executive leads the Subdistrict Disaster Prevention and Mitigation Action Plan Drafting Committee which reviews the plans at the provincial level.

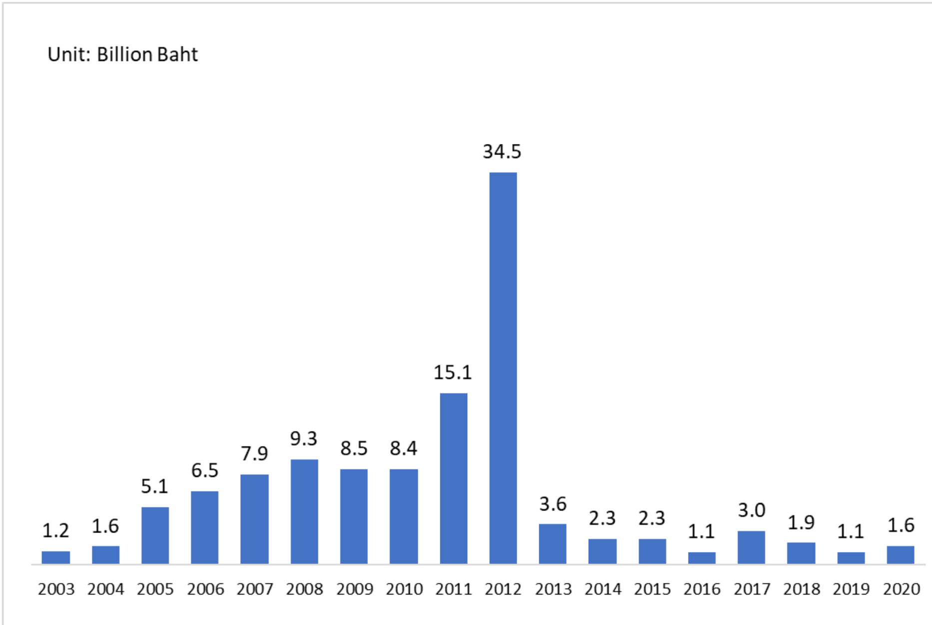
B. Fiscal Impact

The fiscal impact of disasters on Thailand has mainly been documented for flooding events, the worst of which was the 2011 great flood for which THB 34.5 billion of contingency fund was used for disaster relief. This comprised 1.4% of the total budget, which was below the annual earmark of between 2% and 3.5% for the Central Fund for Emergencies or Immediate Needs.

The allocations for contingency fund advances for disaster relief have generally decreased since the 2011 floods (see Figure 17) from THB 34.5 billion to THB 1.6 billion in 2020. The 2022 flooding has increased the allocation back up to as much as THB 23 billion and the government setting aside a total of THB 92.4 billion for emergency responses in fiscal year 2023.

[57] See Appendix 6 for details of the guidelines

Figure 17: The Size of Contingency Fund Advanced Used in 2003-2020



Source: Department of Disaster Prevention and Mitigation

C. Existing Legal and Institutional Framework

The Department of Disaster Prevention and Management oversees disaster risk management in Thailand. It coordinates policy making at the national (chaired by the Prime Minister or Deputy Prime Minister), the provincial (chaired by the governor) and the Bangkok Metropolitan Administration (chaired by the Bangkok governor) levels so that relevant agencies can develop their respective action plans that align to the National Disaster Prevention and Mitigation Plan.

Thailand has established the legal and policy frameworks for disaster risk management. The Disaster Prevention and Mitigation Act of 2007 sets the foundation for disaster risk management in the country and designated a National Disaster Prevention and Mitigation Committee (NDPMC) to direct and approve policymaking and ensure harmonization among national and local government and the private sector. The NDPMC also provides guidance on disaster prevention and mitigation operations and imposes regulations on post-disaster compensation and related expenditures jointly with the MOF.

Under theDPMA Act 2007, disasters can be classified into 4 levelswith an incident commander designated for each level (See Table 10).

Table 8: Disaster Management Levels and Key Incident Commanders in Thailand

Level	Disaster Scale	Definition	Key Incident Commander
1	Small	Disaster which can be controlled and mitigated by local administration alone	Local administration or district chief officers
2	Medium	Disaster which demands the help of Provincial Governor or Governor of Bangkok	Provincial Governor or Governor of Bangkok
3	Large	Disaster which has a strong impact on large areas or requires the presence of experts or special equipment	Minister of Interior
4	Catastrophic	Disaster which has highly severe effects on lives, properties and morale of all citizens or is beyond the control of national disaster prevention and mitigation commander	Prime Minister/Deputy Prime Minister

Sources: Ikeda and Palakhamarn (2020) based on Department of Disaster Prevention and Mitigation (2015)

Thailand does not currently have a disaster risk financing strategy that can guide the financial management of disaster risks and recommend the mix of financing instruments, including both risk retention and risk transfer solutions that would promote cost-effectiveness. The three sources of funds for disaster risk management – Annual Budget, Central Fund and Contingency Fund Advances for Emergency Relief Assistance – are intended mainly for providing relief goods and health services, emergency and evacuation assistance, efforts to restore peace and order and procurement of supplies and equipment. None of the budget sources make any reference to ex-ante risk financing instruments such as insurance.

The Public Asset Insurance Screening Committee's Resolution of 29 March 2021 on the self-insurance of public assets states that all government buildings and properties should be self-insured, with some exceptions. In other words, all damages and losses of the public assets should be covered by the government budget and risk transfer is on an as-needed basis. The government agencies will be responsible for their own assets. Insurance for public assets can be made in two cases: public asset insurance without the approval of the Public Asset Insurance Screening Committee and public asset insurance requiring the approval of the Public Asset Insurance Screening Committee (See details in Annex 3).

The Public Asset Insurance Screening Committee oversees the implementation of their resolution. This committee is chaired by the Permanent Secretary of the Minister of Finance and is comprised of six other committee members as follows:

1. A representative from the Bureau of the Budget
2. A representative from the Ministry of Digital Economy and Society
3. A representative from the Ministry of Foreign Affairs
4. A representative from the Office of the Attorney General
5. A representative from the Office of Insurance Commission
6. A representative from the Treasury Department, who also acts a secretary of the committee.

This committee can determine which public assets can be insured and to what extent through the cost-benefit study of risk transfer for public assets and long-term plan of public asset insurance. Also, the committee sets guidelines on public asset insurance requests for the government agencies in case the government agencies want to have insurance for new types of public assets. Therefore, public assets in "exception" category can be expanded if necessary.

At the national level, the Department of Treasury oversees public assets like Ratchaphatsadu (i.e., government-owned immovable property and government land area) including 1.2 million rais of land and approximately 600,000 units of government buildings. According to the Public Asset Insurance Screening Committee's resolution March 29, 2021, all buildings under the Department of Treasury are self-insured, except for rental units whereby tenants must have fire insurance coverage. The government is pondering to rely on car-leasing instead of buying their own cars. This means, their leased cars are protected by insurance from the leasing companies.

The State Enterprise Policy Office (SEPO) requires state owned enterprises (SOEs) to have their mitigation plan for disaster risk under the upcoming 13th National Economic and Social Development Plan (2023-2027). While their mitigation plans have yet to be officially released, insurance could be one of the instruments for the SOEs to manage risks due to disasters.[58] In Public and Private Partnership Projects (PPP), the private sector is responsible for necessary insurance over the concession period. After the asset is transferred to the public sector, the project owner will determine how to manage risks, including considering insurance.

At the subnational level, the Department of Local Administration indicates that currently the local governments follow the Ministry of Interior's practice of the Public Asset Insurance Screening Committee's Resolution of 29 March 2021 on the self-insurance of public assets , they are allowed to purchase insurance on (1) public cars such as ambulances and chemical trucks (2) durable goods including construction, medical, and factory equipment and (3) buildings except government offices and houses. However, the local governments are more flexible to utilize their revenue to purchase insurance. Also, premium & coverage must be best value. As for the ex-post risk financing, without an assistance from the central government, the local government still does not have adequate resources for emergency as the lion's share of their

[58] From our interview with SEPO, they did not mention any guidelines for SOE's mitigation plan for disaster risk. Therefore, we speculate that there is no specific guidance on risk transfer such as insurance.

revenue comes from the central government and the pool of locally generated revenues is insufficient for emergency situation and recovery process.

In fact, this resolution is consistent with our finding from the interview that the government has a concern over excessive budget required to purchase insurance for all government buildings and other assets. Moreover, the government believes that they have sufficient budget to cover all the damages from disasters and that the cost of insurance still outweighs the benefits. However, this perception could change if climate-change-related risks clearly become more severe and more frequent and inflict heavy damages to government properties.

