

# RESOLUTION TABLE DASHBOARD

on insurance protection gap

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**eiopa**

European Insurance and  
Occupational Pensions Authority

**Question 1: Do you agree with the overall approach used in the dashboard?**

Number	Name Stakeholder	Public/Confidential	Response	Comment	Proposed Resolution
1	German Insurance Association (GDV)	Public	Yes	<p>We generally welcome the approach of providing transparent natcat information in a dashboard. However, we are convinced that the dashboard in its current form is unable to meet this goal.</p> <p>The provision of public information about a natcat protection gap requires a multifactorial approach and must assess the situation in every Member State individually. Aspects such as the the historical context, the legal situation, the exposure to natural hazards, product design, the level of state intervention, the quality of prevention level, voluntary vs. mandatory solutions etc. are just a few crucial points that are necessary for a real assessment of a protection gap but are not taken into account by the dashboard. The statements on the dashboard are therefore imprecise at best, but they are likely to be misleading as a rule. In our opinion, they are currently unsuitable as a starting point for regulatory or political decisions. Moreover - due to oversimplification - the dashboard does not offer a starting point for identifying measures that would result in an increase in insurance coverage against natural hazards.</p> <p>The dashboard does neither reflect the respective market situation in the EU member states nor the quality or scope of products and indemnifications. Furthermore, prevention – as a key element of natcat insurance – is not adequately reflected in the dashboard’s setup. Therefore, users of the dashboard will not be able to confirm or reject concerns about adequate and affordable insurance protection against natural hazards without fail. As mentioned above there is a lack of additional information such as historical context (e.g. Germany deregulated since 1994), market-specific information and legal background. The key figure “insurance density / market penetration” alone does not provide any substantial information about whether private homeowners or businesses have an adequate degree of protection. Think of two countries with a natcat market penetration of 10 %. One country has a very high standard in building codes and a high level of prevention measures, the other country lacks all this. While businesses in the first country are willfully and voluntarily abstain from insurance cover, the businesses in the second country are struggling to find natcat cover at all. Relying on the</p>	<p>Noted. The dashboard aims principally at offering a common view of the protection gap for natural catastrophes in Europe. EIOPA understands that each Member State has specificities. But the dashboard should be a starting point for discussion und understanding the protection gap in each member state. EIOPA mentioned explicitly that the dashboard should not be used as a black box but rather as a starting point to look and understand the protection gap. In addition, as the methodology is transparent, the user has the possibility to reflect on the different scores. EIOPA has also clearly made the point that increasing the insurance penetration is not the right measure to address the protection gap in particular in the context of climate change. This is the reason why EIOPA introduced a view on the vulnerability of the buildings to be able to reflect the building codes quality. The issue however is the availability of these data. EIOPA will continue to work with COM JRC to improve this aspect of the</p>

				<p>dashboard's "insurance penetration" will not show the full picture and render the dashboard basically useless for public information as well as political and / or regulatory decision making.</p> <p>The key to maintaining insurability and affordability for all climate-related losses is prevention. If buildings are erected today on the basis of insufficient or even missing building codes for mitigating or effectively lowering the risk of losses due to floods, heavy rain, hail, heat etc., this deficiency will have a negative impact on the affordability and insurability of climate-related perils in the future. The fact that this aspect is largely absent in the dashboard causes great concern with us. Maintaining or creating affordability and insurability of insurance against climate-related risks cannot be achieved or maintained without specific prevention measures.</p> <p>It's an erroneous belief that "insuring as much as possible" will help create and maintain insurability and affordability of natcat cover. Think of a political decision to cover all buildings in a country, even those, which are technically and structurally not adequately built to withstand the expected changes in weather and climate. These buildings will inevitably be more frequently and more severely affected by natcat losses in the future. This will more likely make these buildings "economically uninsurable" with risk-based pricing. While insurers can play a vital role in adaptation and mitigation, insurance cover as such is just a financial compensation. This compensation does not prevent drought, it does not bring water into dry soils, it does not reduce the death toll due to heat and it does not prevent buildings from being exposed to the effects of climate change.</p> <p>Furthermore, "closing the protection gap" - e.g., by raising the number of insured buildings - does change the distribution of risk, because the previously uninsured buildings suffered losses too – they were simply not covered by insurance yet. Hence "closing the protection gap" raises both parameters at the same time: volume of premium and volume of claims. If the ratio of premiums and claims does not significantly change "closing the protection gap" has no noticeable effect on affordability. Or in other words: insuring house "A" doesn't change the probability of a loss at house "B". To sum it up: focusing on "insurance density" alone will lead the wrong way and won't make the EU-member states any more resilient or cut the cost for ad hoc disaster relief.</p> <p>Please also take our response to Q2 into account here.</p>	<p>dashboard. EIOPA understands that more parameters would be ideal to be reflected in the dashboard, this is the reason why EIOPA will work closely with the NCAs to bring additional information into the dashboard.</p>
2	Actuarial Association of Europe	Public	Yes	<p>Yes, but with some reservations.</p> <p>The dashboard generally uses a scientific approach, has a logical construction, and a reasonable level of granularity. It permits a concise communication of the overall insurance protection gap and uses simple 0-4 scale.</p>	<p>Noted. EIOPA will continue to work at improving the quality of the input data. Having taken the approach to provide a full and transparent</p>

