

6.11 Catastrophe risk

Q152

Q152 Section 6.11.2.2 Is the new specification of “latent liability risk” appropriate? Please explain.

Organisation	Jurisdiction	Role	Confidential	Answer	Answer Comments
Financial Supervisory Service	Korea	IAIS Member	No	Yes	
Swiss Financial Market Supervisory Authority (FINMA)	Switzerland	IAIS Member	No	Yes	Latent liability risk is a potentially material risk which by its nature is difficult to capture by anything other than a rather generic approach. The representation as a mass tort scenario provides reasonable rationales for the design of the scenario and its assumptions.
National Association of Insurance Commissioners	USA	IAIS Member	No	Yes	This is a qualified ‘yes’. The definition is a clear improvement over last year. The term “liability catastrophe” was misleading and overly vague. We still think there is a deeper misunderstanding here. Whatever its merits for measuring other risks, “latent liability” is a prime example of a risk that is not appropriately measured using a one year time horizon. It seems we are seeking for a way to reflect the risk that would be included if we used a longer (and more appropriate) time horizon.

Ageas	Belgium	Other	No	Yes	Latent Liability risk doesn't exist in Solvency II. We welcome this idea as no cat man-made on the past are foreseen on historical claims experience. This is a gap in the current Solvency II framework.
ABIR Association of Bermuda Insurers & Reinsurers	BERMUDA	Other	No	No	We appreciate the improvements made to this risk module in the current version of ICS – such as a clearer definition of the scenario event and considerations around contracts with statutes of limitations which limit risk exposure. However we believe that the current calibration level is still too extreme if this risk is truly being calibrated over a one year time horizon, consistent with the rest of the ICS capital requirement, and does not reflect an ultimate view. We recommend that further work be done to refine the calibration given the necessarily large amount of judgement that is required to parameterise this risk charge, given the scarcity of industry examples to draw from.
Canadian Institute of Actuaries	Canada	Other	No	Yes	
Insurance Europe	Europe	Other	No	Yes	In principle, Insurance Europe supports the new specification. The nature of the loss seems appropriate. However, deriving a net loss on the basis of a gross/net premium ratio does not give a reasonable estimate of the benefit of reinsurance, as reinsurance is likely to be non-proportional, and so will respond in adverse scenarios better than is suggested by the proportion of premiums. Furthermore, using all premiums will include some claims-made policies, to which the latent scenario would not apply.
Munich Re	Germany	Other	No	Yes	
Global Federation of Insurance Associations	Global	Other	No	No	If latent risk is added to the analysis, this will create complications and be based on additional estimates and guesswork.

International Actuarial Association	International	Other	No	No	
					<p>We agree that having a provision for latent liability/mass tort is worth consideration and also are pleased that, as mentioned in item 451, “Further methods – along with refinements to this approach – are under consideration.”</p> <p>Thus we would like to address important weaknesses in the current definition, the approach and the resulting risk charges.</p> <p>1. Treatment of Workers Compensation</p> <p>We find that the application of the concept to US workers compensation claims is not valid.</p> <p>Workers compensation in the US is a social insurance program providing specified benefits through public and private insurers. The program operates on a state-by-state basis, controlled by state law and state administration.</p> <p>An impact as described in the latent liability definition, operating simultaneously across all states in the US, has never happened in the 100+ years of the existence of the program, and may be a legal impossibility under the US separation of powers between federal and state governments.</p> <p>In particular states, from time to time, significant changes in the legal administration of the workers compensation do occur. Hence, a ‘latent exposure’ risk charge might more appropriately be based on premium in the largest state within the insurer’s US business, rather than the nationwide premium.</p> <p>However, variability (risk), in state administration, and other areas, is included in workers compensation experience that is available for calibration. Hence, it is not clear that for US workers compensation there is any “...portion of liability risk that is not adequately captured by historical claims experience,” to any greater degree than in any other line of business.</p> <p>Therefore, we believe the latent liability charge for workers compensation should be zero. With respect to correlations, if there were to be a workers compensation latent liability charge, the 2016 Field Testing Template implies that the workers compensation latent liability is 100% correlated to general liability latent liability. As those lines of business operate through different legal systems, there is no reason to assume that workers compensation latent liability events, if any, are closely correlated to general liability.</p> <p>2. Treatment of General Liability and Products Liability</p>

				<p>It is not clear that the proposed calibration of the latent liability risk gives enough weight to the following:</p> <ul style="list-style-type: none"> • Asbestos liability exposure is typically seen as the prime example of mass tort/latent liability exposure. Yet, there has been only one such event in the past 100 years, and it is not clear that asbestos should be considered a 1/200 year event for the future. • A variety of mass torts are already included in US general liability and products liability experience available for calibration purposes. It is not clear that the total charge would be improved by an effort to remove the existing effect of mass torts and replace it by a specific mass tort provision. • The risk charges for general liability insurance appear to reflect concerns regarding products liability latent liability exposure. The two are often conflated, not always correctly, in part at least, because the US experience with asbestos arose when products liability and general liability were treated as a single line of business. • A calibration of these latent liability charges should include an assessment of the extent to which the mass tort/latent liability risk is already included in the calibration data. • The calibration does not appear to give much weight to the improved policy contract language, use of claims made policy forms, and improved underwriting criteria arising from the experience with asbestos. • Based on the information in the consultation document, the proposed charges appear to be over-stated. <p>As one reasonableness check, we note that the 2015 Field test results (table 14, page 127 of 175), showed that 31% of “catastrophe” risk is from liability catastrophes compared to 40% for property. That proportion, 3:4, is surprisingly high. In our view, industry practices regarding pricing and underwriting property risks with natural catastrophe exposures suggest that the proportion of latent liability/mass tort risk to natural catastrophe risk is much less than this..</p> <p>3. One Year Time Horizon The latent liability/mass tort scenario assumes 50% of the ultimate cost is recognized in one year. Recognition that quickly is inconsistent with any significant mass tort of which we are aware. Mass torts, by their nature, emerge slowly. We note that it might be reasonable to deviate from the one-year time horizon for mass</p>
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					<p>torts and the long times required before costs become estimable. However, that is a separate issue.</p> <p>4. Alternatives to Consider The latent liability risk approach is purely judgmental, and many alternatives are plausible/arguable.. The factor selection in the Field Testing involves several judgments regarding the effects as a percentage of premium, the number of years to consider, dependency relationships, reinsurance treatment, and other features. It might be simpler, more transparent and just as suitable, to determine the latent liability risk charge as a percentage of the otherwise determined final risk charge. We suggest that the IAIS test that approach. Alternatively, this risk might be handled via the ORSA (similar to operational risk.)</p>
General Insurance Association of Japan	Japan	Other	No	No	We cannot comment on the appropriateness of the new specifications as evidence of the defined scenarios and factors have not been provided.
Great Eastern Holdings Ltd	Singapore	Other	No	No	As mentioned in the consultation document, latent liability would develop over many years, which is different from the catastrophe risk, which would occur suddenly and cause an instantaneous increase in liquidity and capital requirements. Hence, not sure if the inclusion of latent liability risk is appropriate. Latent liability risk would probably be more similar to ongoing law suits, and hence should be treated more as an exceptional event as it comes. IAIGs should only be required to set aside contingent liabilities as and when such latent liabilities materialise.
Swiss Re	Switzerland	Other	No	No	Latent liability is covered with the liability threat scenario within Swiss Re's internal model. Latent liability is a very material risk for Swiss Re. However, it is completely inadequately represented by the standard method. For reinsurers, an internal model is necessary to correctly reflect this risk.