In addition, the Personal Data Protection Act BE 2562 (PDPA**)** or Thailand's national data privacy law raises concern over data sharing. PDPA is designed to protect individual personal information, which is defined as "any data pertaining to a person that enables the identification of that person, whether directly or indirectly. Currently, this law prevents the government from sharing any personal risk data, without consent of data owners, to the private sector for purposes, for example, of risk analytics that could inform the design and development of insurance solutions.

D. Existing Disaster Risk Finance Mechanisms and Instruments

Presently, the Thai government relies heavily on its budget and borrowings to deal with the impacts of disaster risks. The reliance on its national budget can be perceived as an offshoot of the lessons learned from the 1997 financial crisis which forced the government to put more emphasis on fiscal discipline by imposing a ceiling on public debt of 60% of GDP. This cap has freed up some fiscal space to manage risks from disasters. Currently, the ceiling is raised to 70% of GDP to have more funds to help the Thai economy.

Applying the risk layering strategy[59] to understand the existing disaster risk financing portfolio in Thailand, Figure 20 shows that for high frequency and low severity risks, risk retention instruments used are the central government reserves and contingent funds, complemented by post-disaster borrowing. For a crisis such as the COVID 19 pandemic, the government has had to borrow from the capital market as existing reserves proved to be insufficient.

For low frequency and high severity disasters, risk transfer instruments that the Thai government has resorted to include crop insurance and insurance of public assets**.** With a government subsidy, the farmer can purchase crop insurance to get additional payment for their losses in the event of flood, drought, frost, and also pest and diseases and damage by elephants.

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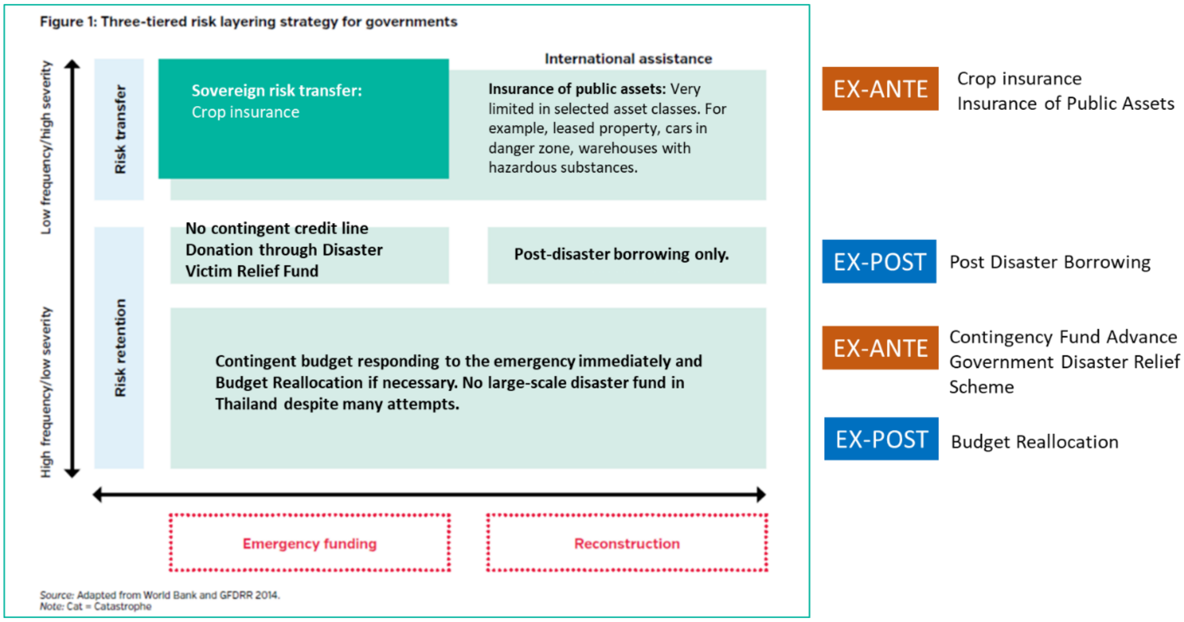
[59] The Risk Layering Strategy Framework encompasses a combination of different instruments to protect against disaster events of different frequency and severity. The bottom layer of risk includes high-frequency but low severity can be retained and managed through government's budgetary reserves and post-disaster budget reallocations or borrowing. The top layer of risk includes low-frequency but high severity can be transferred to insurance markets. This risk layering strategy ensures the optimal risk financing for governments.

Figure 18: Thailand's Disaster Risk Finance Mechanisms and Instruments



Source: Adapted World Bank Group, GFDRR (2017) by Fiscal Policy Research Institute Foundation

For the public asset insurance, public assets are self-insured with some exceptions. Given the approval from the public Asset insurance screening committee, the government agencies can purchase insurance under certain restrictions. After the permission of the Public Asset Insurance Screening Committee, the government agencies can purchase insurance for their assets without any additional budget from the government. This means they must rely on their own revenues (if any) and their allocated budget. For instance, The Department of Treasury oversees tangible assets worth more than 6.48 trillion baht in FY2020. Of which, THB 6.46 trillion comes from value of land and THB 23.25 billion from buildings for investment (THB 21.23 billion) and non-investment purposes (THB 2.02 billion).[60] The insurances of buildings for investment are paid by renters from private sector, while buildings for non-investment purposes are self-insured.

Some of the challenges[61] facing the insurance of public assets in the country include the absence of data on historical losses, damage, and an inventory of assets that will enable assessments of value/replacement costs. This information is crucial to understand the risks that are faced in relation to the management and maintenance of these assets, especially after disasters strike. Moreover, data sharing among government agencies and with the private sector will be necessary for accurate risk evaluation.

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[60] Buildings for investment purpose are those leased to the private sector and, our study, they include the Government Complex Commemorating His Majesty the King's 80th Birthday Anniversary, 5th December, B.E. 2550 (2007), which is under the financial leasing agreement. Buildings for non-investment purpose are those for publics services and owned by the Department of Treasury.
[61] From interview with private insurers

International aid has played a very limited role in Thailand as the country only received international assistance for extremely severe disasters such as the Tsunami in 2004 and the great flood in 2011. It was not until 9 months after the disaster that Thailand started to receive international assistance, accepting USD 5 million grant aid from the Japanese government and the World Bank for recovery process in the affected area. In November 2011, the international assistance to Thailand was over USD 20 million from various donors led by Japan.

To create comprehensive and robust disaster management and emergency response system, ASEAN leaders committed to provide fast emergency response, mobilize more resources, and establish close and extensive coordination among ASEAN member nations in the Declaration on *"One ASEAN One Response: ASEAN Responding to Disasters as One in the Region and Outside the Region"* at the 28th ASEAN Summit in Lao PDR on 7 September 2016.[62] Thailand has been chosen to be a center of long-distance disaster relief for ASEAN, especially for the continental ASEAN states, namely Myanmar, Cambodia, Laos PDR and Vietnam. This mechanism can help support risk finance of ASEAN member countries and facilitate international assistance for disaster mitigation.

After the 2011 flooding, Thailand established a National Catastrophe Insurance Fund fully backed by the Thai Government to help bridge the gap in insurance market where reinsurers did not tolerate disaster risk, especially flooding risk in Thailand. The fund, functioned as both primary insurer and reinsurer. The fund issued disaster insurances as follows: Flooding insurance, earthquake insurance (from the magnitude of 7 on the Richter Scale) and storm insurance (from speed of 120 kilometer/hour). In March 2017, the fund was officially terminated because the reinsurance market situation returned to normal and there were no other severe disasters after the 2011 flooding. Following the DDPM Strategy Plan (2017-2021), the Department of Disaster Prevention and Mitigation attempted to set up a new Disaster Risk Management Fund, but they failed due to the lack of sustainable funding.

The Thai government also set up a Disaster Victim Relief Fund, administered by the Office of the Prime Minister, from the donations for the 1995 flooding and subsequent donations and therefore it does not rely on the government budget. The fund acts as a distributor of donations – gathering and channeling donations to disaster victims properly. The fund solicits donations in the event of disasters.

Aside from risk retention, there are several new instruments in risk finance available for Thailand. The government has not used other risk transfer instruments such as catastrophe bonds, there is an opportunity to explore whether this product would be a suitable addition to manage the long-tail of the disaster events. Covid- 19 pandemic highlights the need to develop and apply this innovative tool to transfer risks from the issuer to the investors, especially when specific conditions occur. Mexico was the first country to use catastrophe bonds (CAT bonds)[63], to manage the long-tail of the disaster event. Thailand could follow a similar path by

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[62] https://asean.org/asean-to-improve-synergies-for-one-asean-one-response/#:~:text=%E2%80%9CThe%20ASEAN%20Declaration%20on%20One,SG%20Dato'%20Lim%20in%20his

[63] Mexico issued parametric CAT bond in 2006 as a risk transfer instrument for their FONDEN. The size of the first CAT bond was USD 160 million and this bond covered earthquake risk in three zones for 3 years. Recently, the

using CAT bonds to manage long tail of the disaster event, while applying conventional disaster relief program for other expected risk events.