				<p>We believe it is important to define and explain the purpose of the dashboard and how the information provided by the dashboard will be used.</p> <p>An inspection of the mechanics of the dashboard shows that it uses a combination of historical information, expert judgment and scientific information (catastrophe models). However, there are questions in respect of the methods of aggregations, granularity and calibration.</p>	<p>methodology, challenges are also in the availability of the data. EIOPA will continue to work with the COM JRC and other partners.</p>
3	Insurance Europe	Public	Yes	<p>Insurance Europe welcomes EIOPA's initiative of providing transparent natural catastrophe (natcat) information in a dashboard. However, some adjustments are needed to meet this goal.</p> <p>To provide public information about a natcat protection gap one needs a multifactoral approach and should assess the situation in different EU countries individually. The historical context, legal situation, exposure to natural hazards, product design, state intervention, prevention level, free-market/semi-mandatory/mandatory solutions, insurability/uninsurability of certain perils in different EU member states are just some of the crucial and necessary points for assessing the protection gap in a particular market, however they are not fully taken into account by the dashboard. As a result, the statements on the dashboard are not fully accurate and therefore are likely to be misleading. This oversimplification means the dashboard as it stands will not necessarily be a good basis for policy decisions in all countries.</p> <p>Furthermore, prevention is not adequately reflected in the dashboard's set-up. Therefore, and because of the role of prevention, dashboard users may not be able to conclusively confirm or reject concerns about adequate and affordable insurance protection against natural hazards. Indeed, if buildings are erected today on the basis of insufficient or even missing building codes for mitigating or effectively lowering the risk of losses due to floods, heavy rain, hail, heat, etc., this deficiency will have a negative impact on the affordability and insurability of climate-related perils in the future. The fact that this aspect is largely absent from the dashboard is an issue that needs addressing. Maintaining, or indeed improving, the affordability and insurability of insurance against climate-related risks cannot be achieved without specific prevention measures.</p> <p>Also, as mentioned above, additional information such as historical context, market-specific information and legal background needs due consideration. The key figure "insurance density/market penetration" alone does not provide any substantial information about whether private homeowners or businesses are adequately protected. Relying on the dashboard's "insurance penetration"</p>	<p>Noted. As mentioned in the response comment #1, EIOPA understands the need to consider additional parameters and will therefore continue to work with NCAs to improve the input of the dashboard. For the prevention measures, EIOPA has added a view on the vulnerability which aims at reflecting building codes for example. EIOPA agrees that additional work will be done in this regard and will continue to work with the COM JRC. EIOPA has explicitly mentioned that addressing the insurance penetration is not the right measure to address the protection gap. EIOPA believes that prevention should be the core of any solution addressing the protection gap. EIOPA will continue to work on identifying the cause of a protection gap and will work with the NCAs. When developing this dashboard EIOPA has also worked with EIOPA's Cat Risk Expert Network.</p>

			<p>may therefore not show the full picture nor be a good basis for political or regulatory decision-making.</p> <p>“Insuring as much as possible” in itself is unlikely to contribute to maintaining or improving the insurability and affordability of natcat. For instance, a political decision to cover all buildings, even those that are technically and structurally not adequately built to withstand the expected changes in weather and climate, will not improve the affordability of cover. This is because these buildings will be more frequently and more severely affected by natcat losses in the future and therefore more likely to be economically uninsurable with risk-based pricing.</p> <p>Likewise, closing the protection gap — for instance by raising the number of insured buildings — does not change the distribution of risk, because the previously uninsured buildings suffered losses too; they were simply previously not covered by insurance. Hence, closing the protection gap raises both parameters at the same time: volume of premium and volume of claims. If the ratio of premiums to claims does not change significantly, closing the protection gap has no noticeable effect on affordability. Insurance Europe therefore believes that focusing on insurance density alone will not make EU member states more resilient or cut the cost for ad hoc disaster relief.</p> <p>Additionally, when closing the protection gap, the relevant bundling of perils should be considered. The protection gap should not be addressed in isolation but considered as part of a combination of different natcat risks. This could help with adverse selection, would make the risk pool bigger and would help with diversification. In general, it is important to keep in mind that while insurers can play a vital role in adaptation and mitigation, insurance cover is simply a way to provide financial compensation for an event. This compensation does not prevent drought, bring water to dry soils, reduce the death toll due to heat or prevent buildings from being exposed to the effects of climate change.</p> <p>Finally, it would be interesting for the dashboard to also refer to the cause of a protection gap and provide background information on which to base decision-making. This could help better understand the situation of countries such as France and Spain where the government provides unlimited reinsurance cover for natcat via the Caisse Centrale de Réassurance and the Consorcio de Compensación de Seguros, respectively.</p>	
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4	Federation of European Risk Management Associations	Public	Yes	Quantifying the protection gap is a key step in the direction of awareness around the size of the potential impact of natural catastrophes. As the federation representing corporate risk and insurance managers we commend EIOPA on making a first effort in this direction. We also believe the dashboard is presented in a relatively easy to read format, which can be broadly understood.	Noted.
5	Association of Bermuda Insurers and Reinsurers	Public	Yes	<p>EIOPA's current approach is very reliant on only a limited set of sources. One consequence of this is that EIOPA itself does not have a lot of control of methodology. Hence, we have attempted to identify useful additional data sets, to increase robustness. This may also help with further validation and in obtaining insight into historical scores.</p> <p>Whilst we understand that the European data sets EIOPA used will have limitations because of for instance privacy concerns, the notion of public good in this regard needs to be highlighted.</p> <p>Further work on perils (which, we would point out, are not all climate related) in particular could be beneficial for the future loss estimate.</p> <p>An assessment of in particular vulnerability, is difficult for some elements in the pilot dashboard, at this stage. There may be a connection here with the quality of building codes, but on this element, data seems largely unavailable.</p>	Noted.
6	APS - Portuguese Association of Insurers	Public	Yes	<p>The dashboard is a very interesting tool, but its effects can be either very virtuous, if it provides accurate results, or very harmful, if it provides inaccurate results.</p> <p>We understand that formulas must be as standardized and widely applicable as possible, which inevitably blurs the model's precision, but limits should be drawn. And these limits are reached when clearly inaccurate results emerge from the model, as is the case for the Portuguese protection gap score for the earthquake risk.</p> <p>[The following comments are mainly focused on the earthquake risk in Portugal.]</p>	Noted.