Institute and Faculty of Actuaries	UK	Other	No	No	<p>Such a scenario could easily spill over into other market segments than those set out here.</p> <p>In addition, the specification does not allow for diversification between geographies/ lines of business. Higher factors combined with a (limited) allowance for such diversification would create a more realistic loss profile: with diversified insurers more likely to benefit from differing legal / societal responses in different areas.</p>
National Association of Mutual Insurance Companies	United States	Other	No	No	<p>NAMIC does not agree with the inclusion of latent liability risk with catastrophe risk. There are reliable models for estimating catastrophe risk for earthquake and hurricane across all jurisdictions. There are no reliable models for estimating latent risks like asbestos or other mass tort risks. These types of risks do not have the predictability of more traditional catastrophe risks and do not have an immediate and known impact on claimants within a predictable timeframe. The time horizons on these risks would be much longer term, much less subject to predictable occurrences and generally much more challenging to model.</p> <p>Once a formerly latent risk has become known it should be reflected in claims reserves and addressed as such. Reserves may be continually adjusted to reflect the evolving nature and size of the risk, but inclusion of the risk as a catastrophe risk would be inappropriate as it does not meet the definition of catastrophe risk. Catastrophe risks are defined as risks that are infrequent, sudden and resulting in immediate damage to multiple persons.</p>
RAA	United States and many other jurisdictions	Other	No	No	<p>While we concur with the inclusion of latent liability risk in ICS, the latent liability scenario is too extreme and the risk factors are too high. The mass tort scenario is an apt description of the asbestos liability crisis, which has not been repeated in several decades. Insurance and reinsurance contracts are more effective than they once were in limiting exposure types and capping policy limits, which does not appear to be recognized in the selected risk factors. Moreover, as discussed in our response to Q153, there are no reliable models for estimating latent risks like asbestos or other tort risks. The time horizons on these risks are much longer term, much less subject to modelling.</p>

American Insurance Association	United States of America	Other	No	No	No. We do not agree with the inclusion of latent liability risk with catastrophe risk. There are reliable models for estimating catastrophe risk for earthquakes and hurricanes across all jurisdictions. There are no reliable models for estimating latent risks like asbestos or other mass tort risks. These types of risks do not have the predictability of more traditional catastrophe risks and do not have an immediate and known impact on claimants within a predictable timeframe. The time horizons on these risks would be much longer term, much less subject to predictable occurrences, and generally much more challenging to model. Once a formerly latent risk has become known, it should be reflected in claims reserves and addressed as such. Reserves may be continually adjusted to reflect the evolving nature and size of the risk, but inclusion of the latent liability risk as a catastrophe risk would be inappropriate as it does not meet the definition. Catastrophe risks are defined as risks that are infrequent, sudden and resulting in immediate damage to multiple persons.
CNA	USA	Other	No	Yes	The approach is reasonable, but some level of validation based on empirical data would be appropriate.
Property Casualty Insurers Association of America (PCI)	USA	Other	No	No	No. While mass torts are a risk, there is no theoretically sound way to impose a charge. The mass tort scenario risks significant double-counting, and the risk cannot be modeled in the same way as catastrophe risk.

Q153

Q153 Section 6.11.2.2 Should the mass tort scenario be used to represent latent liability risk in the ICS? Please explain.

Organisation	Jurisdiction	Role	Confidential	Answer	Answer Comments
Financial Supervisory Service	Korea	IAIS Member	No	Yes	
Swiss Financial Market Supervisory Authority (FINMA)	Switzerland	IAIS Member	No	Yes	Mass tort is a typical representative for latent liability risk that cannot easily be controlled or modelled by other means, e.g. underwriting limits, coverage conditions, exclusions etc.
National Association of Insurance Commissioners	USA	IAIS Member	No	No	While mass torts are a material risk to non-life insurers, they are not possible to model in similar manner as catastrophe loss. The best that can be done -- and what is done in the ICS -- is to apply factors to premiums in a similar manner to how premium or reserve risk is calculated. For mass tort, the calibration of these factors is going to be arbitrary and there will be significant double counting with the actual risk observed in the historical claims triangles. It is not clear why it needs to be broken out separately.
Ageas	Belgium	Other	No	Yes	
Canadian Institute of Actuaries	Canada	Other	No	Yes	

Ping An Insurance (Group) Company of China Ltd.	China	Other	No	No	Latent liability risk has little impact on China market. Due to the low legal standards of compensation, low awareness of claiming and relatively low legal awareness, if the risk scenario of liability insurance happens, the possibility of huge losses is relatively low. So we think it's not appropriate to measure it in catastrophe risk and it could be considered in reserve factor by adding a risk loading.
Insurance Europe	Europe	Other	No	Yes	
Actuarial Association of Europe	European Union	Other	No	Yes	This is a practical approach.
Munich Re	Germany	Other	No	Yes	
International Actuarial Association	International	Other	No	Yes	The two appear to be essentially the same risk.
General Insurance Association of Japan	Japan	Other	No	Yes	With regard to latent liability risk, another "asbestos incident" could be considered such a risk. If a mass tort scenario envisages such an incident, we think it is appropriate to use such a scenario.
Great Eastern Holdings Ltd	Singapore	Other	No	Yes	NA
Institute and Faculty of Actuaries	UK	Other	No	Yes	It is difficult to know what a latent liability risk would look like, so the approach suggested here is pragmatic.

National Association of Mutual Insurance Companies	United States	Other	No	No	<p>NAMIC does not agree with the inclusion of mass tort risk with catastrophe risk. There are reliable models for estimating catastrophe risk for earthquake and hurricane across all jurisdictions. There are no reliable models for estimating latent risks like asbestos or other mass tort risks. These types of risks do not have the predictability of more traditional catastrophe risks and do not have an immediate and known impact on claimants within a predictable timeframe. The time horizons on these risks would be much longer term, much less subject to predictable occurrences and generally much more challenging to model.</p> <p>Once a mass tort risk is known it should be reflected in claims reserves and addressed as such. Reserves may be continually adjusted to reflect the evolving nature and size of the risk, but inclusion of the risk as a catastrophe risk would be inappropriate as it does not meet the definition of catastrophe risk. Catastrophe risks are defined as risks that are infrequent, sudden and resulting in immediate damage to multiple persons.</p>
RAA	United States and many other jurisdictions	Other	No	No	<p>Mass torts of the type described in the ICS scenario are rare and as a consequence they cannot be modelled with the same confidence as other events such as natural catastrophes. Either these should be modelled using partial internal models, which are underdeveloped for this risk, or an additional premium risk factor could be added to premium risk for relevant lines of business. Premium risk factors will also be an imperfect solution since the selection of the factor would likely be the product of guesswork.</p> <p>Perhaps the best solution would be to reflect this risk in the claims reserve risk. Once a formerly latent risk is known, it would be reflected in claim reserves and addressed in claim risk factors.</p>
American Insurance Association	United States of America	Other	No	No	No – see response to Q152.

Q154

Q154 Section 6.11.2.2 Are any other scenarios/refinements needed for the latent liability scenario? If “yes”, please specify and provide rationale.

Organisation	Jurisdiction	Role	Confidential	Answer	Answer Comments
Financial Supervisory Service	Korea	IAIS Member	No	No	
Swiss Financial Market Supervisory Authority (FINMA)	Switzerland	IAIS Member	No	Yes	The mapping of the lines of business used in the calibration of the scenario to the lines of business used in the premiums and claims reserve risk module and the factors for latent liability assigned to the latter should be reinvestigated.
Ageas	Belgium	Other	No	No	
Ping An Insurance (Group) Company of China Ltd.	China	Other	No	No	
Insurance Europe	Europe	Other	No	Yes	
Allianz	Germany	Other	No	Yes	We believe that the probability of the event materializing (worldwide to the extent calculated) is low. Therefore we suggest to reduce the current shock factor. Compared to other regions and products as well as in itself the factors for EEA General liability and Non-Proportional Casualty reinsurance seem to be high. Most contracts in General liability would not cover a comparable scenario (e.g. retail business).

