Guidance Notice FSI GN 4.3

Non-life Underwriting Risk Capital Requirement

Objectives of this Guidance Notice

The FSI Guidance Notice is a regulatory instrument aimed at assisting insurers in complying with the requirements outlined in the Financial Soundness Standards for Insurers. Standards enjoy legal standing and are intended to establish minimum requirements with which insurers must comply. Guidance Notices whilst not having the same legal standing as Standards in terms of enforceability nonetheless provide clarity on the application of the respective Standards. Insurers are not obliged to adopt or adhere to the proposed application methodology offered by the Guidance Notice and are free to demonstrate that the requirements of the Standards have otherwise been met through the use of alternative application methologies.

Guidance Notice FSI GN 4.3 sets out practices and guidelines aimed at assisting insurers in complying with the requirements of FSI 4.3 (Non-life Underwriting Risk Capital Requirement). This Guidance Notice is aimed specifically at illustrating approaches that may be adopted for the treatment of insurers' eligible risk mitigation instruments in addition to the impairment of those instruments for counterparty default risk. The Guidance Notice may not be relevant to all insurers in terms of the application of practices or guidelines,while other aspects may need to be varied based on an insurer's individual circumstances and characteristics.

The Guidance Notice may reference specific provisions within FSI standards and as such must be read in conjunction with the respective standards cited.

Table of contents

Chapter 1: Risk Mitigation Instruments

In calculating the capital requirement for non-life underwriting risk, allowance may be made for the risk mitigating effect of eligible reinsurance and other eligible risk mitigation instruments[1] taking care not to double-count the impact thereof. The _risk of impairment from counterparty default_ on such instruments, however, must be taken into account in the calculation of the non-life underwriting risk capital requirement.[2] The capital requirement for non-life underwriting risk (SCR_{NL}) must be calculated by combining the capital requirements for each non-life underwriting risk component in terms of the prescribed formula.[3]

This Chapter consists of the following parts:

a) Part A provides guidance specific to the impairment of eligible risk mitigation instruments for counterparty default risk;
b) Part B provides guidance specific to the application of eligible risk mitigation instruments to the non-life catastrophe (CAT) risk module;
c) Part C sets out additional considerations when applying eligible risk mitigation instruments; and
d) Part D sets out examples on how to apply the afore-mentioned guidance.

A. Impairment of eligible risk mitigation instruments for counterparty default risk

1. The implication of the formula for the impairment factor IMP[4] is that all counterparties (whether or not the counterparties relate to recoverables from eligible risk mitigation instruments) that were considered as type 1 exposures within the default risk module of FSI 4.1 (Market Risk Capital Requirement), should be included in the calculation of IMP_{stress}. Thus, IMP measures the marginal difference in the capital requirement for type 1 default risk and should be allocated to the relevant NLUR sub-module. The additional capital requirement arises due to the impairment of reinsurance recoveries taken into account when applying the stress event in the relevant sub-module.

2. Insurers should apply the impairment of eligible risk mitigation instruments for counterparty default risk to the following sub-modules, provided that they are applicable to the insurer:

   a) Capital requirement for combined premium and reserve risk;
   b) Within natural catastrophe risk (under Method 1 of calculating the capital requirement for catastrophe risk) at the following levels:

      i) Maximum event retention (MER) for the earthquake event;
      ii) MER for the hail event; and
      iii) The sum of the MER for all scenarios of the horizontal natural catastrophe event;

   c) For the capital requirement for catastrophe risk of inwards non-proportional reinsurance (under Method 1 of calculating the capital requirement for catastrophe risk) at the levels related to:

      i) The property component across all the (sub-)lines of business; and

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[1] Eligible reinsurance and other eligible risk mitigation instruments will collectively be referred to as eligible risk mitigation instruments throughout this Guidance Notice.
[2] Section 4.5 of FSI 4.3
[3] Section 4.8 of FSI 4.3
[4] See FSI 4, Attachment 2 provisions 2 and 4 referencing application of the impairment factor _(IMP)_

  ii) Consumer Credit, Trade Credit and Guarantees insurance;

 d) The level of individual scenarios within man-made catastrophe risk (e.g. calculating the impairment at a Scenario A and B level for Motor); and

 e) Within Method 2 – Factor Based Method at the (sub-) lines of business affected by the events, as set out in section 7.30 of FSI 4.3 (Non-life Underwriting Risk Capital Requirement).

B. Application of eligible risk mitigation instruments for the non-life catastrophe (CAT) risk module

1. This section, read in conjunction with Attachment 1 and Attachment 2, intends to illustrate a common, uniform and consistent application of the treatment of an insurer's eligible risk mitigation instruments within the non-life catastrophe risk module.

2. The definitions specified in Attachment 1 refer to the diagram below that represents the different sub-modules that comprise the non-life catastrophe risk module of the standardised formula[5].

3. Attachment 2 explains the disaggregation of the gross loss method. Disaggregation of the gross loss is recommended to ensure that reinsurance recoveries are not overstated. Disaggregation of the gross loss is also necessary to ensure that the application of eligible risk mitigation instruments is done at the correct level of the non-life catastrophe risk module.