**Question 2: Do you have any comments about the dashboard in general?**

Number	Name Stakeholder	Public/Confidential	Response	Comment	Proposed Resolution
7	German Insurance Association (GDV)	Public	Yes	<p>We definitely agree with the purpose of ensuring availability and affordability of natcat insurance cover in the future – especially under a changing climate. A prerequisite for this, however, is a holistic view on risk management. This includes not only the behavior of insurers, but also that of lawmakers and homeowners / businesses. As regards the dashboard in its current form, it is not clear whom it finally addresses. It can only be assumed that it is primarily aimed at politics, legislators and authorities.</p> <p>Unfortunately, the dashboard neither explains the cause of a “protection gap” nor does it provide any background information. For example, one might wonder why France has a high “insurance penetration” without knowing that the French government is providing unlimited reinsurance cover for natcat risk via the Caisse Centrale de Réassurance. Thus, focusing on “insurance density” does not provide the full picture.</p> <p>Insurance was and will never be a substitute for a lack of prevention measures. That is a lesson the insurance industry learned more than 100 years ago from fire insurance. At the end of the 19th century, insurance premiums for the ever-growing new builds often became economically unaffordable. At the same time, great fire losses showed the limits and inadequacies of the prevention measures and building codes of the time. A radical change in the building codes then brought the breakthrough.</p> <p>Today we take escape stairs and sprinkler systems for granted. We are now facing a comparable challenge with climate change and increasing extreme weather events. We welcome the proposal to include the peril drought. This peril will rise to serious challenges for the EU-member states in the future. Water is and will remain essential for society: shortage of drinking water, threat to nature, food supply, "distribution struggle" and the resulting increase in migration. But as already mentioned, none of this is prevented by insurance - however affordable and available.</p> <p>If we want to keep natcat insurance available and affordable, we need to re-focus on prevention. "More insurance" alone will lead us nowhere near the desired goal.</p>	<p>Noted. The dashboard forms part of COM's new adaptation strategy and will also be referred in COM's renewed sustainable finance strategy. EIOPA understands the point made on explaining the cause of a protection gap. The dashboard currently developed aimed at identifying where a protection gap exists. EIOPA will therefore continue to work with national supervisors to improve also the understanding where the insurance protection gap is coming from. As mentioned previously, EIOPA fully agrees that prevention should be the core of any solution addressing the protection gap. EIOPA also agrees that additional perils are important to consider. EIOPA will continue to work with the JRC to monitor the availability of data for additional perils.</p>
8	Actuarial Association of Europe	Public	Yes	Weightings	<p>Noted. Weighting: EIOPA has weighted the scores for the historical losses and the current</p>

				<p>We note that there is an equal weighting of 4 perils. We would question whether some perils may be deserving of more or less weight than others, e.g. based on the importance for the economy.</p> <p>There is also an equal weighting of countries, irrespective of their size or populations. This does not appear to be appropriate when calculating an overall score for the EU. Instead economic importance weights could be used to reflect the costs that would have to be covered by the governments in case of a protection gap in the respective country.</p> <p>Granularity</p> <p>The dashboard is an adequate starting point though it provides aggregate figure per country, which may hide significant regional or socio-economic differences in insurance protection, which may further compromise usefulness of the metric.</p> <p>General</p> <p>The dashboard is (so far) limited to four main historical perils. Climate change could generate new protection gaps. It could also increase the regional (eg coastal areas) or socio-economic differences. We encourage EIOPA to add new perils as soon as possible even if the historical data are limited. What about sustainability of insurance offer?</p>	<p>view of the protection gap with the GDP (see p. 11&amp;14 of technical documentation). This should therefore allow to weight the countries and the perils with their importance for the economy. Granularity: EIOPA agrees with the comment. Country level was used as a first step due to availability of data. EIOPA will continue to work on the granularity of the data to improve it. General: EIOPA agrees that additional perils should be added but also recognizes the need to first have data available to be able to do so.</p>
9	Insurance Europe	Public	Yes	<p>The pilot dashboard can be a comprehensive and useful tool. However, the use of standard formulas to derive the scores can sometimes lead to inaccurate results.</p> <p>For example, in Portugal, while earthquake risk is probably the biggest natural catastrophe peril to which the country is exposed, insurance coverage is still very low, with only around 15% of households covered. In the dashboard, however, the score given to earthquake in Portugal is 1.8 out of 4; clearly below the level of a “material” gap. This provides a distorted view of the reality of the insurance gap and sends a contradictory message to society in terms of risk awareness and the protection gap.</p> <p>Insurance Europe welcomes the proposal to include drought as a peril. Drought will result in serious challenges for EU member states in the future: shortages of drinking water; threats to nature and to food supplies; and</p>	<p>Noted. EIOPA noted the issue with Portugal and will investigate the topic further. Additional perils are indeed needed and EIOPA will continue to work with the JRC to monitor data on the availability of data for these perils to understand the risk.</p>