GDV - Gesamtverband der Deutschen Versicherungswirtschaft	Germany	Other	No	No	
International Actuarial Association	International	Other	No	Yes	We agree that a provision for liability risk not reflected in calibration experience is appropriate. We recommend that IAIS test a more transparent "percentage loading on otherwise applicable risk charges." See our response to question 152.
General Insurance Association of Japan	Japan	Other	No	Yes	We are concerned about duplication between Catastrophe risk and Premium and Claim Reserve risks. Since their calculation basis has not been disclosed, it is not clear how much Premium and Claim Reserve risks take into account Catastrophe risk. In order to avoid duplication, the portion representing Catastrophe risk should be deducted from Premium and Claim Reserve risks. (If it has been deducted, it should be clearly stated.) Consideration could be given to including Catastrophe risk among Premium and Claim Reserve risks.
Great Eastern Holdings Ltd	Singapore	Other	No	Yes	If need be, latent liability risk should, at most, be included as part of the risk factor for liability risks in view of response to Q152.
Swiss Re	Switzerland	Other	No	Yes	Please see response to question 152 above.
Institute and Faculty of Actuaries	UK	Other	No	Yes	As described above (Q152), allowing for larger losses in individual segments and capturing 'spill over' into other segments would be better, so long as the relevant diversification effects were also captured to mitigate the overall impact on a well-diversified insurer.

Liberty Mutual Insurance Group	USA	Other	No	Yes	The charge for catastrophe risk should be net of catastrophe risk premiums and reinstatement premiums that are available to absorb loss.
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Q155

Q155 Section 6.11.3.1 In addition to the perils covered in 2016 Field Testing (listed above), are there other material Catastrophe perils to which IAIGs may be materially exposed for which a scenario should be defined in the ICS standard method ? If “yes”, please provide a list, including a definition of the peril and any other specific details to support the suggestion(s).

Organisation	Jurisdiction	Role	Confidential	Answer	Answer Comments
China Insurance Regulatory Commission	China	IAIS Member	No	No	
EIOPA	EIOPA	IAIS Member	No	Yes	We think there should be specific scenarios to cover fire catastrophe risk and motor vehicle liability. Those two risks are very often covered by non-life insurers and given the calibration of the premium and claims reserve risks, which exclude catastrophe, we believe they should be covered by scenarios.
BaFin	Germany	IAIS Member	No	Yes	Fire and motor liability catastrophe scenarios should also be considered.
Financial Supervisory Service	Korea	IAIS Member	No	No	
KNF - Polish Financial Supervision Authority	Poland	IAIS Member	No	No	

National Association of Insurance Commissioners	USA	IAIS Member	No	No	
Ageas	Belgium	Other	No	No	
Canadian Institute of Actuaries	Canada	Other	No	No	
Actuarial Association of Europe	European Union	Other	No	Yes	A cyber risk peril should be considered for inclusion.
Allianz	Germany	Other	No	No	
GDV - Gesamtverband der Deutschen Versicherungswirtschaft	Germany	Other	No	No	
AIA Group	Hong Kong	Other	No	No	
International Actuarial Association	International	Other	No	Yes	With respect to Health Insurance, - Mass accident risk (cf. Solvency II) - Accident concentration risk (cf. Solvency II) - The pandemic risk sub-module (SCRp); should be split up into income protection and medical expense. A few comments on pandemic risk for medical expense insurance. This risk has been evaluated in some detail before, and the IAA Health Committee actually drafted a briefing note on the risk of Ebola in 2015, which is available for distribution if necessary. The consensus is that a true pandemic, involving the rapid spread of infectious disease with high mortality rates, is likely to have a limited impact on a private health indemnity insurer, for two reasons: i. The treatment of infectious diseases involve isolation, and medical equipment

					<p>such as ventilators. Quite often, the capacity in private hospitals is limited, and quite often, when a pandemic starts, the facilities are provided by governments or the WHO or NGOs, as happened in West Africa. This means that the insurer would typically not face significantly increased claims as a result of infectious disease. Where an epidemic develops over a long period, it does have an effect, but this can be explicitly priced for during annual premium renewals, and also managed with supply side interventions.</p> <p>ii. A further factor that has been noted is that, if there is a pandemic, people typically avoid hospitals, especially for elective surgery and other non-urgent treatments. Which means that it is possible for health insurance claims to actually decrease in an epidemic, depending on the types of cover provided by health insurers in a particular market.</p> <p>The situation is of course different for a life insurer specialising in protection products, or for a non-indemnity health insurer.</p> <p>For other lines of business, if an IAIG deems another peril to be significant, the IAIG should so disclose. A potential example could be volcanic eruption, a peril that usually causes very localized destruction.</p>
General Insurance Association of Japan	Japan	Other	No	No	
Great Eastern Holdings Ltd	Singapore	Other	No	No	
Institute and Faculty of Actuaries	UK	Other	No	Yes	A cyber scenario should be included. The exact details of such a scenario would be difficult to parameterise, but there are some benchmarks available (e.g. Lloyd's cyber Realistic Disaster Scenarios (RDS)).

RAA	United States and many other jurisdictions	Other	No	No	
CNA	USA	Other	No	No	
Property Casualty Insurers Association of America (PCI)	USA	Other	No	No	

Q156

Q156 Section 6.11.3.1 Are there scenarios used in 2015 and 2016 Field Testing (listed above) which, for materiality or other reasons, should not be included in the Catastrophe risk component? If “yes”, please provide a list, including the rationale.

Organisation	Jurisdiction	Role	Confidential	Answer	Answer Comments
China Insurance Regulatory Commission	China	IAIS Member	No	No	
EIOPA	EIOPA	IAIS Member	No	No	
BaFin	Germany	IAIS Member	No	Yes	It is hard to adequately calibrate a terrorism scenario. Maybe the terrorism risk could be implicitly included in the risk charges for the other catastrophe risks.
Financial Supervisory Service	Korea	IAIS Member	No	No	
KNF - Polish Financial Supervision Authority	Poland	IAIS Member	No	No	
National Association of Insurance Commissioners	USA	IAIS Member	No	Yes	Focus should be given to catastrophic risks which are material and for which the underlying capital requirement does not appropriately capture the risk. For natural catastrophes such as earthquakes or hurricanes, there is ample experience that models better reflect an insurer's exposure to risk than factors. Evidence for the man-made catastrophes is not as strong. For the

					<p>pandemic risk it could be more appropriate (and certainly more practical) to include it with the other life insurance mortality stress and not in the catastrophe risk component of the ICS.</p>
Ageas	Belgium	Other	No	No	
Canadian Institute of Actuaries	Canada	Other	No	No	
Ping An Insurance (Group) Company of China Ltd.	China	Other	No	No	
Allianz	Germany	Other	No	Yes	<p>For the credit and surety scenario the underlying information requested is not available on Group level within a best effort approach. We recommend to amend the definition of this scenario.</p>
AIA Group	Hong Kong	Other	No	No	
International Actuarial Association	International	Other	No	Yes	<p>We note that saying a scenario should not be included does not mean that capital should not be held against it. It just means that the premium risk factor covers the entire risk. Catastrophe risk charges are most appropriate where a single factor does not adequately reflect the risk. (Natural catastrophes like earthquake and hurricane fit the bill here.) For example, Marine and Aviation are likely not worth the trouble of modelling separately. They happen frequently enough that industry experience can be used to generate appropriate factors.</p>
Dai-ichi Life Holdings, Inc.	Japan	Other	No	Yes	<ul style="list-style-type: none"> • Actually, catastrophic event for life insurance is limited to a large-scale earthquake or pandemic. The expected loss and probability in those events is one of the assumptions and the credibility is too low to include the Risk amount into the ICS.