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[5] See section 7.6 to 7.32 of FSI 4.3 (Non-life Underwriting Risk Capital Requirement
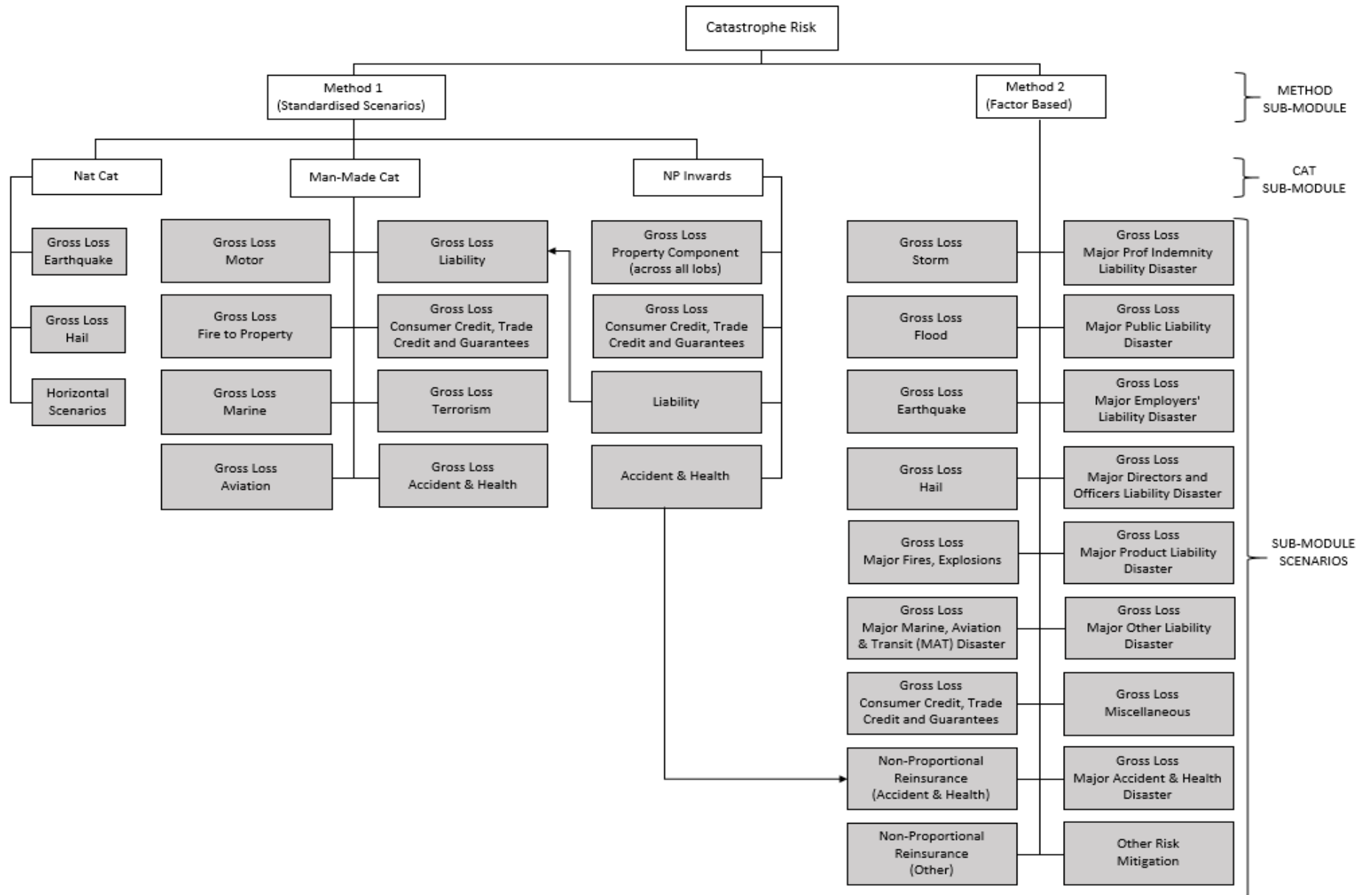
C. Additional considerations when applying eligible risk mitigation instruments

Order of operation of eligible risk mitigation instruments

1. Insurers should apply eligible risk mitigation instruments in the order specified in the insurer's reinsurance contractual agreements, as they apply to the underlying risks.

Reinstatement premium

2. Insurers should allow for outward reinstatement premiums or other additional cash flows that may result from the utilisation of eligible risk mitigation instruments.

Proportional reinsurance capacity limits

3. Where the insurer's proportional reinsurance arrangements are subject to an event limit or treaty limit, the total risk mitigation assumed under these contracts should take these limits into account.

4. Treaty limits are generally defined in terms of the maximum sum insured (i.e. single risk) that can be automatically ceded under the treaty. Treaty limits will generally not require the application of the principles outlined in Part C and Attachment 2 (i.e. no disaggregation of the gross loss will be required).

5. Proportional reinsurance structures that have event limits or annual aggregate limits will, however, require the careful application of the principles outlined in Part C and Attachment 2.

Non-proportional reinsurance per risk

6. Insurers should apply risk excess of loss and non-proportional facultative reinsurance at a risk level, where the information of the risks that contribute towards the gross loss is available.

Non-proportional reinsurance per event

7. Insurers should apply catastrophe excess of loss reinsurance at an event level (e.g. hail, earthquake or horizontal scenarios), taking into account any reinstatement premiums that may apply.

Application of aggregate contracts

8. Insurers should apply aggregate excess of loss reinsurance cover to the sum of the total losses over the defined period[6]. Insurers should note that application of aggregate excess of loss reinsurance separately to each (sub-)line of business/event covered by the aggregate excess of loss could potentially result in an overestimation of the reinsurance benefit. As such, the disaggregation method, explained in Attachment 2, may be applied.

   Example 1 in Part D below, provides a practical example to illustrate the above steps of the application of aggregate contracts.

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[6] The defined period over which the aggregate losses will be accumulated, as specified in the treaty.