				<p>distribution challenges and resulting increases in migration.</p> <p>Insurance Europe also believes that other perils such as tsunamis and hailstorms should be incorporated into the model as they are a considerable component of seismic risks and heavy storms respectively.</p>	
10	Federation of European Risk Management Associations	Public	Yes	<p>Unfortunately due to several ongoing projects simultaneously our feedback is limited. We would, however, welcome further discussion with EIOPA, our Members and the broader affected community on the topic.</p>	Noted.
11	Association of Bermuda Insurers and Reinsurers	Public	Yes	<p>Overall, we feel the pilot dashboard offers a good balance between simplicity and robustness, with an intuitive approach. EIOPA is to be commended for a very solid start in this exercise.</p> <p>We have a number of additional points for consideration (which we would be delighted to discuss with EIOPA Secretariat in more detail):</p> <ul style="list-style-type: none"> <li>• How often does EIOPA plan to publish this? We have noted the European Commission's recognition of the importance of this work in the EU's climate adaptation strategy. It is of course important to ensure the data is refreshed at regular, well chosen, and predictable intervals. This would also bring with it considerations of control of and management of the most current version.</li> <li>• The detail behind the pilot dashboard could be made more transparent, including the assumptions that were made in developing it, to allow for further validation.</li> <li>• One suggestion we would like to make is, over time, for EIOPA to turn the dashboard into a web-enabled portal. This would then allow users to penetrate deeper into the detail and the datasets, maintaining transparency, and really gain a solid understanding of how the scores are achieved.</li> </ul>	<p>Noted. EIOPA plans to regularly update the dashboard once it is published in its final version. The frequency has not been decided yet. In order to be transparent, EIOPA has developed a technical document which should explain the steps used to derive the scores. EIOPA welcomes the idea to integrate the dashboard into a web-enabled portal and will give further thoughts on this.</p>
12	APS - Portuguese Association of Insurers	Public	Yes	<p>Scientists, reinsurers and specialized brokers all agree that the earthquake risk is probably the biggest natural catastrophic risk to which Portugal is exposed to, with a territory located on, or close to, significantly unstable tectonic plates and a history of major seismic events (like the 1755 Lisbon earthquake and tsunami, the biggest ever in Europe in the last centuries).</p>	<p>Noted. EIOPA will work further with the risk data providers (COM's Joint Research Center) to analyse further the scores for Portugal.</p>

				<p>And, on the other hand, as national politicians, civil protection agents and insurers can tell, the earthquake insurance coverage in Portugal is still very low (and not simply low), with only around 15% of households covered, not to mention all the unprotected public buildings and infrastructures.</p> <p>Surprisingly, however, the estimate of protection gap today for earthquake in Portugal reaches a score of only 1,8 in 4, clearly below the level to be considered a “material” gap, providing a distorted message to our society, when we – and not only the insurance sector – are exactly trying to draw attention to the importance of this protection and the problems that might arise from the existing protection gap. According to recent estimations, in a 300-year return period seismic event the protection gap would represent more than 6% of the GDP only for the Portuguese housing stock, not to mention the gap in industry, commerce, transports, infrastructure, etc.</p>	
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**Question 3: Do you have any comments on the methodology used to derive the scores?**

Number	Name Stakeholder	Public/Confidential	Response	Comment	Proposed Resolution
13	German Insurance Association (GDV)	Public	Yes	<p>Our detailed answer to question 1 already shows where the dashboard needs to be supplemented or changed in order to become a reliable tool. Simply relying on scientific data and comparing it to the insurance density does not show the full picture.</p> <p>Furthermore, it is unclear whether public infrastructure and property owned by the state and municipalities are taken into account. Privately owned property accounts for only a fraction of the losses caused by natural catastrophes. The level of insurance penetration for privately owned property does not answer the question how big or small a protection gap is. In Germany for instance the municipalities must buy natcat insurance from the insurance industry for their schools, city halls or their swimming pools. But they fail to do so. Therefore, only a fraction of the public buildings in municipalities is insured. Moreover, a high insurance density does not help in any way if power plants do not supply electricity, water and gas do not flow, trains do not run, and roads or bridges are damaged because they were too vulnerable to the effects of climate change. Bridging the protection gap must take this into account.</p>	<p>Noted. The dashboard currently developed aimed at identifying where a protection gap exists. EIOPA will therefore continue to work with national supervisors to improve also the understanding where the insurance protection gap is coming from (also including aspects on capacity, affordability, national schemes...). The dashboard currently focuses on residential and commercial lines. EIOPA agrees that additional views are important to understand the protection gap such as for example public infrastructure. EIOPA will continue to work with COM to be able to add additional views.</p>

