MALAYSIAN RE FORESIGHTS

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Malaysian Insurance Highlights (MIH) 2021, which will be published at the end of **April 2022**, will **focus** on **the flood risks in Malaysia and explore methods to address the protection gap**.

This the executive summary from the report.

Flooding is regarded as Malaysia's most severe and frequent disaster causing the highest amount of annual average losses. This has been painfully evidenced once again in December 2021, when the most severe flood event since 2014 struck the country, killing about 50 people, displacing more than 120,000 and causing an estimated flood related claims exposure of RM 3 billion (US$ 720 million).

Historically, Malaysia experienced adverse flood events every three years. In addition, flash floods occur on a more frequent basis. From 1998 – 2021, around 14 major flood events took place in Malaysia. Apart from the December 2021 event, a flood event in 2014, affecting the East Coast region was one of the worst hydrological disasters to hit the country.

According to the Malaysian Disaster Management Agency (NADMA) about 5 million Malaysians live in flood prone areas. However, less than 25 % of all homeowners are insured against flood risk, according to a study by Zurich Insurance. Thus, underinsurance or the low flood insurance penetration is a major challenge. As a result, the government supports people affected by flood. In the recent event, it committed a financial contribution of RM 1.4 billion (US$ 336 million) in cash and other forms of emergency assistance. Since only about 5 % of all vehicles in Malaysia are flood insured, the country's general insurance association, PIAM, supported vehicle owners with a flood relief fund of RM 2.4 million to cushion the losses suffered from water-damage.

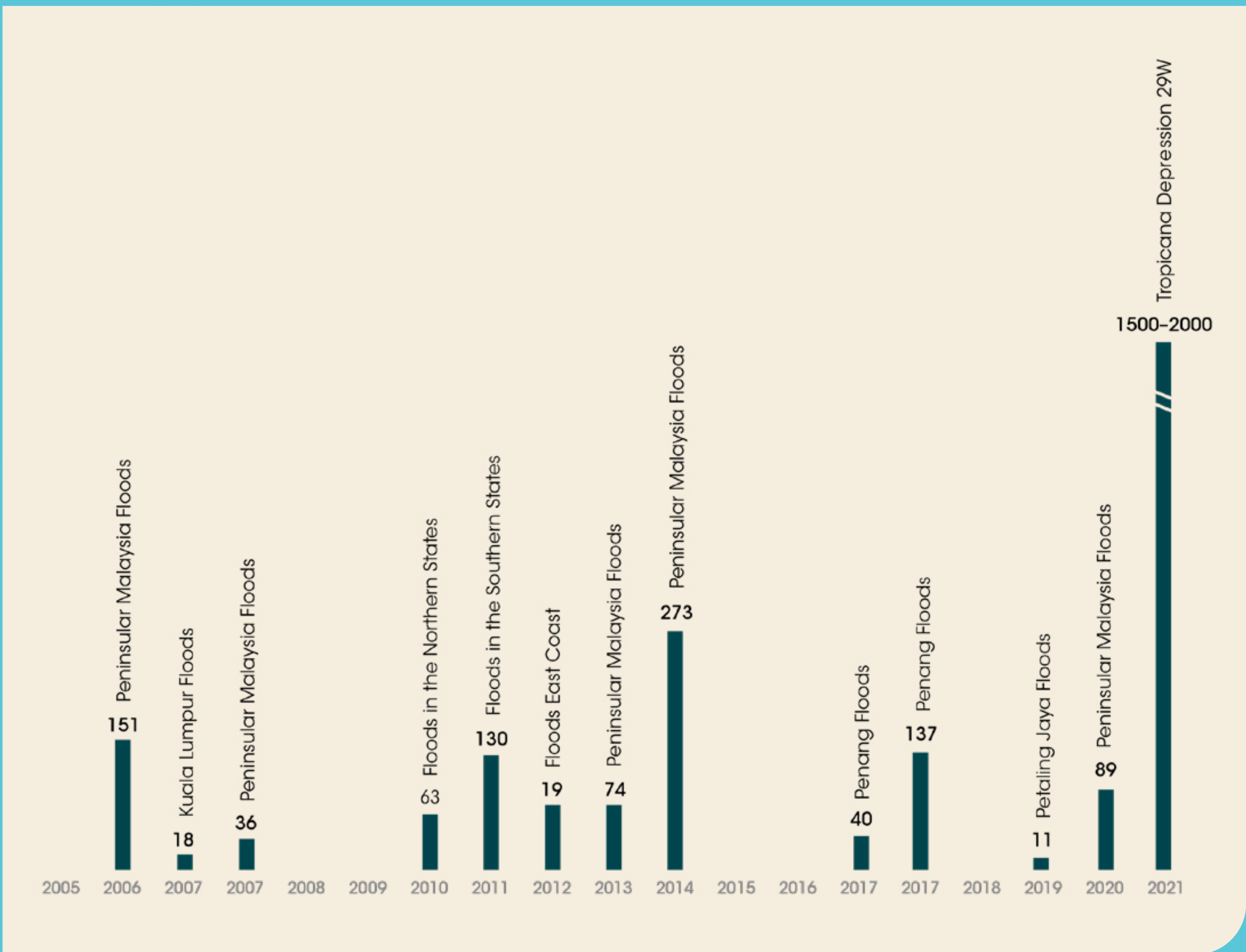


Figure 1: Recent domestic insured flood losses (exceeding RM 10 million; in RM million; 2005–2021)

Malaysia's insurers see no capacity issue for flood insurance Despite the low insurance penetration, insurance and reinsurance capacity for flood risk is sufficiently available, according to the interviewees participating in this year's edition of the Malaysian Insurance Highlights. The country's general insurers are adequately capitalized to shoulder the risk, which predominately concerns Malaysia's rural regions. However, the pricing of the risk is perceived as high and, as a result, flood cover is often only purchased in flood prone regions or following recent events.

While Malaysia's large corporations and public institutions are seen to recognize the risk, SMEs and consumers tend to underestimate it. The limited understanding of the risk, its magnitude and potential financial impact, influence the price sensitivity, as the insurance is perceived as expensive. Human interventions into nature, such as deforestation and urbanisation, but also climate change are seen as drivers for flood coverage but mainly among those, who already buy the product.

Demand is also influenced by the government's willingness to support and partially compensate the low-income segment of the country for the loss caused by a disaster. Although the government budgets for these kinds of events, there is a high consensus that historically the government's bail-out measures have been insufficient to compensate the lower income sections (B40 segment) for its losses.

Supply side shortcomings are rare. They only arise in flood prone areas that are mostly inhabited by the country's low-income population. Flood models have greatly improved and although they might still lack granularity, their availability is continuously improving with vendor models now complementing the most widely used broker and reinsurer models.

Map 1: Flood prone areas in Malaysia

Flooding predominately affects the B40 segment, as it hits most frequently the rural east coast of the Malaysian peninsular or lower lying urbanizations prone to inundations.

Our interviewees also left no doubt that Malaysia's government should take a more prominent role in improving risk protection to the lower income segment. Currently, the government assumes the role of an insurer of last resort. Going forward, insurers believe that some form of premium subsidies for this part of society or a compulsory insurance scheme would be a more efficient, predictable and reliable solution.

Drivers of Flood Insurance

Climate change has become a driver to purchase more flood protection with more people realizing that weather patterns have changed, and catastrophes occur more frequently. In addition, human interventions, such as urbanization, deforestation and the expansion of agriculture have changed the ability of the environment to absorb or retain water from heavy rainfall. Furthermore, drainage systems are often either insufficient or blocked. Finally, assets and values have been growing as the country's GDP increased. Insurance penetration is mainly seen to have progressed in tandem, but not in excess of value creation.

Due to its scale, frequency, data availability and obtainable capacity, insurers regard Malaysia's flood risk as insurable. Flash floods triggered by heavy or continuous rain are the most common form of flooding, although the magnitude of the loss they cause is usually limited. Nevertheless, they are difficult to predict and model because they happen quite localized. Particularly in urban areas flash floods can trigger hefty damages, especially if drainage systems are insufficient or blocked. Storm surges also pose a risk for Malaysia's East Coast, but usually the damage caused is small, given the rural nature of the region.

However, as evidenced by the recent December flood, Malaysia's central part also suffers from flooding, causing severe losses. Insurers also pointed out that there are striking differences between residential and commercial properties, as residential properties are often located in lower areas with a higher flood exposure, while commercial properties are frequently situated in safer places with more reliable drainage systems.

Flood risks are mainly covered through property and fire insurance. Coverage is bought most consistently by the larger corporations, while in the SME segment penetration is low. Business interruption is the second most frequently mentioned line of business affected by flood losses, although the impact is limited as the insurance is mostly bought by large corporations and its coverage is capped and only kicks-in after the deductible has been exhausted.

Indicator	Unit	2000	2010	2020	CAGR 2000–2010	CAGR 2010–2020
Total GDP	RM billion	388.168	833.104	1,416.605	7.9 %	5.5 %
Service GDP	RM billion	179.726	403.864	776.087	8.4 %	6.7 %
Industrial, incl. construction GDP	RM billion	187.567	337.399	508.660	6.0 %	4.2 %
Agricultural GDP	RM billion	33.379	84.060	116.247	9.7 %	3.3 %
Population	People in million	23.495	26.589	32.939	2.0 %	1.4 %

Table 1: Selected exposure indicators: Malaysia

Stable pricing

Prices for flood coverage have been stable to declining for the last three years. As part of property/fire or motor insurance, flood coverage used to be tightly regulated by the tariff scheme governed by Bank Negara. Since the launch of the de-tariffication of both lines, insurers gained some flexibility to adjust and reduce the pricing for property and fire by 30 % maximum and by 10 % for motor. Going forward, much will depend on the launch of the next phase of the de-tariffication, which has been postponed due to the COVID-19 pandemic. Insurers therefore expect a rather stable to slightly declining pricing for as long as rates are regulated.

Modelling is seen to have greatly improved and to have contributed to a stable risk appetite. Insurers assess their flood risk through models provided by the main brokers, the leading reinsurers or through vendors of natural catastrophe models.

As more events have been recorded in recent years, there is more data available to assess flood risks. However, models still lack granularity because the country's postal codes, which form a basis for the flood models, cover a geographic area, which is far too broad and diverse to enable a robust risk assessment. In addition, available models are criticized for not providing sufficient foresight, as current data does not yet accommodate for the impact of climate change on the Malaysian risk landscape.

Malaysian Re CEO interview with AIR Magazine, Sep 2021

(with updated info for March 2022 newsletter)

Zainudin Ishak

President & Chief Executive Officer,
Malaysian Reinsurance Berhad

1. **How has 2021 been for your organization, in terms of financial performance? What were the renewal rates like in January 2022, and do you expect a big shift from that in the next renewal period?**

For the first half of calendar 2021, Malaysian Re concluded our Financial Year Ended 31 Mar 2021 (FYE 2021) with the highest premium in the Company's history as we posted RM1.4 billion, a positive outcome resulted from our Business Transformation (T20) Programme which started in 2017 of which during this period, Malaysian Re was at its lowest abyss as the Company had just delivered its worst result in almost 20 years.

We took some unpopular decisions including ceasing close to RM300 million of businesses as we built back the Company and re-laid the foundation. For FYE 2021, we posted the Company's best net profit in 5 years with RM133 million, which is 38% higher than previous year's profit of RM96 million. We are grateful for the positive support which we have received from our clients and partners for the milestone.

For the new Financial Year, FYE 2022, our first half ended 30 September 2021, Malaysian Re continued the strong growth trajectory by writing RM832 million, which is also the highest premium written in our first financial year half. Our net profit also showed an improvement at RM50 million as compared to RM47million for the same period last year.

For domestic market, our treaties experience for January 2022 renewal indicated an increase to both motor and non-motor XL in tandem with the increase in overall market loss experience. On the other hand, commission rates for proportional treaties were generally flat although there were marginal increases for loss-affected treaties. We do not see domestic reinsurance market to see major surprises in terms of pricing for the next renewal.

2. **What regulatory developments has BNM introduced in the past year that has had a significant impact on the reinsurance market? What about upcoming regulations that they are planning to introduce?**

BNM relaxed a number of regulatory requirements during the early stage of the pandemic which allowed (re)insurers in the domestic market to strategically divert their resources from stringent regulatory requirements, to actually shift their operations which includes underwriting, marketing and customer service to online. Also, the decision to defer the next phase of detariffication to Dec 2021 really helped to stabilize the market amidst the uncertainty that the pandemic has brought.

One upcoming regulation that the (re)insurers will be watching closely is the proposed enhancements to the design of the Risk-Based Capital (RBC) adequacy framework for licensed (re)insurers and licensed (re)takaful operators. As a reinsurer, we are optimistic that the enhanced RBC will enable us to strategically grow our international and specialty business.

3. **What have been some of the major developments in the reinsurance market over the past year and how is the market evolving? How has COVID-19, specifically, impacted your business and the reinsurance market as a whole?**

Obviously the once-in-century pandemic initially caught many in the reinsurance market including Malaysian Re off-guard. The scale of the pandemic was initially not really understood as it was considered localized within Wuhan. The speed of the transmission, which was expedited by the inter-connected global travels and trades, was not fully appreciated until it hit home.

At Malaysian Re, when the first nationwide lockdown was announced in March 2020, we had to quickly adapt despite a great degree of uncertainties by switching to WFH arrangement while still maintaining a full level of underwriting operations and support to our business partners especially in claims payment, and not to forget, ensuring that our employees' well-being and motivation remains attended to. Whilst it was not an easy task, we managed to rally everyone at Malaysian Re to work together through the tribulation, and succeeded to deliver one of our finest results.

In term of practical lessons learnt from the pandemic, it has been a profound reminder on the need to strengthen the fundamentals. During normal times when business was thriving, (re) insurers may find it easier to mask inefficiency by chasing topline growth and relying on investment incomes to cover underwriting deficit. However, during a pandemic, (re)insurers have had to revert to fundamentals on pricing discipline, prudent risk selection and cost-containment.

Nonetheless, fundamentals can only carry one so far. Being innovative and bold during a crisis also pays off as long as one does the necessary homework. There are always pockets of opportunities up for grabs, and these were the lessons we adopted to drive the company's1 results onwards.

4. **What is your outlook on the market for the upcoming year?**

Malaysia has reached 97.5% of fully vaccinated adults and the country is entering the endemic phase in April 2022. I am optimistic that re-opening the country's border will spur our domestic economy in 2022, in line with the GDP target of 6.5%% growth forecast by BNM. This will augur well with our domestic (re)insurance business prospect as increased domestic consumption will drive up insurance premium, and the rebound in the equity market will translate into stronger earning for our investment income.

We are also encouraged by the business recovery progress in Europe, China and Gulf countries, which are the 3 biggest markets for our international segment. We will be looking with a keen eye for opportunities to grow our business in these markets, taking advantage of their re-opened businesses after positive progress in containing the pandemic.

Nonetheless, we are also cognizant of the on-going risk from the Omicron variant which may drive occasional stress to our healthcare system. Domestically, there is also the political uncertainty while regionally, inequitable access to vaccination has caused regional imbalance of pandemic recovery and this obviously has impacts on economic and trade activities within ASEAN, which is also a major market for Malaysian Re. The on-going military conflict between Russia and Ukraine is also a pressing concern especially with regards to the equity market and commodity price stability.

We intend to apply the valuable lessons learned during the pandemic in managing risks prudently while pursuing opportunities strategically as we look forward to drive Malaysian Re onwards to a greater heights.