Treatment of stop-loss reinsurance contracts[7]

9. The allowance for risk mitigation from stop-loss reinsurance arrangements that apply to a combination of premium and reserve risk, non-life catastrophe risk and lapse risk may be applied in the following manner:

Calculation Step 1: Determine total expected loss in a 1-in-200 year scenario

a) The total expected loss in a 1-in-200 year scenario can be determined as the sum of the best estimate loss and the stressed loss, where:

  i) The best estimate loss is the expected loss ratio multiplied by the premium, net of applicable reinsurance, of the business which is covered by the stop loss program; and

  ii) The stressed loss is the expected non-life insurance capital requirement for premium and reserve risk and catastrophe risk after allowing for risk mitigation (i.e. assuming that the stop-loss operates last) and diversification (i.e. $\sqrt{\sum_{r,c} CorrNL_{r,c} \cdot NL_r \cdot NL_c}$).

Calculation Step 2: Calculate expected stop-loss recovery

b) Express the total expected loss as a percentage of the premium, net of applicable reinsurance of the business which is covered by the stop loss program.

c) Assess the total expected loss (expressed as a ratio) in relation to the stop-loss attachment point loss ratio and stop-loss upper limit loss ratio.

d) Calculate the expected stop-loss recovery from the stop-loss reinsurance arrangement.

10. The following diagrams illustrate the process outlined above:

Diagram: Total expected loss = Best estimate loss + Stressed loss

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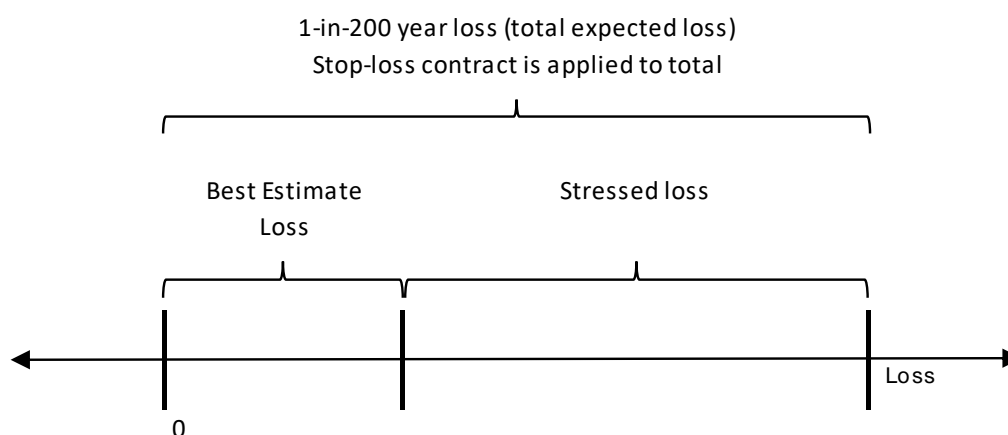
[7] The footnote relating to section 4.8 of FSI 4.3 states that: "In calculating this amount, insurers should determine which portion of the overall 1-in-200 year loss is covered by the terms of the stop-loss reinsurance arrangement, and ensure that there is no duplicate allowance for risk mitigation. A suitable expected loss ratio assumption may be used to determine the combined ratio in a 1-in-200 year scenario, taking into account that expected profits would likely offset a portion of the 1-in-200 year loss prior to the stop-loss being triggered."

Diagram: Stop-loss recovery

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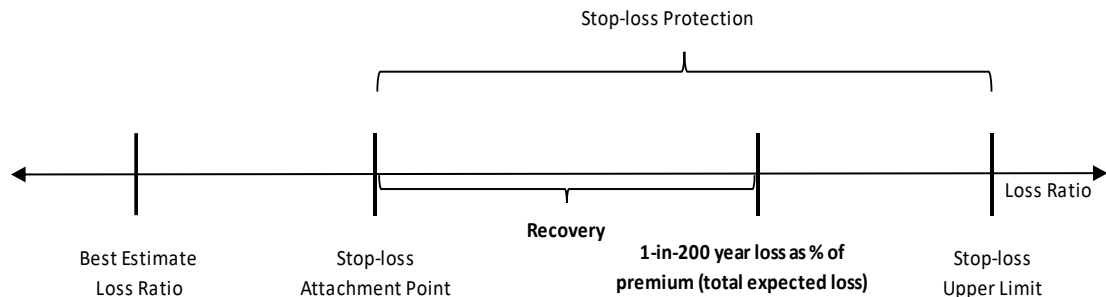
The recovery from the stop-loss could be calculated as:

$$SL_{Recovery} = min\big(max\big(0, Total\ Expected\ Loss - SL_{Attach\_Point} \cdot Premium\big), \big(SL_{Upper\_Limit} - SL_{Attach\_Point}\big) \cdot Premium\big)$$

Where:

$Total\ Expected\ Loss$	=	$Best\ Estimate\ Loss + Stressed\ Loss$
$Stressed\ Loss$	=	The non-life insurance capital requirement (premium and reserve risk and catastrophe risk) after allowing for risk mitigation (i.e. assuming that the stop-loss operates last) and diversification (i.e. $\sqrt{\sum_{r,c} CorrNL_{r,c} \cdot NL_r \cdot NL_c}$) and ignoring impairment of risk mitigation instruments
$Best\ Estimate\ Loss$	=	Best Estimate calculated as per FSI 2.2 (Valuation of Technical Provisions)
$Best\ Estimate\ Loss\ Ratio$	=	$Best\ Estimate\ Loss / Premium$
SL_{Attach_Point}	=	The loss ratio at the attachment point of the stop-loss reinsurance arrangement
$Premium$	=	Premium net of all risk mitigation other than stop-loss reinsurance of all policies covered by the stop loss program
SL_{Upper_Limit}	=	The loss ratio at the upper limit of the stop-loss reinsurance arrangement

