



## 7.11 Catastrophe risk

Q99 Section 7.11 Is the list of perils for Catastrophe risk appropriate for ICS Version 2.0? If “no”, please provide a list of amendments, including a definition of the peril to include or exclude and any other specific details to support the suggestion(s).

Organisation	Jurisdiction	Confidential	Answer	Answer Comments
European Insurance and Occupational Pensions Authority (EIOPA)	EIOPA	No	Yes	
Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin)	Germany - BAFIN	No	Yes	
International Actuarial Association	International	No	No	For instance, tsunami (even as a secondary risk), which has caused significant losses in the past, should be specified in ICS 2.0, though it is stated in TS 626. Wildfire or bushfire might be added to ICS 317 to the extent models for such are believed to produce generally reliable/comparable tail values. (There may be different views on that ability at this time, as some of these models are relatively new and have only been used for pricing purposes, not for assessing solvency.).
General Insurance Association of Japan	Japan	No	Yes	With regard to other catastrophe scenarios, IAIGs should be able to consider them based on materiality. With regard to terrorist attack, it should be included in the premium and reserve risks as is the case with latent liability risk. (Please refer to our comments on Q103 for details.)



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Financial Supervisory Service (FSS) & Financial Services Commission (FSC)	Korea (Republic of )	No	Yes	
Legal & General	UK	No	Yes	We are comfortable with the list of perils
National Association of Mutual Insurance Companies	United States	No	Yes	NAMIC disagrees with the mandate of a standard method, the 99.5% VaR calibration level and the IAIS dictating the factors to be used in the formula. Jurisdictional flexibility is the appropriate way to capture these risks with mutual recognition and shared understanding of the jurisdictional approach at supervisory colleges.
RAA	United States and many other jurisdictions	No	No	Given the fundamental differences in the nature of life and non-life catastrophe exposures, they should not be combined in the same module.
American Property Casualty Insurance Association (APCI)	USA	No	No	As with several other questions posed in the CD, it is difficult to answer this question without the experience of being a field testing participant.
Property Casualty Insurers Association of America (PCI)	USA	No	No	PCI's yes or no response was simply required in order to open the text box and file comments. We believe this question to be best addressed by field test volunteers who have the ability to do so with the benefit of actual data for support and context. The absence of a response by PCI should not be taken one way or the other with respect to the subject of the question.
National Association of Insurance Commissioners (NAIC)	USA, NAIC	No	No	Given the large differences in the nature of life and non-life catastrophe exposures, it does not make sense to combine them in the same module. The only overlap is terrorism risk and this tends not to be a large risk for IAIG's that write life insurance business. It would be more sensible to include pandemic risk and with mortality risk and the non-life catastrophe exposures with premium/claims risk.



Q100 Section 7.11 Are the catastrophe scenarios, as defined in the 2018 Field Testing Technical Specifications, appropriate for ICS Version 2.0? If “no”, please provide specific suggestions supported by rationale and evidence to amend the scenario(s).

Organisation	Jurisdiction	Confidential	Answer	Answer Comments
China Banking and Insurance Regulatory Commission (CBIRC)	China	No	Yes	
European Insurance and Occupational Pensions Authority (EIOPA)	EIOPA	No	No	A global pandemic is likely to cause not only deaths but also morbidities and disabilities. Thus, from EIOPA’s point of view the pandemic scenario should also comprise an increase in both medical claim payments and payments due to an increase in disability rates.
German Insurance Association	Germany	No	Yes	The different event classification leads to hardly comparable results with Solvency II. We believe the ICS scenarios are more appropriate because these contain additional categories that are more relevant for internationally active groups.
Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin)	Germany - BAFIN	No	No	A global pandemic is likely to cause not only deaths but also morbidities and disabilities. Thus, from our point of view the pandemic scenario should also comprise an increase in both medical claim payments and payments due to an increase in disability rates.
International Actuarial Association	International	No	No	Cyber risk should be specified as Other catastrophe scenarios rather than as an emerging risk in 7.11.2.1. (It is emerged risk instead of emerging risk.) Although there are no reliable vendor models to quantify cyber risk for the time being, Lloyd’s is quantifying it, so it may be useful to learn the methodology from them. Terrorist attack scenario: It may not be consistent with the nature of the terrorism peril to choose the largest geographic risk concentration within a company’s entire portfolio, as that may not line up with a region thought to be a major terrorism exposure. For example, the largest geographical risk concentration may be a major industrial plant that is not close to a business center.