Thailand can also learn from other countries' experiences in using disaster funds for risk management purposes such as New Zealand's, Turkey's and Taiwan's respective earthquake funds and the US flood fund. One mechanism that can make these funds viable, is to levy the insurers to finance the disaster funds along with the return on investment of the fund.

Additional, instruments such as parametric insurance can help to enhance the effectiveness of traditional public asset insurance and crop insurance. The parametric insurance can simplify the payout approval process due to the clear, measurable, and simple terms of insurance policy. With this advantage, farmers and other vulnerable affected from damaged public assets can recover more quickly.

E. Funding Gap Analysis

Thailand relies on the ex-post financing instruments such as budget allocations, contingency funds and borrowings to manage and respond to disaster risks. These instruments serve as the major disaster risk financing approach of the Thai government. Ex-ante financing is not mainstreamed even though there have been initial efforts in the form of the government's crop insurance program and policy for public asset insurance. The inclusion of risk transfer mechanisms and instruments within the comprehensive disaster risk financing approach of the government may not be receiving urgent prioritization because of the historically low utilization of the contingency fund advances for disaster relief and emergency assistance. While we cannot directly determine financing gap, we consider that Thailand has sufficient funds available, compared to the budget required to meet the recovery costs from a disaster.

As mentioned before, the government has five categories of budget for disaster risk management: 1) regular budget 2) central budget 3) local administrative agencies budget 4) advanced emergency disaster budget and 5) donations. We have estimated the potential funds for recovery purposes from a disaster by gathering information on related regular budget, central budget, and advanced emergency disaster budget. Since there is insufficient data on disaster risk management budget from local administrative agencies and the size of donations are small, we do not include local administrative agencies' budgets and donations.

The budget data is shown in two formats. First, the budget allocation by strategy and second, budget allocation by government agencies. Therefore, we will identify items in budget allocation in both formats, which are likely to be used for disaster recovery. Then, we will add up these items to get a potential fund for recovery purposes based on each format of budget allocation.

From 2016-2021, the government had a budget allocation strategy for disaster risk and climate change management. On the one hand, the government has a direct budget for disaster management as well as for preventing and reducing the impact of climate change. On the other

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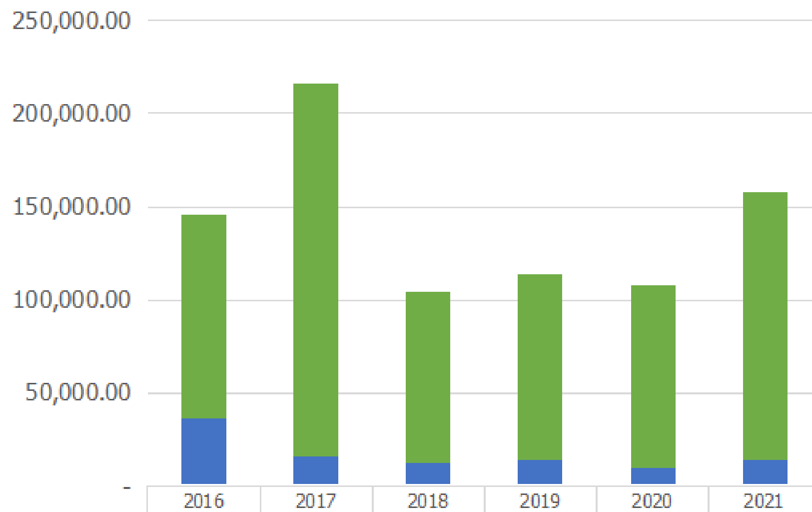
World Bank issued four CAT bonds, which helped Mexico to have financial protection against earthquakes and named storms over the duration of 4 years, in 2020.

hand, the government set aside budget for attending to emergencies and management of disasters, which covers Thai people’s peace, state security, disasters, and state’s urgent necessities. We will classify this latter budget as potential budget for recovery from disaster. The direct budget can vary over time according to the disaster situation from THB 9,945.30 to THB 36,611.50 million, while the budget for emergencies and management of disaster is between THB 91,923.5 and THB 200,785.50 million (See Figure 21). Combining both items, we can have a potential fund for disaster risk management of THB 104,478.00 – 216,176.10 million per year.

Figure 19: Thailand’s Budget Allocation Strategy for Disaster Management 2016-2021 (Million THB)

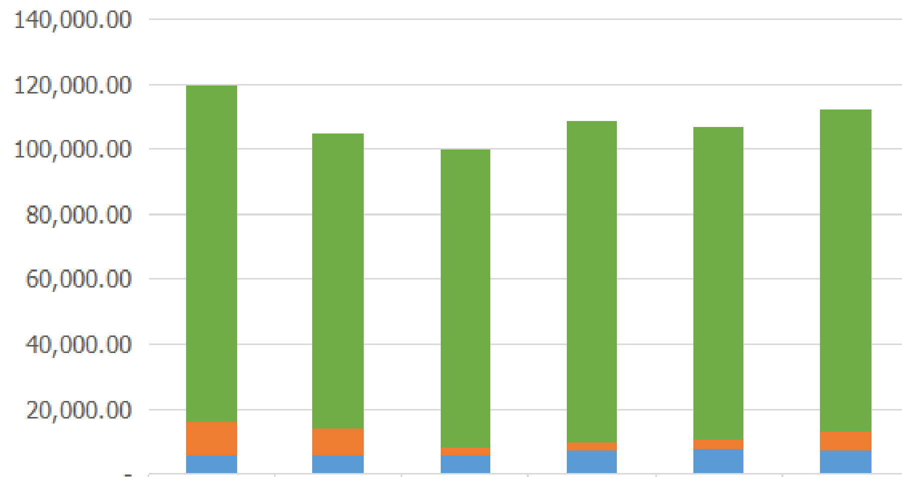


	2016	2017	2018	2019	2020	2021
Potential Budget for Disaster Management	108,999.30	200,785.50	91,923.50	99,500.00	98,059.60	143,496.40
Direct Budget for Disaster Management	36,611.50	15,390.60	12,554.50	14,123.00	9,945.30	14,123.00

Source: The Budget Bureau

Over the same period, based on budget allocation by government agencies the budget for the Department of Disaster Prevention and Mitigation was on the rising trend from THB 5,989.50 million in 2016 to THB 7,057.90 million in 2021. The size of the Central Budget or Central Fund corresponds to budget for attending to emergencies and management of disasters, but more stable around THB 90,000-103,000 million. The reimbursement of Emergency Financial Assistance is also varied by the disaster situation, ranging from THB 2,500-10,000 million (See Figure 22). Together, we can combine these three items to obtain a potential fund for disaster risk management of THB 99,917.86 – 119,534.90 million per year.

Figure 20: Expenditures for Disaster Management by Budget Receiving Agencies 2016-



	2016	2017	2018	2019	2020	2021
Central Budget: Contingency Fund for Emergencies or Immediate Needs	103,545.40	90,985.90	91,423.50	99,000.00	96,000.00	99,000.00
Central Fund: Reimbursement of Emergency Financial Assistance	10,000.00	8,000.00	2,500.00	2,500.00	3,000.00	6,000.00
Regular Budget of DDPM	5,989.50	6,029.70	5,994.36	7,426.50	7,570.30	7,057.90

2021 (Millions of THB)

Source: The Budget Bureau

To be conservative, we choose an estimation with has lower value and lower range. Therefore, our potential fund for recovery purposes is THB 99,917.86 – 119,534.90 million per year.

To estimate the required expenditures for disaster management, according to budget allocation by strategy, the direct budget for disaster management during 2016-2021 is THB 9,945.30 - 36,611.50 million per year. Since we are certain that this expenditure is for disaster management, we can treat it as minimum required expenditure based on budget allocation by strategy. Based on budget allocation by government agencies, our minimum required expenditure, defined as the sum of central fund's reimbursement of emergency financial assistance and regular budget of DDPM, is THB 8,494.36 - 15,989.50 million per year. Again, to be conservative, we choose to an estimation with higher value and higher range of expenditure. Therefore, minimum required expenditure is THB 9,945.30 - 36,611.50 million per year.

By comparing our estimated potential funds and minimum required expenditures, it appears to have some cushion for a disaster risk management fund. This estimation has two limitations. First, we cannot be certain that we can use all potential budget for disaster management or contingency fund for emergencies or immediately needs for disaster risk management. Second, with the presence of very severe disaster, reimbursement of emergency financial assistance can increase drastically as we have seen in the case of 2011 flooding debacle. Therefore, borrowing from capital market is still a necessary option.