14	Actuarial Association of Europe	Public	Yes	<p>Note: while we have reviewed the methodology at a high level, we would recommend that it is reviewed in detail by experts in the area.</p> <p>Calibration</p> <p>How do we know the calibration of the historical gap score is consistent with the calibration of the score for the gap estimated today, e.g. Greece's score for earthquake are Historical: 4, Today: 3.5. Similarly, Ireland's scores for Flood are Historical 1; Today: 0. What is the reason for the improvements?</p> <p>The scores are derived using the combination of a scientific approach and expert judgment. However there seem to be large differences for some countries in respect of historical gap versus the current gap. It would be beneficial to understand the reason of these differences to ensure that there is no calibration issue. Furthermore, it would be beneficial to involve national regulators in respect of the methodology, calibration and understanding of the predicted score.</p> <p>Effect of large events on perceived gap</p> <p>The methodology appears to ignore the historical information and time from the latest large event -this can have significant impact on the future protection gap due to the making the risk more "real" for policyholders, which can create need for insurance and reduction of protection gap.</p> <p>Aggregation</p> <p>The index aggregation seems to follow simple average applying a same weight between perils within individual countries and across all countries within Europe. European countries have different exposure to these perils (e.g. the Czech Republic does not have any earthquake exposure, so it doesn't feel right to consider this peril to measure overall protection gap in Czech Republic). These non-exposure perils artificially lower protection gap index for given country and likewise for the overall European index.</p>	<p>Calibration: The issue with historical data can be that as we are looking at low frequency events data would be missing and therefore not show the right result. For Ireland, the issue comes from the fact that EIOPA assumes that when the insurance coverage is high then there is no protection gap problem. Considering your comment EIOPA will review the score for the insurance penetration as giving a 0 (no risk) might be too optimistic. For Greece, EIOPA has asked the JRC to provide their latest data for earthquake. National supervisors are included in the estimation of these parameters. Effect of large events on protection gap: this is an interesting aspect that EIOPA will consider in the next step for the dashboard. Aggregation: this metric will benefit from diversification effect in the sense that if not all perils (earthquake and flood and windstorm and wildfire) show a high insurance penetration then the aggregated score will be lowered. The idea in the dashboard will always be to take the metric in comparison with the other EU countries (some countries might have a high protection gap for all 4 perils - which shows a very significant problem and some countries might benefit from the fact that they are not impacted by all perils). EIOPA understands the concern raised in not providing the</p>
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					wrong message that the protection gap in Czech Republic is low.
15	Insurance Europe	Public	Yes	<p>As mentioned in response to Q1, Insurance Europe is of the opinion that amendments are required for the dashboard to be a reliable tool. Simply relying on scientific data and comparing it to insurance density does not give the full picture.</p> <p>Furthermore, there are some aspects of the exposure to hazard risk elements that should be adjusted in order to have more precise and accurate results. For instance, using a 50-year period to calculate earthquake exposure hazard seems insufficient to model this risk. Instead, estimations should be based on a 300-, 400- or 500-year return period. Increasing the timespan would result in a more accurate score for “heavy potential damage zones”.</p> <p>Additionally, the exposure to hazard formula does not normalise the results by GDP but rather by country area, as the two GDP elements in the formula cancel each other out. The formula should therefore be adjusted to include GDP considerations in the final score.</p> <p>It is also unclear whether public infrastructure and property owned by the state and municipalities are taken into account. Privately owned property accounts for only part of the losses caused by natural catastrophes, so the level of insurance penetration for privately owned property does not answer the question of how large or small a protection gap is. In Germany, for instance, municipalities are required to buy natcat cover from the insurance industry for their schools, city halls or swimming pools but, in practice, fail to do so. As a result, only a fraction of the public buildings in municipalities are insured. Moreover, high insurance density does not help if power plants do not supply electricity, water and gas do not flow, trains do not run, and roads and bridges are damaged because they were too vulnerable to the effects of climate change. Bridging the protection gap must take this into account.</p> <p>With regard to the data, the technical report should also mention country areas.</p>	<p>Noted. EIOPA will review the data used for earthquake with the JRC. The data used from the JRC do not consider a 50-year RP to calculate the earthquake exposure but considered the impacted km2 by intensity scale VI (Light potential damage zones), Intensity scale VII (Moderate potential damage zones) and Intensity scale VIII (Heavy potential damage zones). EIOPA is not sure where the information comes from that the dashboard has used a 50-year period to calculate the earthquake exposure hazard but obviously this would not be appropriate for earthquakes risks. The technical documentation of the dashboard mentions a hazard map (Figure 6) with a 10% probability of exceedance in 50 years but this corresponds to a ~475-year Return Period. The dashboard currently developed aimed at identifying where a protection gap exists. EIOPA will therefore continue to work with national supervisors to improve also the understanding where the insurance protection gap is coming from (also including aspects on capacity, affordability, national schemes...). Normalization of the hazard: following intensive discussion with the national supervisors, EIOPA decided to use the methodology as shown in the technical paper. For the historical losses, EIOPA divides the losses by</p>

					the GDP. This result in a unitless factor. The same approach was used for the hazard i.e. the JRC gives the number of square km impacted, which is then multiplied by (GDP/total country area) to have an economic estimation of the impacted region (which would be equivalent to the "losses"). These losses are then divided by the GDP to have the same unitless factor as done for the historical losses. EIOPA is working with the JRC to have an estimation of the economic losses instead of the impacted square km as this could then be divided by the GDP. EIOPA agrees that additional views are important to understand the protection gap such as for example public infrastructure. EIOPA will continue to work with COM to be able to add additional views.
16	Federation of European Risk Management Associations	Public	Yes		
17	Association of Bermuda Insurers and Reinsurers	Public	Yes	<p>Overall, EIOPA's methodology for the pilot dashboard is a good start, though we recognise that it will change and improve in further versions. Especially if better, more granular, data is used in future versions, the methodology will also change.</p> <p>We feel that the approach in the dashboard is valid, from the point of view of having a generalised framework. However, we would be interested to discuss the weight that has been given to expert judgement. One example of this concerns insurance penetration assumptions, where the assumptions have a significant impact on the ultimate outcome. Here, a justification of the approach, or underlying data sources, would help validate the result. We feel additional data sources (for instance on penetration for different perils and per region) could also be beneficial here, as per our answers to the other</p>	Noted. EIOPA will work further on the weight given to expert judgement. EIOPA will also work together with the National Supervisors and industry to improve the input data for the insurance penetration. EIOPA has considered the historical economic and insured losses as shown in the score "historic protection gap". EIOPA agrees that a "full" modelling approach would also be helpful but also require significant amount of