11. The impairment of stop-loss reinsurance arrangements for counterparty default risk should be allowed for.

12. It is worth keeping the following principles in mind when allowing for risk mitigation:

    a) All risk mitigation allowed for may be allocated to (sub-) lines of business as far as possible, including stop-loss reinsurance.
    b) Should an insurer or reinsurer have two or more reinsurance arrangements covering the same business, the impairment for the reinsurance arrangement that applies first may be calculated using the better credit quality step of a subsequent reinsurance arrangement that will stand in for defaults of the first reinsurance arrangement, provided this is contractually supported. E.g. when a stop-loss reinsurer stands in for defaults from reinsurance contracts applying before the stop-loss.

Treatment of contracts not specified here

13. Insurers may apply the principles incorporated in the guidelines of all the above to other reinsurance contracts or features not explicitly provided in this Guidance Notice.

The man-made catastrophe risk sub-module

14. For the Motor, Marine, Aviation, and Terrorism lines of business, insurers should determine the gross loss as the greater loss between the different prescribed scenarios, net of risk-specific risk mitigation instruments only (including an allowance for the impairment of eligible risk mitigation instruments for counterparty default risk). In other words, aggregate risk mitigation instruments should not be considered when selecting the maximum scenario.

The natural catastrophe risk sub-module

15. For the natural catastrophe sub-module scenarios, the insurer could identify which eligible risk mitigation instruments apply to each level (line of business or CRESTA zone) of the calculation.

16. Where the insurer's eligible risk mitigation instrument does not cover all the (sub-) lines of business or regions that the insurer is exposed to, the insurer could disaggregate the gross loss for each natural catastrophe (hail, earthquake or the horizontal scenarios) to the level at which the reinsurance should be applied.

Method 1 sub-module scenarios

17. Where the capital requirement of the relevant sub-module is based on the maximum of two or more losses, the capital requirement selected should be the maximum loss net of risk mitigation, after allowing for the impairment of eligible risk mitigation instruments for counterparty default risk.

Method 2 sub-module scenarios

18. Where the insurer's reinsurance arrangements does not cover all the (sub-)lines of business that the insurer is exposed to, the insurer could disaggregate the gross loss for each sub-module scenario to a (sub-)line of business level.

D. Practical examples

Example 1: A direct insurer writes Motor Personal and Property Personal business in South Africa. The insurer has an aggregate excess of loss cover in place that provides cover for Motor and Property.

Background information

1. A summary of the information regarding the insurer is provided below:

    a) Insurer ABC only writes direct Motor Personal lines and Property Personal lines business.
    b) Insurer ABC calculates the capital requirement for natural and man-made catastrophe risk under Method 1.

2. The insurer has the following eligible risk mitigation instrument:

    a) Aggregate excess of loss (R30 million in excess of R80 million)

3. The following additional points should be noted:

    a) The aggregate excess of loss provides cover for all claims over the course of the financial year.
    b) The aggregate excess of loss does not cover natural catastrophe events.

Non-life Catastrophe Risk calculation structure of Insurer ABC
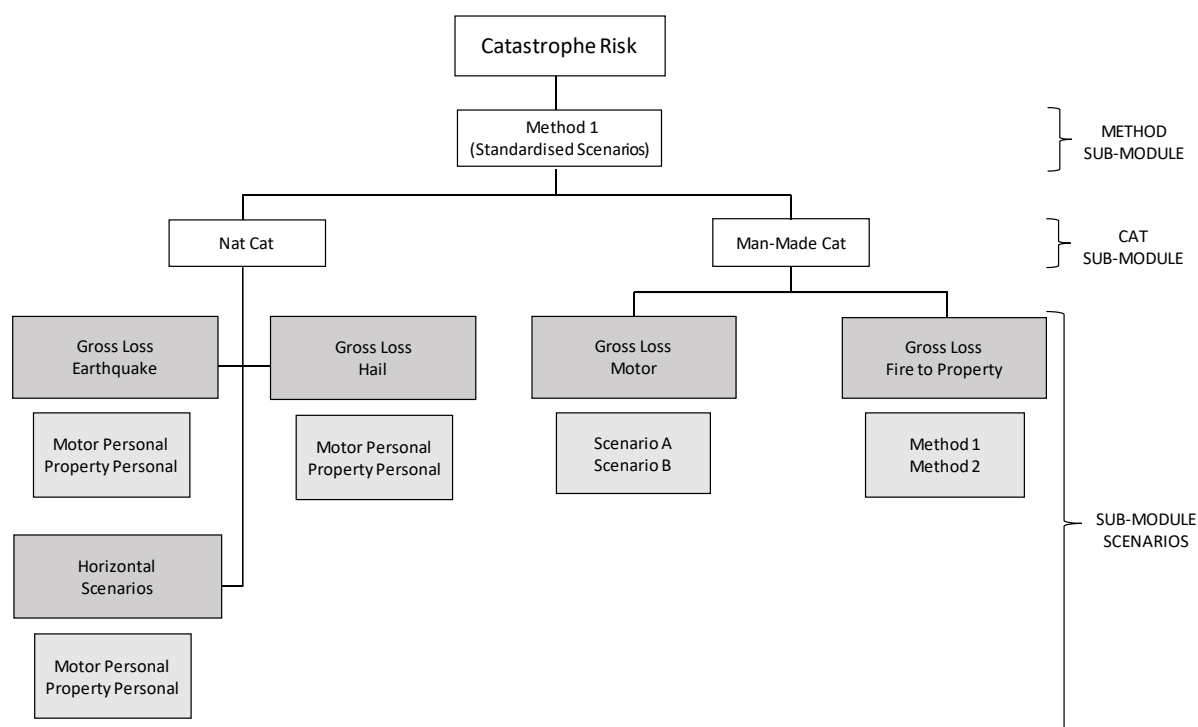
Calculation Steps