					<ul style="list-style-type: none"> It should be excluded from the ICS calculation and be monitored based on other framework, such as stress testing.
General Insurance Association of Japan	Japan	Other	No	Yes	Given the 2015 Field Testing results shown in Table 14, Paragraph 442, and the 2016 Field Testing results, scenarios could be limited to natural Catastrophe and liability risks only. There are concerns that the current Catastrophe risk calculation approach overlaps with these for other risks. Therefore, it is important that the impact of natural Catastrophe and liability risks are deducted from Premium and Claims Reserve risks.
The Life Insurance Association of Japan	Japan	Other	No	Yes	<ul style="list-style-type: none"> As for life insurers, large stress events are generally limited to large earthquakes and pandemic events. However, the expected losses caused by or the probability of those events are not credible to be used as risk amount calculation parameters of life insurers as those scenarios are just two of many assumptions. Therefore, it is recommended not to include these events in the risk amount calculation of the ICS and to address these events in another way such as stress testing for life insurers outside of the ICS.
Great Eastern Holdings Ltd	Singapore	Other	No	No	
Swiss Re	Switzerland	Other	No	No	
National Association of Mutual Insurance Companies	United States	Other	No	Yes	Yes. We agree with the statements made by other commenters, including the NAIC, that the focus of catastrophe risk should be on risks that are material and for which the traditional premium and claim requirements do not adequately capture the risks. For earthquake and hurricane there are existing models that can predict the risks providing appropriate recommendations for limitation of liability. For man-made and liability risks the traditional premium and claims risk categories provide a means for assessing or managing the risk that is more appropriate.

					In addition, catastrophe risk should be identified as risk net of cat risk premiums and reinstatement premiums that are available to absorb loss.
Liberty Mutual Insurance Group	USA	Other	No	Yes	The IAIS has not allowed catastrophe risk premiums to be taken into consideration. In general, many of the risk charges overlap (despite their co-variance considerations) resulting in more conservatism/redundancy than is needed. The focus of catastrophe risk should be on risks that are material and for which the traditional premium and claim requirements do not adequately capture the risks. For earthquake and hurricane risks there are existing models that can predict the risks providing appropriate recommendations for limitation of liability. The catastrophe risk component must be revised to address these issues.

Q157

Q157 Section 6.11.3.2 Should the IAIS allow the use of catastrophe models for ICS Version 1.0? Please explain.

Organisation	Jurisdiction	Role	Confidential	Answer	Answer Comments
Bermuda Monetary Authority (BMA)	Bermuda	IAIS Member	No	Yes	The BMA strongly advocates the use of partial internal models for the calculation of catastrophe risk for the ICS standard method. It is difficult to envision a practical approach other than individual modelling use of partial internal models, given the potentially significant and varied nature of the risks, perils, risk mitigation strategies and even business models (direct writer vs. reinsurer) under consideration.
Office of the Superintendent of Financial Institutions (OSFI)	Canada - OSFI	IAIS Member	No	Yes	Catastrophe models should be allowed for peak perils in a given jurisdiction. For example, the peak peril in Canada is earthquake and OSFI permits the use of earthquake models to estimate the probable maximum loss (PML).
China Insurance Regulatory Commission	China	IAIS Member	No	Yes	
EIOPA	EIOPA	IAIS Member	No	No	There is a very wide variety of models for the same risks as expert judgment is often use in that matter. We believe the IAIS should specify the scenarios. We acknowledge catastrophe risk is complex and difficult to model, but we should aim for a fair treatment of all groups.
BaFin	Germany	IAIS Member	No	No	The use of such risk models would go beyond the scope of a standard approach.

Financial Supervisory Service	Korea	IAIS Member	No	No	Depending on which catastrophe model is used in the calculation, the level of risk could be significantly different among the companies. It is deemed more appropriate providing risk factor and/or stress shock in the standard model.
KNF - Polish Financial Supervision Authority	Poland	IAIS Member	No	Yes	
National Association of Insurance Commissioners	USA	IAIS Member	No	Yes	Yes, at least for risks where modeling is well-developed such as earthquakes or hurricanes.
Ageas	Belgium	Other	No	Yes	The Catastrophe models have been built by group of experts not working in an insurance company and this expertise doesn't exist in general in a company. Catastrophe models give a full distribution of scenario; an alternative is to define a few scenarios but the difficulty is the calibration of those scenarios. The measure of the impact of a reinsurance treaty is also better captured by having a full distribution. Examples of such models are RMS, AIR, QFLAT and EQE.
ABIR Association of Bermuda Insurers & Reinsurers	BERMUDA	Other	No	Yes	We strongly support the use of natural catastrophe risk models to capture this risk type and believe it is the only practical way to adequately quantify such risk exposures.
Canadian Institute of Actuaries	Canada	Other	No	Yes	Catastrophe risks can affect insurance contracts in a number of different ways depending on their specific provisions. We believe catastrophe models are the only suitable tool to quantify catastrophe risk exposures.
Ping An Insurance (Group) Company of China Ltd.	China	Other	No	Yes	We recommend allowing the use of catastrophe models for capital measurement as long as IAIS prescribes the unified capital measurement principles (such as 99.5%VaR method). The catastrophe models of different countries are able to reasonably reflect the frequency and severity of losses under the catastrophe

					events of different probabilities, and so evaluate the corresponding capital requirements reasonably. Stress testing method and scenario analysis method both require the setting of reasonable stress and scenario assumptions, and there will be quite a lot of difficulties during the calculation process. Therefore, the use of catastrophe models is rather reasonable.
Insurance Europe	Europe	Other	No	Yes	
Actuarial Association of Europe	European Union	Other	No	Yes	Provided the models are appropriate and IAIGs are able to adjust the models if they feel it is necessary.
Allianz	Germany	Other	No	Yes	We believe Cat models better reflect the risk of the company hence recommend its use.
GDV - Gesamtverband der Deutschen Versicherungswirtschaft	Germany	Other	No	Yes	
German Association of Actuaries (DAV)	Germany	Other	No	Yes	
Munich Re	Germany	Other	No	Yes	
Global Federation of Insurance Associations	Global	Other	No	Yes	GFIA is strongly supportive of the use of models for catastrophe risk. We do not believe that it would be possible to adequately reflect the diversity of cat risk through a standard formula.

International Actuarial Association	International	Other	No	Yes	<p>There is no better alternative to the use of such models and all or nearly all IAIGs would use a model or a combination of models for various internal management purposes.</p> <p>In application, there will be issues, including those raised in the Consultation Document. However, the results of using the models will be much better risk assessment than the other alternatives involving ratios applied equally to each company's premium, insured values, etc.</p>
General Insurance Association of Japan	Japan	Other	No	Yes	<p>Unique to insurers, natural disaster is a risk to which no other type of financial institution is exposed. It varies depending on the characteristics of each IAIG's portfolio, such as its products and the jurisdictions in which it operates. If catastrophe models are able to reflect such characteristics more appropriately, the IAIS should allow their use.</p>
Swiss Re	Switzerland	Other	No	Yes	<p>Distributions of catastrophe losses vary considerably depending on the type of business written, e.g. by geography, type of contract etc. In particular for reinsurers, it is essential to allow for the use of catastrophe models.</p>
Institute and Faculty of Actuaries	UK	Other	No	Yes	<p>As set out in the consultation document, use of standard factors / scenarios is difficult, so this approach is more pragmatic, and should not be too onerous for firms. However, there are some concerns with this approach:</p> <ol style="list-style-type: none"> 1. What should be the contingency plan if the supervisor does not feel that the IAIG's use of catastrophe models is appropriate? 2. For some region/ perils, the catastrophe models are generally accurate and reliable, but for others they are not. IAIGs with material exposures in the latter will have considerable uncertainty in their capital requirements. 3. The approach essentially requires all IAIGs to use one of a small number of commercial catastrophe models, potentially at the expense of undertaking their own analysis of the relevant risks. It is important that IAIGs should not be