From 2016, there have not been many disasters, therefore, the government budget for disaster management is flexible to correspond to disasters in the previous year. Given rare opportunity of severe disasters in Thailand and the manageable size of contingent fund advances around 1.4% of total budget at its peak during the mega flood in 2011, the government seems to be able to handle damages and losses due to disasters.

With respect to the health-related aspect, the definition of disaster[64] under the Disaster Prevention and Mitigation Act B.E. 2550 has a broad concept which also covers epidemic and pandemic. For the MOPH, disaster relief budget, part of Contingency Fund for Emergencies or Immediate Needs in the central budget in 2020 and 2021, was used for the purpose of preventing further virus transmission in the community such as Covid-19 diagnostic testing and building temporary community isolation. The procurement of Covid-19 vaccines was, however, financed by government borrowings. Therefore, the burden from the contingency fund advances should not have large impact on fiscal balance of Thailand.

[64] According to the Article A of the Disaster Prevention and Mitigation Act B.E. 2550 (2007), "Disaster means fire, storm, flood, drought, human epidemics, animal epidemics, aquatic animal epidemics, and plant epidemics, including any type of hazard that has a negative effects on general public, be it induced by nature activity, human activity, accidents or any other incident which is harmful to life, body of people or inflicts damage on property of the people or of the state, including air threat and sabotage actions."

V. Insurance/Risk Finance and Development Integration

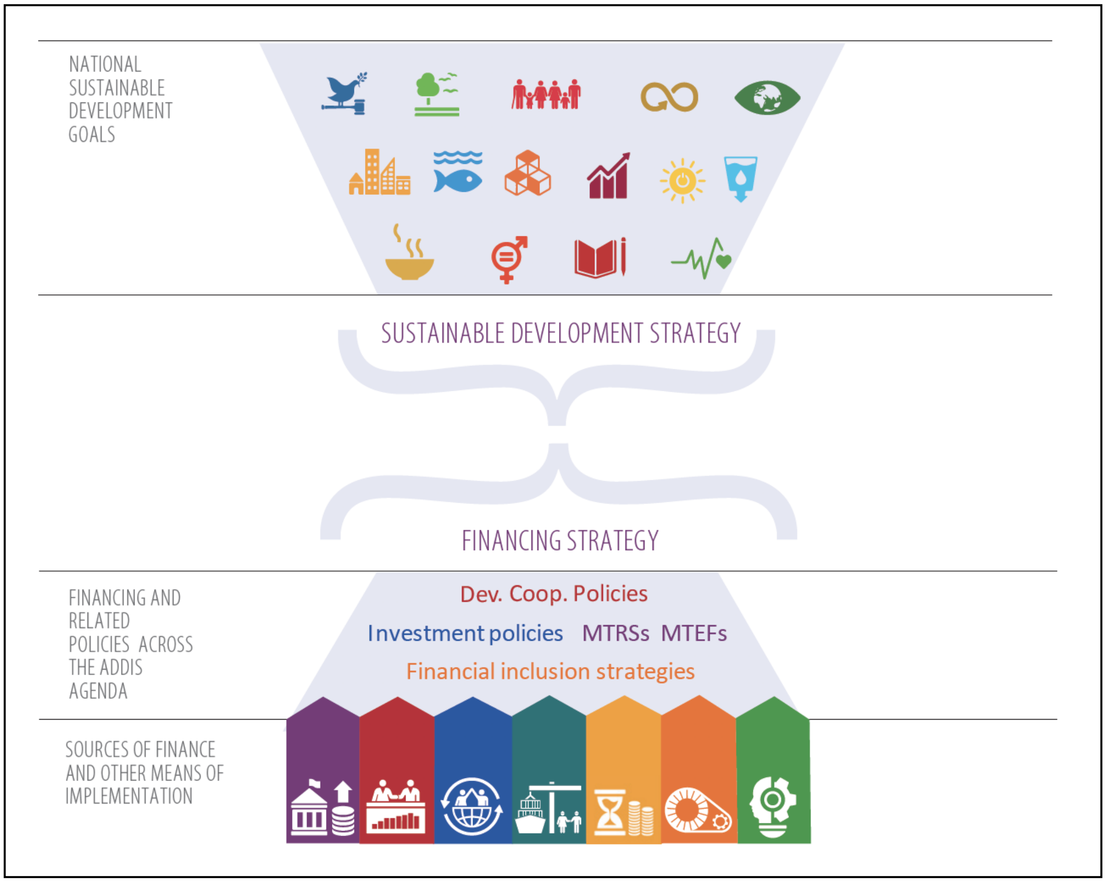
Inclusive insurance and risk finance can be integral parts of promoting sustainable development goals. To ensure financing for and implementation of inclusive insurance and risk finance measures, specific provisions must be included in national or local development frameworks and plans that emphasize the priority for relevant budget allocation.

The government of Thailand has established the policy agendas that present opportunities for the integration of inclusive insurance and risk financing into development frameworks that support international processes. To act on its commitments to the Kyoto Protocol and the Paris Agreement, Thailand had submitted its Nationally Determined Contributions (NDCs) in 2020 which do not explicitly reference insurance and risk financing but acknowledge the need for climate risk and disaster management and overall risk reduction for the country. Among the recommended climate change adaptation options in its National Adaptation Plan, insurance schemes such as disaster insurance and agriculture insurance were included as options for the water management, agriculture and food security and human settlement and security sectors.[65] This aligns with the strategies articulated in the Climate Change Master Plan 2015 – 2050 to develop and promote insurance systems for natural disasters in areas that are at risk; establish a climate risk insurance system for agriculture produce, livestock and fisheries, and encourage private sector to develop natural disaster insurance packages for areas deemed to be at risk at the national, sub-regional and regional level. The importance of providing access to agriculture insurance and to comprehensive social insurance were the only references to insurance and risk financing in the 20-Year National Strategy (2017-2036) and National Reform Plans. The 13th National Economic and Social Development Plan (2023-2027) include milestones on poverty eradication and social protection and on disaster risk management that are relevant for the development and delivery of inclusive insurance and risk financing. Coordination among the focal agencies implementing these policies is crucial to harmonize measures at the national and local levels.

It is also important that inclusive insurance and risk financing instruments are considered within the country's Integrated National Financing Framework (INFF) which is a holistic and fit-for-purpose financing strategy that aims to ensure availability of sufficient levels of funding for development. In both the 20-Year National Strategy and National Reform Plan, no budgetary appropriations for the goals on poverty eradication or social protection have been made for insurance development. Budget allocations for disaster risk financing, on the other hand, are limited to broader risk management measures and not linked to any ex-ante financing instruments such as insurance.

Figure 21: Integrated National Financing Framework (INFF)

[65] The six implementation sectors are Water Management, Public Health, Tourism, Agriculture and Food Security, Natural Resources Management, and Human Settlements and Security.



Source: 2019 Financing for Sustainable Development Report, IATF on Ff

VI. Investment and Natural Capital
A. Market Condition for Insurance Investment

The OIC has recognized the rise of disaster risk and included disaster as a key challenge in their fourth Insurance Development Plan (2021-2025). Climate change acts as a catalyst and leads to other disasters, such as storms, floods, and droughts. As these disasters become more severe and more frequent they affect insurance sector's business risk.

OIC wants to promote the role of insurance system to contribute to the sustainable development of the economy and society. To do so, the OIC will launch the following initiatives:

- Support risk management and implementation of the public sector's policies, which focus on the use of insurance for managing the national risk and facilitate the public sector policies
- Promote financial stability of the insurance industry to improve their abilities to take more risk onto their books.
- Encourage the insurance sector to contribute to Thailand's sustainable developments in terms of environmental, society, and governance (ESG) and use insurance system as a driving force of the Thai economy and society.

Presently, both Thai and foreign insurers must comply with the Risk Based Capital II (RBC II), a capital regulation which considers the risks when estimating the amount of capital needed for each insurer based on the risk of their insurance business. There is no regulation to enforce insurers to invest in SDG related projects. The Securities and Exchange Commission (SEC) requires listed companies and security issuers to disclose more ESG information as part of good corporate governance. Moreover, SEC aims to encourage listed companies to invest more in SDG-related opportunities and to integrate SDG lens into their business practices. For banks and insurance companies, this can mean, for example, implementing green lending standards or promoting insurance products related to climate mitigation or reaching out to the local communities. Indirectly, investment in Thai government bonds could be considered as an option of insurance investment for the development finance since SDG is part of Thailand's 20-year National Strategy. Also, the Thai government also set up development funds such as infrastructure funds to finance large infrastructure projects such as highways by raising funds from the market without raising fiscal burden.