REINSURANCE AND RETAKAFUL MARKET DEVELOPMENT IN MALAYSIA

Key Development - Proportional Treaties

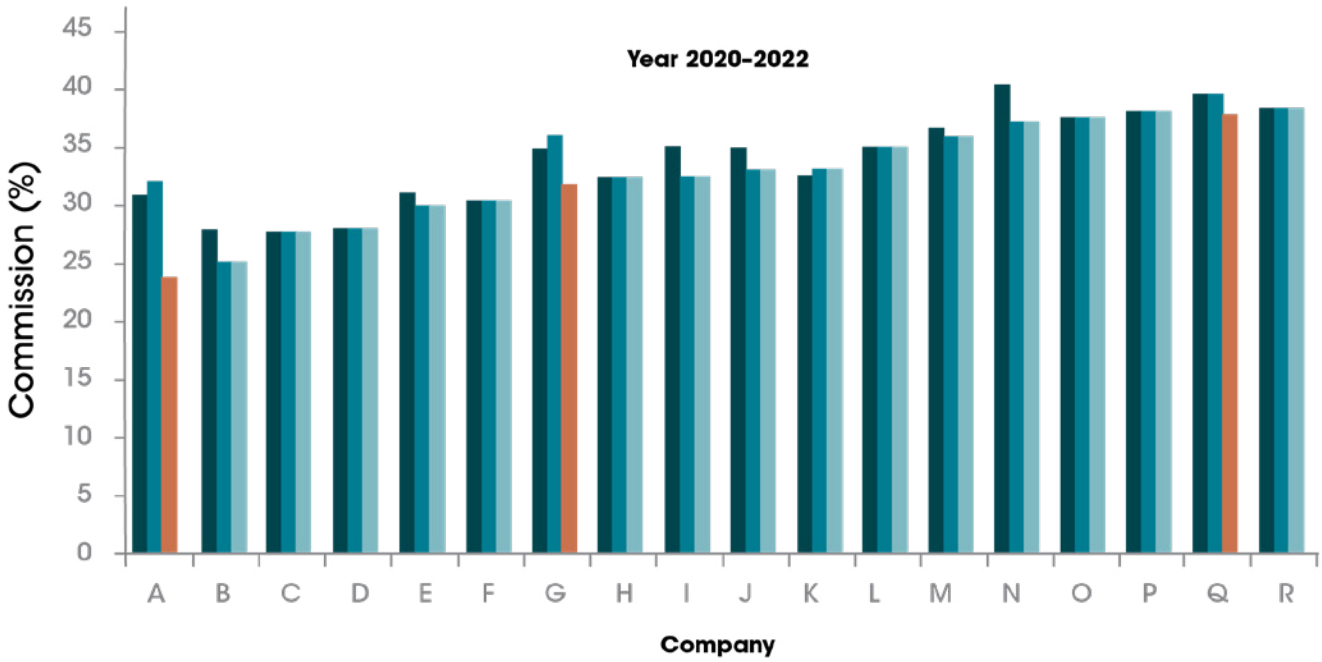


Diagram 1: Development of Commission over the past 3 years as at January 2022 – FIRE

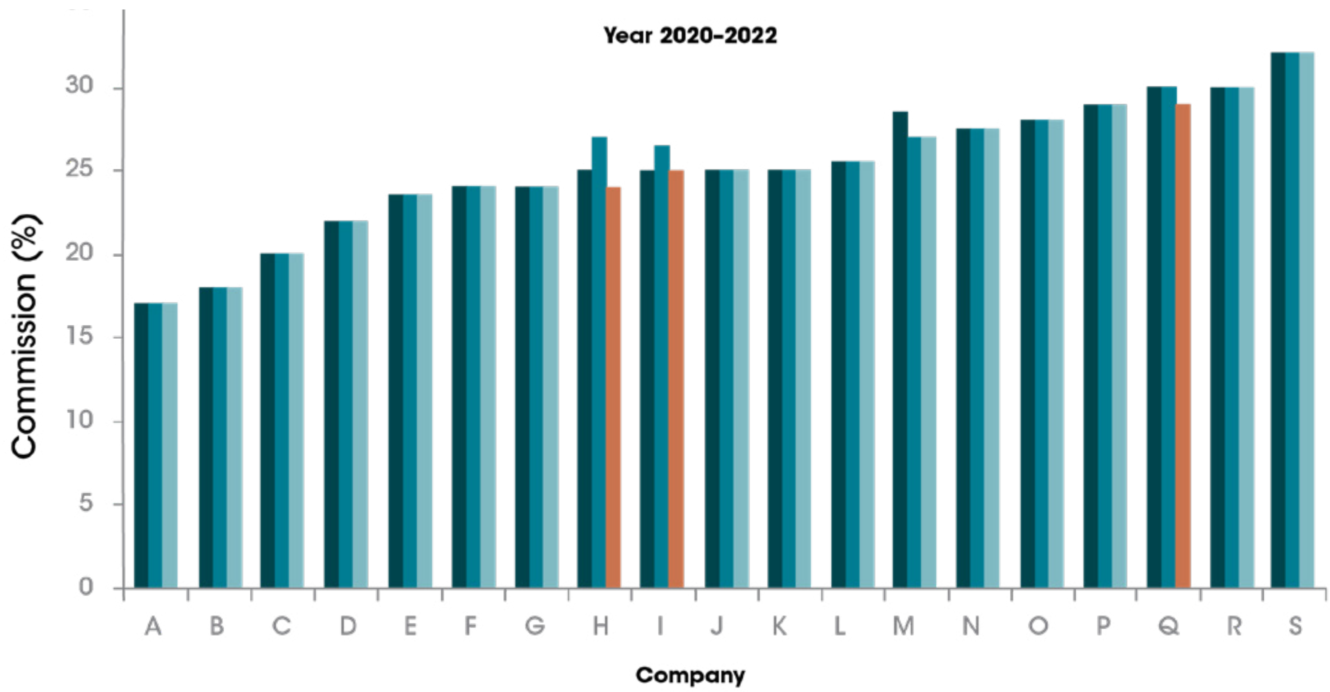


Diagram 2: Development of Commission over the past 3 years as at January 2022 – ENGINEERING

The commission development for Fire treaties has been comparatively stagnant for more than half of the companies in the last renewal. As per Diagram 1 above, 3 of the companies' fire commission has been reduced, mainly due to deterioration in the claims experience where the treaties have been impacted by a large property loss in 2021, as well as due to changes in treaty structure.

Similar to fire treaties, commissions level for most of the Engineering treaties have shown a stable trend where only 3 companies are showing some downwards movement. The revision in commissions is mainly due to deterioration in the claims experience and substantial increase in their flood exposure.

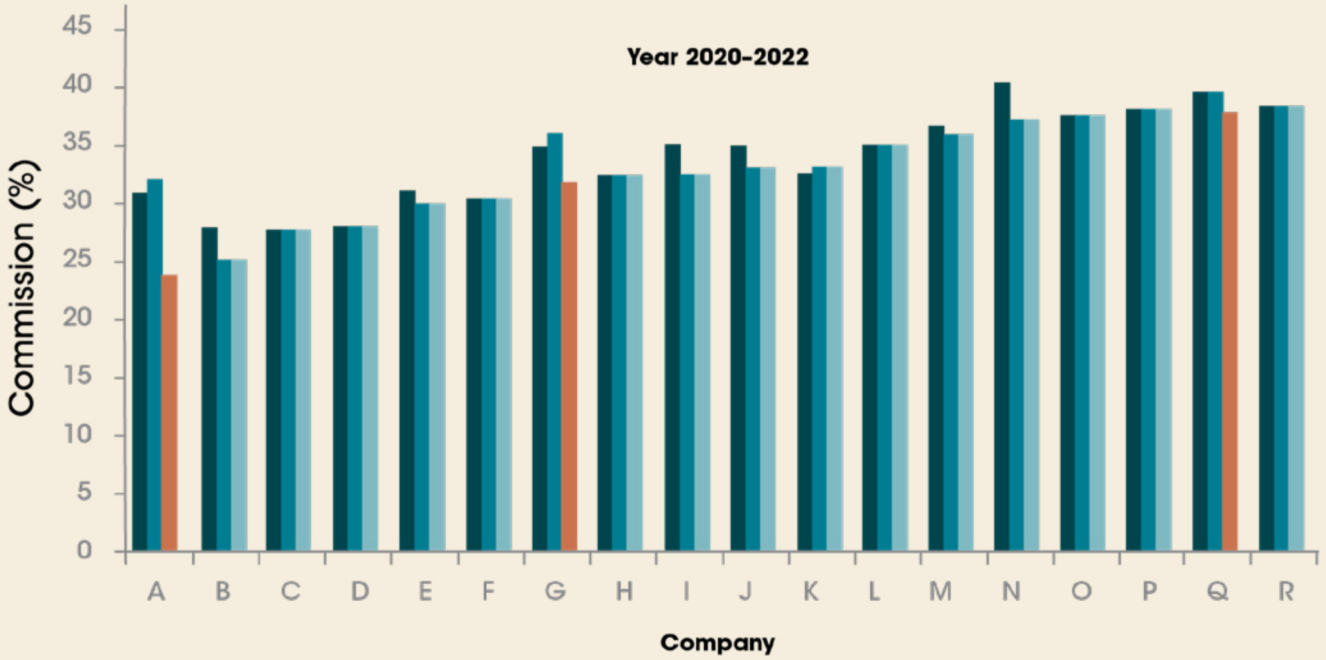


Diagram 3: Development of Treaty Limit over past 3 years as at January 2022 – FIRE

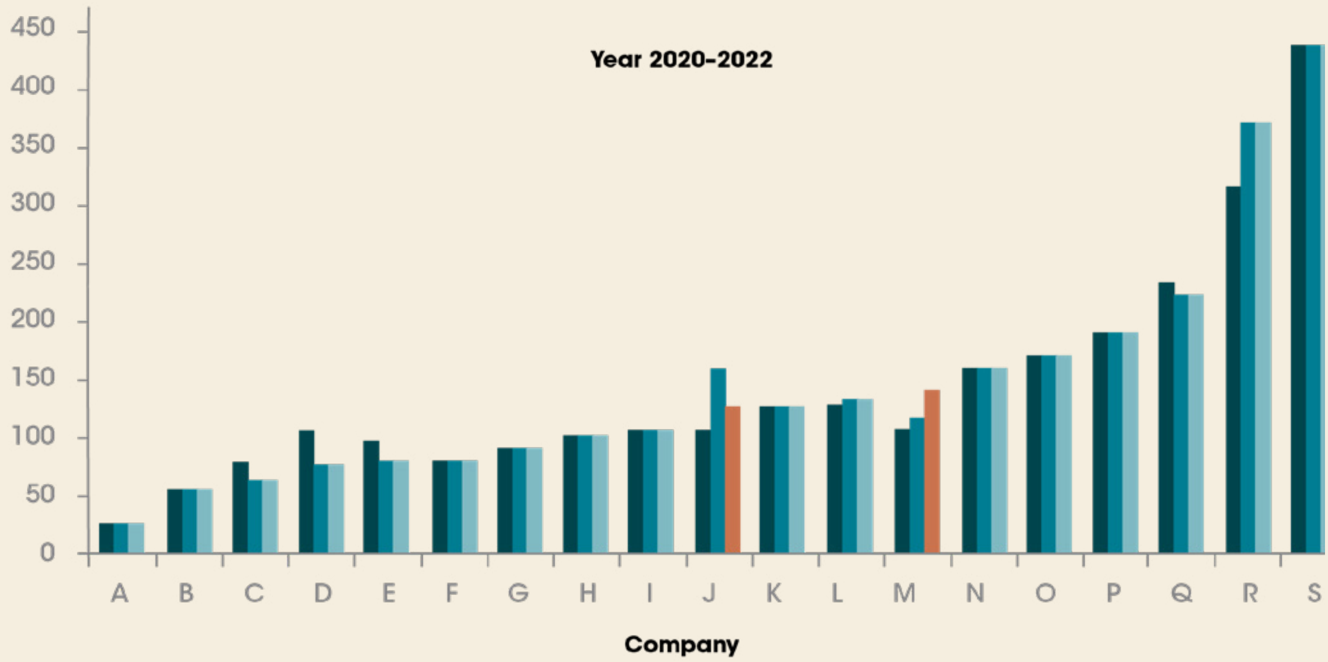


Diagram 3: Development of Treaty Limit over past 3 years as at January 2022 – FIRE

Diagram 3 & 4 show that Fire Proportional treaty limit has levelled off in the last renewal except for 4 companies which have shown increased, while for Engineering, 1 of the companies' treaty limits have reduced and 1 of the companies' treaty limits have increased. The increases were not significant and was mainly due to cedant's business plan to grow their portfolio especially on certain targeted segments for the new underwriting year.

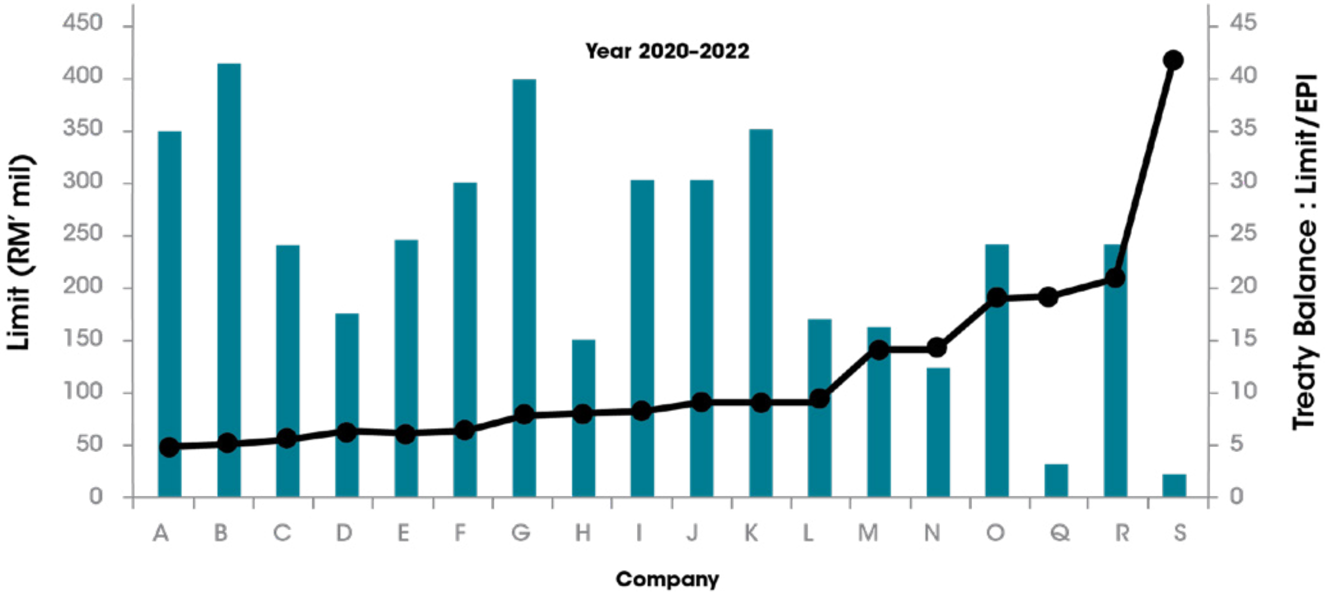


Diagram 5: Limit vs Estimate Premium Income (EPI) 2021/2022 as at January 2022 – FIRE

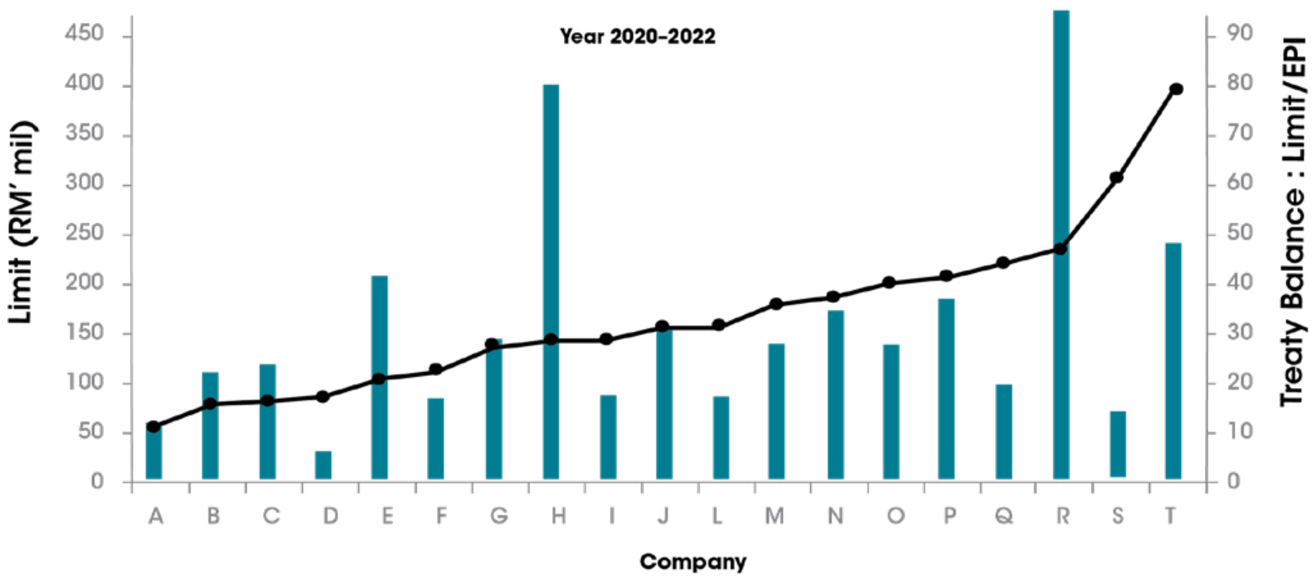


Diagram 6: Limit vs EPI 2021/2022 as at January 2022 – ENGINEERING

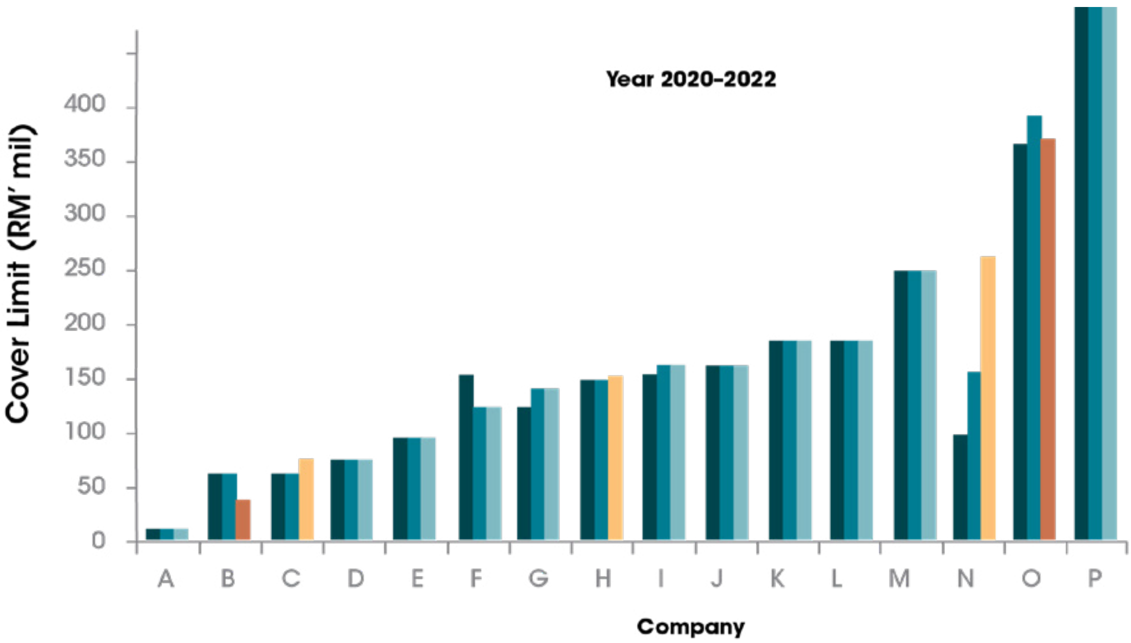
The major considerations while underwriting Treaty from a Reinsurer's perspective is the Treaty balance, which is the ratio of the total premium receivable by a Reinsurer under a Surplus treaty to the Reinsurer's maximum liability for any one claim. For Fire treaty, most of the companies in Malaysia are sitting in the range of between 5 to 20, except an outlier with treaty balance ratio more than 40. However, that company's treaty limit is relatively low compared to the others.