					<p>dissuaded from adjusting or discarding the results of the catastrophe models if they have reason to believe they are inappropriate.</p> <p>4. As a follow-up to the above, additional systemic risk is potentially introduced. If a catastrophe model understates the risk in particular areas, it could lead a number of IAIGs to be over-exposed in those areas, with potential systemic difficulties. On the other hand, if the cat model overstates the risk in particular areas, this could lead to IAIGs taking business decisions to reduce carrying capacity, potentially resulting in a lack of insurance availability in certain regions. This could be detrimental to the impacted markets.</p> <p>5. This effectively creates a 'partial internal model' regime for all IAIGs, which may make benchmarking comparisons more difficult and increases the time/ resource required from a supervisory perspective.</p>
Association of British Insurers	United Kingdom	Other	No	Yes	The ABI is strongly supportive of the use of models for catastrophe risks, as well as of the use of partial and internal models more broadly. We do not believe that it would be possible to adequately reflect the diversity of cat risk through a standard formula.
National Association of Mutual Insurance Companies	United States	Other	No	Yes	Yes. Catastrophe models do the best job of assessing many catastrophe risks. If a well-developed model is not available (natural disasters other than earthquake/volcano and hurricane) then other methodologies may be needed.
RAA	United States and many other jurisdictions	Other	No	Yes	The RAA strongly supports the use of internal models for the estimation of catastrophe risk.
American Academy of Actuaries	United States of America	Other	No	Yes	Commercial catastrophe models should be allowed as part of the standard model. Entities of the size of IAIGs will most likely be using catastrophe models as part of their management process. The models also have been in the marketplace long enough to be subject to scrutiny and preferred to the alternative factor-based

					method. There should be disclosures regarding exact settings used in the models (e.g., storm surge included or not, and near-term/long-term frequency rates).
CNA	USA	Other	No	Yes	For those risks with well-developed approaches to modeling that are in principle consistent across IAIGs, yes it should be allowed. Catastrophe models are an example of this given their wide use and acceptance by market participants.
Property Casualty Insurers Association of America (PCI)	USA	Other	No	Yes	Yes. Catastrophe models are by far the best tools for estimating exposure to perils such as windstorm and earthquake for which historical data alone is insufficient.

Q158

Q158 Section 6.11.3.2 If the IAIS allows the use of catastrophe models in ICS Version 1.0, should there be requirements to ensure that the use of catastrophe models results in a fair and comparable assessment of the natural catastrophe risk? If “yes”, please comment on requirements that should be included.

Organisation	Jurisdiction	Role	Confidential	Answer	Answer Comments
Bermuda Monetary Authority (BMA)	Bermuda	IAIS Member	No	Yes	There should be disclosure of additional modelling information to allow the supervisor to understand the key assumptions and judgments made, and to allow benchmarking where appropriate.
Office of the Superintendent of Financial Institutions (OSFI)	Canada - OSFI	IAIS Member	No	Yes	To ensure a fair and comparable assessment, the use of catastrophe models should be limited to a prescribed list of permitted models or prescribed criteria in the use of catastrophe models.
China Insurance Regulatory Commission	China	IAIS Member	No	Yes	ICS can provide general calculation rules and basis, for example: - scope, risk coverage and definitions; - risk measure (99.5% VaR); - parameter calibration requirements, e.g. data lengths and frequencies.
EIOPA	EIOPA	IAIS Member	No	Yes	The IAIS should at least provide guidance to ensure a level playing field. There should be qualitative and quantitative requirements on both the data and the models.
Financial Supervisory Service	Korea	IAIS Member	No	No	

KNF - Polish Financial Supervision Authority	Poland	IAIS Member	No	Yes	Use of model should be subject to prior supervisory approval. Additionally to criteria listed in par. 460, model should be used in practise for example: for quotation of reinsurance arrangements, for calculation of PML, as basis for risk management.
National Association of Insurance Commissioners	USA	IAIS Member	No	Yes	The requirement should be that the IAIG apply the same catastrophe models or combination of models to the same underlying exposure data, and using the same modeling assumptions, as they use in their own internal risk management process.
Ageas	Belgium	Other	No	Yes	Requirements : ask the company information on 1) model & versions used 2) potential adjustments of data's or assumptions made (default value) in particular for missing data's, 3) options selected in the tool 4) adjustments made to the tool results and ask the impact for each decision taken. Some options could be imposed.
ABIR Association of Bermuda Insurers & Reinsurers	BERMUDA	Other	No	Yes	IAIS could leverage existing jurisdictional approaches to acceptance of particular model platforms, e.g. those in Bermuda BSCR and those being deliberated under changes to US RBC.
Canadian Institute of Actuaries	Canada	Other	No	Yes	We agree there is a need to ensure comparability. We believe that can best be achieved by requiring that catastrophe models used by firms be subject to independent reviews and supervisory approval. Imposing requirements on model outcomes stifles research and model improvements, and therefore we would recommend against that option.
Ping An Insurance (Group) Company of China Ltd.	China	Other	No	Yes	Referring to Q157, IAIS should prescribe the unified principles for capital quantification, to ensure that the results are comparable and fair. Measurement principles include: 1. Definition and description of scope;

					<p>2. A unified measurement method such as 99.5%VaR;</p> <p>3. Disclosures of the data source for model parameters, and there should be requirements on the number of years for the data covered.</p> <p>4. Explanations of the effectiveness of the catastrophe model.</p>
Insurance Europe	Europe	Other	No	Yes	Insurance Europe strongly supports the use of natural catastrophe risk models to capture this risk type and believe it is the only practical way to adequately quantify such risk exposures. Notwithstanding some limitations of those models, some consistency could be sought through requiring firms to provide version and basis of model run details with the submission numbers.
Actuarial Association of Europe	European Union	Other	No	Yes	The IAIG should be able to justify why the particular catastrophe models are appropriate. Criteria for appropriateness may be that the models are widely used in the global insurance market, or, in case of new developed models, that they are widely tested and that there is a strong, document rationale to use a rather new model compared to an existing one
GDV - Gesamtverband der Deutschen Versicherungswirtschaft	Germany	Other	No	Yes	
German Association of Actuaries (DAV)	Germany	Other	No	Yes	A requirement regarding catastrophe models should be that they are widely used in the global insurance market, or, in case of new developed models, that they are widely tested and that there is a strong, document rationale to use a rather new model compared to an existing one.
Munich Re	Germany	Other	No	Yes	

Global Federation of Insurance Associations	Global	Other	No	No	
International Actuarial Association	International	Other	No	Yes	<p>As we note in response to question 157, we believe the use of models is a step forward. However, the use of elements is new and therefore there may be unintended results (good or bad).</p> <p>We believe that after ICS is implemented, there should be some monitoring of model use to address questions such as:</p> <ol style="list-style-type: none"> 1. Are the models being sufficiently well validated and comparable? 2. Is the level and granularity of exposure serving as model inputs adequate and comparable across companies? 3. Are there issues arising from bespoke models vs. widely used models? 4. Are issues arising sufficient to require some regulatory "approval" of models or "professional opinion" supporting the model results. That would be an actuarial opinion that the model is fit for purpose and has been used appropriately for the purposes of the capital calculation (NOT an opinion on accuracy) Please refer to the IAA's work on ISAP 1A, "Governance of Models." Potentially if further guidance is desired by the IAIS, an extension of the current scope of ISAP 7 could be entertained (at present the focus of ISAP 7 is the "current estimate" for ICS purposes). <p>In addition -, we suggest the following:</p> <p>The NAIC is well along in using catastrophe models in a standard formula. The NAIC formulation addresses issues such as what model is good enough, whether the catastrophe model is used for other purposes such as internal catastrophe management , when is the exposure sufficiently small, what information should be available to the regulator. We recommend that IAIS refer to NAIC for a perspective on the consultation questions.</p>
General Insurance Association of Japan	Japan	Other	No	Yes	<p>If approval requirements regarding the use of models in ICS Version 1.0 are considered only for confidential reporting purposes, it is too early to introduce formal approval processes, at least for 2017 confidential reporting, because both</p>