General Insurance Association of Japan	Japan	No	No	The surety scenario is too conservative compared with the target confidence level and should be revised as follows: (1) It is not relevant to assume that the two largest net losses will occur simultaneously irrespective of their credit conditions (credit rating). When the two largest exposures to surety counterparties are rated ICS RC 3 or better (equivalent to Average 3-year CDR (0.35% or less)), then insurers should be able to assume that the counterparty with lower credit rating will fail. (2) Instead of a loss severity model 95% PML worst gross loss to exposure ratio for the past 10 years, net losses should be based on expectations.
Financial Supervisory Service (FSS) & Financial Services Commission (FSC)	Korea (Republic of )	No	Yes	
Legal & General	UK	No	No	We believe that the terrorism event is calibrated more strongly than we would expect. Whilst the event selected appears sensible, the additional requirement that it takes place in the most onerous location means that the overall capital calculation for terrorism is based on an assessment with probability significantly more remote than 1-in-200. We would suggest reducing the severity of the event selected in order that the overall strength moves closer to 1-in-200 strength.
National Association of Mutual Insurance Companies	United States	No	No	NAMIC disagrees with the mandate of a standard method, the 99.5% VaR calibration level and the IAIS dictating the factors to be used in the formula. Jurisdictional flexibility is the appropriate way to capture these risks with mutual recognition and shared understanding of the jurisdictional approach at supervisory colleges.
American Academy of Actuaries	United States of America	No	No	The use of defined catastrophe scenarios, to measure a loss at the 99.5 percent VaR over a one-year time horizon for each individual IAIG, is appropriate for ICS Version 2.0. However, the Academy's Solvency Committee believes it preferable to the use of existing scenarios currently modeled by the IAIG such as those required by U.S. credit rating agencies for the supplemental rating questionnaires in place of those defined in the 2018 Field Testing Technical Specifications. As currently defined, there will be additional programming required for newly defined scenarios, in particular the Terrorism scenario.

Prudential Financial, Inc.	United States of America	No	No	Prudential Financial believes the level of the pandemic stress is reasonable, but on the low end of the reasonable range in terms of severity.  We believe that the pandemic stress should be applied to all products which possess mortality/longevity risk as opposed to only those which are negatively impacted by the stress. A global pandemic affects the entire population, so it is not fully risk sensitive to apply the stress selectively to mortality products only. The impact to the risk charge will be a small offset but including both positive and adverse impacts is the theoretically appropriate way to measure risk.
American Property Casualty Insurance Association (APCI)	USA	No	No	As with several other questions posed in the CD, it is difficult to answer this question without the experience of being a field testing participant.
Property Casualty Insurers Association of America (PCI)	USA	No	No	PCI's yes or no response was simply required in order to open the text box and file comments. We believe this question to be best addressed by field test volunteers who have the ability to do so with the benefit of actual data for support and context. The absence of a response by PCI should not be taken one way or the other with respect to the subject of the question.
National Association of Insurance Commissioners (NAIC)	USA, NAIC	No	Yes	Yes.

Q101 Section 7.11 What should be the safeguards for using natural catastrophe models as part of ICS Version 2.0? In particular, please address the extent to which the aforementioned list should be expanded. Please also comment on the requirements that should be included, as well as any alternative approach that could be taken if an IAIG were unable to meet the requirements.