As for Engineering treaty, the much higher treaty balance ranging from 10 to 80 shows that Engineering is more unbalance compared to Fire class of business. As Engineering is non-tariff class and with the nature of non-renewable risks such as Construction All Risks (CAR) and Erection All Risks (EAR), the premium rate could be extremely competitive whilst the sum insured could vary from low to extremely high. However, in recent renewals, we observed that the Engineering rates has been hardening due to the unfavourable performance experienced by the industry.

Overall, based on our observation from the last renewal, there was no sign of major improvement in the terms and conditions for Proportional treaties even for treaties that have been performing well.

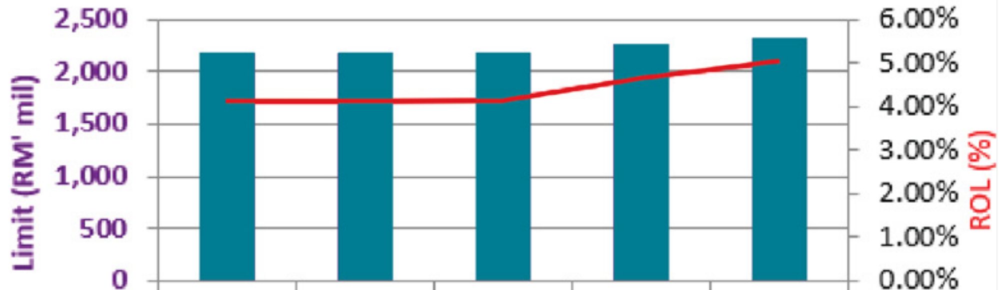
Key Development - Non–Proportional Treaties

Non-motor



**Excluding Gross XL and Regional XL treaties*
Diagram 7 : Development of Cover Limit over past 3 years as at January 2022 – NON MOTOR

We do not normally observe a significant revision in Non-Proportional treaties cover limit, unless there is a change in the companies' portfolio. In the last renewal, there are 3 companies which have shown increase in the cover limit and 2 companies which have shown reduction as reflected in Diagram 7 above. The changes are mainly due to the revision in flood exposure, and some were due to changes in maximum retention of certain classes of business. As Flood modelling tools are common and readily available in the Malaysia market where companies are now able to monitor their aggregates more closely and efficiently, the company will consider revising their cover limit in accordance with the identified return period exposure from the modelling tool.

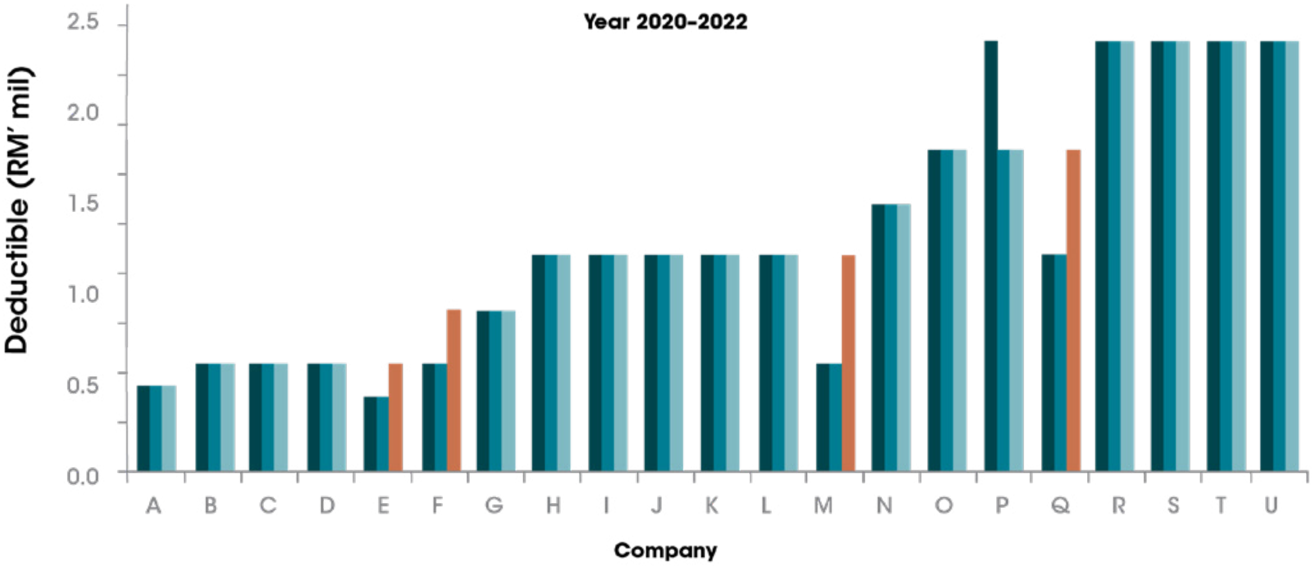


	2018	2019	2020	2021	2022
Limit (RM mil)	2,185	2,182	2,186	2,255	2,318
XOL Cost (RM mil)	89	90	91	105	117
ROL	4.09%	4.13%	4.17%	4.67%	5.05%

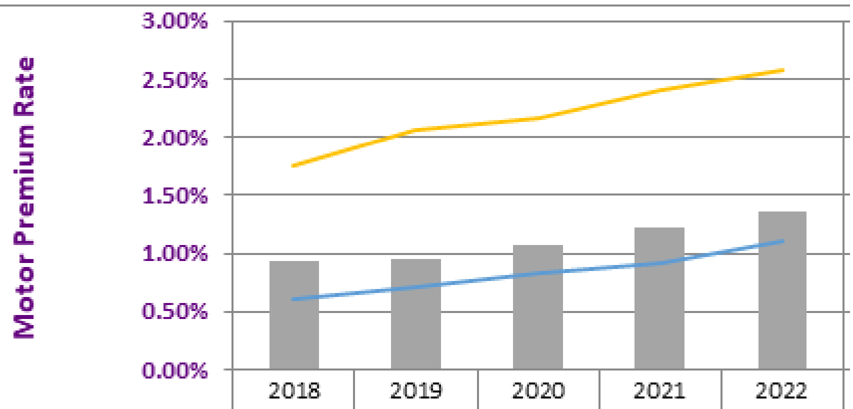
**Excluding Gross XL and Regional XL treaties*
Diagram 8 : Development of Rate on Line (ROL) & XOL Spend over past 5 years as at January 2022 – NON MOTOR

From Diagram 8, we could observe that the trend of the ROL for Non-Motor classes has been increasing over the years together with the increase in cover limit and XOL cost, with current year being the highest compared to the last 5 years. In the year 2021, there were a number of property losses in the market which resulted to the increase of the pricing or the premium rate for the non- proportional treaties. Also, the increase in the flood accumulation exposure has resulted in higher pricing even though the treaty has been performing well.

Motor



**Excluding 1 company with RM 5million deductible*
Diagram 9 : Development of Deductible over past 3 years - MOTOR



	2018	2019	2020	2021	2022
Combined Rate	0.93%	0.95%	1.07%	1.22%	1.35%
Rate for deductible <1m	1.75%	2.06%	2.17%	2.41%	2.57%
Rate for deductible 1m and above	0.61%	0.70%	0.83%	0.92%	1.10%
GNPI (RM mil)	9,657	9,804	9,826	10,386	10,343
XOL Cost (RM mil)	90	93	106	127	140

Diagram 10 : Development of Premium Rate & XOL Spend over 5 years as at January 2022 - MOTOR

The deductible for Insurance & Takaful companies in Malaysia for Motor Non-Proportional treaties are mostly in the range of RM1-2mil, which can be seen from Diagram 9. We could observe that the ceding companies have started to increase their deductible as it is no longer sustainable due to increase in severity of losses over the years. Also, based on our observation, Reinsurers' appetites for Motor excess of loss have been changing towards higher deductible, i.e. MYR1 million and above, from the present average of MYR0.5 million in the past.

Diagram 10 shows that the premium rates for both deductibles range have consistently been increasing over the years. The overall Motor premium rate has been on upward trend since 2018, even with the increase in the deductibles for a few ceding companies.

Gross Claims (MYR)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
0-1mil	344	355	346	240	268	194	150	131	143	233	166	258
1-2mil	42	48	36	44	53	29	60	59	58	93	45	43
2-3mil	7	5	8	9	1	14	12	2	22	25	14	19
3-4mil	2	3	0	2	3	1	3	8	7	14	4	8
4-5mil	1	0	2	4	3	2	0	2	9	0	5	1
5-6mil	1	1	2	2	0	1	0	0	6	0	3	10
6-7mil	0	0	0	0	0	0	1	0	0	0	1	0
7-8mil	0	0	0	0	1	0	0	0	1	0	1	0
>8mil	0	0	0	0	0	0	0	0	0	0	1	1

Table 1: Number of Motor Claims by Reporting Year as at December 2021

Insured	Loss Year	Reporting Year for latest amount	Gross Loss Amount
A	2019	2021	10,038,050
B	2015	2020	8,632,050
C	2013	2018	7,813,351
D	2017	2021	7,791,916
E	2015	2019	7,562,313
F	2008	2016	6,923,215
G	2019	2021	6,784,439
H	2018	2021	5,962,861
I	2017	2020	5,875,324
J	2010	2012	5,800,000

Table 2: Top 10 Motor Losses as at December 2021

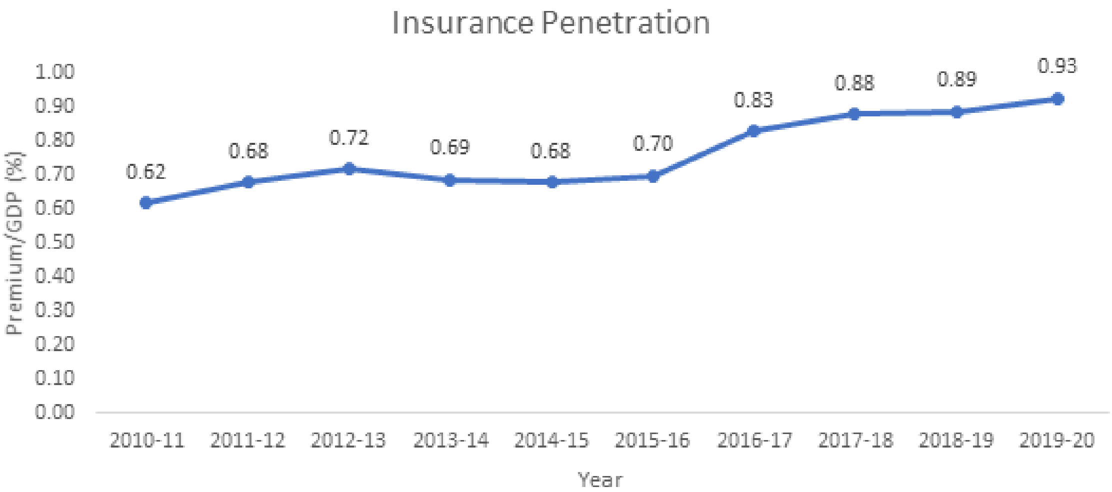
The Movement Control Order (MCO) due to pandemic crisis in Malaysia has resulted to a lower frequency of motor losses due to the lesser vehicles and activities on the road. However, we have noticed that even with the lower frequency, the severity of losses has increased substantially for Motor Third Party Bodily Injury mainly due to the higher cost of medical and nursing care. This could also be supported by our research where the number of Motor Third Party Bodily Injury losses above RM1m impacting the Motor XOL treaties has increased in recent years as per Table 1 & 2 above.

THE INDIAN INSURANCE MARKET

The Indian insurance industry is regulated by the Insurance Regulatory and Development Authority of India (IRDAI). Currently, there are 34 non-life insurance companies in the market. The top four public general insurers, namely, The New India Assurance Co Ltd, United India Insurance Co Ltd, National Insurance Co Ltd and The Oriental Insurance Co Ltd, nearly accounted for almost 50% of the net earned premium (NEP) share, while 30 insurers accounted for the rest.

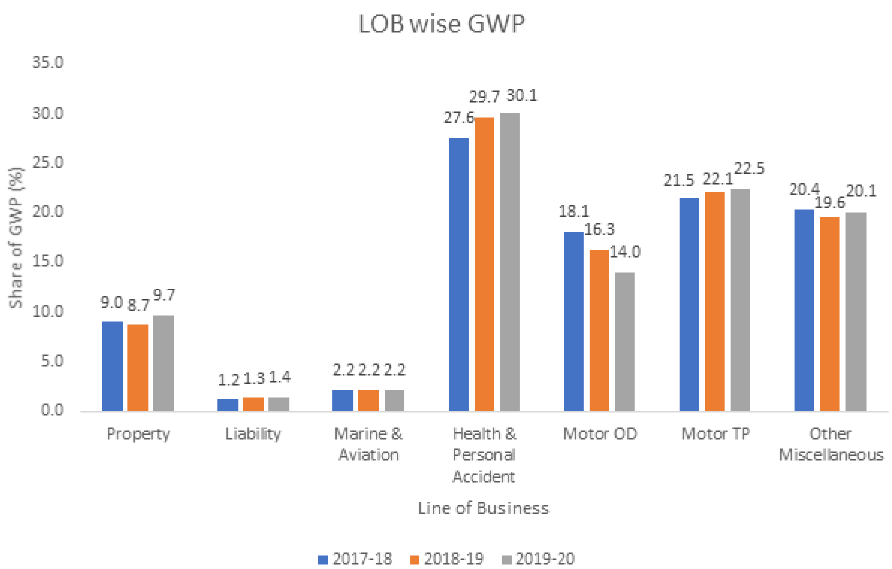
Insurance Penetration

Non-life insurance penetration of India (expressed as a percentage of GDP) has grown from 0.62% in 2010-11 to 0.93% in 2019-20, however, is still significantly lower as compared to the global average of 3.88%. Insurance penetration is an indicator to assess the performance and potential of the insurance sector in a country.

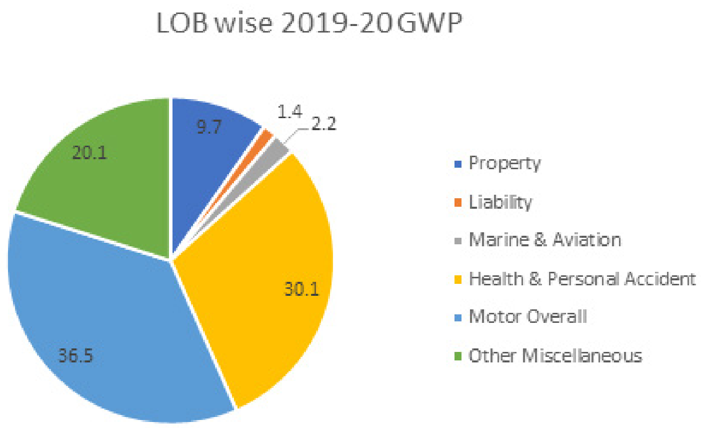


Gross Written Premium

Gross written Premium (GWP) of Indian non-life Insurance Industry increased from INR1,734,830 Mil in 2018-19 to INR 1,921,930 Mil in 2019-20. Nearly two-thirds of the Non-Life Insurance Premium comprise of personal lines of business namely Motor and Health & Personal Accident insurance. Whereas crop insurance as an emerging segment comprises majority premium in Other Misc.



In 2019, Gross Written Premium by percentage for Property is 9.7%. Motor is the largest class of business with premium share of 36.5% followed by Health & Personal Accident share of 30.1%. Other Miscellaneous class of business makes up 20.1% of the total GWP of Indian Insurance business. Liability contributes 1.4% share and Marine & Aviation 2.2%.



Indian Property Insurance Market 2020 vs 2019

With growing crisis globally due to COVID-19, Insurance & Reinsurance Industry has been impacted with slowdown, losses, and rating downgrades. Despite the challenges, Indian Property Insurance market has shown tremendous growth on back of the minimum rates adopted by the market, driving the upward movement and overall growth of Indian Insurance Industry.

Indian Insurance Industry showed strong resilience during the pandemic, managing a positive 2.5% growth in YTD 2020 (January – December) with high growth in Health and Fire segments offsetting the impact on segments directly impacted by the pandemic especially Motor.