B. Natural Capital Risk Financing

Thailand has made continued progress on financing for nature conservation. The Biodiversity Finance Initiative (BIOFIN) started in Thailand in June 2014 with strong support of the NESDC and the Office of Natural Resources and Environmental Policy and Planning (ONEP) under the Ministry of Natural Resources and Environment (MONRE). BIOFIN works with government, business, finance & banking sector, civil society organizations and communities and to create sustainable finance solutions to not only protect biodiversity, but let it flourish. While Thailand has concrete biodiversity-related policies, the budget allocation for biodiversity in 2016-2020 averaged only 13,000 million baht per year or 0.08% of the country's GDP, and only 0.45% of the overall national expenditure budget in the same period. Through the BIOFIN initiative, UNDP helped identify financial gaps, set goals for cross-sector resource mobilization for sustainable management of Thailand’s biodiversity, and push for the piloting of biodiversity finance solutions including the areas of sustainable tourism, wildlife and protected areas, government budgeting and private finance.

Natural capital is a new concept in Thailand and natural capital risk financing is not available in Thailand. Natural capital insurance is essentially an income protection insurance for those who rely on natural resources to generate their incomes. The deterioration of natural capital could lead to income loss, so an insurance payout will help mitigate the adverse effect of any deterioration. The Ministry of Natural Resources and Environment is responsible for gathering data on natural resources, but they do not have comprehensive and unified data on natural resources. Some of the available data is related to biodiversity and environmental impact assessments (EIA).

The Ministry of Natural Resources and Environment is developing a database on meteorological data such as temperature and rain precipitation and related disasters like drought, flood and heat or high temperature, at the provincial level. The Office of Natural Resources and Environmental Policy and Planning express their interests in marine and coastal resources, coral reef and wetland or peat swamp forest as their high priority in areas affected by climate change and risk transfer as a tool to manage disaster risk. This is definitely a good start, but there is a lot of groundwork needed to be done to support the growth of natural capital risk financing in Thailand.

VII. Summary of findings and recommendations

A. Main Findings

- The inclusive insurance market in Thailand is underdeveloped. The financial risk protection schemes available for the poor and vulnerable are provided through the government's social security system. The opportunities for the private insurance sector to complement this system must be explored. To reach the poor and the vulnerable groups, it is crucial to build "trust" and some agencies such as the National Saving Fund, the Government Savings Bank, and the Bank of Agriculture and Agricultural Cooperatives can be the channels to increase insurance penetration.

- Insurance literacy is necessary to create awareness of inclusive insurance. Aside from financial literacy, the poor and the vulnerable groups still need to attain insurance literacy to understand the benefits of insurance to mitigate risks and secure income during and post-loss periods.

- Digital technology opens up new opportunities for both insurers and the poor and vulnerable. Technology helps to reduce operating costs and can increase access to insurance for the poor and vulnerable groups. However, some groups of the poor and the vulnerable groups still do not have access to reliable internet connection, do not have smart phones and have a low level of digital literacy.

- The development of disaster prevention and mitigation plans can be found at both national and sub-national levels. Thailand shows promising signs related to developments for disaster risk assessment as it starts to promote the development of a disaster prevention and mitigation plan at both national and sub-national levels. The national-level plan set the general direction for all government agencies, while the sub-national-level plan can accommodate for area-specific disaster risk.

- The risk financing strategy in the country is highly reliant on risk retention where contingent budgets are the main financing resources for post-disaster relief and recovery.

- The government mainly resorts to risk transfer for the agriculture sector through its national crop insurance scheme. However, the government can operate more sophisticated insurance tools by developing risk sharing structures with insurers. For example, if the loss ratio is very low, the insurers do not get the full benefit, much of the profit effectively comes back to the government. To balance this, the government acts as an insurer in the catastrophe event. This type of risk strategy and parametric insurance linking to revenue must be explored in more detail.

- The importance of public asset insurance has been expressed in public policy, but opportunities for further information on the status of implementation is needed. The government has a concern over the level budget required to purchase insurance for all government buildings and other assets. Moreover, the government believes that they have sufficient budget to cover all the damages from disasters and that the cost of insurance still outweighs the benefits. The Public Asset Insurance Screening Committee may hold key to expand the scope of eligible public assets, which are allowed to have insurance policy.

B. Recommendations for Technical Assistance developments and interventions for Inclusive Insurance

- Insurance literacy should a key element of financial literacy. The concept of risk management has not been well-understood by large percentage of the population. A better understanding of insurance as a risk transfer instrument that can help improve the welfare of the poor and the vulnerable is needed. The right channel and right approach to this group is required to ensure higher levels of insurance literacy. It is essential that Thailand leverages existing government schemes and institutional arrangements within social protection programs for outreach on insurance literacy as part of financial literacy education initiatives.

- Slow progress to develop inclusive insurance prompts to policy adjustment. Due to the large role of government acting as an insurer in protecting health-related risks and limiting premiums and low awareness of benefits of insurers, private insurers has less incentives to innovate pure health micro insurance product that suits for low-income segment and penetrate the market. Low income households need an insurance product with lower premiums, shorter duration, and simpler terms. Potential market segments initially can include factory employees and women entrepreneurs. Regulatory policy to support the development of microinsurance must be developed as part of the broader goal of financial protection. The regulatory framework for microinsurance should be readjusted to accommodate private insurers to provide microinsurance products. The official definition of inclusive insurance and microinsurance needs to be developed. Collaborative platforms among government agencies and insurance industry to acknowledge the financial risk protection needs of the underserved and agree on concrete action plans for raising awareness and developing needs-based microinsurance products will help to develop the market.

- The use of credit-linked insurance for MSMEs can help improve business resilience**.** In the unfortunate event in life such as death or invalidity of a business owner, this credit-linked insurance can help to pay off outstanding debts, so the MSMEs can continue to operate and the remaining owner's family members are free from debt obligation. This would also help to protect the lenders from unexpected losses from unexpected event of borrowers.

- More timely data is needed to support insurance operations. In the area of crop insurance, faster access to information regarding sales loss and an estimation of the affected area can help the progress of claim process and there should be continuous updates of the situation or, even better, real-time update of the disaster situation.

- Review and recommend improvements for crop insurance scheme. The crop insurance should expand to cover more types of agriculture products. The government should show strong commitment and work with the local and foreign insurers to improve the crop insurance scheme.

- Data analytics and digital technology can help to increase efficiency of the insurance processes. The use of data analytics and technology will enable insurers through new parametric insurance, satellite imaging and drones to facilitate the payout approval processes and this, in turn, will lead to an immediate recovery for disaster victims. Also, digital technology should be used to increase insurance penetration. Thailand can focus on improving the efficiency of insurance operations and increasing access to insurance via data analytics and digital technology. Unified database on inclusive insurance and risk financing is highly demanded.

- Complete the feasibility of developing tailored-made insurance products for women could improve women's access to appropriate insurance services. Due to different natures between men and women, women has specific need for insurance products. New insurance products that can address such need will help improve women's quality of life.

C. Recommendations for technical assistance developments and interventions for risk finance

- Develop a process to ensure the formulation of the budget takes into account differing levels of disaster risk. Thailand should consider developing a national disaster risk financing strategy to formalize planning, financing and monitoring of priorities based on a risk layering approach. Currently, there is no formal procedure to estimate disaster risk and hence the level of budget needed, other than a rule of thumbs of 2.5%-3% of total budget allocated for emergencies and management of disasters.

- Complete a feasibility study on how a financial mechanism can be provided to ensure sustainability of a disaster fund. The key challenge of the disaster fund is how to secure a source of fund.
  Similar to the use of an excise tax in alcohols to fund a Thai Health Promotion Foundation, an excise tax on "dirty fuels" could be a potential source of financing for the disaster fund.
- Develop the concept of innovative risk transfer products. To expand capacity of government in handing disaster risk and improve efficiency of insurance processes. New risk transfer products like CAT bonds and parametric insurance should be introduced. CAT bonds can help transfer disaster risk to investors ease government and parametric insurance can help simplify insurance processes.
- Assist the government construct a unified database of risk financing from related parties. The new database will reflect a more accurate picture of fiscal burden of the government. This will help the government determine the need for new insurance products for public assets better. This database will support the work of the Public Asset Insurance Screening Committee.
- Advise how the government can enhance the coordination between national and subnational governmental agencies on risk financing. This entails strengthening systematic assessment of disaster risks and utilization of risk financing instruments at subnational levels.

D. Policy Recommendations: Public Assets

- Advise the government on the feasibility of scaling up public asset insurance through greater participation by the private sector and improving data systems. As the Public Asset Insurance Screening Committee plays a significant role in determining the rules for public asset insurance, It is recommended that UNDP engage with this committee to make further progress on public asset insurance. One of the functions of the Committee is to study key advantages of using private insurance for other assets. .