					<p>IAIGs and supervisors would not be able to make sufficient preparations in time. Meanwhile, as part of a standard method, appropriate review process regarding the use of models should be put in place in the future, such as the validation of models by supervisors, in order to ensure comparability.</p> <p>However, with the validation of models, standards that are stricter than necessary should be avoided. The IAIS should examine the introduction of validation and review processes which are effective and efficient. For example, to begin with supervisors could compare insurers' models and then focus on matters of concern found in the first step.</p> <p>Additionally, models widely used by insurers could be subject to IAIS approval or, after validation and review by jurisdictional supervisors, be introduced as one of the options in a standard method of risk calculation for ICS.</p> <p>It should be noted that the General Insurance Rating Organization of Japan, of which almost all Japanese general insurers are members, develop risk models of natural disaster types that are common in Japan. Because these models are utilised in the assessment of natural disaster risk under Japanese solvency regulations, they should be introduced as one of the above options to calculate the risk amount of each peril, though how correlation among perils can be reflected is still to be examined.</p>
Swiss Re	Switzerland	Other	No	Yes	One way that this can be achieved is to allow for the use of internal models that have been approved by the group regulator.
Institute and Faculty of Actuaries	UK	Other	No	Yes	IAIGs should justify clearly why particular catastrophe model(s) have been chosen, and demonstrate the quality and coverage of their data capture.
Association of British Insurers	United Kingdom	Other	No	Yes	While we support the objective that catastrophe models result in a fair assessment of natural catastrophe risk, we do not think that this assurance should be sought in the form of a requirement within the ICS. If catastrophe models are allowed in the IAIG's jurisdiction, these should also be allowed for the ICS. The key ingredient in achieving a fair assessment of nat cat risk is in fact the allowance of the use of

					catastrophe models in itself, as this ensures that the ICS reflects an IAIG's actual exposure to nat cat risk.
RAA	United States and many other jurisdictions	Other	No	Yes	The best way to achieve a fair and comparable assessment of catastrophe risks that are developed by bespoke internal models is to require that the model data and assumptions used for the ICS measure are the same data and assumptions used for internal management purposes. This will ensure that the ICS reflects the IAIG's own assessment of its catastrophe risk which can then be compared to other IAIG's similar assessments. We do not believe it is possible to create a comparable assessment of catastrophe risk through the use of a standard formula.
American Insurance Association	United States of America	Other	No	Yes	Yes. We support the use of natural catastrophe risk models to capture this risk type and believe it is the only practical way to adequately quantify such risk exposures. Notwithstanding some limitations of those models, some consistency could be sought through requiring firms to provide version and basis of model run details with the submission numbers. IAIS could leverage existing jurisdictional approaches to acceptance of particular model platforms, e.g. those in Bermuda BSCR and those being deliberated under changes to US RBC.
Property Casualty Insurers Association of America (PCI)	USA	Other	No	Yes	The IAIS should rely on the catastrophe model certification processes of the jurisdiction of each IAIG. The ICS should not require a separate model certification process – this would duplicate the substantial work done in the U.S. and in other jurisdictions that have or are developing catastrophe risk charges. IAIGs should be required, however, to use the same models and assumptions that they use in their internal risk management processes.

Q159

Q159 Section 6.11.3.2 Is there information about catastrophe models and their use by the IAIG that should be reported to the group-wide supervisor? If “yes”, please provide specific examples.

Organisation	Jurisdiction	Role	Confidential	Answer	Answer Comments
Bermuda Monetary Authority (BMA)	Bermuda	IAIS Member	No	Yes	For the majority of cases, IAIGs will be using widely used CAT vendor models. As a minimum IAIGs should provide the overall CAT risk capital charge and capital charge per peril plus information about the models used including the version number and any adjustments / expert judgements made to the standard calibration of these models (including model blending) – with the underlying rationale. Additionally the IAIG would need to supply a range of additional statistics / results to help the supervisor assess the validity of the results such as: <ul style="list-style-type: none"> - Gross and net losses for a variety of return periods / by peril. - Annual average aggregate gross loss. - Standard deviation of annual aggregate gross loss. - Exposure limits. - Modelled exposure and perils. - Data quality. - Reinsurance information.
China Insurance Regulatory Commission	China	IAIS Member	No	Yes	An example can be regulatory submission requirements, so that the supervisor is able to assess the model comparability and consistency.
Financial Supervisory Service	Korea	IAIS Member	No	No	

Ageas	Belgium	Other	No	Yes	Please refer to our answer to question 158.
ABIR Association of Bermuda Insurers & Reinsurers	BERMUDA	Other	No	Yes	Consistency could be sought between the use of Natural Catastrophe models through requiring firms to provide version and basis of model run details alongside the submission results.
Ping An Insurance (Group) Company of China Ltd.	China	Other	No	Yes	We propose that IAIG should report their catastrophe models to local regulators based on the principles set by IAIS.
GDV - Gesamtverband der Deutschen Versicherungswirtschaft	Germany	Other	No	Yes	A check who provided an external model respectively who approved an internal model is needed.
Munich Re	Germany	Other	No	Yes	For external models it needs to be checked who provided it. For internal models it has to be checked who approved it.
International Actuarial Association	International	Other	No	Yes	Section 5.8 of the Phase 2 Field Testing Questionnaire requests substantial information from the IAIG in questions 99-101. It is likely though that in fact most IAIGs use a combination of external and internal models with adjustments. Besides validation, it would be beneficial to know how the IAIG uses the model in addition to calculating CAT ICS. In addition, reinsurance companies have catastrophe models which they are using for internal steering and also for economic risk capital calculation. If they also use it for the ICS, they should report about it. See also our response to question 158.

General Insurance Association of Japan	Japan	Other	No	Yes	For ICS Version 1.0, the following could be reported: - Names of the model (if any) - A vendor model or an internally developed model - Areas and perils covered by the model - Overview of the model
Swiss Re	Switzerland	Other	No	Yes	Information should be reported according to the local regulatory approval process.
Institute and Faculty of Actuaries	UK	Other	No	Yes	<ul style="list-style-type: none"> • Which model has been used, including justification • Which version of the model has been used, • Which options (e.g. secondary uncertainty) have been turned on / off in the model • Any adjustments that have been made outside the model (e.g. non-modelled elements included, adjustment for data limitations) • Impact on mean figures and 1/200 figures • Data limitations to feed data into the model – e.g. limitations in exposure data • Summary of main regions / perils covered by the cat model and whether any areas / regions are not covered by the model and why.
Association of British Insurers	United Kingdom	Other	No	Yes	

Q160

Q160 Section 6.11.3.2 Are there additional conditions or restrictions about catastrophe models or their use by IAIGs that should form part of ICS Version 1.0? Please explain.