				<p>questions in the survey.</p> <p>An additional point where specificity could be added, is to look at historical losses, and add specific events, as well as to analyse insurance losses vs. economic losses.</p> <p>One element that may also help improve the dashboard, could be an evaluation of a model approach to today's protection gap in Europe. Perhaps EIOPA could view historical records and try to model this for parallel regions using GDP and vulnerability assumptions, as well as insurance coverage from previous years. This may give a view as to whether results are in the same range as what was seen for the parallel region in terms of the actual protection gap.</p> <p>Generally, having a better understanding of why trends are going into certain directions can of course be helpful, and could be an area for further work in future versions.</p>	resources. EIOPA will continue to explore this.
18	APS - Portuguese Association of Insurers	Public	Yes	<p>In our opinion, supported on discussions with experts (namely from Munich Re), some inadequate assumptions and criteria in the Exposure to hazard and in the Insurance coverage sub-scores, combined with the overuse of qualitative, rather than quantitative, information, tend to explain this inaccurate global result, as we will try to explain.</p> <p>In general, an earthquake is a low frequency / high severity type of event. It might not be the case for some other countries, where frequency is nevertheless higher, but at least for Portugal a 50-year period is too short to model this risk. Given our country's risk profile, estimations here are generally based on 300, 400 or 500-year return period events (for which insurers look for reinsurance protection). We believe that using a larger period could significantly change the results, leading for instance to "Heavy potential damage zones" different from zero, a figure which is very difficult to understand, given the exposure to hazard of our main cities, including Lisbon. And Portugal would not have the same score in this Exposure to hazard component as so many other European countries where this specific risk is obviously less relevant.</p> <p>Additionally, Tsunamis should not simply be set apart from the model. Half of the Portuguese continental boarder is costal line, close to where the biggest cities are located, the industry and services are largely implanted and the majority of the population lives. As the 1755 Lisbon earthquake has shown,</p>	Noted. EIOPA is not sure where the information comes from that the dashboard has used a 50-year period to calculate the earthquake exposure hazard but obviously this would not be appropriate for earthquakes risks. The technical documentation of the dashboard mentions a hazard map (Figure 6) with a 10% probability of exceedance in 50 years but this corresponds to a ~475-year Return Period. The data used from the JRC do not consider a 50-year RP to calculate the earthquake exposure but considered the impacted km2 by intensity scale VI (Light potential damage zones), Intensity scale VII (Moderate potential damage zones) and Intensity scale VIII (Heavy potential damage zones). EIOPA will work further with the risk data providers (COM's Joint Research

				Tsunamis are a considerable component of the seismic risk, and should be somehow incorporated in the model, to prevent wrong messages from it.	Center) to analyse further the scores for Portugal.
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**Question 4: Do you have any comments on the input data used in the dashboard?**

Number	Name Stakeholder	Public/Confidential	Response	Comment	Proposed Resolution
19	German Insurance Association (GDV)	Public	Yes	There is no information available on whether and to what extent it is ensured the data incorporated in the dashboard is in line with the findings of other already established systems. Trust in the system can only arise if all data sources are open and can be objectively compared.	Noted. The data used in the dashboard are mainly coming from the COM JRC Risk Data Hub which EIOPA trusts to be a reliable partner. For the historical losses, EIOPA will also explore additional sources. For the insurance coverage, the estimations are based on national supervisors. EIOPA will continue to improve the input data with the national supervisors, Cat Expert Network and JRC.
20	Actuarial Association of Europe	Public	Yes	There will be different data quality and availability of the data across countries due to the existing insurance/reinsurance penetration the quality of the models, underlying data used for calibration. It is critical to communicate these limitations to ensure consistency between individual countries and allow for potential weighting between experience and expert judgment.	Agreed. EIOPA has tried to add weighting based on the quality and expert judgement.
21	Insurance Europe	Public	Yes	Insurance Europe understands the complexity of the underlying data needed and that the available data cannot be complete. However, there is no information available on whether and to what extent it is ensured the data incorporated in the dashboard is in line with the findings of other already established systems. Trust in the system can only be engendered if all data sources are open and can be objectively compared.	Noted. The data used in the dashboard are mainly coming from the COM JRC Risk Data Hub which EIOPA trusts to be a reliable partner. For the historical losses, EIOPA will also explore additional sources. For the insurance coverage, the estimations are based on collaboration with national supervisors. EIOPA will continue to work to improve the data quality.