Appendices

Appendices 1:Growth of Thailand's Economy by Sector (2001-2021)

	2001	2006	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Agriculture	3.1%	3.9%	6.3%	2.7%	0.7%	-0.3%	-6.5%	-1.2%	4.8%	6.1%	-0.9%	-3.5%	1.4%
Agriculture, Forestry and Fishing	3.1%	3.9%	6.3%	2.7%	0.7%	-0.3%	-6.5%	-1.2%	4.8%	6.1%	-0.9%	-3.5%	1.4%
Non-Agriculture	3.5%	5.1%	0.2%	7.8%	2.9%	1.1%	4.2%	3.9%	4.1%	4.1%	2.4%	-6.4%	1.6%
Industrial	2.5%	5.6%	-4.1%	7.2%	1.7%	0.1%	1.9%	2.2%	2.1%	2.9%	-0.1%	-5.9%	3.4%
Mining and Quarrying	0.1%	8.9%	-1.6%	7.7%	2.2%	-1.6%	2.4%	0.8%	-6.0%	-2.9%	1.7%	-8.9%	-7.1%
Manufacturing	2.0%	5.7%	-4.9%	6.9%	1.9%	0.0%	1.5%	2.3%	2.9%	3.5%	-0.8%	-5.6%	4.9%
Electricity, Gas, Steam, and Air-Conditioning Supply	10.4%	3.3%	1.3%	10.3%	-1.9%	3.1%	4.9%	2.9%	1.8%	2.2%	4.5%	-8.0%	-2.5%
Water supply; Sewerage, Waste Management and Redemption Activities	7.9%	-4.8%	-1.4%	8.3%	7.2%	2.7%	9.0%	7.5%	6.6%	5.9%	5.6%	0.7%	1.5%
Services	4.0%	4.7%	3.3%	8.2%	3.7%	1.8%	5.6%	4.8%	5.2%	4.7%	3.8%	-6.7%	0.7%
Construction	0.6%	1.2%	-4.3%	7.9%	-0.3%	-2.4%	17.1%	8.0%	-3.0%	2.3%	1.6%	1.3%	2.7%
Wholesale and Retail Trade, Repair of Vehicles and Personal and Household Goods	2.8%	5.0%	0.0%	5.2%	0.8%	-0.8%	5.6%	6.2%	6.4%	6.4%	4.5%	-3.2%	1.7%
Transport, and Storage	3.3%	4.3%	1.6%	8.4%	5.2%	3.1%	4.0%	5.3%	8.0%	3.9%	2.8%	-22.9%	-2.9%
Accommodation and Food Service Activities	5.0%	9.5%	12.3%	14.1%	9.7%	2.5%	15.0%	9.3%	10.8%	8.0%	7.7%	-37.5%	-14.4%
Information and communication	25.8%	17.4%	8.4%	8.8%	9.6%	5.3%	10.1%	2.4%	3.9%	8.8%	11.4%	1.1%	5.7%
Financial and Insurance Activities	7.9%	-0.5%	6.1%	15.3%	12.3%	7.5%	8.4%	7.0%	6.7%	3.7%	1.9%	5.1%	5.7%
Real Estate Activities	-1.2%	8.5%	3.5%	2.9%	1.0%	2.2%	1.5%	7.0%	6.7%	5.4%	3.8%	1.5%	1.7%
Professional, Scientific and Technical Activities	-3.0%	6.7%	6.4%	17.2%	1.8%	-1.1%	-1.5%	-2.2%	6.3%	2.8%	1.9%	-4.9%	-2.9%
Administrative and Support Service Activities	19.0%	7.1%	6.1%	16.5%	1.2%	-2.8%	3.6%	1.5%	3.1%	3.5%	2.3%	-22.0%	-5.0%
Public Adminstration and Defence, Compulsory Social Security	3.2%	2.9%	3.8%	4.2%	0.5%	1.3%	1.1%	0.4%	0.8%	1.5%	1.4%	1.6%	0.6%
Education	1.0%	3.3%	2.7%	4.9%	1.9%	2.2%	0.2%	-0.2%	0.4%	1.0%	1.2%	1.3%	0.6%
Health and Social Work	6.7%	2.6%	4.8%	5.9%	3.7%	5.4%	3.2%	3.0%	4.1%	4.8%	3.7%	3.2%	3.8%
Arts, Entertainment, and Recreation	-3.9%	-1.2%	13.2%	18.3%	8.2%	0.3%	9.2%	21.3%	12.1%	12.2%	14.4%	-13.0%	4.8%
Other Service Activities	4.8%	2.9%	7.0%	12.0%	5.9%	2.2%	3.1%	3.9%	4.8%	4.2%	2.7%	-7.4%	-2.2%
Private Houshold with Employed Persons	1.9%	-8.3%	6.0%	2.3%	-7.2%	-4.4%	3.7%	-0.1%	-2.8%	-2.6%	-0.6%	2.8%	1.1%
Gross Domestic Project (GDP)	3.4%	5.0%	0.8%	7.2%	2.7%	1.0%	3.1%	3.4%	4.2%	4.2%	2.2%	-6.2%	1.6%

Source: NESDC

Appendices 2: Data Sources

Organization	Source	Nature of Data
Supply Side of Inclusive Insurance and Risk Finance		
1. Primary Insurers		
Non-Life		
1.1 AXA General Insurance	Official request	Current market condition of motor and property insurance as well as microinsurance, Opportunities and challenges for inclusive insurance and risk finance
1.2 Thai Insurance	Official request	Current market condition of microinsurance, Opportunities and challenges for inclusive insurance and risk finance
Life		
1.3 Muang Thai Life Assurance	Official request	Current market condition of life insurance, Opportunities and challenges for inclusive insurance and risk finance
2. Reinsurance Broker		
2.1 Aon	Official request	Development of insurance industry (both life and non-life), Best practices including agricultural insurance schemeOpportunities and challenges in inclusive insurance and public asset insurance
3. Reinsurers		
3.1 Munich Re	Official request	Development of insurance industry (both life and non-life), Best practices including agricultural insurance scheme, Opportunities and challenges in inclusive insurance and public asset insurance
3.2 Swiss Re	Official request	Development of insurance industry (both life and non-life), Best practices including agricultural insurance scheme, Opportunities and challenges in inclusive insurance and public asset insurance
4. Main Coordinators		
4.1 Thai General Insurance Association (TGIA)	Official request	Current market condition of non-life insurance industry, Access to insurance products of the poor and vulnerable groups and possible products for inclusive insurance, The role of digital technology
4.2 Thai Life Assurance Association (TLAA)	Official request	Current market condition of life insurance industry, Access to insurance products of the poor and vulnerable groups and possible

Organization	Source	Nature of Data
		products for inclusive insurance, The role of digital technology
Demand Side of Inclusive Insurance and Risk Finance/ Regulators		
1. Ministry of Finance		
1.1 Fiscal Policy Office (FPO)	Official request	Policies on fiscal sustainablitity and risk finance, Future trend of fiscal burden, Current measures related to inclusive insurance, Crop insurance policy making (e.g. scheme Improvement, premium subsidies), overseeing non-financial institutions
1.2 Office of Insurance Commission (OIC)	Official request	Direction of Insurance Industry Development, Regulations and product approval process, Possibility of Disaster Fund, risk finance and inclusive insurance (including micro insurance), Incentives and support for inclusive insurance
1.3 Comptroller General's Department	Official request	Disaster relief budget regulation and data on Contingency Fund Advances for Disaster Relief and Emergency Assistance
1.4 Department of Treasury	Official request	Policy on public asset management and available risk finance for public assets
1.5 State Enterprise Policy Office	Official request	Public Private Partnership (PPP) Projects
1.6 Bank of Agriculture and Agricultural Cooperatives	Official request	Insurance distribution and insurance literacy channel, Financial resources for self-help groups and community-based institutions, Demand side of inclusive insurance information
1.7 Government Housing Bank	Official request	Insurance distribution and insurance literacy channel, Demand side of inclusive insurance information
1.8 National Saving Fund	Official request	Policy on promoting retirement savings starting at a young age, with a particular focus on freelance and informal workers, giving incentives for contributors such as microinsurance, Demand side of inclusive insurance information.
1.9 Government Saving Bank	Official request	Insurance distribution channel, financial resources for low-income earners, Demand side of inclusive insurance information
2. Ministry of Agriculture and Cooperatives		