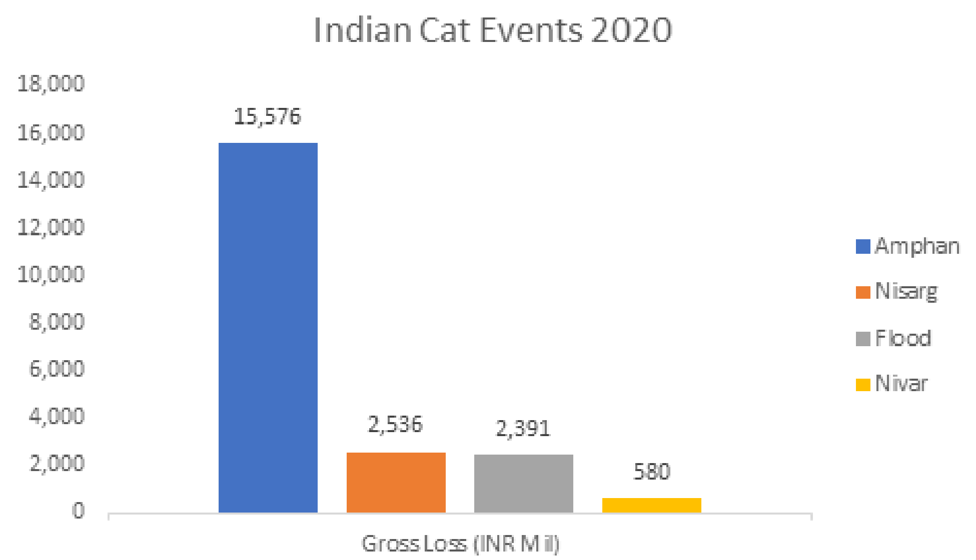
GIC Re started following the Insurance Information Bureau (IIB) rates for all fire risks. This means that the rates have increased substantially for fire-related occupancies, which were very low previously. Prior to this initiative, GIC Re increased premium rates for only eight occupancies and the reason behind it was that these risks have loss ratios above 200%. However, effective January 1, 2020 the entire Fire portfolio has been revised with rates going up by 2 – 3 times. India known for having seen a lot of catastrophic events on yearly basis especially flood and cyclone has subsequently caused several losses to the general insurance market. Hence, the premium rate correction was needed to improve the claims experience of fire risks.

The table below lists the Large Risk Losses affecting the Indian Market in UY 2020 that exceeds USD 10 Mil or INR 724 Mil:

Insured Name	DOL	Loss Location	Cause of Loss	100% Estimated Loss (INR)	Leader
Unicharm Pvt. Ltd.	24-06-20	GIDC, Ahmedabad	Fire Loss	9,852,416,164	New India
Bhilosa Industries	22-03-20	Silvassa	Fire Loss	9,417,750,745	National Ins
Tagros Chemical	07-04-20	Dahej Plant	Fire Loss	3,187,546,406	United India
Varroc Industries	18-02-20	Pune	Fire Loss	1,521,328,967	Bajaj Allianz
TATA Motors	30-01-20	Palwal, Haryana	Fire Loss	1,376,440,494	New India
Jai Chemicals	28-06-20	Anaknd, Gujarat	Fire Loss	1,014,219,311	Oriental Ins
Odisha Power Generation	05-09-20	Jharsuguda, Odisha	Machinery Breakdown	869,330,838	New India
Adani Enterprises	11-02-20	Chhattisgarh	Structural Damage to Silo	796,886,602	Reliance
Yashashvi Rasayan	03-06-20	Bharuch, Gujarat	Fire Loss	724,442,365	New India

In year 2020, India was hit by several flood and cyclone which has resulted in insured losses as stated in the table below: Cyclone Amphan is a catastrophic tropical cyclone that caused widespread damage in Eastern India,

Cat Event	Date of Event	Location
Cyclone Amphan	16th - 20th May 2020	West Bengal, Odisha
Cyclone Nisarg	1st - 4th June 2020	Maharashtra
Flood in various states	13th - 19th October 2020	Maharashtra/Andhra Pradesh/Karnataka/Telangana
Cyclone Nivar	26th November 2020	Tamil Nadu



specifically West Bengal and Odisha in May 2020. Loss due to this cyclone can be distributed by 89% to fire and engineering, 9% to motor, and 2% to miscellaneous class of business. Large loss was seen from JW Mariott and Kolkata Airport. Whereas Cyclone Nisarg struck the Indian state of Maharashtra in the Month of June 2020. This event has impacted multiple line of business such as fire, motor, engineering etc. Heavy rainfall in October caused flooding in various states. Main impact was on motor class of business while a few other companies were affected by their exposure in shops, godown, home, etc. Finally, Cyclone Nivar struck the states of Tamil Nadu & Andhra Pradesh in the month of November 2020. However, the reported damage has been minimal. This is because, the insurance penetration was low in the impacted areas.

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TAKAFUL MARKET & RETAKAFUL SOLUTION IN MALAYSIA

Insurance Landscape In Malaysia

More than 10 years ago, the Malaysian government with support from Bank Negara Malaysia ("BNM"), Life Insurance Association of Malaysia ("LIAM"), and the Malaysian Takaful Association ("MTA") set a target of 75% insurance penetration rate in Malaysia. 10 years on, it is clear that there is still some way to go before the industry is able to collectively hit its long-term goal of insuring 75% of its population. BNM's monthly report highlighted that as of July 2021, the total in-force individual family certificates is close to 5.2 million while life insurance policies are at 19.3 million. The unique lives covered are less than these counts as at least 17% of the in-force certificates and policies have multiple family takaful or life insurance covers.

The industry and market leaders have been largely focused on the medium to top income segment which make up about 60% of the population. In fact, we continue to see innovative and comprehensive new product offerings to close the protection gap for this segment, i.e. the people who already have some form of protection.

In order to achieve its national aspiration of insuring at least 75% of its 32.7 million population, the Malaysian government introduced a slew of initiatives to encourage both takaful operators and life insurers to promote products to the B40s. In recent years, the Perlindungan Tenang campaign was rolled out to provide simple and affordable protection to all.

Family Takaful Market Growth In Malaysia

Since family takaful was first introduced in Malaysia in 1983, it has shown a much faster growth rate compared to its conventional life insurance counterpart. The steadily increasing in-force counts prove that takaful is playing its part to improve the overall protection penetration rate.

According to statistics from the MTA and BNM, new family takaful certificates grew by 7.2% in 2020 as compared to 2.8% for conventional life insurance. At the same time, in-force family takaful certificates grew by 5.2% while conventional life insurance in-force grew by 1.1%.

The high growth in family takaful take-up rate indicates growing takaful awareness amongst Malaysians. It can also be implied that the product concept of mutual assistance appeals not just to Muslims, but also to a much wider Malaysian population.

In order to meet the projected high demand of family takaful market in Malaysia, Malaysian Re, currently ASEAN's largest national reinsurer by asset size, acquired the license to transact general and family retakaful business in 2016. It also aims to play a leading role in extending shariah-compliant services to both local and international operators via its Malaysian Re Retakaful Division ("MRRD"). Malaysian Re operates on a 'Leveraged Model' and is thus able to harness upon Malaysian Re's underwriting best practices which encompasses, among others, sound rating disciplines, accessibility to actuarial services, and appropriate pricing models and/or tools.

MRRD has successfully implemented the robust Shariah Governance Policy Document ("SGPD") in its operation and is able to provide shariah governance consultation as a value-added service for its business partners. This strategic move is designed to address the new development in the Islamic financial market in the area of governance.

Making Insurance Affordable And Accessible

Making insurance affordable and accessible to the people of Malaysia remains a key strategic initiative for MRRD. In order to strengthen its proposition further, Malaysian Re entered into a collaboration agreement with Pacific Life Re towards the end of 2019. This collaboration aims to provide sustainable and comprehensive retakaful solutions to Family Takaful Operators in Malaysia.

As a fast-growing global reinsurer, Pacific Life Re through its own shariah-compliant operation, will play an integral role in supporting Family Takaful business in Malaysia. Pacific Life Re will leverage on its global experience with a focus on its strong expertise in technical pricing, underwriting, product development, and data analytics. Together, Malaysian Re and Pacific Life Re aim to provide competitive edge to takaful operators through new and innovative market propositions which will be informed by global insights and combined with strong local knowledge to meet the needs of the Malaysian population.

Further, this collaboration aims to support the industry's recent move to digitalise and transform the underwriting journey by providing access to market-leading technology powered by Pacific Life Re's subsidiary, UnderwriteMe. The current pandemic situation has increased awareness of the importance of technology and how digitalisation can improve efficiency and results. With UnderwriteMe insurers can automate their underwriting process to make instant underwriting decisions at the point of sale, in both online and offline environments. This helps improve distribution efficiency and the ability to get people protected.

The retakaful support is also extended to life insurers as allowed by the regulations. In supporting a life insurer under an inward retakaful arrangement using a retakaful contract, MRRD will be able to accept shariah-compliant risks. This arrangement allows both MRRD and Pacific Life Re to extend its knowledge and expertise to both takaful operators and conventional life insurers.

Combining MRRD's strong local presence and Pacific Life Re's global expertise is a step in the right direction to position both MRRD and Pacific Life Re as a strong family retakaful provider in this region.

To conclude, the main purpose of any life insurer or reinsurer is to help people live their best lives, particularly more so during very challenging times. The enormous scale of the challenge and opportunity to provide adequate protection for the people of Malaysia requires a collective effort from not just Pacific Life Re and MRRD, but from the industry as a whole. We aim to make insurance affordable and accessible to the wider population, paving the way for the industry to achieve its goal of a 75% penetration rate.

COVID PROTECTION GAP

Introduction

Living through the great calamity of the 21st century has been a tremendous challenge for all walks of life anywhere around the globe. The Covid-19 pandemic has severely damaged global economic and financial stability. This has resulted in losses of company revenue, as well as the loss of livelihoods and incomes. An epidemic is defined by the World Health Organization (WHO) as "the occurrence in a community or region of cases of an illness, specific health-related behaviour, or other health-related events clearly in excess of normal expectancy", while pandemic is defined as "an epidemic occurring worldwide, or over a very wide area, crossing international boundaries and usually affecting a large number of people."

In recent years despite several firms and non-profit organisations are prepared to endure most of the short-term and long-term harm caused by a viral illness incident, many of the others are not. As a result, these misfortunate companies are being pushed to make a series of significantly tough decisions to survive including layoffs or furloughs of workers, delay in implementing capital projects and investments, and even declaring bankruptcy. Many companies will not stand through the test of this pandemic notwithstanding the progress that has been achieved so far.

COVID-19 has had a significant effect on businesses all around the globe. Resulting from both government-imposed restrictions and changes in customer demand and behaviour, several industries have seen substantial income and employment losses. To protect their employees and consumers and preserve access to critical products in the face of significant supply chain disruptions, most industries have had to adapt to new methods of functioning.

Insurance coverage limitation & Challenges to insurability

Many businesses are seeking insurance coverage to deal with the current financial losses following government efforts to limit the spread of COVID-19. While some insurance plans may cover pandemic claims, most do not. Given COVID-19's particular and widespread impacts, many insurers have started to remove pandemic risk.

Typically, standard property insurance is activated when a covered event occurs such as physical loss or damage to the insured items. These includes business interruption coverage, compensating for revenue lost if a company's operations are interrupted due to physical loss, and for damages such as a fire or a natural catastrophe.

Property policies especially commercial ones vary considerably in their definitions, terminology, and structure. They often contain specific clauses relating to the manuscripts of certain issues. There is also a rather remarkable degree of fluidity in the underlying condition. Following these circumstances, policyholders should go through their plans thoroughly and insist on having coverage if needed. Considering that, due to some plans containing limitations on coverage, policyholders should look at the following:

1. The property damage "trigger."
2. The definition of coverage extensions.
3. Any exclusions that their insurers may attempt to impose, all of which are associated with short timelines.

Policies may interpret on no physical loss or damage if COVID-19 appears on an insured's premises. They may also challenge that potential contamination, proximity to other polluted sites or public anxiety may not qualify as physical loss or damage for coverage reasons. Exclusions such as "contamination" may be entreated if the physical loss is proven.

Policies may provide coverage for interruptions by civil authorities such as those imposed by the governments. Each policy has its form of civil authority extension. Therefore, it is advised to be reviewed carefully. Insurers may claim that shutdown and lockdown orders do not meet the policy's physical loss or damage trigger condition. In the context of extensive closures of non-essential retail shops, there is no compensation for lost profits from leasing to commercial tenants who could no longer pay their rent. Many conflicts and lawsuits have arisen due to ambiguity and/or different interpretations of policy wordings and definitions.

Workers' compensation will compensate employees for medical costs and lost income from work-related illnesses or injuries. With the development of COVID-19, ascertaining whether an individual contracted COVID-19 at work has become a challenging issue. Health-care employees, first responders, airline and transportation workers, hospitality workers, and others involved in critical sectors are among at risk.

While insurers and reinsurers must deal with the frequency and severity of uncertainties, accumulated losses are the primary risk. The insurance is premised on the notion that the few premiums collected from insurers are enough to cover the few claims in one year. The small amount of premiums collected worldwide to cover business disruption is inadequate since some estimates indicate output losses at USD 4.5 trillion because of the COVID-19 issue. The business disruption losses arising from the worldwide pandemic are geometric and not arithmetic because of the possibilities for accumulating losses makes it harder to estimate ultimate losses.

One of the main challenges in the General Insurance industry will be the description of the 'event' that causes the loss. There will be multiple opinions on the definitions and by extension and liability in various reinsurance contracts and programs. Specific terms and exclusions in reinsurance policies and whether COVID 19 is covered by them will be scrutinised. Another challenge is that insurers may allow paying certain claims (e.g., business disruption) owing to social, governmental, or possibly regulatory influences despite not agreeing on this stance. The issue is whether claims payment was made based on broader consumer-focused norms and expectations, or on a clear regulatory obligation to pay. It is anticipated that such negotiations especially when there is court proceeding would take a long time to conclude. In health insurance, there will be an expectation at the insurer level that reinsurers would follow any possible rebates agreed upon proportionately between the insurer and reinsurer.

Pre- and Post-Covid-19 Communicable Diseases Clause

Before the outbreak of the Covid-19 pandemic, Lloyd's Market Association (LMA), only published two clauses on communicable diseases back in 2006 for Personal Accident class, covering Avian influenza and SARS exclusion. However, since the Covid-19 pandemic broke out, LMA has introduced 32 clauses encompassing various classes such as Marine and Non-Marine (Lloyd's Market Association Wordings, n.d.) for the purpose to apply a common format and language for the clauses drafted in response to COVID-19. These clauses merely serve as guidance for the members, who are free to amend or agree to different conditions. Exclusions are crucial because the widespread nature of pandemic and magnitude of losses could cause uncontrollable accumulation of losses and inability to preserve capital for (re)insurers. Here are some examples of such exclusions:

Reference	Description
LMA5391	Coronavirus exclusion for Personal Accident
LMA5393	Communicable disease endorsement on property policies coverage exclusion
LMA5394	Communicable disease exclusion for property treaty reinsurance contracts
LMA5395	Coronavirus exclusion for marine and energy liability contracts
LMA5396	Communicable disease exclusion for liability policies
LMA5397	Communicable disease exclusion for power generation, construction, and engineering policies
LMA5399	Communicable disease exclusion on casualty treaty reinsurance
LMA5507A	Contingency coronavirus exclusion

The global reinsurance and retrocession industry responds to the development of COVID-19 by imposing some form of exclusion on Infectious and Contagious Disease (ICD). Malaysian Re faces the same scenario as our retrocession protection excludes coverage for ICD. Malaysian Re has thus imposed the same exclusion to the international treaties we lead in order to bridge the gap. As for the treaties in which Malaysian Re is the follower, for the exclusion was proposed to be imposed for the treaties instead.

For ASEAN markets, Communicable Diseases Exclusion Clause (LMA 5391) is incorporated into treaties, especially those led by Malaysian Re starting from underwriting year 2020. There was slight leeway for some run-off cases but they were terminated upon the natural expiry of the policies. The trend continued in 2021 with stricter wordings introduced i.e. LMA 5394 throughout the ASEAN market where resistance from cedants was minimal.

How to Overcome the Protection Gap

Insurance-based solution on closing the COVID-19 protection gap

The benefit of a pandemic risk insurance facility is to minimise private-sector risks, which enables both banks and stock markets to get the necessary protection they need. This accelerates the recovery of the financial system and the overall economy. It may also reduce the financial effect of a future pandemic by absorbing the first shock which in turn allows companies to retain workers and fulfil financial commitments during the period of uncertainty. A variety of risk-pooling methods may be employed to deal with challenging risks ranging from pure private partnerships to state-funded pools for non-insurable hazards.

An example would be for all infectious illnesses and outbreaks to be covered by private-public protection scheme. For example, Malaysian Re was appointed to be the nation's administrator of the Covid-19 Test Fund (CTF) for the insurance and takaful industry (New Straits Times, 2021). This fund helped with the Ministry of Health's efforts to increase Covid-19 tests among medical insurance and takaful policyholders and certificate holders, by way of reimbursing the cost of Covid-19 testing of up to RM300. There is also the public-private effort to reduce protection gap especially for the B40 group by way of the Perlindungan Tenang voucher programme (PTV)– of which Malaysian Re is also the project manager and fund administrator. In this programme, eligible Bantuan Prihatin Rakyat (BPR) recipients would receive RM50 voucher to participate in the Perlindungan Tenang products with licensed insurers and takaful operators to receive basic protection programs that suit their needs. The aim of this programme is to enhance insurance penetration for the B40 group and reduce the gaps in the social protection system.

Digitalisation

Mumenthaler's (2021) article, "How we can overcome uninsurability with data" highlights how digitalisation can be a great lever for re/insurance to reduce protection gap, accentuated by the pandemic. Digitalisation enables insurers to collectively cover risks, including the uninsurable ones, and technology assists to overcome major hurdles for people and business to get insurance coverage, by addressing concerns such as affordability, ease of access, product attractiveness, and transactions costs. Firstly, more risks will be come insurable because digitalisation provides better information on risks due to the availability of granular data and analytics for risk modeling, allowing insurers to rate risks based on individual exposures and propose customised solutions. Big Data and cloud computing also give rise to new insurance models such as parametric insurance, made possible by the availability of real-time information and access to huge amounts of data. Digitalisation also provides real-time data on behaviour, promoting more accurate risk assessment, for example by using telematics app to assess driver's behaviour, affecting pricing. Therefore, better risk knowledge leads to more affordable products as well as providing protection for previously uninsurable risks.