Organisation	Jurisdiction	Role	Confidential	Answer	Answer Comments
Bermuda Monetary Authority (BMA)	Bermuda	IAIS Member	No	No	
China Insurance Regulatory Commission	China	IAIS Member	No	No	
Financial Supervisory Service	Korea	IAIS Member	No	No	
Ageas	Belgium	Other	No	Yes	Before using the results of a tool, the entity should provide an assessment of the tool itself in function of the peril and the territory modelled.
Ping An Insurance (Group) Company of China Ltd.	China	Other	No	No	
GDV - Gesamtverband der Deutschen Versicherungswirtschaft	Germany	Other	No	No	

Munich Re	Germany	Other	No	No	
International Actuarial Association	International	Other	No	No	None other than as answered in question 158.
General Insurance Association of Japan	Japan	Other	No	Yes	In standard internal models, the risk amount is calculated using input data owned by the insurer such as insured amounts. However, the available data at the time of calculation is before the reference date of the calculation. Hence, it is usual to use such data with reasonable adjustments as required. Such an approach mentioned above should be allowed in ICS Version 1.0, which is also the practice in calculations of Japanese solvency regulations.
Swiss Re	Switzerland	Other	No	No	
Institute and Faculty of Actuaries	UK	Other	No	Yes	See above: It is important that IAIGs are able to present their own view of the risk (and to justify that against the modelled view of the risk), rather than purely relying on the commercial catastrophe models.
RAA	United States and many other jurisdictions	Other	No	No	

Q161

Q161 Section 6.11.3.2 If an IAIG were unable to meet the requirements that were set out in the specifications of the ICS, are there measures that the group supervisor should take in order to correct the weaknesses? If “yes”, please provide details of suggested measures and the rationale.

Organisation	Jurisdiction	Role	Confidential	Answer	Answer Comments
EIOPA	EIOPA	IAIS Member	No	Yes	In such a case, the group supervisor should be able to impose a capital add-on. Determining this capital add-on can be difficult. Benchmarking could be useful in that case.
Financial Supervisory Service	Korea	IAIS Member	No	No	
Ageas	Belgium	Other	No	Yes	Adding prudence margins (based on stress tests / benchmarking)
Ping An Insurance (Group) Company of China Ltd.	China	Other	No	Yes	As catastrophe models have been introduced into C-ROSS, the local regulator CIRC could set the requirements on the use of catastrophe models for IAIG in China.
GDV - Gesamtverband der Deutschen Versicherungswirtschaft	Germany	Other	No	Yes	A standard approach as fallback solution has to be provided for.
Munich Re	Germany	Other	No	Yes	There has to be a fall-back standard approach.

International Actuarial Association	International	Other	No	Yes	<p>If this were the case, then the IAIG likely has an approach to addressing the exposure. The regulator would need to assess whether the IAIG approach was adequate.</p> <p>We assume that ICS will not require all IAIGs to use models for all perils/geographies, regardless of the materiality of the peril/geography to the IAIG.</p> <p>The regulator ought to have the authority to have the IAIG demonstrate that it has a model appropriate to its circumstances.</p> <p>Alternatively, the group supervisor could construct a proxy based on other results or results of other IAIGs, to fill the reporting gaps. Or, an extrapolation could be used, but the uncertainty of this approach would more than likely be greater than the other options.</p>
Great Eastern Holdings Ltd	Singapore	Other	No	No	
Swiss Re	Switzerland	Other	No	No	
Institute and Faculty of Actuaries	UK	Other	No	Yes	<p>The usual supervisory controls should suffice: initially, a capital loading would seem to be the obvious choice to mitigate the key risks while the IAIG works to meet the relevant requirements. If an IAIG has significant exposure in an area which simply is not covered by available catastrophe models, the supervisor should agree a pragmatic approach in line with that IAIG's risk management process.</p>

Q162

Q162 Section 6.11.3.3 Is the man-made catastrophe scenario (as defined in the 2016 Technical Specifications) appropriate for the ICS standard method? If “no”, please provide specific suggestions supported by reference or evidence to amend the scenario(s).

Organisation	Jurisdiction	Role	Confidential	Answer	Answer Comments
BaFin	Germany	IAIS Member	No	No	Some relevant catastrophe risks are not included (as fire and motor liability) and some might be removed (terrorism risk), see answers to previous questions.
Financial Supervisory Service	Korea	IAIS Member	No	No	Current calculation of man-made catastrophic risk requires judgement from each company and therefore it is difficult to ensure consistency. For comparability purpose among the participants in IAIG, it is necessary to provide standardised risk factor and/or stress shock.
Ageas	Belgium	Other	No	Yes	
ABIR Association of Bermuda Insurers & Reinsurers	BERMUDA	Other	No	No	<p>We question whether these risks should be broken out as standalone risk charges. We are concerned about the potential for double counting this risk given that such events will appear in the datasets for the calibration of premium and reserve risks.</p> <p>While we recognize there is value in quantifying such realistic disaster scenarios for the purposes of risk management, we do not believe that incorporating them into the ICS capital requirement is the best treatment of these risks and they may be better handled elsewhere within ComFrame as part of a holistic risk management framework.</p> <p>If these risk types are to be included, then the premium risk charges should be parameterised to exclude man made catastrophes to avoid any double counting.</p>

Canadian Institute of Actuaries	Canada	Other	No	Yes	
Ping An Insurance (Group) Company of China Ltd.	China	Other	No	No	We lack the data of relevant risks and thus cannot comment on this for now. We hope the measurement method should take practical implementation into consideration where possible. The current method is difficult to implement in practice. For instance, as for the definition of terrorist attack risk, it is tricky to define losses within 200 meters for explosion events. As China is widely dispersed and the policyholders and the properties insured have been spreading throughout the country, it is difficult to locate the risk exposures accurately. So it is challenging to define the risk exposure of policyholders within 200 meters even if for highly concentrated group insurance.
Allianz	Germany	Other	No	No	We believe that the probability of the latent liability event materializing (worldwide to the extent calculated) is low. Therefore we suggest to reduce the current shock factor. Compared to other regions and products as well as in itself the factors for EEA General liability and Non-Proportional Casualty reinsurance seem to be high. Most contracts in General liability would not cover a comparable scenario (e.g. retail business).
International Actuarial Association	International	Other	No	No	For Terror Scenario: No details are provided on proposals related to medical Health insurance; only for fatality and disability. For Pandemic Scenario: There are no details about Health exposures. For calibration details cf. Solvency II – Health Pandemic Risk
Dai-ichi Life Holdings, Inc.	Japan	Other	No	No	Please refer to the answer for Q156.
General Insurance Association of Japan	Japan	Other	No	No	As for terrorism risks, it is inappropriate to include damage to own properties and payments to employees other than insurance benefits, for the following reasons: - Damage to own properties etc. is not an insured loss, and does not match the definition of

					<p>Catastrophe risk, which is a "risk involving a low frequency and generally high severity insured accident".</p> <ul style="list-style-type: none"> - This assumes an accident targeting the insurer itself, and we think that this leads to an overly conservative evaluation. - There are concerns over overlaps with Operational risk. <p>In addition, in order to reduce the practical burden, damage assessment using similar scenarios such as RDS should be allowed for the assessment of insured losses.</p>
The Life Insurance Association of Japan	Japan	Other	No	No	<ul style="list-style-type: none"> • Same to the comment(s) on Question 156 above.
Great Eastern Holdings Ltd	Singapore	Other	No	Yes	
Swiss Re	Switzerland	Other	No	Yes	
Institute and Faculty of Actuaries	UK	Other	No	No	<p>As above, a cyber scenario should be included in the man-made catastrophe scenarios.</p> <p>The terror scenario could be considered too small at a 1-in-200 level – the damage, fatality and disability rates would be optimistic in particular scenarios. For instance, a terror attack on a refinery / combustible warehouse could have much higher damage ratios. Compared to the attacks in New York on 11 September 2001 for instance, this does not seem extreme enough; nor does it appear to reflect a Nuclear/ Chemical/ Biological/ Radiological (NCBR)-type attack.</p> <p>The marine scenario is a single loss, whereas the aviation scenario is a two plane collision; is it unclear why there are differing approaches here. In addition, the losses do not appear to include any relating to contingent business interruption cover.</p>
MassMutual Financial Group	USA	Other	No	Yes	

Q163

Q163 Section 6.11.3.4 Is the approach to calculate the contingent Credit risk associated with reinsurance recovery appropriate for the purposes of ICS Version 1.0? Please explain. If “no”, please provide details of an alternative approach that would be more appropriate for the ICS standard method.