Organisation	Jurisdiction	Confidential	Answer	Answer Comments
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China Banking and Insurance Regulatory Commission (CBIRC)	China	No	The IAIS can provide principle-based rules, to ensure a general consistency. For example, the IAIS can provide the definition of risks to be covered in the model and require a risk measure of 99.5% VaR. Meanwhile the IAIS can request the insurers to provide data sources and calibration approaches for model parameters, or even ask insurers to provide self-assessment reports on the model.	
European Insurance and Occupational Pensions Authority (EIOPA)	EIOPA	No	The aforementioned list embeds the most relevant safeguards to be used. Note that the focus on testing is of paramount importance.	
Insurance Europe	Europe	No	Insurance Europe strongly supports the use of natural catastrophe risk models to capture this risk and believes it is the only practical way to adequately quantify such risk exposures. Supervisory concerns about the use of these models can be addressed through the provision of fit-for-purpose information and model governance, as proposed in the consultation. Insurance Europe does not agree that it is necessary to set restrictions on the use of the models. This could inhibit appropriate model development and may result in reduced risk sensitivity. It is also unclear who would set the restrictions and how these would be consistently implemented across the IAIGs. If a catastrophe model (and the attendant governance and validation requirements) is allowed within an IAIG's jurisdiction, then it should also be allowed for in the ICS. Insurance Europe also notes that insurers typically carry out a wide range of assumption testing, validation and impact assessment as part of their model choice and development. A specific provision for self-assessment may therefore be unnecessary.	
Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin)	Germany - BAFIN	No	The use of natural catastrophe models in the ICS standard approach constitutes effectively a partial internal model. Therefore, the safeguards should be designed to provide a level of comfort that the risk charges for natural catastrophes are appropriate in the similar to the requirements for internal models. The aforementioned list embeds some of the most relevant safeguards to be used. What should be added is some kind of use test, to show that the IAIG is confident in the results.  Non-compliance with the safeguards could result in a capital add-on or a simple capital charge that is prudently set based on sum insured.	

Global Federation of Insurance Associations	Global	No	<p>GFIA strongly supports the use of natural catastrophe risk models to capture this risk and takes the view that it is a practical way to adequately quantify such risk exposures.</p> <p>Supervisory concerns about the use of these models can be addressed through the provision of fit-for-purpose information and model governance, as proposed in the consultation.</p> <p>GFIA does not agree that it is necessary to set restrictions on the use of the models. This could inhibit appropriate model development and may result in reduced risk sensitivity. It is also unclear who would set such restrictions and how these would be consistently implemented across the IAIGs.</p> <p>GFIA also notes that insurers typically carry out a wide range of assumption testing, validation and impact assessment as part of their model choice and development. A specific provision for self-assessment may therefore be unnecessary.</p>	
International Actuarial Association	International	No	<p>The key requirement is that there be a clear documentation of the various switches or options that may be used in a model as to the medium and long term changes anticipated in the environment. Some firms may want to take a long-term focus for ongoing capital strategy, while evaluating capital strength may be shorter term, given that most natural cat-exposed products are re-underwritten and re-priced annually.</p>	
General Insurance Association of Japan	Japan	No	<p>Natural catastrophe is a risk unique to insurance that is not found in other financial institutions. Depending on their geographical and product portfolio mix, risks differ significantly between insurers. Natural catastrophe models, which can best reflect the characteristics of the risk of an insurer, must be part of the standard method and, subject to certain safeguards, be available for use without supervisory approval.</p> <p>It is relevant to incorporate certain safeguards to ensure a degree of comparability. We understand supervisors' concerns about the quality of the model and its use by IAIGs. In order to mitigate such concerns, the developer of the model could be required, for example, to provide an explanation of the rationale and validity of the model to the supervisory authorities concerned (authorities of the jurisdictions covered by the model). The developer of the model could also be required to report the relevant issues described below to the supervisory authorities concerned.</p>	



			<p>(1) The board approved the use of the model for regulatory purposes.</p> <p>(2) Appropriate rules on model governance are in place.</p> <p>(3) The model is subject to self-assessment with regard to material regions and perils.</p> <p>(4) Information on the model and its use with regard to material regions and perils currently provided through the FT questionnaire (Q164-166, in the case of the 2018 questionnaire). These safeguards are beneficial in ensuring comparability and removing concerns about not requiring supervisory approval.</p> <p>Comparability is not necessarily ensured through the use of the same models by all insurers. Rather, comparability can be achieved through allowing each IAIG to utilize the models (subject to safeguards) which help the insurer achieve the most appropriate results in accordance with the risk characteristics of the insurer, irrespective of the place of its domicile. Such models would best describe the risk characteristics of the insurer and enable comparability among insurers.</p> <p>With regard to safeguards, due care should be taken so that they are not too stringent, impose an excessive burden on IAIGs, and that flexibility is assured.</p> <p>While the criteria listed in paragraph 329 are in principle necessary, the information requirements based on each criterion should be fit for purpose. Also, supervisors should be allowed to clarify the criteria of information they require. Supervisors should also be allowed to utilize the approval process within IAIGs to help reduce procedural burden.</p> <p>Also, further simplification of safeguards should be applied to those models that are widely used, for example, in reinsurance transactions (external models developed by RMS, AIR, etc.), and those models that are used industry-wide, for example, for accounting purposes (the GIROJ model in the case of Japan).</p>	
Legal & General	UK	No	The IAIG should provide information around the data used as an input to the catastrophe model. Key examples would include the sum insured and location of each risk, and the provision should be supported by supporting documentation setting out how the sum insured is calculated and how granular the location data is.	
Association of British Insurers	United Kingdom	No	The ABI supports the use of internal models for all risks, catastrophe risks included. <p>We do not consider that assurance on natural catastrophe models should be sought in the form of a requirement within the ICS. It is unclear who would set any restrictions, and how these would be consistently implemented across the IAIGs. If a catastrophe model (and the attendant governance</p>	