Secondly, digitalisation improves ease to access insurance because it eliminates inefficiencies in the supply value chain. Therefore, transaction costs will be reduced due to the reduction in the distribution, administration, and claims settlement costs. Due to the ability to quickly assess policyholders' risks, the process of taking out policies and claims settlement online are seemless and and efficient. Affordability and effortless customer experience will furter stimulate higher insurance penetration.

Role of Brokers

The scale of the Covid-19 pandemic crisis highlighted to insurers on their exposure to catastrophic losses across their portfolio, hence most are restricting cover for renewals by imposing broad disease exclusions, narrowing the cover provided by policies and increasing the protection gap in the process. Therefore, brokers as the intermediaries with technical and placement expertise must act to respond to this matter to seek protection for their clients. Brokers could react by developing innovative placement and wordings solutions to get coverage for their clients, despite the exclusions. Brokers must also exercise their negotiation skill to negotiate alternative or less restrictive form of the exclusions related to pandemic. Additionally, brokers could collaborate with industry bodies to not only represent the concerns of their clients with regards to broad disease exclusions and to also pressure to these parties to come up with a solution that would serve the benefit of all stakeholders, such as write- backs for these policies

Conclusion

As the world continue to suffer and adapt from the Covid-19 pandemic – now in its second year of outbreak and experiencing the new normal in every aspect of life, measures implemented to reduce its transmission will continue to impact the (re)insurance sector. While (re)insurers adapt their underwriting decisions and approaches to service delivery to survive pandemic-related losses, there is a real human consideration to factor as people from all walks of life suffer and need to rely on insurance to protect them and reduce their losses. Cybersecurity is a concerning area given that most of the workforce began working remotely due to lockdown orders issued by authorities. Even though (re)insurers are cushioned from the exposure via broad exclusions on new communicable diseases clauses, it is important for all parties to work together for the society, to address the increase in protection gap. This is where the collaboration between governments and private sector becomes crucial to come up with a way to offer protection, the development in digitalisation and technology making more data in real-time available for better pricing, more affordable coverage, and more efficient access to purchase coverage and settle claims come in. Lastly, brokers play a huge part in trying to come to a balance to get protection for their clients but in a way that also does not harm the (re)insurers.

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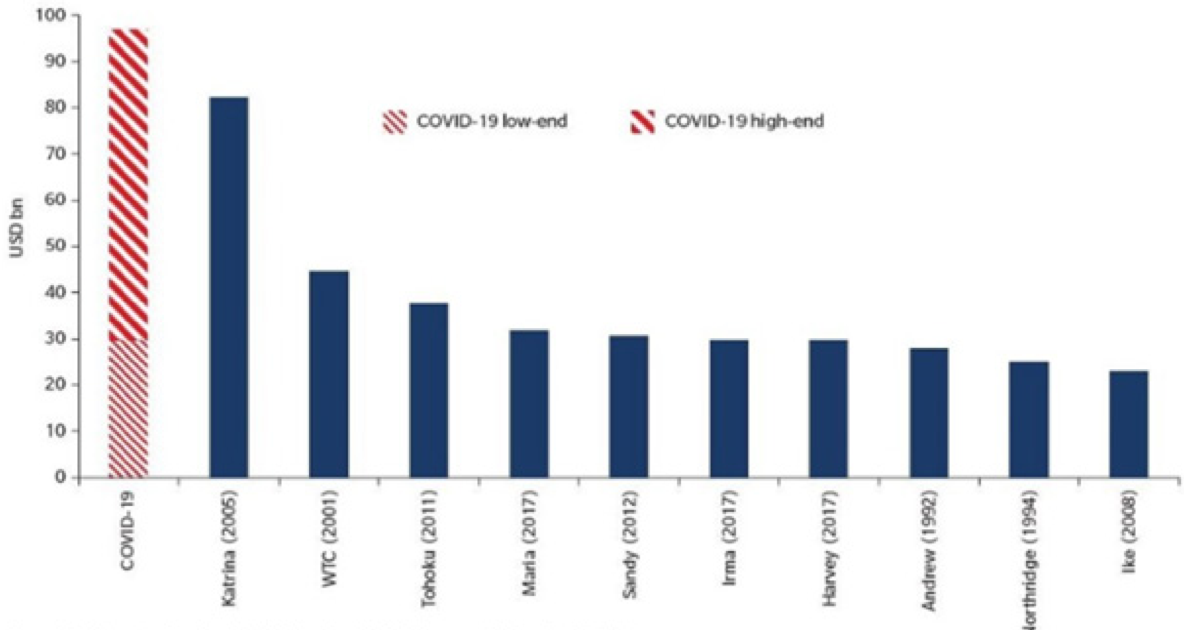
COVID-19 IMPACT TO GLOBAL RE/INSURANCE INDUSTRY

COVID-19 can be considered as a black swan event. A black swan event is defined as an unpredictable event which result in a very severe impact to many entities. Pandemic of such degree joins other unpredictable low frequency and high severity event such as the 1929 Great Depression, September 11 Terrorist Attack and Hurricane Katrina in 2005. However, COVID-19 poses a threat that is very catastrophic as it has no limit geographically and easily spread human to human. Furthermore, we are now living in an era of increasing global interconnectivity. Thus, this is a problem faced by all people living on this planet. Everyone is affected by it and nobody is excluded. It is important that every single living human to contribute overcoming this disaster. Aside from the obvious impact of deaths around the globe and economic slowdown, other direct impact of COVID-19 includes unemployment, livelihood crises and increasing social inequality to name a few. Multiple business industries also felt the negative impact. Insurance industry is one of them. Insurance industry are in the business of providing protection during an unfortunate event. Thus, re/insurance industry is also not being spared by the impact. Generally, COVID-19 pandemic has impact to re/insurer credit rating, differing claims experience and the need for coverage offered to be revisited.

One of the major impacts to the re/insurance industry is negative impact to re/insurer credit rating such as status downgrade by main credit rating agency such as AM Best and Fitch Ratings. Country-wise, Malaysia's Long-Term Foreign-Currency Issuer Default Rating (IDR) has been downgraded from 'A-' to 'BBB+' by Fitch. This is the result of a few Malaysia's key credit metrics deteriorated due to COVID-19 crisis. Some example of companies that are negatively impacted due to COVID-19 are Lloyd's, AXIS Capital and QBE. Fitch Ratings has put Lloyd's and its operating entities on Rating Watch Negative (RWN) due to uncertainty and increasing risk to the marketplace earnings and underwriting performance. This is due to COVID-19 claims experienced by Lloyd's across multiple lines of business. Next, AXIS Capital has its outlook being revised by Fitch Ratings from stable to negative due to economic impact from the COVID-19 pandemic in addition to its worsening operating performance. As for QBE, the re/insurer has its outlook revised from stable to negative by rating agency, Moody's. The company projected that it would experience an after-tax loss of USD 1.5 billion over 2020. One of the contributors to the loss is a USD 470 million from COVID-19 related claims. Generally, COVID-19 could cause credit rating of a re/insurer to be adversely affected.

Next, reinsurer and insurer will have many claims that are related to COVID-19 whereas some will not expect any claims emanating from COVID-19. To date, it is still largely unknown what the ultimate quantum of the total incurred claims would be. A lot of estimations coming from industries varies ranging from USD 30 billion to 100 billion. The reported insured loss as at February 2021 stands at approximately USD 31 billion. COVID-19 insured loss could be higher than 2005's Hurricane Katrina based on high impact estimates of USD 100 billion.

Top 10 Largest Insured Losses vs Projections for COVID-19



Source: Guy Carpenter, Barclays, Bank of America, Swiss Re, Insurance Information Institute

Claims situation in other oversea countries differs. Firstly, in China, where the disease first discovered are expecting no to low number of COVID-19 losses. This is as Business Interruption (BI) is subject to damage to the insured property. Plus, prior to the pandemic outbreak, most non-marine treaties in China already have exclusion for Infectious Disease. In the US and European countries, the impact of the pandemic to the property class depends on the outcome of the court cases on the coverage of BI due to COVID-19. In the event court rules that it is covered, the number of claims could significantly spike across several countries. In ASEAN, claims expectation varies across ASEAN nations. In Vietnam, it is a common practice to have extension for Infectious Disease for their direct policy. However, since SARS outbreak in 2003 and further to rapid spread of COVID-19, the market excludes extension coverage going forward. For claims from COVID-19, insurers in Thailand require the claimant to identify the infected individual contracted the disease within the insured. In Singapore, claims relating to COVID-19 is triggered due to lockdown imposed by the Singaporean Government between April 2020 and June 2020. As summary, insurer and reinsurer could potentially face yet the biggest ever claims in its history from this pandemic.

Then, the outbreak of COVID-19 also triggers insurer and reinsurer to revisit the coverage provided for infectious disease in their policy. The pandemic has revealed exposures that were not given enough care and attention prior to the outbreak. The exposures mainly in focus are the business interruption. This event has also pointed out lack of clarity and inconsistencies in the policy wordings issued by the direct insurer and reinsurer alike. Latest development saw difficulties during renewal to incorporate exclusionary wordings related to infectious disease. Lloyd's Market Association currently provide standardized language for clauses with regards to infectious disease to be used by the industry which can be accessed from the website. However, the clauses are still subject to critical amendments from insurer and reinsurer. Specifically, in Asia, wordings in respect of infectious disease have been reinforced in aftermath of the SARS outbreak in 2003. COVID-19 has made insurers and reinsurers to revisit their exposure, reassess the offering provided in their product and tightens the policy wordings. This is all expected to be pushed and accelerated especially during 2021 renewal. In short, COVID-19 has caused insurers and reinsurers to reevaluate about the products and coverage offered on whether any major adjustment needed to be done.

Malaysian Re also felt the impact of COVID-19. However, the impact varies on credit rating, claims and COVID-19 exposures. Malaysian Re is also subject to annual evaluation by credit rating agency namely AM Best and Fitch Ratings. On 10th December 2020, based on its press release "AM Best has affirmed the Financial Strength Rating of A- (Excellent) and the Long-Term Issuer Credit Rating of "a-" of Malaysian Reinsurance Berhad (Malaysian Re) (Malaysia). The outlook of these Credit Ratings (ratings) is stable". As for Fitch Ratings, statement released on 2nd February 2021 confirmed that Malaysian Re's Insurer Financial Strength (IFS) Rating at 'A' (Strong) with Stable Outlook. In addition, Malaysian Re also suffers from claims due to COVID-19. The claims are coming from multiple overseas clients from across the globe. As of September 2020, Malaysian Re's conservative estimates of incurred loss due to COVID-19 amounts to RM 18.9 million. However, Malaysian Re is not expecting further deterioration to the incurred claims arising from the pandemic. Lastly, in terms of 2021 renewal, Malaysian Re is pushing and encouraging rate increase in line with the expected hardening markets. In terms of policy wording, Malaysian Re prefers absolute exclusionary wording for infectious disease which are LMA5394. However, any deviations are still acceptable subject to approval from management. In summary, Malaysian Re maintains their credit rating, experience a sizeable claim due to COVID-19 and employs action in reassessing coverage provided for infectious disease.

Conclusively, aside from loss of life due to COVID-19, insurance industry also felt the impact due to this pandemic in terms of discouraging impact to credit rating, claims activities due to COVID-19 and the need to reevaluate coverage relating to infectious disease. However, there will be rainbow after rain. There are good things that can come out of this. COVID-19 can act as a 'reset' button for many entities. Use this opportunity to reinvent, to restructure and to solidify oneself for next unknown catastrophe. Relook at business strategy, can it withstand if such black swan event of such degree reoccurs soon. Reinvent company strategy going forward to be more crisis-proof. Due to this crisis, human interaction must be avoided as much as possible. Companies move to working from home basis. If a lot of system used within the company is not technologically advance, restructure the system to be more technologically advance and to be more accessible wherever the employees are. Relook at risk management structure such as business continuation plan. Does the strategy managed to handle this crisis according to plan? What has been learnt. If it works, solidify the strategy to be more resilience and efficient in the future. In the end, we are now more interconnected and related to one another. Thus, it is utmost important to collaborate to protect each other from any unfortunate event. We should protect everyone.

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ARE WE WEARING PLASTIC?

By Special Rating Department (Market Services)

Do You Still Remember ......

During your younger days, when your favourite junk food slipped from your fingers and painted stubborn stains on your school uniform. The stain stays despite being washed with detergent under room temperature water.

Then your mother came to the rescue by soaking your stained school uniform into a pot of hot boiling water followed by fiery stir to discard the stubborn stain. Notwithstanding the bittersweet nagging experiences from your mother as she battled through the stubborn stains.

Yes, those were random memories which at times will carve a smile on your face.

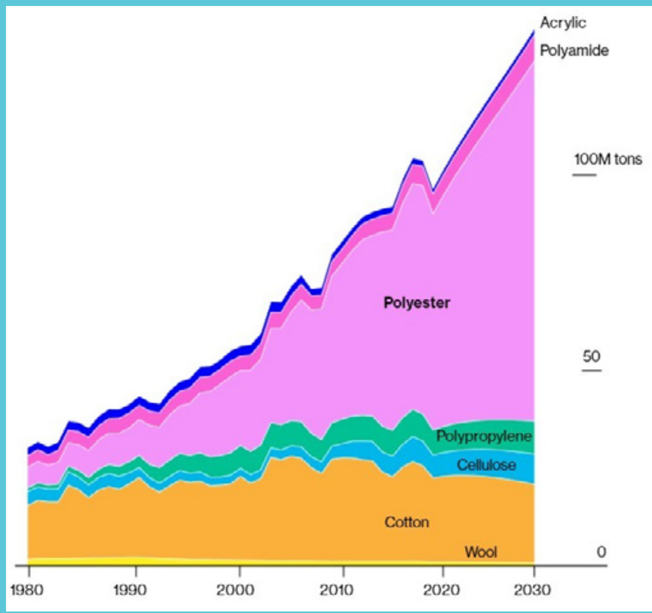
Fast forward into the digital era, one is **NO HERO** should a child's school uniform being soaked into hot boiling water as certain clothes are made of synthetic polyester which crumples and shrink like a plastic.

Why Is There Plastic In Our Clothes??

Polyester yarns or textiles are 100% man-made polymer. Most of the school uniforms these days are made of synthetic polyester. It is because such fibres are easy to wash and are extremely long-lasting which means children can wear it for many years.

Polyester Has Surpass Cotton in the 21st Century

Annual global fiber production per year in metric tons, projected through 2030



Source: Tecnon OrbiChem analysist

Polyester was introduced into clothing many years ago and has now become a core part of our clothing.

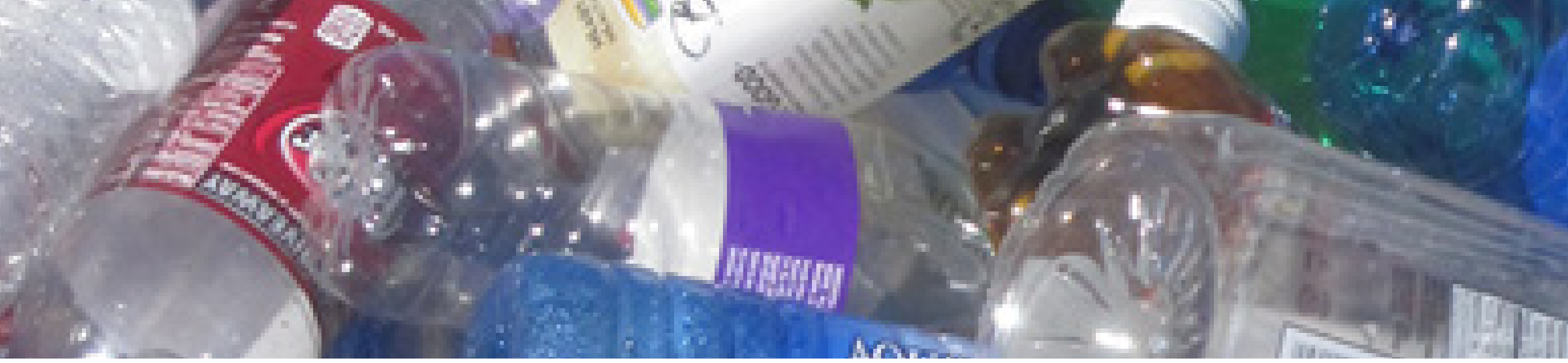
Polyester and nylon usage grew with improvements made to how well it could be blended with natural fibres, until it overtook cotton as the world's dominant fibre. The most used plastic in clothes is polyethylene terephthalate (PET).

Polyester is more sustainable than some natural fibers because the production process doesn't require as much water or land as growing natural fibers like cotton.

It also accounts for a 5th of the 300 million tons of plastic produced globally on annual basis. Polyester is an ubiquitous form of plastic that is derived from oil which has surpass cotton as the backbone of textile production in this 21st century.

What Could Polyethylene Terephtalate (Pet) Produce

Polyethylene terephthalate (PET) could produce plastic bottles and which when pulled into long thread, can also be woven, or knitted into fabrics or blended with other threads such as cotton to make mixed (polycotton) fabrics.



Clothing And Shoes Made From Recycled Plastic Bottles

Plastic litter - one of the most urgent environmental problems of our time Plastic bottles usually get discarded into landfill sites where they do not decompose. This non-degradable waste, being one of the main causes for global warming, can in fact be converted into a useful product that is fibre and then it can be further used for making yarn and into fabric.

Conversion Flow From Plastic To Fabric

The conversion flow from plastic to fabric as follows

1. Post-consumer PET bottles are collected from around the world.
2. The bottles are sorted by type and colour. The labels and caps are removed.
3. The bottles are then washed and crushed into flakes.
4. The clean flakes are used directly or turned into pellets.
5. The flakes or pellets are extruded into polyester fibres or filament yarns.
6. The filament yarns or fibres are used to produce fabrics.