Organization	Source	Nature of Data
2.1 Department of Agriculture and Agricultural Extension (DoAE)	Official request	Channel to reach out and help develop farmers, Demand side of inclusive insurance information
2.2 Cooperative Promotion Department	Official request	Channel to reach out and help develop farmers, Demand side of inclusive insurance information
3. Ministry of Social Development and Human Security	Official request	Policies to support the poor and vulnerable groups, Demand side of inclusive insurance information, Future trend of fiscal burden.
4. Ministry of Public Health	Official request	Policies to support the poor and vulnerable groups, Demand side of inclusive insurance information, Future trend of fiscal burden
5. Ministry of Interior		
5.1 Department of Disaster Prevention and Mitigation	Official request	Policy on disaster risk management and financing and statistics
5.2 Department of Local Administration	Official request	Current Situation and policy on disaster risk management and financing
6. Ministry of Industry		
6.1 SME Development Bank	Official request	Policy to support access to credits for MSMEs
7 Office of the National Economic and Social Development Council	https://www.nesdc.go.th/nesdb_en/more_news.php?cid=155	Macroeconomic Data of Thailand such as Gross Domestic Products
8. Bank of Thailand	https://www.bot.or.th/Thai/FinancialInstitutions/Highlights/pages/financialaccess.aspx	Survey of Thai Household's Access to Financial Services 2020
9. Related Research & Technical Institutions		
9.1 Puay Ungpakorn Institute – Bank of Thailand	Official request	Overall views on inclusive insurance and risk financing

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Appendices 4: Scope of Insurance under The Public Asset Insurance Screening Committee's Resolution of 29 March 2021 on the Self-Insurance of Public Assets

Scope of Insurance
The arrangement of public asset insurance shall be as follows.

1. Public assets that can be insured without the approval of the Public Asset Insurance Arrangement Screening Committee

1.1 Public assets under a legal provision

If a legal provision prescribes that such public asset must be insured, insurance can be obtained in accordance with the law without having to obtain the approval of the Public Asset Insurance Arrangement Screening Committee.

1.2 Public assets with approval by the cabinet's resolution

1.2.1 Individual assets that the cabinet has already resolved to obtain insurance.

1.2.2 Assets under the rules regarding public asset insurance pursuant to the cabinet's resolution on 3 May 2005.

(1) Government venues in the country must have their own securities, except government venues with inventories or the government's general factories, which may be severely impacted by fire. Insurance may be obtained for the latter.

(2) State enterprises with assets that may be severely damaged by fire shall obtain insurances for their factories or inventories.

(3) Government venues in foreign countries which the government owns may obtain insurance pursuant to the opinion of the Ministry of Foreign Affairs.

(4) Insurance for government vehicles in foreign countries.

(4.1) Third-party insurance shall be obtained for the common vehicles of the offices and the cars provided for officers in certain positions or as stipulated by the laws of that country.

(4.2) If a different type of insurance from (4.1) is needed for the common vehicles of the offices and the cars provided for officers in certain positions due to unsafe circumstances in that country, high rate of vehicle theft, weather, chaotic traffic, and problems about drivers employment, such insurance can be obtained pursuant to the opinion of the Ministry of Foreign Affairs.

(4.3) Embassies and consulates in countries with land borders with Thailand can obtain motor insurance with a Thai insurance company, covering damages in the countries where the embassies and the consulates are located.

(5) Insurance may be obtained for other types of public assets, with the approval of the Public Asset Insurance Arrangement Screening Committee.

(6) Insurance for a public asset, such as government venues, vehicles, etc., is obtained to insure the asset before damage occurs. Therefore, insurance should be obtained to cover the government's other assets. However, in determining the insured value for the government's other assets, the Public Asset Insurance Arrangement Screening Committee should carefully consider whether the insurance premium rate is worth the coverage.

1.3 Public assets which the Public Asset Insurance Arrangement Screening Committee has already approved in principle

<u>**Voluntary motor insurance for government vehicles**</u>

Initial criteria for government vehicles to obtain voluntary motor insurance

1. The vehicle must be a government vehicle only used for the organization's tasks.
2. The usage of the vehicle for the organization's tasks has a high accident risk.
3. The organization requesting the insurance must have enough budget for the insurance without requesting for additional budget specifically for this matter.
4. If any organization has other reasons not specified by the Public Asset Insurance Arrangement Screening Committee, that organization shall obtain approval on a case by case basis.

Principles for obtaining voluntary motor insurance for government vehicles

Group 1 Approval is granted in principle to obtain voluntary motor insurance for government vehicles in the three southern border provinces: Yala, Pattani, and Narathiwat and the four districts of Songkhla: Saba Yoi, Thepha, Chana, and Na Thawi. The proposed vehicles must be used for normal tasks in the area. Documents and evidence are required to show that the vehicles are used for normal and regular tasks in the three southern border provinces: Yala, Pattani, and Narathiwat and the four districts of Songkhla: Saba Yoi, Thepha, Chana, and Na Thawi. In obtaining the insurance, the government agency that applies for the insurance shall also negotiate to obtain terrorism coverage. If the situations in the three southern border provinces and the four districts of Songkhla return to normal, the request for voluntary motor insurance shall adhere to the practice in Group 2 or Group 3, as applicable, or propose it to the Public Asset Insurance Arrangement Screening Committee for their consideration.

Group 2 Approval is granted in principle to obtain voluntary motor insurance for government vehicles that carry higher accident risk than other vehicles. If an accident occurs, it may widely cause severe damages to many people's lives and properties.

2.1 Vehicles used in emergencies or special circumstances with possibilities of accidents, such as ambulances, emergency vehicles, public disaster relief vehicles, fire trucks, vehicles used to follow and arrest offenders, vehicles and motorcycles used in the tasks and procession of the royal families and the ministers.

2.2 Vehicles used to transport dangerous materials and/or substances, such as oil trucks, chemical trucks, etc.

2.3 Passenger vehicles and buses with 20 seats or over.

Group 3 Approval may be granted in principle to obtain voluntary motor insurance for other government vehicles not in Group 1 and Group 2. The chief of the government agency shall approve the number of vehicles to be insured as necessary and appropriate within the allocated budget. No additional budget shall be requested for this particular purpose.

In obtaining voluntary motor insurance for the government vehicles in Group 1, Group 2, and Group 3, the chief of the government agency shall approve the number of vehicles that are currently registered and used as necessary and appropriate within the allocated budget. No additional budget shall be requested for this particular purpose.

Types of Voluntary Motor Insurance for Government Vehicles

The agency should ensure that the voluntary motor insurance for government vehicles is in accordance with the organization's needs and the insurance premiums are acceptable and do not cause unnecessary expenses. Moreover, regarding the liabilities of the government's drivers under the Act on Offenses Committed by Officials of State Organizations or Agencies B.E.2539 (1996), drivers are protected if they commit offenses against a third party. If such offense occurs from negligence, the agency shall be responsible for the damage. If such offense occurs by intention or gross negligence, the driver shall be responsible. This is to ensure that government officials are responsible for their duties. Moreover, obtaining motor insurance for government vehicles should aim at protecting people that might be affected.

Therefore, the Public Asset Insurance Arrangement Screening Committee determines the rules of obtaining voluntary motor insurance for government vehicles as follows.

1. For voluntary motor insurance in Group 1 and Group 2, the chief of the government agency shall consider the type of insurance as necessary and appropriate.

2. For voluntary motor insurance in Group 3, voluntary motor insurance type 3 shall be obtained with the coverage for liabilities and damages on lives, bodies, and hygiene of a third party within the minimum specified in the notification of the registrar regarding motor insurance policies that include motor vehicle victims and the motor insurance premium rates specified by the OIC.

2. Public asset insurance that requires the approval of the Public Asset Insurance Arrangement Screening Committee

<u>The public asset insurance arrangement</u>

The asset to be proposed must be the government's asset and/or asset that can be procured under the Public Procurement and Supplies Administration Act B.E. 2560 (2017).

Initial criteria for a public asset to be proposed for insurance

1. An asset that, if damaged, may cause impact or danger to lives, bodies, hygiene, and asset of other people, such as transmission towers, air quality monitoring towers, office signs on high buildings, satellite dishes installed in high places, and airplanes;

2. An asset used for public services that, if damaged, may cause troubles to the general public, such as dams, airports, and transport stations;

3. An asset of value at least 100 million baht, such as medical equipment, communication equipment, control or monitoring systems; or

4. It is not an asset under a contract or concession agreement that requires insurance because the insurance has to be obtained as a part of the contract.

The asset list under the Public Procurement and Supplies Administration. Act, B.E. 2560 (2017) consists of supplies, durable objects, lands and buildings. The Public Asset Insurance Arrangement Screening Committee believes that the list of supplies can be used up. Therefore, no insurance is needed. The Committee prescribes that only the following durable objects and buildings can be insured.