4. The insurer calculates non-life catastrophe risk using Method 1 and the lines of business covered by the aggregate excess of loss arrangement are clearly identified. Only man-made catastrophe risk will be covered by the aggregate excess of loss as natural catastrophe events are not covered.

5. The first common sub-module between the Motor man-made catastrophe risk and Property man-made catastrophe risk gross losses is identified as man-made catastrophe risk (as shown in the diagram above).

6. The gross man-made catastrophe loss is calculated based on the standardised formula. Assuming that the gross loss for Motor (as shown in the diagram above) was R100 million and the gross loss for Property was R120 million, the man-made catastrophe risk is R156 million (or$\sqrt{100^2 + 120^2}$). This provides an estimate of the gross loss from Motor and Property (after allowing for the diversification benefit), over a one-year horizon.

7. The aggregated amount should now be disaggregated back to the Motor and Property (sub-)lines of business. Thus, the gross event for Property will be R85 million (or 120 / (100 + 120) x 156) and the gross event for Motor will be R71 million (or 100 / (100 + 120) x 156).

8. Apply the aggregate excess of loss reinsurance to the sum of the revised gross losses for the Motor and Property (sub-)lines of business. The reinsurance recovery will equal R30 million (calculated as min ((85 + 71) – 80, 30)).

9. The final net man-made catastrophe risk loss is R126 million (calculated as 156 – 30).

10. In this example, if the aggregate excess of loss had been applied separately to the Motor man-made catastrophe risk and the Property man-made catastrophe risk, the reinsurance recovery would have been overstated. Applying the aggregate excess of loss reinsurance contract to the gross loss for Motor (before aggregating up to $NL_{CAT1,ManMade}$ and disaggregating) would have resulted in a reinsurance recovery of R20 million. Similarly, applying the aggregate excess of loss reinsurance contract to the gross loss of Property alone (before aggregating up to $NL_{CAT1,ManMade}$ and disaggregating) would have resulted in a reinsurance recovery of R30 million. The sum of these two reinsurance recoveries is R50 million.

11. This highlights that aggregate reinsurance cover should not be applied separately to each line of business, since aggregate reinsurance applies to the total claims (from the applicable lines of business) over the reporting period.

Example 2: A direct insurer writes Motor Personal and Property Personal business in both South Africa and Botswana has a catastrophe excess of loss and a quota share reinsurance arrangement in place.

Background Information

12. A summary of the information regarding the insurer is provided below:

   a) Insurer XYZ writes direct Motor Personal lines and Property Personal lines business in both South Africa and Botswana.
   b) Insurer XYZ calculates the capital requirement for natural and man-made catastrophe risk under Methods 1 and 2 given that both local and foreign business are written.

13. The insurer has the following eligible risk mitigation instruments, applied in the same order as listed below:

   a) Catastrophe XOL
   b) Quota share

14. The following additional points should be noted:

   a) The catastrophe XOL covers Storm, Flood, Earthquake, Hail, Major Fires and Explosions and the Horizontal scenarios in both South Africa and Botswana.
   b) The quota share covers the Motor and Property lines of business.

Non-life Catastrophe Risk calculation structure of Insurer XYZ
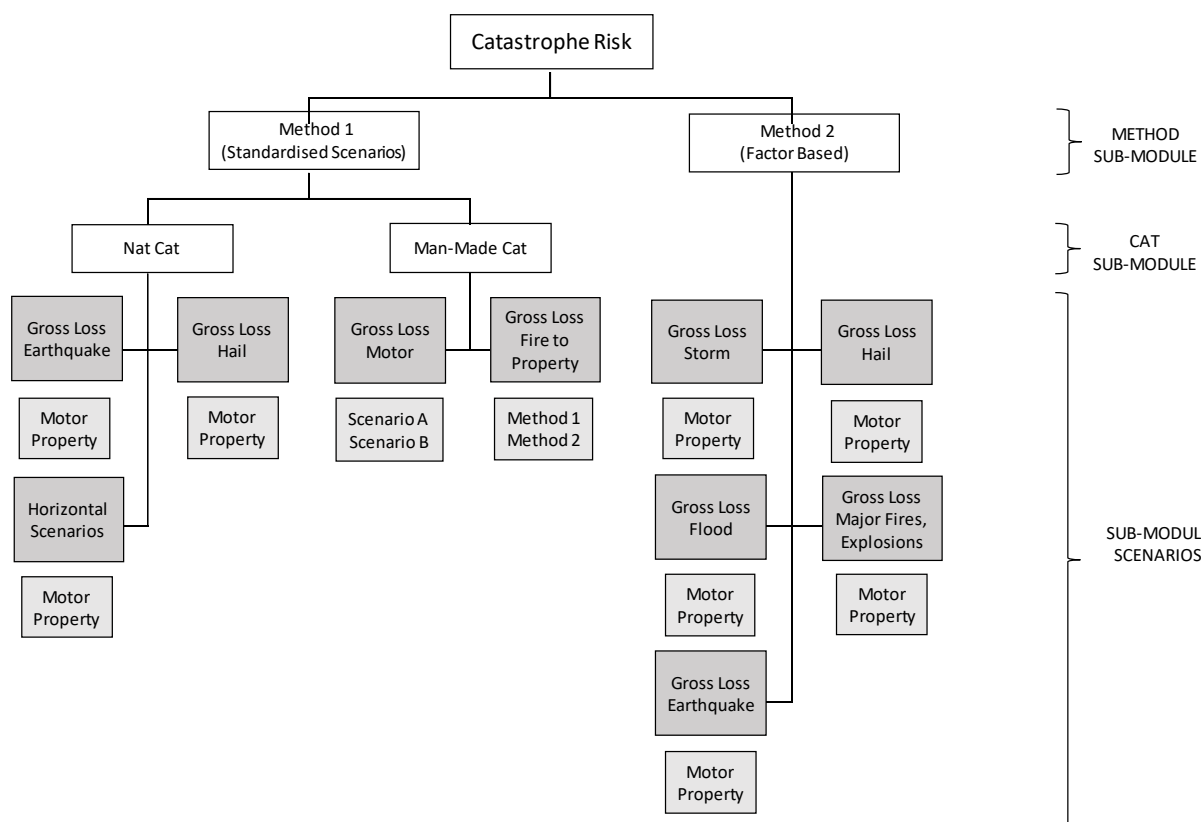
Calculation Steps