22	Federation of European Risk Management Associations	Public	No		
23	Association of Bermuda Insurers and Reinsurers	Public	Yes	<p>We feel EIOPA's approach is robust, though understandably limited and can be improved with additional data sets. We have therefore considered which additional sources may assist EIOPA in enhancing the underlying data sets for the exercise, for instance with data on losses, exposure and insurance penetration, as well as data granularity.</p> <p>As a general point, would encourage EIOPA to use more detailed data sets available for European Union countries and explore data acquisition processes used outside of the European Union, including greater use of available imaging and mapping technology, to build its own data sets over time.</p> <p>One specific comment we would like to make is on the use of GDP at country level as a baseline. Using regional GDP as a baseline would make for a better benchmark and is available through EuroStat at NUTS (Nomenclature of Territorial Units for Statistics) level.</p> <p>We would also suggest that EIOPA explore future climate impacts. In this respect we would be happy to exchange views with EIOPA Secretariat about possible data sources that might assist it with this exercise.</p>	Noted. EIOPA agrees that the aim should be to develop a better database of input data for the dashboard. EIOPA also agrees that more granular data could help (as the suggested GDP data at NUTS level). However, care would also need to be taken to have all data at the same level of granularity to ensure consistency. EIOPA agrees that future work should involve the consideration of climate impact.
24	APS - Portuguese Association of Insurers	Public	Yes	In some cases, the input data used led to inaccurate results.	Noted.

**Question 5: Do you have any other data sources which could be used for the dashboard?**

Number	Name Stakeholder	Public/Confidential	Response	Comment	Proposed Resolution
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25	German Insurance Association (GDV)	Public	Yes	National recurring datasets are most likely suitable for regular reporting in the dashboard. In Germany this might be the case with data and time series provided by the German Weather Service (DWD) such as records of the amount of precipitation and the soil moisture index for the risk of drought.	Noted. Data about precipitation or soil moisture index are helpful but will be used in a second stage when the dashboard will also include additional perils and impact of climate change. Precipitation alone is not sufficient, EIOPA worked with experts to understand the risk of precipitation on floods for example.
26	Actuarial Association of Europe	Public	Yes	As we expect that available data from European national regulators, EIOPA and insurance associations have already been extensively used for this exercise, we see currently no additional data sources.	Noted. EIOPA is collaborating with the national supervisors, EIOPA's Cat Expert Network and COM Joint Research Center to develop the dashboard.
27	Insurance Europe	Public	Yes	National recurring datasets are most likely suitable for regular reporting in the dashboard. For example, in Germany this might be the case with data and time series provided by the German Weather Service (DWD), such as records of the amount of precipitation and the soil moisture index for the risk of drought.  Furthermore, Insurance Europe believes that EIOPA could benefit from the insurance industry's expertise. Insurance companies have been developing risk-zoning mapping systems for decades. These could be a valuable source of information when it comes to identifying natcat perils.	Noted. EIOPA has worked with the COM JRC Risk Data Hub which can be a trusted source to understand the cat risk. In addition, EIOPA also works with the EIOPA's Cat Risk Expert Network while developing the dashboard. In a first round of validation EIOPA had invited members from this network to provide feedbacks which have been reflected in the dashboard. Data about precipitation or soil moisture index are helpful but will be used in a second stage when the dashboard will also include additional perils and impact of climate change. Precipitation alone is not sufficient, EIOPA worked with experts to understand the risk of precipitation on floods for example.
28	Federation of European Risk Management Associations	Public	No		

29	Association of Bermuda Insurers and Reinsurers	Public	Yes	<p>We feel that the sources EIOPA has chiefly draft upon, including data from Munich Re and Swiss Re, are a good source from a loss perspective and use market-accepted methods for temporal and societal inflation and adjustment. We have considered which other data sources EIOPA could possibly draw upon, to make its data set more robust. In general, data granularity could be improved by drawing on existing sources that consider elements such as construction costs and business data.</p> <p>As a general point, we feel EIOPA may be well placed to push its members for more harmonised data, directly from EU insurance markets, to help the overall robustness of the exercise in the future.</p> <p>There is likely a discussion to be had on funding of any procurement of additional data by EIOPA from commercial sources. If indeed, such funding was available, there are a number of additional commercially available data sets we can suggest, both to address physical risk exposure and consumer trends such as insurance penetration.</p> <p>In terms of data sets that have the potential to improve the dashboard, we would recommend that EIOPA explore the following:</p> <ol style="list-style-type: none"> <li>1. Sub-country regional GDP - GDP normalization would benefit from being run at higher resolution. Eurostat collates GDP at sub-county level, both in terms of absolute values and in terms of a standardized purchasing power index ("PPS"). - Eurostar - (<a href="https://ec.europa.eu/eurostat/statistics-explained/index.php/GDP_at_regional_level#Regional_gross_domestic_product_28GDP.29">https://ec.europa.eu/eurostat/statistics-explained/index.php/GDP_at_regional_level#Regional_gross_domestic_product_28GDP.29</a>)</li> <li>2. Insurance Industry Exposure by region/country - To provide a view of insurance penetration and market size - PERILS (<a href="https://www.perils.org/products/industry-exposure-and-loss-database">https://www.perils.org/products/industry-exposure-and-loss-database</a>), RMS (<a href="https://www.rms.com/data/exposure-data">https://www.rms.com/data/exposure-data</a>), AIR Worldwide (<a href="https://www.air-worldwide.com/publications/air-currents/2016/Modeling-Fundamentals--AIR-Industry-Exposure-Databases/">https://www.air-worldwide.com/publications/air-currents/2016/Modeling-Fundamentals--AIR-Industry-Exposure-Databases/</a>)</li> <li>3. Building vulnerability by region - Modelling firms have built regional vulnerability curves by peril. These would fix the extremely coarse building code methodology – standardizing it across regions. This might need a bespoke project engagement – we could make the right intros if they would</li> </ol>	<p>Noted. EIOPA welcomes the mentioned points. As a next step EIOPA will carry out with a data request involving the national supervisors and the industry to improve the quality of the input data. The input source on sub-country GDP data has been noted. The reference to the Perils/Cat models data are known to EIOPA as they are members in EIOPA's Cat Risk Expert Network with which EIOPA has discussed the dashboard. EIOPA deliberately decided not to use data from Perils or cat model vendors as they would not be available as open source. EIOPA is aware of the vulnerability curves from model vendors. For similar reasons as mentioned previously EIOPA preferred to use open source data such as the one on the Risk Data Hub. Finally EIOPA appreciates the idea to collaborate with OASIS and will further explore the idea.</p>
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				<p>like. - RMS (<a href="https://www.rms.com/about/contact-us">https://www.rms.com/about/contact-us</a>), AIR Worldwide (<a href="https://www.air-worldwide.com/contact/Contact-Us/">https://www.air-worldwide.com/contact/Contact-Us/</a>),</p> <p>Corelogic (<a href="https://www.corelogic.com/solutions/catastrophe-risk-management.aspx">https://www.corelogic.com/solutions/catastrophe-risk-management.aspx</a>)</p> <p>We would also propose that EIOPA engage specifically with Oasis (<a href="https://oasislmf.org/">https://oasislmf.org/</a>) to explore a partnership through which it possibly could:</p> <p>a) Benefit from the Loss Modelling Framework itself</p> <p>b) Use the Open Exposure Data (OED) data standard as the repository for their exposure data (note that RMS also has an open standard but may be a bit too complex/detailed for this purpose - <a href="https://www.rms.com/risk-data-open-standard">https://www.rms.com/risk-data-open-standard</a>)</p> <p>c) Get access to further expertise from within the Oasis community (<a href="https://oasislmf.org/community/community-members">https://oasislmf.org/community/community-members</a> &amp; <a href="https://oasislmf.org/community/model-providers">https://oasislmf.org/community/model-providers</a>)</p>	
30	APS - Portuguese Association of Insurers	Public	Yes	The expertise of reinsurers and reinsurance brokers should be taken into account.	Noted. EIOPA has discussed the dashboard with EIOPA's Cat Risk Expert Network (which include brokers).