			and validation requirements) is allowed within an IAIG's jurisdiction, then it should also be allowed for in the ICS.	
RAA	United States and many other jurisdictions	No	We support the use of natural catastrophe risk models to capture catastrophe risk and believe that it is the only practical way to adequately quantify such risk exposures. Supervisory concerns about the use of these models can be addressed through the provision of fit-for-purpose information and model governance, as proposed in the consultation. We do not agree that it is necessary to set restrictions on the use of the models. This would inhibit appropriate model development and may result in reduced risk sensitivity. Reinsurers typically carry out a wide range of assumption testing, validation and impact assessment as part of their model development. A specific provision for self-assessment may therefore be unnecessary.	
American Academy of Actuaries	United States of America	No	The Academy's Solvency Committee finds it appropriate to use natural catastrophe models including Commercial catastrophe models for field testing. The list of required disclosures should be expanded to include specific characteristics selected within a commercial catastrophe model: <ul style="list-style-type: none"> <li>- Model Vendor/version</li> <li>- Catalogue</li> <li>- Perils</li> <li>- Treatment of Demand Surge</li> <li>- Ceded Reinsurance applicable to the losses</li> <li>- Regions to which the model was applied</li> </ul> Given the nature and complexity of risks insured by IAIGs, it is likely they would be able to meet the specified requirements.	
American Property Casualty Insurance Association (APCI)	USA	No	As with several other questions posed in the CD, it is difficult to answer this question without the experience of being a field testing participant.	
Property Casualty Insurers Association of America (PCI)	USA	No	PCI strongly supports the use of natural catastrophe risk models to capture this risk and believe it is the only sound and practical way to adequately quantify such risk exposures. Supervisory concerns about the use of these models can be addressed through the provision of fit-	



			<p>for-purpose information and model governance, as proposed in the consultation.</p> <p>We do not believe it is necessary to set restrictions on the use of the models. This could inhibit appropriate model development and may result in reduced risk sensitivity. It is also unclear who would set such restrictions and how these would be consistently implemented across the IAIGs.</p> <p>Insurers typically carry out a wide range of assumption testing, validation and impact assessment as part of their model choice and development. A specific provision for self-assessment may therefore be unnecessary.</p>	
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Q102 Section 7.11 For the purposes of the ICS standard method, is the approach taken in 2018 Field Testing adequate to account for diversification effects between Catastrophe risks? If “no”, please provide a more appropriate alternative suggestion including rationale, keeping in mind the need to apply a consistent methodology across all jurisdictions, and to balance practicality and materiality with risk sensitivity in a standard method.

Organisation	Jurisdiction	Confidential	Answer	Answer Comments
Association of Bermuda Insurers and Reinsurers	Bermuda	No	No	We believe that geographical diversification could be better represented in the ICS standard method.
China Banking and Insurance Regulatory Commission (CBIRC)	China	No	No	ICS assumes no correlation within the catastrophe risk. However, it is often with natural disasters of earthquake or floods, infectious diseases could spread and cause pandemic diseases. These two risks can have certain level of correlation. Thus we suggest that the ICS consider correlations within the catastrophe risk.