15. Insurer XYZ should calculate all gross catastrophe losses, noting the losses calculated under Method 1 at the method sub-module level, the CAT sub-module level, the sub-module scenario level and the line of business level and the losses calculated under Method 2 at the method sub-module level, the sub-module scenario level and line of business level.

16. The catastrophe XOL reinsurance is then applied to each natural catastrophe loss (covered in the treaty) under Method 1 and Method 2. This step assumes that the natural catastrophe losses occurring in South Africa and Botswana are considered as separate and independent events.

17. The quota share should be applied to all the Motor and Property components (net of catastrophe XOL). Disaggregation is not required at this step.

18. The net losses are aggregated from the sub-scenario level to the non-life catastrophe risk level to calculate the overall net non-life catastrophe risk capital requirement, in line with the standardised formula. Allowance should be made for the impairment of eligible risk mitigation instruments for counterparty default risk.


Example 3: Insurer 123 writes direct Motor Personal, Agriculture Crop and Accident and Health business in both South Africa and Botswana and has risk specific facultative cover, quota share, aggregate excess of loss and stop-loss reinsurance cover in place.

Background Information

19. A summary of the characteristics of the insurer is provided below:

    a) Insurer 123 writes direct Motor Personal lines, Agriculture Crop[8] and Accident and Health business in both South Africa and Botswana.
    b) Insurer 123 calculates the capital requirement for natural and man-made catastrophe risk under Method 1 and 2, given that both local and foreign business are written.

20. The insurer has the following eligible risk mitigation instruments, applied in the same order as listed below*:*

    a) Risk specific facultative reinsurance
    b) Quota share
    c) Aggregate XOL arrangement
    d) Stop-loss

21. The following additional points should be noted:

    a) The risk specific facultative reinsurance covers the largest Motor Personal lines risks.
    b) The quota share covers the Motor Personal line of business only.
    c) The aggregate XOL covers all claims from the Accident and Health line of business, for both South Africa and Botswana.
    d) The stop-loss covers the Agriculture Crop sub-line of business.

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[8] An implicit allowance for catastrophe risk is included in the standard deviation parameters for premium and reserve risk for the Agriculture Crop sub-line of business under Method 1.

Non-life Catastrophe Risk calculation structure of Insurer 123
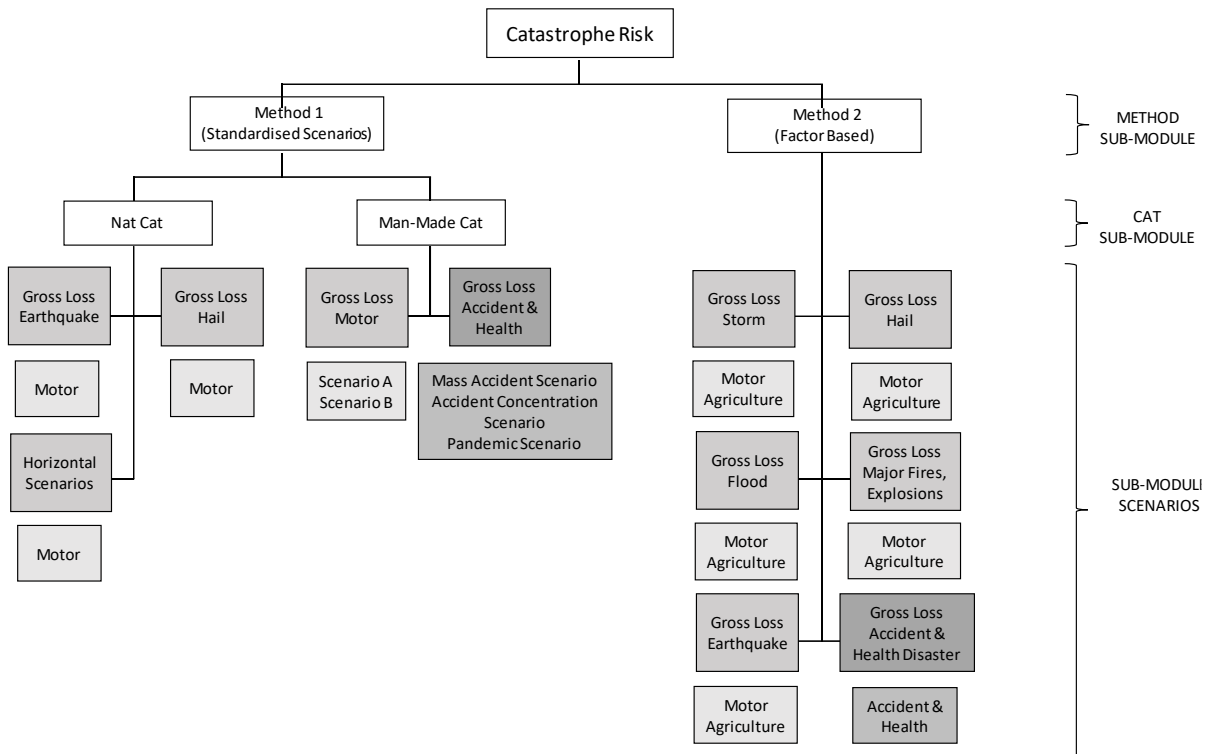
Calculation Steps