Durable objects

1. Durable objects at reasonable standard prices specified by the Budget Bureau and eligible to be proposed for insurance.

- Construction materials
- Agricultural materials
- Medical materials
- Advertising materials
- Electricity and radio materials
- Factory materials
- Scientific materials

2. Durable objects for which the Budget Bureau has not specified the standard price.

Buildings

1. A building to be proposed for the approval of the Public Asset Insurance Arrangement Screening Committee shall not belong to the definition of government venue and not be a

government venue with inventory or the government's general factory, which is already insured by the resolution of the cabinet.

2. A building/construction valued at least 100 million baht or a building/construction of which the engineering components or installations constitute at least 100 million baht in total value can be proposed for insurance, such as a building with distinctive architectural characteristics, exhibition centers, and laboratory buildings.

Appendices 5 Tables and details on Health Schemes

Summary of Health Care Systems in Thailand

	Universal Coverage Scheme (UCS)	Social Security Scheme (SSS)	Civil Servant Medical Benefit Scheme (CSMBS)
Type[1/]	Non-contributory	Contributory	Civil servants
Established	2001 (B.E. 2544)	1990 (B.E. 2533)	1960 (B.E 2503)
Responsible Organization	National Health Security Office (NHSO)	Social Security Office, Ministry of Labour	Comptroller General Department, Ministry of Finance
Source of Fund	Government Budget (Capitation)	Contribution (Tripartite: Employer, Employee, and Government)	Government Budget
Beneficiaries	Thai citizens who are not covered by SSS, or CSMBS, or any other schemes specified by laws	Employees in private sector, ex-employees, non-employees	Civil servants, government employees, and their families
Numbers of Beneficiaries (Persons)	48.6 millions	11.03 millions	5 millions
Service Providers	Public and private hospitals contracted with NHSO (and their networks)	Public and private hospitals contracted with SSO (and their networks)	Mainly public hospitals. However, in case of emergency, private hospitals can be allowed
Benefits	Benefits package designed to cover health services, health protections, screening for selected diseases (condition applied)using drugs listed in the National List of Essential Medicines (NLEM)	Benefits package designed to cover selected health services using drugs listed in the National List of Essential Medicines (NLEM)	Cover almost all types of health expenditures, medical equipment, and drugs including using of special patient room and foods

Remarks: [1/] Thailand Social Protection Diagnostic Review, Social Protection Mapping and Vulnerability Analysis, ILO, UNICEF, IOM, UN Women 2021

Summary of the UCS scheme

UCS has the mission to provide free basic healthcare for all Thai people of all ages. The scheme was established in 2001, after SSS and CSMBS. UCS therefore currently covers only Thai people who are not covered by the other two programs. The SSS covers both formal and informal workers. On a compulsory basis, the SSS is financed by tripartite system, government budget, employer and employee contributions, and offers benefits including sickness, pregnancy, invalidity, death, unemployment, child allowance and old age to formal sector private employees (section 33 of Social Security Act). The total formal workers covered in the section was about 11 million persons. On a voluntary basis, the SSS financed by bipartite system, government budget and individual, offers coverages through section 39 of the Social Security Act. Section 39 applies to ex-employees who used to be covered under section 33 of the Social Security Act. The coverages are the same as those of section 33, excluding unemployment benefits.

Informal workers are eligible to have access to healthcare through the Social Security Scheme. Informal workers can also voluntarily participate in the SSS and receive benefits under section 40 of the Social Security Act which is financed by the government budget and participated individual. Options of benefits include sickness, invalidity, death, child allowance, and old-age. Compared to sections 33 and 39, section 40 offers less comprehensive benefits. Section 40 can be divided into 3 groups by amount of monthly contribution: THB 70/month for Section 40 (1), 100 THB/month for Section 40 (2) and THB 300/month for Section 40 (3). All groups of Section 40 covers income compensation in case of sickness and invalidity and funeral expenses. However, Section 40 (1) does not provide pension and child allowance, while Section 40 (2) does not offer child allowance. Total informal workers of sections 39 and 40 are 1.96 million and 10.4 million respectively. It should be noted that the total members of section 40 rose sharply from 3.5 million in 2020 to 10.4 million in 2021 because eligible workers under this section can receive compensation from the government Covid-19 relief measure[66] announced in August 2021 (See Figure 11).

[66] On 13th July 2021, the Cabinet approved relief measures for labours in Social Security Scheme. These measures have covered employers and employees under Section 33, 39 and 40 of Social Security Scheme in 9 businesses in 29 Maximum and Strict Controlled Areas. For those under Section 33, employees with Thai nationality would be eligible to receive 2,500 Baht cash transfer, while the employers would be eligible to receive cash transfer 3,000 Baht per head of employees with maximum 200 employees. On the other hand, those under Section 39 and 40 would be eligible to receive 5,000 Baht cash transfer by August 2021. This measure also encouraged those that were not in the system or do not have employers to apply to SSS within July 2021 to be able to be covered by this measure.
Source: http://www.thaigovt.go.th
(https://ofm.mof.go.th/th/view/attachment/file/3136303132/%E0%B8%A1%E0%B8%95%E0%B8%B4%E0%B8%84%E0%B8%93%E0%B8%B0%E0%B8%A3%E0%B8%B1%E0%B8%90%E0%B8%A1%E0%B8%99%E0%B8%95%E0%B8%A3%E0%B8%B5%E0%B8%A7%E0%B8%B1%E0%B8%99%E0%B8%97%E0%B8%B5%E0%B9%88%2013%20%E0%B8%81%E0%B8%A3%E0%B8%81%E0%B8%8E%E0%B8%B2%E0%B8%84%E0%B8%A1%202564.pdf)

Appendices 6

Details of disaster risk management at a local level

Structure of the Local Disaster Prevention and Mitigation Action Plan

(I) Introduction

This section explains the rationale of the action plan and gives an overview of the plan as well as its objectives.

(II) General Information

The section presents geographical information of the subdistrict, population, economic profile, transportation infrastructure and river system. It also contains the record of past disasters in the subdistrict. For each type of disaster, there is information regarding the frequency of disaster, affected areas, impacts of the disasters in terms of number of affected households, deaths, losses, injured and cost of damage over the past 5 years. Moreover, the subdistrict ranks disaster risk and its possible impact and constructs a disaster calendar, describing seasonal pattern of disasters in the subdistrict.

(III) Disaster Management Framework

This section is pertaining to the structure of disaster management system and how the disaster management at the subdistrict level can be linked to the disaster management at the national level. It explains the role of each agency involving in the local disaster management system and chain of commands as well as sources of fund (e.g. from regular budget, central budget or budget reallocation).

(IV) Ex-Ante Disaster Action Plan

Regular disaster risk assessment is part of this section. Following UNDP's comprehensive risk assessment approach, the process of risk assessment starts are as follows: 1) Understanding of current situation, needs and gap 2) Hazard assessment 3) Exposure assessment 4) Vulnerability analysis 5) Loss/Impact analysis 6) Risk profiling and evaluation and 7) Formulation or revision of DRR strategy and action plans. It also outlines a disaster risk reduction action plan in general and for specific disaster risks in this area and establishes an early warning system.

(V) During Disaster Response

This section is related to the establishment of Local Emergency Operation Center, emergency management, communication during the crisis, temporary shelter, damage and need assessment, donation management and emergency termination.

(VI) Ex-Post Disaster Action Plan

This section is related to a recovery plan. Under the principle of "Build Back Better and Safer", damage and need assessment at household level is recommended prior to the development of the recovery plan. There are both short-term and mid-to-long-term plans.

(VII) Action Plan Implementation

The section clearly elaborates the role and responsibility of each agency in the implementation of this action plan. It establishes a monitoring and evaluation mechanism, continuous learning and improvement process and regular review of the Disaster Prevention and Mitigation Action Plan.

The structures of the Local Disaster Prevention and Mitigation Action Plan follow the standard template of action plan development**.** The action plans provide general information on their subdistricts including the record of disasters in their areas and state their risk management framework. The action plans are divided into three stages: before-, during- and after-the disaster. The action plans also explain the process of implementation and the sources of funding used during the normal circumstances and emergencies. However, none of them attempt to estimate the required disaster management budget for their districts.

The action plan should allow for long-term risks such as climate change. In this action plan, we do not have instructions to assess long-term risk such as climate change, which is likely to induce more frequent and more severe disasters in the future. Usually, the action plan covers only past and existing disasters. This, in turn, could lead to a higher fiscal burden on the government. Therefore, the action plan should incorporate the monitoring of the development of climate change in the existing assessment of disaster risk in Thailand.

Source: Compiled by Fiscal Policy Research Institute Foundation (FPRI) based on local administration's Disaster Prevention and Mitigation Action Plan.