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European Insurance and Occupational Pensions Authority (EIOPA)	EIOPA	No	Yes	
Insurance Europe	Europe	No	Yes	
Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin)	Germany - BAFIN	No	Yes	
Global Federation of Insurance Associations	Global	No	No	The lack of geographic diversification within a geographic region means the approach taken is not adequate to account for diversification effects between catastrophe risks.
International Actuarial Association	International	No	No	Correlation within natural catastrophe risks (*) should be left up to the IAIG, but disclosed. (*) e.g. Caribbean and US hurricane, Japan and China typhoon.
General Insurance Association of Japan	Japan	No	Yes	
Financial Supervisory Service (FSS) & Financial Services Commission (FSC)	Korea (Republic of )	No	Yes	
Legal & General	UK	No	Yes	We believe that the method used is materially appropriate.
Association of British Insurers	United Kingdom	No	No	The lack of geographic diversification within a geographic region means the approach taken is not adequate to account for diversification effects between catastrophe risks.
National Association of Mutual Insurance Companies	United States	No	Yes	NAMIC disagrees with the mandate of a standard method, the 99.5% VaR calibration level and the IAIS dictating the factors to be used in the formula. Jurisdictional flexibility is the appropriate way to capture these risks with mutual recognition and shared understanding of the jurisdictional approach at supervisory colleges.

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RAA	United States and many other jurisdictions	No	No	As with many questions in this consultation, this question is impossible to answer without access to aggregated field testing results.
Prudential Financial, Inc.	United States of America	No	Yes	
American Property Casualty Insurance Association (APCI)	USA	No	No	As with several other questions posed in the CD, it is difficult to answer this question without the experience of being a field testing participant.
Property Casualty Insurers Association of America (PCI)	USA	No	No	The lack of geographic diversification within a geographic region means the approach taken is not adequate to account for diversification effects between catastrophe risks. A more granular approach should be taken, e.g., to recognize differences in risk exposures between major geographical areas within a region
National Association of Insurance Commissioners (NAIC)	USA, NAIC	No	Yes	Yes.

Q103 Section 7.11 Are there any further comments on Catastrophe risk that the IAIS should consider in the development of ICS Version 2.0? If “yes”, please explain with sufficient detail and rationale.

Organisation	Jurisdiction	Confidential	Answer	Answer Comments
Office of the Superintendent of Financial Institutions (OSFI)	Canada - OSFI	No	Yes	OSFI supports the use of catastrophe models for peak perils in a given jurisdiction.



China Banking and Insurance Regulatory Commission (CBIRC)	China	No	No	
European Insurance and Occupational Pensions Authority (EIOPA)	EIOPA	No	No	
Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin)	Germany - BAFIN	No	No	
General Insurance Association of Japan	Japan	No	Yes	With regard to other catastrophe scenarios, IAIGs should be able to judge whether to employ them or not depending on the materiality. These scenarios may not necessarily be material for certain insurers. With regard to the terrorist attack scenario (a five-tonne bomb blast and calculated for the largest geographical risk concentration), while it is too burdensome to make a precise calculation, it is also difficult to apply simplified risk scenarios that meet the confidence level. Therefore, we think it is inappropriate to calibrate risk based on the scenario method. An alternative approach would be to include the risk within the premium and reserve risk and apply a risk factor derived from past field testing results.
Financial Supervisory Service (FSS) & Financial Services Commission (FSC)	Korea (Republic of )	No	No	
Legal & General	UK	No	No	We have no further comments
Association of British Insurers	United Kingdom	No	No	
National Association of Mutual Insurance Companies	United States	No	Yes	NAMIC disagrees with the mandate of a standard method, the 99.5% VaR calibration level and the IAIS dictating the factors to be used in the formula. Jurisdictional flexibility is the appropriate



				way to capture these risks with mutual recognition and shared understanding of the jurisdictional approach at supervisory colleges.
American Property Casualty Insurance Association (APCI)	USA	No	Yes	As with several other questions posed in the CD, it is difficult to answer this question without the experience of being a field testing participant.
Property Casualty Insurers Association of America (PCI)	USA	No	Yes	PCI's yes or no response was simply required in order to open the text box and file comments. We believe this question to be best addressed by field test volunteers who have the ability to do so with the benefit of actual data for support and context. The absence of a response by PCI should not be taken one way or the other with respect to the subject of the question.

End of Section 7.11