22. Insurer 123 should calculate the total gross catastrophe loss, noting the losses calculated under Method 1 at the method sub-module level, the CAT sub-module level, the sub-module scenario level and a line of business level; and the losses calculated under Method 2 at the method sub-module level, sub-module scenario level and a line of business level.

23. The risk specific facultative cover is applied to the man-made Motor scenario under Method 1. The risk specific facultative cover can be applied to both Scenario A and Scenario B.

24. The quota share should next be applied to all the Motor components. The quota share can be applied directly to a line of business level as the quota share covers all gross losses that are automatically ceded to the treaty. Disaggregation is not required at this step.

25. The steps from the disaggregation method, set out in Attachment 2, are used to calculate the total Accident and Health (as shown in the diagram above) losses over the year. The first common node between all the Accident and Health components is identified as non-life catastrophe risk. This non-life catastrophe risk capital requirement is calculated, net of the risk specific facultative cover and the quota share applicable to the Motor personal lines business. This loss is then disaggregated back to a line of business level where the Accident and Health losses (under Method 1 (man-made catastrophe) and Method 2) can be added together to obtain an estimate of the total Accident and Health losses over the year.

26. The Accident and Health loss, net of aggregate excess of loss, is apportioned between its various components (i.e. the Accident and Health Components of Method 1 and Method 2 non-life catastrophe risk) in line with the proportionate contribution of each gross event.

27. The losses are then re-aggregated by adding all disaggregated net losses at the sub-module scenario level, a CAT sub-module level and a method sub-module level to obtain the total net non-life catastrophe risk. Allowance should be made for the impairment of eligible risk mitigation instruments from counterparty default risk.

28. The net non-life catastrophe risk is aggregated with premium and reserve risk and lapse risk to obtain the total net non-life underwriting risk capital requirement (gross of stop-loss reinsurance). The stop-loss reinsurance is applied at this level. Allowance should be made for the impairment of eligible risk mitigation instruments from counterparty default risk.

Attachment 1: Definitions used in this Guidance Notice

1. For the purpose of this Guidance Notice, the following definitions have been used:

| Term	Definition
Aggregate risk mitigation instruments	Outward reinsurance that is provided on a treaty basis where cover is in respect of an accumulation of losses over a defined period
Catastrophe sub-module(s)	Corresponds to the following under Method 1[9]: i) Natural catastrophes (Nat CAT); ii) Man-made catastrophes (Man-made CAT); and iii) Catastrophe scenarios specific to inwards non-proportional reinsurance (NP Inwards)
Component	A self-contained calculation unit of the non-life catastrophe risk module for which a gross (and net) capital requirement can be determined. This may be at a method sub-module level, catastrophe sub-module level, a sub-module scenario level or at a level within the sub-module scenario (such as at a (sub-)line of business level or a sub-scenario level).
Disaggregation	The process of apportioning a diversified gross loss according to its individual components
Gross event	The gross loss after disaggregation
Gross Loss	The gross loss that is used to determine the gross capital requirement calculated at a method sub-module, catastrophe sub-module or a sub-module scenario level
Method sub-module(s)	Corresponds to either Method 1 (Standardised scenarios) or Method 2 (Factor-based method)[10]
Risk-specific risk mitigation instruments	Outward reinsurance in respect of a defined set of policies (treaty) or a single policy (facultative)
Sub-module scenario(s)	The catastrophe events, as defined in the natural catastrophe, man-made catastrophe and inwards non-proportional reinsurance catastrophe sub-modules[11]

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[9] As per section 7.7 of FSI 4.3
[10] As per section 7.3 of FSI 4.3
[11] As per sections 7.8, 7.9 and 7.22 of FSI 4.3

Attachment 2: Disaggregating the gross loss method

1. The need for disaggregation arises when an eligible risk mitigation instrument covers one or more (sub-)lines of business that attract a capital requirement in more than one component of the non-life catastrophe risk module. If the eligible risk mitigation instrument is applied to each component separately before taking into account any diversification benefit that may be present between the components, the reinsurance recovery could potentially be overstated.

2. Insurers should conduct a detailed assessment of their eligible risk mitigation instruments to identify any components of the non-life catastrophe risk module that may utilise the same eligible risk mitigation instruments as another component and thus lead to a potential overstatement of the reinsurance recoveries in the non-life catastrophe risk module.