Examples of the products originated from polyethylene terephthalate (PET) Bottles

More and more BIG BOYS are moving towards production via Recycled Plastic

ADIDAS is in increasing usage of recycled plastics in its products.

Adidas says that 2020 will mark the first time more than half of the polyester used in its products will come from recycled plastic waste.

From 2024 onwards, the company is committed to using only recycled polyester

Fire Insurance Points Of View

Basically, plastics industry can be divided into four basic sectors -

Secondary petrochemical production — processing primary petrochemicals (e.g., ethane) that have been extracted from crude oil and transforming them into secondary petrochemicals (e.g., ethylene).

Plastic fabricating and finishing — processing secondary petrochemicals (e.g., ethylene) into solid, synthetic resinous compounds (e.g., polyethylene), better known as "raw plastic"; and

Plastic moulding, forming, and extruding — the shaping of raw plastic (e.g., bulk polyethylene) into finished goods (e.g., plastic cups and auto-body parts).

Assembly and/or Manufacture of plastic goods from ready-made plastics - not involving processing of plastic resins or compounds or extrusion, blowing or injection moulding.

In accepting risk for Manufacturing of Yarn or Textile, it is important for insurers to study the whole manufacturing process. They need to consider the following aspects:-

- What are the raw materials used by the manufacturer?
- Is there any heating element involved (plastic extrusion process)?
- Is the insured manufactures textile from readymade polyester yarn that has been purchased elsewhere?

This is the main reason why survey reports are important for underwriters to decide whether their risk falls under these categories:

Textile	Plastic Recyling Process	Ready Made Plastic	Or Combination of all the three above

With the information gathered, underwriters can now evaluate the risk in proper by seeing the process and the fire hazards involved before determining the fire rate.

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TRANSITIONING INTO RENEWABLE ENERGY BY 2025

Introduction

2020-2021 have been a difficult year as the world grapples still with Covid-19 and its impact on all forms of normal daily life as we once knew it to be. One article published by Bloomberg even suggested that we may never go back to the days of pre-Covid 19, due to emergence of new variants that may require governments to plan better in living and dealing with this pandemic in the long term (Bloomberg, 2021).

In the previous edition of Malaysian Re newsletter, we discussed the case for coal fired power plants. In this continuation, we look at renewable energy with regards to power generation especially in the South East Asia region. The paper will also touch a little on impact on Covid on the power generation sector.

As an international reinsurer, Malaysian Re has developed it' own sustainability statement with regards to its Economic, Environmental and Social (EES) front. With more and more international reinsurer moving away from risks associated with coal (ie. Coal Mining, Coal Fired Power Plants), this paper aims to give an insight into impacts of such an approach, especially since Malaysian Re aims to be a reinsurer of choice among its ASEAN members, where coal will still be a large component of the power generation mix.

Energy Sector Overview

In the wake of the pandemic, investments have been focused more on the recovery from Covid 19, hence, other sectors have taken a hit with governments moving more funds into vaccination programmes. The renewable energy was not spared, and there were several delays in the implementation or operations of new renewable energy coming into the existing grid. This may affect the timeline of each nation as they transition into more reliance on renewable energy to combat the negative impact to climate change as identified in the Paris Agreement (Change, n.d.).

Below is a data presentation of the energy supply by source, up to 2018. From the data shown, the world's energy source is still dependant on coal which makes up 28% of fuel types. Further analysis show that Asia Pacific is still coal dependant with a larger percentage at 48% compared to other sources such as natural gas, nuclear, hydro, wind, solar, biofuels and oil (International Energy Agency, n.d.).

Regions	Coal	Natural gas	Nuclear	Hydro	Wind, solar, etc.	Biofuels and waste	Oil	Total
Asia Pacific	2,864,881	677,561	148,359	150,022	143,737	493,454	1,513,762	5,991,776
North America	347,966	880,276	249,025	61,391	51,471	130,346	988,692	2,709,167
Europe	314,706	496,697	244,374	54,874	72,029	176,990	622,798	1,982,468
Eurasia	161,992	506,765	54,178	21,855	303	9,147	187,387	941,627
Africa	113,511	133,336	3,017	11,278	6,836	378,639	189,512	836,129
Middle East	3,693	429,120	1,978	1,609	732	996	320,245	758,373
Central & South America	31,580	137,755	5,882	61,298	11,268	137,403	252,727	637,913
Total	3,838,329	3,261,510	706,813	362,327	286,376	1,326,975	4,075,123	13,857,453

Table 1: Fuel Source by Region measured in ktoe (kilotonnes of oil equivalent)

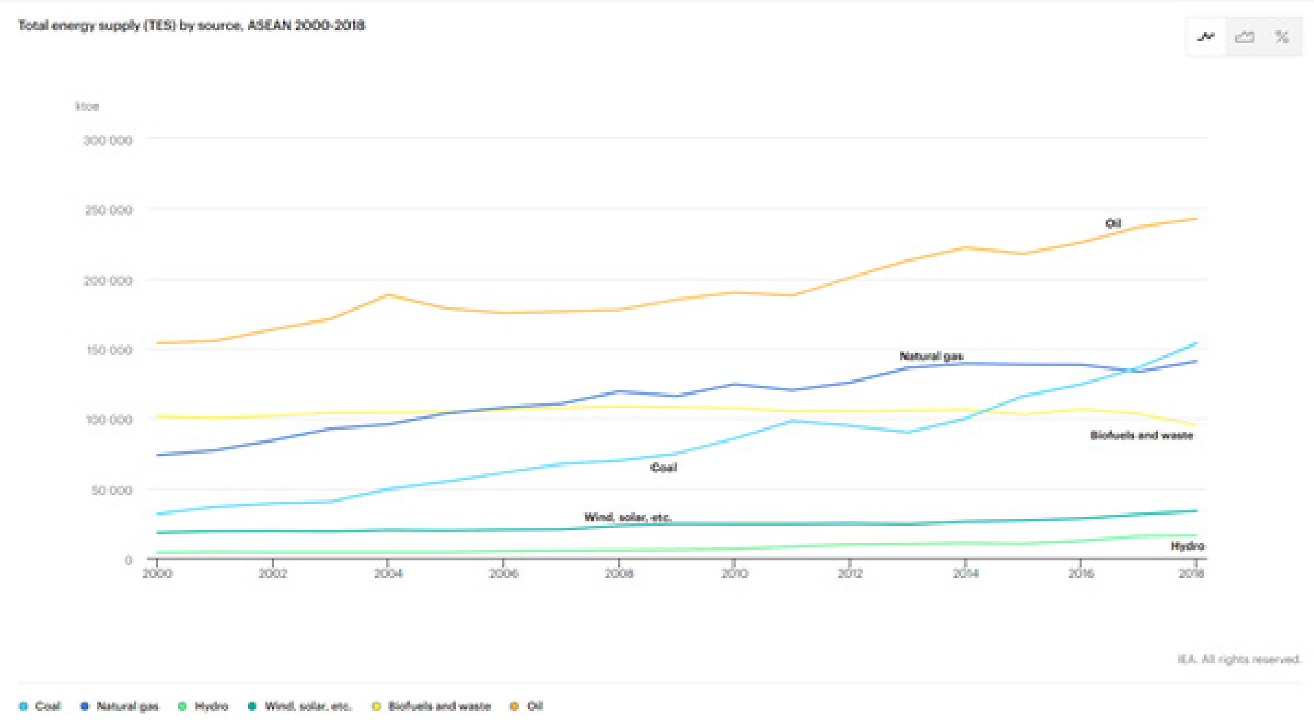


Table 2: Fuel Source in ASEAN measured in ktoe (kilotonnes of oil equivalent)

Looking at ASEAN specifically, as at 2018, the dependance on coal is about 23%, which is second only to Oil at 36%. From the data shown in Table 2, renewables made up of hydro, wind and solar only accounts to 7% of total fuel source. Another important factor to look at is the increase over the years on coal and fuel (up to 2018), whereas the renewables have not seen similar increases.This is also a similar trend when we zoom into Malaysia, as shown in Table 3.

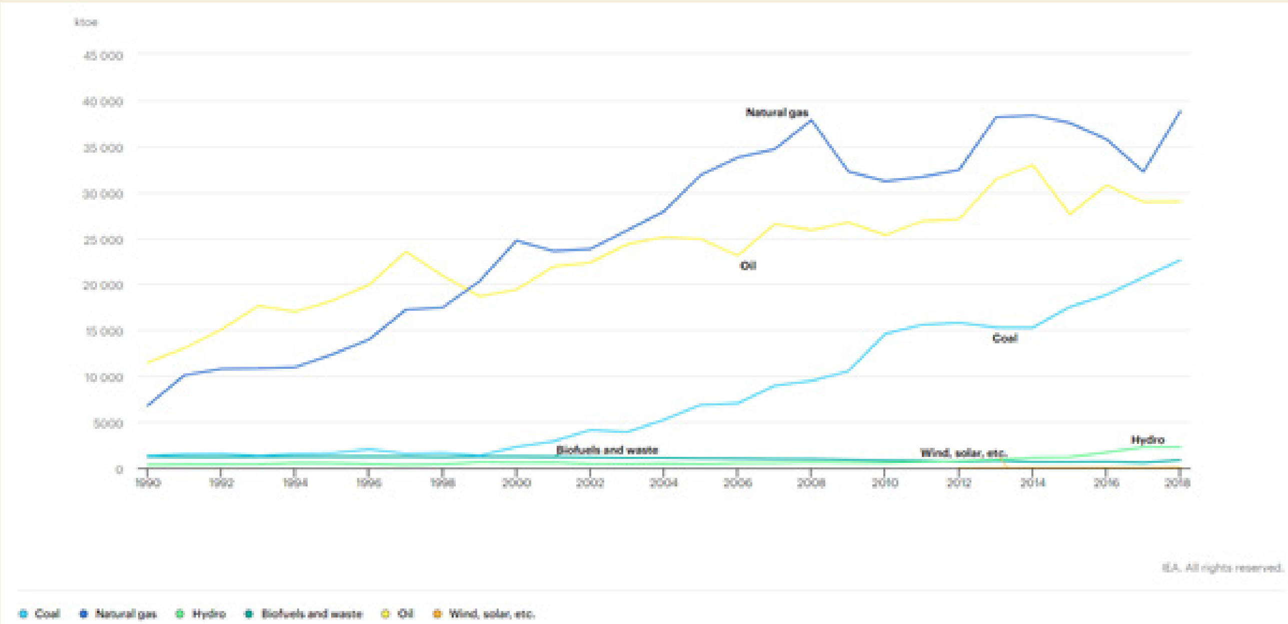


Table 3: Fuel Source in Malaysia measured in ktoe (kilotonnes of oil equivalent)

Although Asia is still dependent on coal, the rise of renewables cannot be stop. With cost becoming more of an important factor, the low operational cost involved in running hydro, wind, solar compared to coal and gas, adds to the attractiveness of renewables.

To improve the renewable energy capacity and revive the pandemic-hit economies, ASEAN governments have laid out an aspirational five-year sustainability plan under the second phase of ASEAN Plan of Action for Energy Cooperation (APAEC) 2021-2025. Under this, ASEAN energy ministers agreed to set a target of 23% share of renewable energy in total primary energy supply in the region and 35% in ASEAN installed power capacity by 2025. This would require approximately 35GW-40GW of renewable energy capacity to be added by 2025 (Power Technology, 2021).

Looking into Renewable Energy

In IEA's (International Energy Agency) estimate for 2020, renewable energy demand increases by about 1% from 2019 levels, in contrast to all other energy sources. Renewable electricity generation grew by nearly 5% despite the supply chain and construction delays caused by the Covid-19 crisis. In doing so, renewables almost reach 30% of electricity supply globally, halving the gap with coal (from 10 percentage points in 2019) as shown in Table 4 below.

Overall, renewables growth is more sluggish than last year but in line with the general slowing trend since 2016.The pace of renewable power capacity additions could decline in 2020 as supply chain disruptions and labour restrictions delay construction.The duration and extent of lockdowns and social distancing measures in different countries will influence the total for the year, along with the scope and timing of economic stimulus packages in response to the economic downturn.

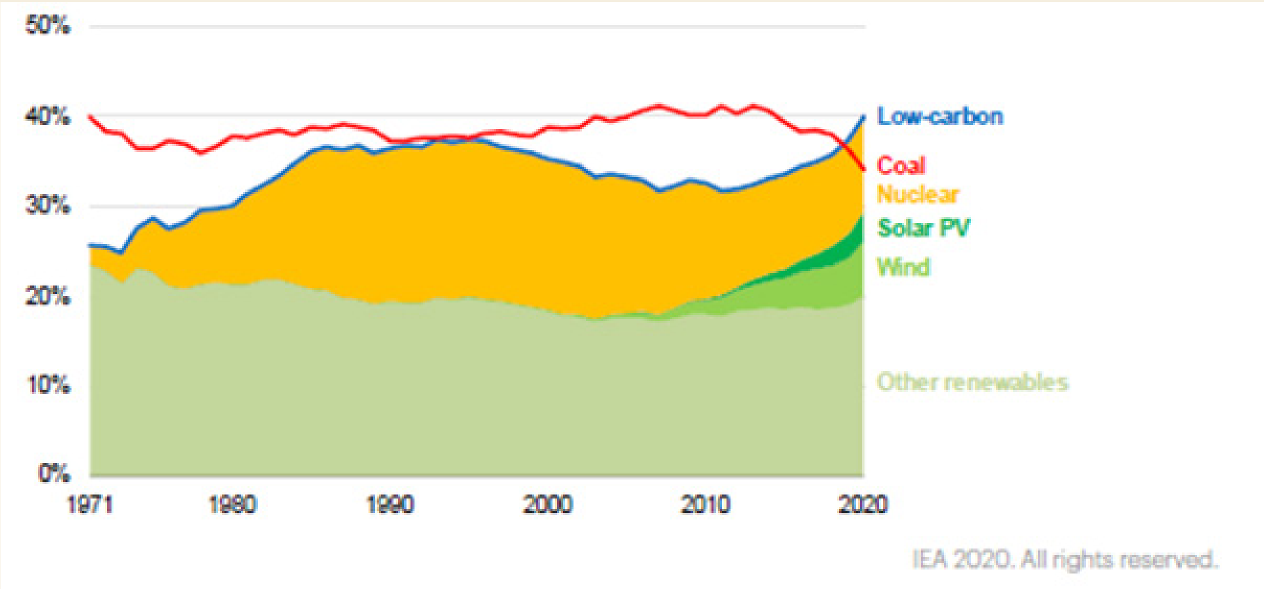


Table 4: Global generation shares from coal and low-carbon sources, 1971-2020

Solar PV is set to increase the fastest of all renewable energy sources in 2020 with wind power expected to increase the most in absolute generation terms among all renewables as shown in Table 5 below.

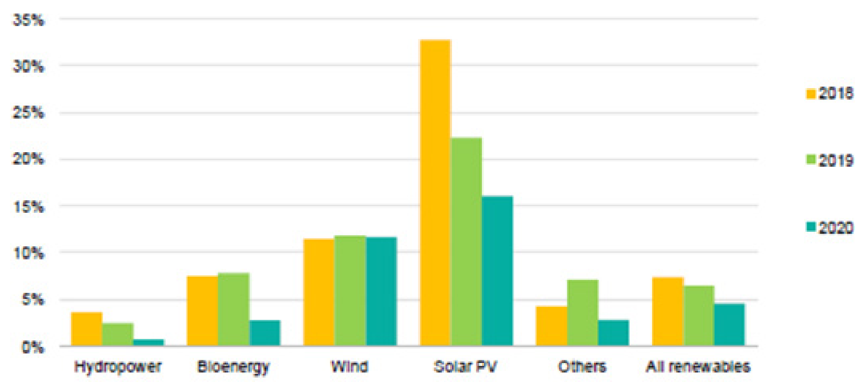


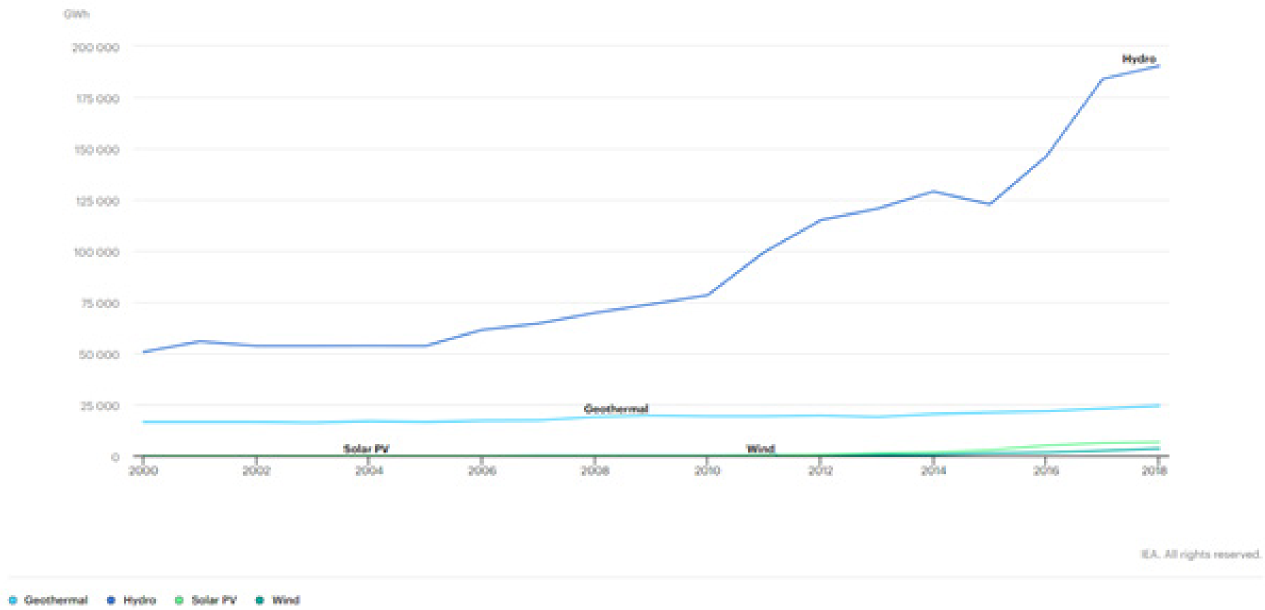
Table 5: Annual growth for renewables by source, 2018 to 2020

Some important policy deadlines require developers to commission projects by the end of 2020. In China, all wind projects need to be commissioned by the end of 2020 to qualify for feed-in tariff subsidies. In the United States, wind developers are in a similar situation, as they are required to ensure projects are operational by the end of 2020 to receive production tax credits. Despite such policy deadlines, however, uncertainty remains over capacity growth this year because of possible delays.