Organisation	Jurisdiction	Role	Confidential	Answer	Answer Comments
Financial Supervisory Service	Korea	IAIS Member	No	Yes	
National Association of Insurance Commissioners	USA	IAIS Member	No	No	The contingent credit risk associated with reinsurance recovery is correlated with insurance risk but is not very closely correlated with other default risk. The current approach results in excessive diversification.
Ageas	Belgium	Other	No	Yes	
ABIR Association of Bermuda Insurers & Reinsurers	BERMUDA	Other	No	Yes	The simplification described appears appropriate for allocating this risk to reinsurance counterparties within the Credit Risk module.
Canadian Institute of Actuaries	Canada	Other	No	Yes	
Actuarial Association of Europe	European Union	Other	No	Yes	

Allianz	Germany	Other	No	No	For the credit and surety scenario the underlying information requested is not available on Group level within a best effort approach. We recommend to amend the definition of this scenario.
GDV - Gesamtverband der Deutschen Versicherungswirtschaft	Germany	Other	No	No	A consideration of 50 % of the difference to reflect diversification between Credit Event and underlying Cat Event Risk would be a better approach.
Munich Re	Germany	Other	No	No	We propose to consider just 50% of the difference to reflect diversification between Credit Event and underlying Cat Event Risk.
International Actuarial Association	International	Other	No	No	<p>The VAR 99.5 % gross scenario mitigated may not be the same as the VAR 99.5 % net scenario. The impact of mitigation may not preserve the order of large annual aggregate losses.</p> <p>For low probability (e.g., 1-in-200) scenarios, net cat loss can have materially different levels of cessions, with the mix of applicable reinsurers varying across the scenarios. The proposal assumes that the ceded amount can be assigned to specific reinsurers with specific credit ratings, which does not seem feasible. We believe that a simpler approach is called for.</p> <p>This is one of the issues addressed in the NAIC RBC implementation of catastrophe model use. Their proposed solution was to use an average credit rating for the cessions such that a pre-determined flat charge applied to those cessions. Given the charges involved, more precision does not materially change the answer regarding the capital charge for cat risk.</p> <p>Also, the consultation draft approach includes the charge with other credit risk items, which implicitly assumes that the contingent credit risk charge is highly correlated with those credit risk charges (including bond default risk) and less correlated with premium and cat risk. We believe that the contingent credit risk</p>

					charge is more likely to be correlated with the cat risk charge than the bond investment credit risk charge.
General Insurance Association of Japan	Japan	Other	No	Yes	Contingent Credit risk does not significantly affect the entire ICS capital requirement, as long as Credit risk is properly controlled. Therefore, in such cases, more accurate calculation is unnecessary, and thus we support the current approach.
Great Eastern Holdings Ltd	Singapore	Other	No	Yes	NA
Swiss Re	Switzerland	Other	No	Yes	
Institute and Faculty of Actuaries	UK	Other	No	Yes	This is a simplified but pragmatic approach to allocating reinsurance recoveries to reinsurers. Short of using a full stochastic model, some allocation approach has to be assumed and the choice of allocation methodology is unlikely to be material to the overall calculation.
RAA	United States and many other jurisdictions	Other	No	No	We propose a 50% correlation between insurance risk and the related contingent credit risk as a starting point, which could be refined pending further field testing. This approach would more appropriately reflect the diversification between the underlying catastrophe event and the related potential for default.
CNA	USA	Other	No	Yes	

Q164

Q164 Section 6.11.4 Are there any further comments on Catastrophe risk that the IAIS should consider in the development of ICS Version 1.0? If “yes”, please explain with sufficient detail and rationale.

Organisation	Jurisdiction	Role	Confidential	Answer	Answer Comments
Bermuda Monetary Authority (BMA)	Bermuda	IAIS Member	No	No	
China Insurance Regulatory Commission	China	IAIS Member	No	No	
Financial Supervisory Service	Korea	IAIS Member	No	Yes	It is difficult to ensure comparability of catastrophic risk calculated based on company’s own stochastic model and therefore it is suggested to provide standardised risk factor and/or stress shock by each sub-risk of catastrophic risk.
Ageas	Belgium	Other	No	No	
ABIR Association of Bermuda Insurers & Reinsurers	BERMUDA	Other	No	Yes	As noted in Q151, contracts which explicitly cover only property catastrophe risks are subject to a premium risk charge in addition to a catastrophe risk charge, when the latter already adequately captures all the risk. Applying premium risk also to such contracts is to introduce double-counting of this risk.

Canadian Institute of Actuaries	Canada	Other	No	Yes	For the formula at paragraph 446 to be reasonable, one needs to assume that the seven catastrophic risks variables are independent and jointly normally distributed, but the events of interest are far out in the tail, and there will likely be non-negative correlation between some of them (e.g., credit with various others such as NatCat and terror), and it is almost certain that the joint distribution will be nowhere close to normal.
Ping An Insurance (Group) Company of China Ltd.	China	Other	No	No	
EIOPA Insurance & Reinsurance Stakeholder Group	EU	Other	No	Yes	The IRSG does not support a volatility shock to be applied to equity investments, as this would lead to a significant exaggeration of the actual risk exposure that insurers face when investing in this asset class. Volatility is already reflected in the calibration of the shock based on market pricing of equity.
German Association of Actuaries (DAV)	Germany	Other	No	Yes	The scenarios used under Solvency II seem appropriate for the European market and therefore could be a basis for adoption by the ICS. However where commercial catastrophe models are available and widely (globally) used, their use results in capital requirements that reflect the risk-profile (i.e. the Var 99.5% target) much better than prescribed scenario-based calculations.
AIA Group	Hong Kong	Other	No	No	
International Actuarial Association	International	Other	No	Yes	It would be better to split the catastrophic risk module into Life, Health and Non-Life and calculate them as a sub-module in the corresponding module.
Dai-ichi Life Holdings, Inc.	Japan	Other	No	Yes	<ul style="list-style-type: none"> Considering the availability of historical data and difficulties in setting the credible model, Catastrophe risk for life insurance should be monitored by each company's risk management system rather than measured as one of ICS submodule.

General Insurance Association of Japan	Japan	Other	No	No	
The Life Insurance Association of Japan	Japan	Other	No	Yes	<p>• With regard to the Catastrophe risk for life insurance policies, we think it is more appropriate to observe such risk through monitoring process such as stress testing, which would be conducted in each IAIG's risk management process, as it may be difficult for IAIGs to obtain historical data or to develop reliable model to calculate risk charge for Catastrophe risk.</p>
Great Eastern Holdings Ltd	Singapore	Other	No	No	
Swiss Re	Switzerland	Other	No	No	
Prudential Financial, Inc.	United States of America	Other	No	Yes	<p>Prudential believes that the level of the pandemic stress is reasonable, but on the low end of the reasonable range in terms of severity.</p> <p>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. All mortality/longevity products will be impacted and 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.</p> <p>As noted in our response to question 129, the mass lapse stress should only apply to products with positive surrender strain, i.e. products for which the insurer is disadvantaged by the surrender. The contract in recommended approach is because lapse risk is behavioral rather than biometric in nature; the application of the lapse stress only in the adverse case reflects the behavioral economic drivers and is both plausible and risk sensitive.</p>

MassMutual Financial Group	USA	Other	No	No	
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End of Section 6.11