3. The insurer should consider the following levels of the non-life catastrophe risk module when identifying components that may utilise the same eligible risk mitigation instruments:

   a) Method sub-module level
   b) Catastrophe (CAT) sub-module level
   c) Sub-module scenario level
   d) Scenario/(sub-)line of business level within a sub-module scenario
   e) Regional (CRESTA zone) level within a sub-module scenario

   The following diagram depicts the various levels of the non-life catastrophe risk module and identifies the various components present at each level:
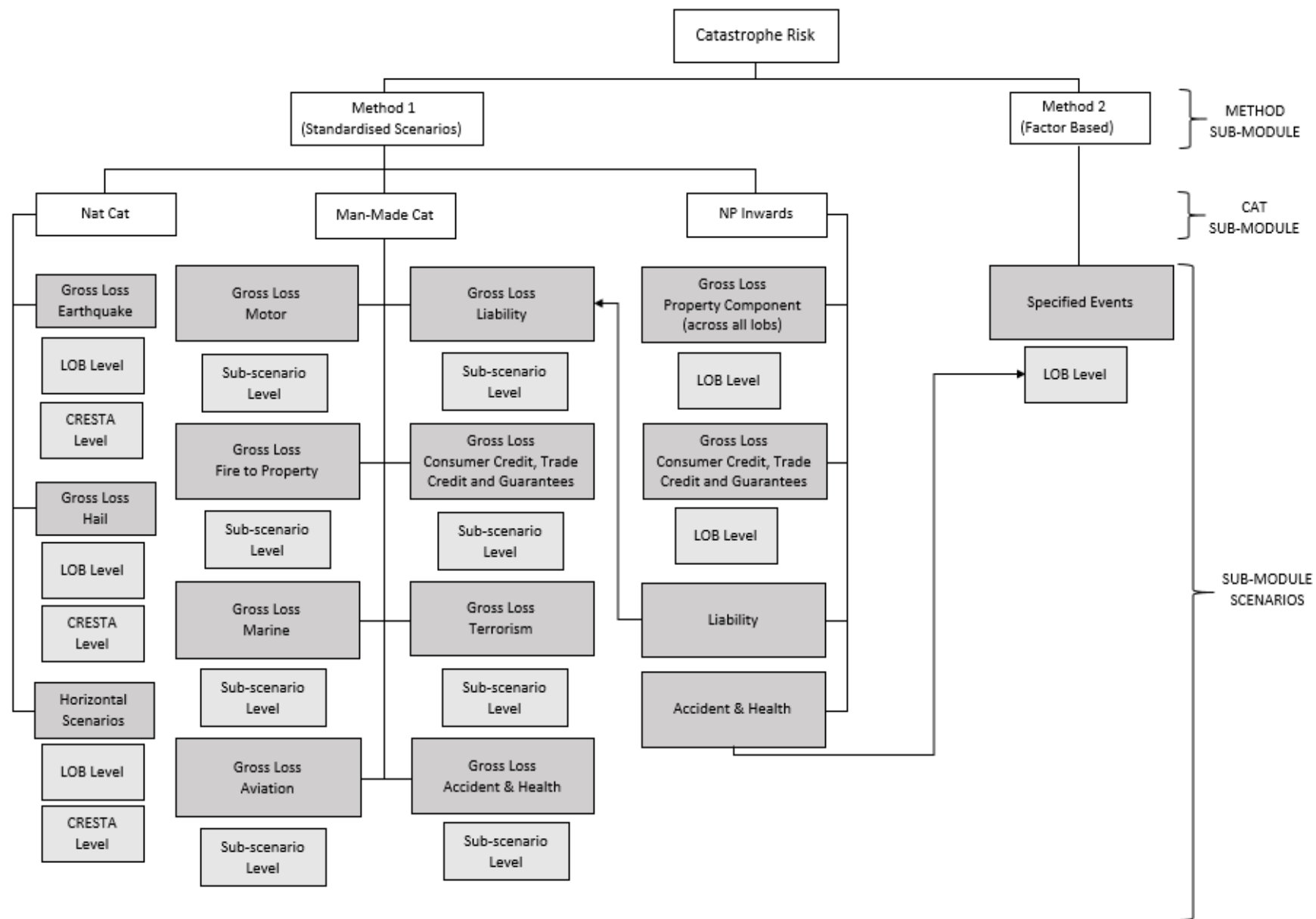
4. The disaggregation method allows for the correct gross loss by allocating the diversified gross capital requirement to its various individual components before any eligible risk mitigation instrument is applied. The disaggregation method involves the following steps:

a) Identify the (sub-)lines of business that are covered by the eligible risk mitigation instruments.

b) Identify the first common component of the (sub-)lines of business covered by the eligible risk mitigation instrument. In other words, this is the first component that establishes a common link to all lines of business covered by the eligible risk mitigation instrument. By way of example, the first common component between natural catastrophe risk using Method 1 and man-made catastrophe risk using Method 1 is the capital requirement for non-life catastrophe risk.

c) Once the first common component has been identified, calculate (aggregate) the gross loss of this component (in line with the standardised formula).

d) Disaggregate this gross loss into the (sub-)lines of business that were identified in step a) in proportion to their contribution to the gross loss. This provides the gross event at each line/sub-line of business level, after disallowing for the diversification benefit.

e) Add the gross events to obtain an estimate of the total gross loss (after allowing for the diversification benefit) to which the eligible risk mitigation instrument will be applied.

f) Once the eligible risk mitigation instruments have been applied to the gross events, the resulting net components should be added (after allowing for the impairment of these eligible risk mitigation instruments for counterparty default risk) to obtain the first common component (identified in b)).