Electricity generation for bioenergy is expected to slow down as supply chain interruptions and logistical challenges are expected for the delivery of solid biofuels to large-scale power plants. For instance, large bioenergy power plants in Europe use as fuel wood pellets that mostly come from North America. Pressure on biofuel consumption levels will continue because transport activity is expected to contract still further in the second quarter of 2020 in the United States, European countries and many other countries. If the pandemic is under control by late in the northern summer, transport demand could rebound in the second half of the year, allowing a partial recovery of biofuel production. Full-year biofuel consumption is nonetheless likely to be substantially lower than in 2019. Planned increases to blending mandates have already been delayed in several Southeast Asian countries and the introduction of Brazil's flagship RenovaBio policy may be disrupted. Low oil and prices also limit appetites to increase biofuel blending levels. The impact on biofuel production across 2020 will depend on the share of sugar cane directed to sugar rather than ethanol, and the scope of financial support made available for producers as part of Covid-19 rescue and recovery packages.

Closer to home, Table 5 below shows the increase in renewables in particular Hydro in ASEAN region.

Table 5: Renewable electricity generation by source (non-combustible), ASEAN 2000-2018



A faster or slower recovery would have limited effects on renewable electricity production in 2020, with year-on-year growth expected under most conditions. However, the impacts on the renewable energy industry could be very large, as the regions most affected by the Covid-19 crisis could see a sharp reduction in construction. The production of renewable electricity largely depends on the availability of natural resources, as weather is the main determinant for hydropower, wind and solar PV, which together account for about 90% of all renewable electricity generation. The estimates for 2020 are based on past weather trends, and so deviations from these historical averages are a source of significant uncertainty. The total amount and timing of new capacity additions in 2020 also remain uncertain, but their impact on total renewable electricity generation is limited (IEA, 2020). Willis reports that although at 2018, the renewables made up only about 26% of global electricity generation, this figure is expected to rise to 45% by 2040 (Willis, 2021).

Malaysian Re Facultative Department

The current power portfolio of the Facultative department is predominantly on coal which is in line with the existing fuel mix offered in the ASEAN region. Table 6 below shows the current portfolio mix. The existing portfolio is in line with the ASEAN overall fuel type mix as shown in Table 7. With the change in the market with respect to reduction in coal and an increase change to renewables, supported by ASEAN governments, we will need to position ourselves carefully as we look to balance the portfolio mix, capturing still the hard market conditions, especially for coal fired power plants.

Fuel mix	UY 2020 Premium	% of fuel mix
Coal	7,100,000	40%
Oil	650,000	4%
Natural gas	6,000,000	33%
Biofuels/ Waste	440,000	2%
Hydro	3,400,000	19%
Solar PV/ Wind/ Geothermal	358,000	2%
	17,948,000	100%

Table 6: Malaysian Re Facultative Premium for Power

Fuel mix	2020 Fuel Mix (GW)	% of fuel mix
Coal	479,993	42%
Oil	21,290	2%
Natural gas	383,800	33%
Biofuels/ Wate	35,061	3%
Hydro	199,737	17%
Solar PV/ Wind/ Geothermal	32,769	3%
	1,152,650	100%

Table 7: Fuel mix in ASEAN for 2020

As we prepare to rebalance our portfolio moving into 2025, we made assumptions based on IEA reports as well as engagement with specialized brokers in the market. Our assumptions are:

1. The coal fired power plants saw a average increase in premium rates of 15% to 20% in 2020 compared to 2019. Continued capacity reduction played an important role in the hard market cycle. Moving into 2021 up to 2025, this sector is expected to hardened with an average 10% year on year up to 2025.

2. Hydro premium rates have also increased due to market losses, with the recent Tapovan Hydroelectric Power Plant (India) loss in February 2021. Capacity for hydro power is also limited due to the large contract values associated with this sector. Moving into 2021 up to 2025, this sector is expected to hardened with an average 10% year on year up to 2025.

3. Natural Gas, Oil, Wind, Solar, Biofuels will see an average increase of 10% to 15% depending on performance of each risks.

4. Renewable energy will make up about 23% of fuel source coming into 2025 as per APAEC (ASEAN Plan of Action for Energy Cooperation).

Table 8 shows Scenario 1 where we assume organic growth of our existing portfolio at the assumed premium rates as mentioned above. The renewables are highlighted in green for easy reference. From here, the renewables make up 23% of the portfolio mix, which is in line with ASEAN target set for 2025. However, the dependency of coal is still large.

Fuel mix	Estimated UY 2025 Premium	% of fuel mix
Coal	11,434,621	44%
Oil	829,583	3%
Natural gas	7,657,689	30%
Biofuels/ Waste	561,564	2%
Hydro	4,768,676	19%
Solar PV/ Wind/ Geothermal	456,909	2%
	25,709,042	100%

Table 8: Estimated premium by 2025 (Scenario 1)

We then looked at Scenario 2 whereby we assumed similar percentage mix of fuel types as projected by IEA for 2025 as shown in Table 9 below. This is also in line with ASEAN's goal of 23% renewables as power generation overall. In order to achieve a similar balance of fuel mix percentage, we have to reduce our coal percentage by 50% by 2025, with an increased in other source of power generation especially in renewables. However, in Scenario 2, we have not factored growth in Biofuels/Waste and Hydro as the projection of these generation types is not large in the ASEAN region.

Fuel mix	2025 Fuel Mix (GW)	% of fuel mix
Coal	2,186,440	22%
Oil	3,384,330	35%
Natural gas	1,953,840	20%
Biofuels/ Waste	779,210	8%
Hydro	197,710	2%
Solar PV/ Wind/ Geothermal	1,302,560	13%
	9,804,090	100%

Table 9: Fuel Mix by 2025 (Scenario 2)

Fuel mix	Revised Estimated UY2025 premium	% of fuel mix	Assumptions
Coal	5,717,311	23%	Reduce line by 50% on current book
Oil	995,500	4%	New plants coming into grid
Natural gas	11,486,534	46%	New plants coming into grid
Biofuels/ Waste	561,564	2%	No new plants coming into grid
Hydro	4,768,676	19%	No new plants coming into grid
Solar PV/ Wind/ Geothermal	1,370,726	6%	New plants coming into grid
	24,900,310	100%	

Table 10: Revised estimated premium by 2025 (Scenario 2)

With the revised estimated premiums under Scenario 2, the percentage of renewables in the portfolio would be 27%. However, with this alignment towards less coal, the loss of premiums overall from coal is estimated at RM5.7mil and the overall estimated loss compared to Scenario 1 would be RM0.8mil.

Summary

In summary, as we move towards supporting more renewable energy sources, a balance is needed in developing a sustainability statement in particular it's restrictions to coal fired power plants. Some are the points we share below:-

1. Asia in particular South East Asia, where Malaysian Re operates, relies on coal as a major fuel source for power. Removing ourselves from coal entirely, will impact negatively on our premiums as well as neglecting support for national interests such as Tenaga Nasional (Malaysia). As seen in the forecast in terms of premium size by renewables and non-renewable for the Facultative Department up to 2025 in both scenarios above.

2. Although cost of renewables is lower compared to the other fuel types, challenges remain which points to renewable taking some time to gain market share and if we are to exit entirely from coal and write an increase share in renewable, we are missing out on premiums. Some of the challenges as listed below (Willis, 2021):-

   I. Renewables have a lower cost of operations and maintenance but higher cost of capital investments. With the economic downturns, spending on renewables will be affected and is very reliant on government incentives.

   II. Renewables depend largely on the climate, and with climate change uncertainties, provision of stable electricity to the main grid is highly dependent on climate. Example, lower rainfall at catchment area of dam will result in lower electricity output produced by hydro dams.

   III. Investments in new transmission grid systems to support renewable energies. Majority of the current grid system wasn't designed for renewables in mind and this needs government commitment especially on policy changes.

3. Natural catastrophe exposures related to renewables are high. Solar farms are an example, where solar farms are typically built on least prime land with more exposure towards flooding. Hydroelectric dams are also exposed to flooding as can be seen in India with Tapovan Hydroelectric Plant. This will result in higher cost of capital if we are expanding in renewables. The ASEAN countries geared towards renewables ie. Vietnam, Philippines and Indonesia are known to be prone to natural catastrophes.

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MENTAL HEALTH AWARENESS

Introduction

Mental health is a term coined that encompasses cognitive, behavioural, and emotional well-being. It is entirely dependent on how individuals think, feel, and act.

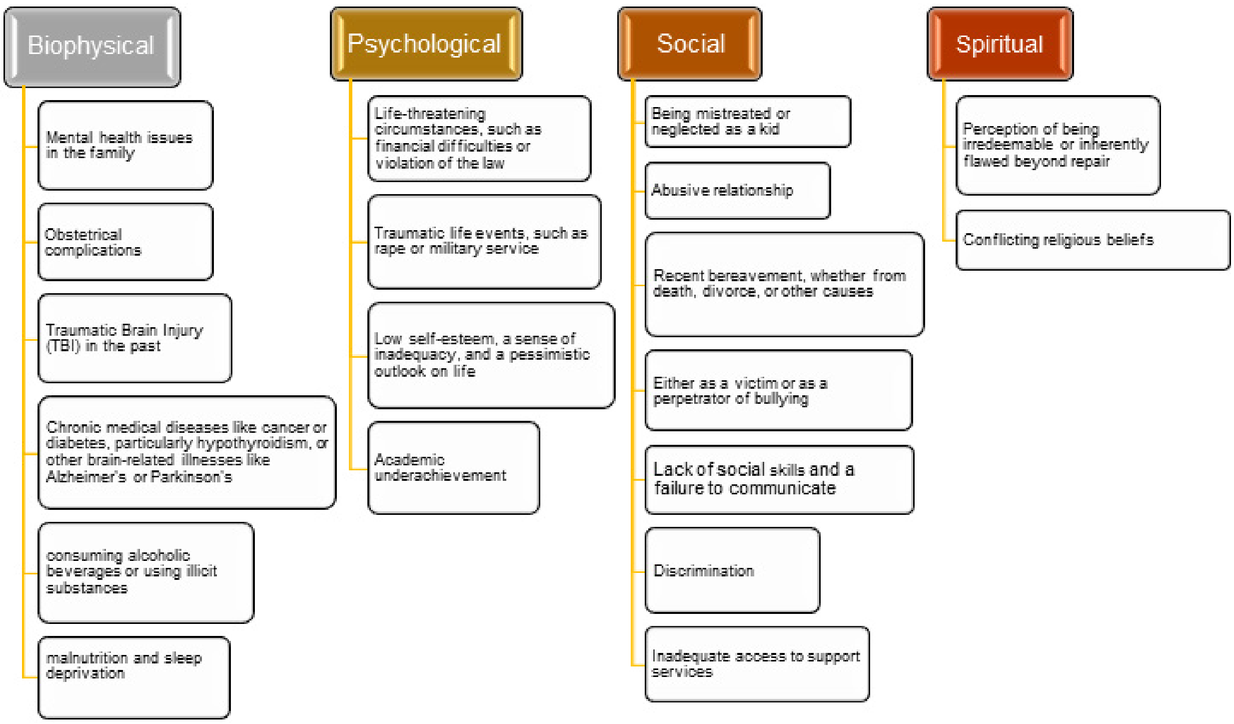
According to the World Health Organization (WHO):-

"Mental health is a state of well-being in which an individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively, and is able to make a contribution to his or her community."

A person's entire health status includes both physical and mental well-being. When someone is depressed, they are more likely to suffer from long-term illnesses like diabetes, heart disease, or stroke. A chronic illness, such as depression or anxiety, may worsen an individual's mental health which in turn leads to many psychological and social issues.

Risk factors for mental health conditions

A variety of factors may cause mental health issues. Many individuals are likely to be influenced by a complex mix of variables, but some may be more profoundly affected by specific elements than others. The 4 risk factors are as illustrated in diagram below.



Common risk factor

Early signs/symptom of mental health disorder

There is no actual physical test or scan that could identify whether someone has acquired a mental disorder. Nevertheless, the following are potential indicators of mental health problem that individuals should be on the lookout for:

- Isolating oneself from friends, family, and coworkers
- Abstaining from activities they might usually enjoy
- Sleeping or eating excessively or insufficiently
- Despondent
- Experiencing low energy levels on a regular basis
- Excessive smoking, drinking, or drug usage
- A feeling of extraordinary fuzziness or disorientation such as being forgetful, agitated, furious, or frightened
- Fighting or ranting at loved ones or acquaintances
- Having constant thoughts and recollections that you can't quite grasp
- Unable to carry out regular tasks such as looking after your children or going to work or school.
- Numbness or a feeling that nothing matters
- Contemplating on harming oneself or others physically.
- A state of perplexity

Typical mental health disorders

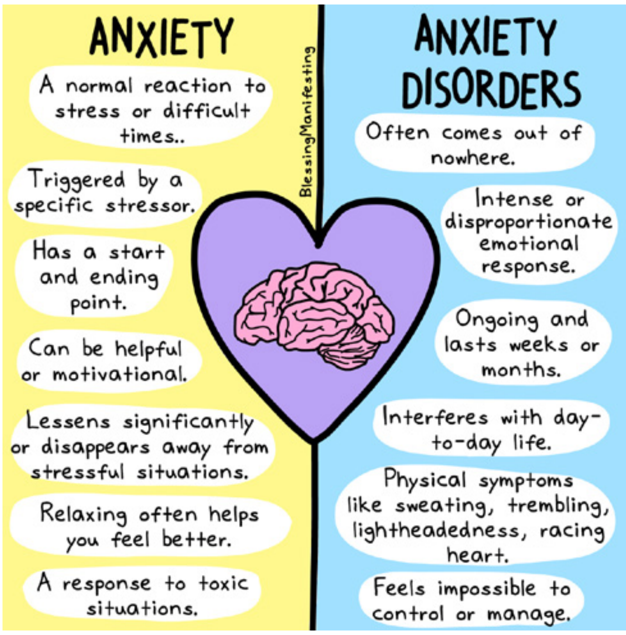
The following are the most prevalent type of mental illness which are commonly associated with the general population:

a) Anxiety disorders
b) Bipolar disorder
c) Post-traumatic stress disorder (PTSD)
d) Schizophrenia psychoses

Anxiety disorders

Anxiety is by far the most prevalent mental health issue among adolescents. The few variations one may be plagued with is continuous, apparently uncontrolled, and overpowering anxiety. This condition may worsen and lead to endangering of one's mental health if they have an illogical and overwhelming fear of daily events.

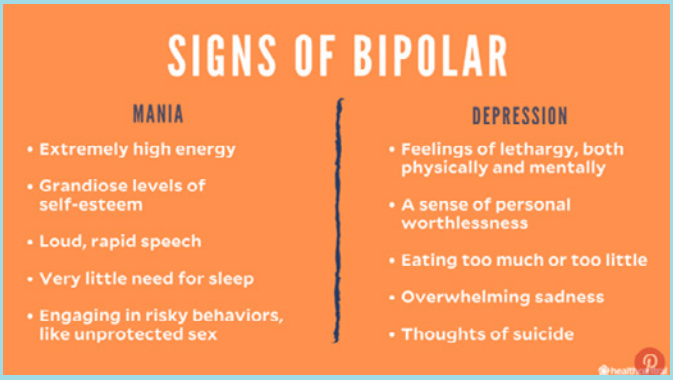
Anxiety disorders are a category of mental diseases defined by high level of anxiety. It's normal to feel anxious from time to time in life but overwhelming felling will definitely cause more harm than good. Anxiety disorders are tough to deal with, yet they are not usually treated seriously especially in adolescence where it is given the chance to manifest into a more severe form throughout time. People who have anxiety issues are more likely to develop an anxiety disorder too later in life.



Differences between anxiety and anxiety disorders

Bipolar disorder

Bipolar disorder, previously known as manic depression, is a mental illness characterised by severe mood fluctuations, including emotional highs (mania or hypomania) and lows (depression). It is a severe mental illness that produces significant irregularities in mood, thoughts, energy, and behaviour—the kinds of changes that impede your day-to-day functioning.



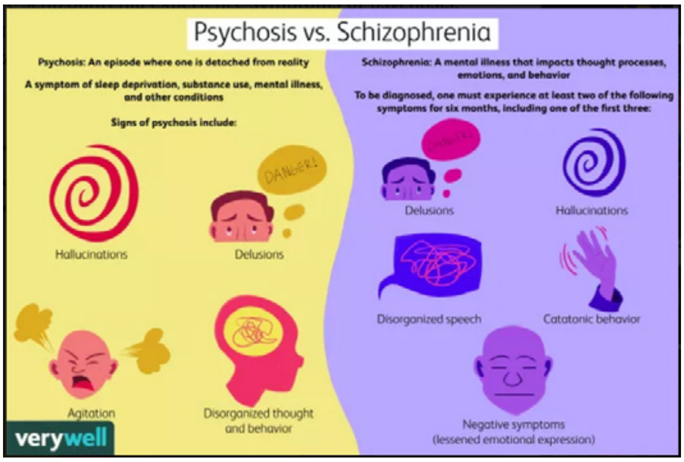
Signs of bipolar

Post-traumatic stress disorder (PTSD)

Post-traumatic stress disorder (PTSD) is a mental illness developed by seeing or experiencing a frightening incident. Flashbacks, nightmares, and extreme anxiety, as well as uncontrolled thoughts about the incident, are all possible symptoms. PTSD symptoms may emerge as soon as one month or up to several years after a stressful incident. These symptoms create significant issues in social and professional settings, as well as in relationships. They may also make it difficult for those affected to carry out regular everyday activities.

Schizophrenia and psychoses

According to the World Health Organization (WHO), about 20 million individuals across the globe are affected with schizophrenia, which is an enlisted as a serious mental illness. Psychiatric disorders such as schizophrenia include thought, perception, emotion, language, and behaviour that are distorted. Hallucinations (hearing, seeing, or feeling things that aren't there) and delusions are common in psychosis. People suffering from this condition may find it challenging to work or study regularly. Schizophrenia usually manifests itself in late adolescence or early adulthood. Schizophrenia may include hallucinations, delusions, and highly disorganised thought and behaviour that interferes with everyday functioning and can be debilitating



Psychosis vs Schizophrenia

Impacts of Covid-19 on Mental Health

Various studies have shown that there is a correlation between the worsening pandemic of Covid-19 with declining mental health due to higher psychological distress across the population. Highlights of the studies among others are worsening financial conditions, the worries in meeting living expenses, and prolonged lockdown period to exacerbate psychological distress. The behavioural aspect stemming from these concerns ie increased dependency on alcohol as a coping mechanism to further affect mental health (Bahar Moni AS, Abdullah S, Bin Abdullah MFIL, Kabir MS, Alif SM, Sultana F, et al., 2021). Psychological distress due to financial difficulties were also noted in previous studies into during SARS and MERS epidemics. Social media influence is another factor to be concerned about as not everyone can filter the information on the internet positively. There are various risk factors that could lead to psychological distress during this pandemic, and they should be identified and addressed with accordingly

Tips to Manage Mental Health Wellbeing during Covid-19

Manage your stress threshold

There are many things that could be done to maintain stress limit within the acceptable threshold. For example, indulgences like food and alcohol should be managed as excessive consumption could be harmful in the long-run. Sleep should be prioritised as such, actions need to be taken to create routine sleep and wake up times as well as maintaining sleep quality. Exercise for instance, is also beneficial to improve sleep and lower stress levels.

Other than that, external stressors should be monitored. For example, there should be a limit as to how news is consumed. News could be both informational and sensationalised, and negative or bad news items would only add to one's worry. People should limit how much news is to be consumed daily as well as choosing news from reputable sources only.

Manage uncertainties

People are vulnerable to feeling overwhelmed and stressed out due to the uncertainties created by this pandemic. To manage them, consider taking things one day at a time, by focusing on the present and only on the things within one's control. Managing uncertainties could also be done via communicating one's concerns with family or friends, or even professional help. There are organisation that are providing assistance for their employees to get help in a safe and confidential manner. Mental health awareness programs are also organised by many organisations. MNRB has recently launched "Amber", a smart artificial intelligence assistant to engage with employees by collecting feedbacks and providing guidance and assistance in various manner – including for mental health-related issues. To get through the tough times due to the pandemic, people could support each other by knowing when to reach out for help and offer help when needed.

Work-life balance

As many companies began to normalise work-from-home culture, some even on a permanent basis, the need to create a work-life balance becomes urgent. Working from home does not mean that output has to be increased compared to working onsite. To avoid stress and burnout, there should be a clear routine to help workers split their working and non-working time. Even while working there should be short breaks in between and a time to go offline so that one could wind down and focus on other activities that bring them joy and relaxation, instead of being consumed with too much task to the point where mental health is compromised.

Stay connected with others

With the new norm of lifestyle, while adapting to technology and the lack of physical interactions are challenging, it is important to remain connected to family, friends, and others, Despite the easing on travel restrictions, people should still adapt to the new normal way of communication and by adopting technology into social interactions. This is because, virtual interactions are quick and plenty of platforms are also accessible at reasonable costs. Staying connected will also help people address loneliness issues, especially if one stays alone.

Take time to unwind

Find time for enjoyable activities, pick up new hobbies, or learn new skills that would help promote relaxation by not focusing thoughts on negative matters and to take a breather from stress and anxiety-inducing aspects i.e. prolonged working from home, online classes and examination for self or children, balancing household chores and work, etc. Take time to perform activities that spark joy instead. For example, meditation and family movie night are among activities that could be done within the confine of one's own home but will help to unwind.

Conclusion

The prolonged pandemic brings about concerns on physical and mental well-being of people across the globe and from all ages. It is therefore important to understand the risk factors associated with the declining mental well-being and take actions to overcome them. Understanding the concept of mental health as well as risk factors are the early steps in promoting mental health during this pandemic. This is because, mental health has never been in the spotlight or at the forefront of concerns to address previously, due to the topic being taboo or because some people tend to brush off this issue as minor. However, now that the issue on mental health is gaining attention globally, more concentrated efforts could be taken to overcome this matter. Additionally, even companies are embracing the topic of mental health and are incorporating support and creating awareness on mental health for their employees.

The rest is up to individual themselves to be aware of their own mental health and to take actions to overcome issues that could cause a decline in mental health.

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ROAD TO DIGITAL TRANSFORMATION

Digital transformation or digitalization in short is a buzz word during this pandemic times. Companies are looking into transforming their organization to be technologically savvy. This is the result of movement and face-to-face meeting restrictions imposed due to lockdown to curb the spread of COVID-19. Employees are forced to work from home and meetings to be done virtually. Therefore, companies need to adapt by utilizing technology and Internet to keep the organization in the "business as usual" state. ASEAN Pulse has been mentioning digitalization in insurance since its second edition of the publication in 2018. It was touched briefly in 2018 where new technologies are identified as one of the key opportunities within ASEAN. The third edition discussed more in depth on this topic. The latest version published in 2020 revisited digitalization where interviewees agree that COVID-19 accelerated digitalization. The main goal of digitalization among other things is to streamline the fundamental system wherever applicable in marketing, underwriting, actuarial and claim. This is with objective to achieve process automation, better decision making, reliable analytics and ultimately adding value to both companies and customers. Therefore, as insurers and reinsurers are innovating themselves particularly in digitalizing their business, it is crucial to focus on key areas which are data quality, tools used, and potential risks associated with this initiative.

The most essential key area to focus on the digitalization journey is the quality of data within the organization. Data facilitates in offering comprehensions of risk being underwritten to help underwriter price and select risks that are within the company's risk appetite. Therefore, the data being utilized must be top of quality. It must be accurate, complete, and fit for the intended use. Data driven statistical analysis has historically been the fundamental of business decision-making in insurance and reinsurance companies. Aside from assisting in making underwriting decisions and pricing the risk, data also aids in settling claims and preventing fraudulent claims. Thus, the quality of data is very critical in day-to-day business decisions for re/insurance company. Lack of effort in ensuring the data is accurate leads to erroneous decisions and missed opportunities. A publication by CRO Forum, found that executives at several insurance companies are skeptical of data at their disposal. Furthermore, the publications further stated that analysts could devote 40% of their time validating data reliability prior to analyzing it to come out with business strategic decisions. Generally, ensuring the accuracy, completeness and reliability of data is the utmost importance as industry is transitioning into data driven business decisions.

Next, with abundance availability of data, choosing the correct tools for analysis are as important as ensuring the quality of data. Choosing the right analytical software is vital in making sure it meets the intended objective, optimizing latest technology and at a reasonable cost. The wealth of computer capability available in this modern era gives re/insurers the ability to analyze data, acquire deep insight forecast and propose business decisions easily and effectively. In its day-to-day operation, insurers and reinsurers generate and collect enormous volumes of data. Moreover, todays re/insurers have access to real-time data, third party database and customers are more willing to be more transparent on their personal information. Insurers and reinsurer can optimize the data by using business intelligence tools to create dashboard visualizing real-time core operations information. The reports can be automated to be refreshed at certain frequency to ensure it shows latest information available and assist management to maneuver strategic decision quicker. Additionally, availability of data from satellite imagery, weather forecasts and detailed risk location information makes advanced analytics such as catastrophe risk modelling massively benefit underwriters in risk selection, risk prevention and risk pricing. Basically, selecting the correct data analytics tools is as important as ensuring the data to be in the top of the notch quality.

In addition, everything has risk associated with it. The same applies to digital transformation initiatives. Two major risks to be considered are operational risk and systemic risk. Data that is inaccurate, incomplete and unfit for the intended use may lead to operational risk. Usage of erroneous data causes faults in reports generated based on it and leads to incorrect decisions made. Additionally, the cost of fixing the deficiency in the quality of data could be punishing as it is laborious and time consuming. Therefore, it is essential effort in effective data quality management system should be the number one agenda to be decided in re/insurers digitalization journey. Systemic risk from IT system is the potential of catastrophe cyber attack to the organization. The Internet provides interconnections between digital devices around the world. As result, potential threat could not only come from within the company but also externally. This create concerns that it only takes a single device to be hacked to impact simultaneous aggregated damage to all connected devices. Thus, it is critical to consider risk associated in transforming a company to be more technologically advanced.

Malaysian Reinsurance Berhad (Malaysian Re) also invests in utilizing available technology to innovate the company to be more effective and add more value to its client. Efforts in ensuring data quality is a continuous and collaborative effort among all departments. Additionally, Malaysian Re also subscribes a third-party insurance and reinsurance database to benchmark data at our disposal against the market data to ensure the deviation is within the acceptable and reasonable level. Besides that, the database is also used to study new markets. Malaysian Re also utilized analytical tools such as pricing modelling, catastrophe modelling and robotic process automation. Malaysian Re also employs and expands on the usage of business intelligence reporting to have real-time information of its business. Lastly, one of Malaysian Re's risk management initiatives is by having Business Continuation Plan in place in the event of a catastrophic IT failure affecting the company. On underwriting side, we have been proposing exclusionary wording for silent cover in the policy wording. As for the market which Malaysian Re as follower, we ensure some form of cyber exclusion is incorporated in the policy. All in all, one of Malaysian Re's strategic mission going forward is to digitalize its model while also ensuring database at top quality all the time, utilize analytical tools to meet the intended purpose and have risk management strategy in the event of IT failure.

In conclusion, data is a crucial asset. Insurers and reinsurers' dependency toward data will only increase from now and onwards. The industry is undergoing evolutionary state. Method how underwriters select risk could possibly be very different in the next 10 years. With the possibility of better and advanced analytical tools, underwriter can arrive to decision on whether to bind the risk quicker. Chief Risk Officer also plays an important role in ensuring risks are managed accordingly and risk mitigation plans are in place in case an unfortunate event occurs. Companies that adapt swiftly and fully equipped will be more resilient and benefit the most in digitalization transition. Recent COVID-19 pandemic show insurers and reinsurers that adapt quickly by investing in appropriate technology managed to keep their business continue as per usual rapidly. These new normal are expected to be irreversible and help to improve the efficiency of the industry. Organizations that are behind in adopting the needed technology will struggle to compete soon. They will struggle to compete in terms of improving their business by streamlining internal processes, boosting revenue and reducing cost of doing business. In the end, it is very important for every single insurer and reinsurer to start planning on digital transformation to stay competitive.

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Machine learning in reserving and its challenges

With the advent of technology and abundant data, machine learning is often adopted to solve various business challenges, resulting in improved process efficiency, better customer experience and more useful insights from data. In insurance, it is fairly common to see machine learning techniques being adopted in several aspects of operations, from pricing, claims management to product development. Despite this, machine learning has gained less traction when it comes to reserving exercise and this article seeks to discuss this.

Applying machine learning in reserving

The most common approach in reserving is the triangulation method. Even though it is widely used, the triangulation method is not without its weaknesses. The triangulation method is built on a strong assumption that historical experience is a good indicator of future experience and therefore, patterns seen in historical claim development are assumed to repeat itself in the current claim development. Without any adjustment in the triangulated data, triangulation method cannot adapt to underlying structural changes in the data e.g. change in regulation. Also, triangulation method relies on aggregated data. Hence, information on individual claims, policyholders and policy details have been lost and cannot be utilised to gain any meaningful insights. Furthermore, triangulation method often produces unstable prediction, especially in recent accident/underwriting years.

Machine learning technique could achieve better accuracy because it uses granular claim information (that otherwise would have been lost in triangulation methods) to explain claims development trend and project future development. Whilst triangulation emphasises on claims homogeneity when grouping the data, machine learning relies on claims heterogeneity to explain trend anomalies to gain more insights and produce more accurate projections. It is able to do this with the availability of large volume of datasets and presence of stronger computing power. For example, in motor insurance reserving, a machine learning algorithm may utilise various granular data regarding the insured vehicle (e.g. make and model, age, sum insured), the policyholder (e.g. age, gender, geographical location) and the policy (e.g. type of coverage, underwriting date) to predict the total expected claims of a motor insurance portfolio. A supervised machine learning algorithm will "teach" itself by analysing a large volume of paired input and output data - the input being the data on insured vehicle, policyholder and policy, and the output being claim size and event date. The algorithm will then derive the general rules that define the relationship between the input and the output. In this example, the algorithm is able to predict the occurrence of a motor claim and the expected claim size for a male policyholder age 45 driving a Mercedes by analysing the patterns within the input and output data. With this information, the total expected claims from a motor insurance portfolio can be projected and after accounting for the claims that have been settled, the amount of claims to be reserved can now be estimated.

It can be argued that the triangulation method can be improved by moving towards Generalised Linear Model (GLM) only without applying machine learning techniques. But machine learning techniques can enhance the common reserving methods because human intervention and biasedness can be minimised, as well as because of their shorter run time.

By construct, triangulation methods often overlook underlying trend changes such as changes in product mix and distribution channel, changes in policyholder behaviours, hidden inflation trends and changes in legal environment. A common approach is to either exclude data with the abnormal trends or adjust the data to reflect the new trends before applying the triangulation method. However, doing this requires a lot of subjectivity and judgment and may result in inaccurate and unstable prediction. A machine learning algorithm will be able to capture such trends and reflect this in the modelled relationship. Despite this, the results of machine learning model are not always intuitive and require further investigation.

Considerations in adopting machine learning in reserving

Before embarking on any machine learning projects, be it pricing or reserving, an organisation needs to first embrace a culture that embeds technology and innovation in its operations and decision making. Potential organisational, political and technical setbacks within the organisation need to be identified and minimised to ensure successful implementation of machine learning initiatives.

High-quality data is the most important building block of machine learning. Therefore, to successfully implement a machine learning project, it needs to be supported by an updated and centralised data and technology infrastructure. An organisation needs to ensure it has a robust and accurate data system, together with an internal application programming interface (API) which can connect the data with the company's other business systems. The quality of the machine learning output will be as good as the quality of the data driving the project. Besides this, it is also part of the organisation's obligation to practice responsible data collection to avoid future data privacy issues.

Secondly, the organisation needs to invest in talents. Because of its niche, skilled talents with programming, statistics and insurance knowledge are required to build and train machine learning systems for reserving exercise. Talents with niche skilled can either be acquired externally (which can be expensive) or develop internally (which can be time consuming). More junior actuaries may have data science and programming background knowledge from their current curriculum and therefore more proficient in the machine learning techniques. Therefore, the challenge lies more in the senior levels where the skills and knowledge to understand and review the machine learning model can be limited.

Thirdly, the organisation needs to ensure consistent engagement with its stakeholders, both internal and external. Internally, is the company comfortable enough accepting the results of a machine learning algorithm that goes against its long-held beliefs or intuition? There will be little point of employing resources to develop machine learning infrastructure if the company finds little value from its results. Externally, because insurance is a heavily-regulated industry, it might be challenging to gain the trust of the regulators on the reliability of less traditional methods as compared to the true-and-tested triangulation method.

It is also worth noting that strategies to replace human entirely with AI often underperform those which complement human strengths with AI, according to a Harvard Business Review study. Whilst machine learning has more superior speed and cognitive ability in certain tasks, even the most advanced machine learning system still lacks intuition and cultural sensitivity, which sometimes are important considerations when justifying certain reserving results and findings. This is especially important in evidence-based and client-facing industries such as medicine, law and insurance, where results and findings need to be properly justified and explained to various stakeholders. As machine learning can sometimes be considered a black box, its results may need to be contextualised and assessed for sensibleness before it can be deployed. For example, machine learning algorithm may conclude that yellow cars have faster reporting pattern than red cars from its data. Unless there are valid reasons to explain the relationship between the colour of the car and the speed of claim reporting, one needs to fall back on human intuition to validate the logic and reasonableness of such relationship. If the machine learning results are against our common belief or intuition, it can be challenging to make sense of the results because the workings behind machine learning algorithm are not easily understood. Machine learning lacks cultural sensitivities. Left to its own devices, it can suggest controversial variables such as race and ethnicity as one of the reserving determinants. Adopting such variables in business operations can be against regulation, if not perceived as culturally unacceptable or unethical. Human judgment on the cultural and sentiment aspects is still required to overrule such results, for example to assess which potential cultural-sensitive data to be excluded without affecting the quality of the analysis.

Conclusion

In conclusion, machine learning has its obvious advantages above triangulation methods when it comes to reserving. However, an organisation needs to consider its technology readiness, human capital and stakeholder communication before embarking on a full machine learning project.


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