**Question 6: Some parts of the methodology to derive scores for the dashboard use expert judgements. Do you agree with the expert judgement calls or would you have suggested another approach? Please explain.**

Number	Name Stakeholder	Public/Confidential	Response	Comment	Proposed Resolution
31	German Insurance Association (GDV)	Public	Yes	Yes. But expert opinions are only useful as an add-on when there is a lack of specific data. Expert opinions should be clearly marked as such, sources must be named. Opinions should be updated on a regular basis because opinions change over time as more knowledge becomes available. Furthermore “an expert opinion” should be based on a large group of respondents in order to avoid individual opinions being overestimated, even if they are of scientific nature.	Noted. EIOPA agrees that it should be transparent when expert judgements have been used. The source should also be indicated. EIOPA has also consulted with a group of experts from COM and EIOPA's Cat Risk Expert Network to discuss the "expert judgements".
32	Actuarial Association of Europe	Public	Yes	To comment in detail on this we would need review by experts in the area.  In addition, it may be worth discussing the approach with national regulators and local insurance companies – who might have more specific data/local expert judgment, e.g. as shared in their ORSA reports.	Noted. The dashboard has been validated by the national supervisors and by a group of experts from the COM and Cat Risk Expert Network.
33	Insurance Europe	Public	Yes	Insurance Europe agrees with the use of expert judgement to derive scores when scientific data is not available. However, expert opinions should be clearly marked as such and sources must be named. Opinions should be updated on a regular basis because they change over time as more knowledge becomes available. Furthermore, any expert opinion should be based on a large group of respondents in order to avoid individual opinions being overestimated, even if they are of a scientific nature.  Insurance Europe also believes that some of the scientific data available for certain scores in the dashboard may have been overlooked. For example, the scores for insurance coverage are only based on NCAs judgement and available literature whereas objective data is largely available to measure insurance penetration.  Insurance Europe suggests prioritising the use of available scientific data to ensure the most accurate result possible.	Noted. EIOPA agrees that it should be transparent when expert judgements have been used. The source should also be indicated. EIOPA has also consulted with a group of experts from COM and EIOPA's Cat Risk Expert Network to discuss the "expert judgements". For the insurance penetration, EIOPA used literature which offered objective data. The issue was however that the way the metric was computed was not based on the same methodology (or methodology was not always transparent). In addition, not all countries were covered by the studies found on insurance penetration so it was necessary to use data from the national supervisors. EIOPA agrees to prioritise the use of available scientific data.

34	Federation of European Risk Management Associations	Public	No		
35	Association of Bermuda Insurers and Reinsurers	Public	No		
36	APS - Portuguese Association of Insurers	Public	Yes	<p>For some reason, the scores for insurance coverage are simply based on “NCAs judgement and available literature compiled a qualitative estimation of the insurance penetration”.</p> <p>It is somewhat surprising that this part of the model is left supported on such a subjective criterion, when objective data is almost certainly available to measure (or, at least, as better proxy to) the insurance penetration.</p> <p>With objective data, we know, for instance, that only around 15% of households in Portugal are protected against the earthquake risk. And, even knowing that households are not the only vector, it is hard to understand how 15% is considered a “low” penetration, instead of a “very low” penetration, as we prefer to assume.</p> <p>And it is still low for the bancassurance portfolio, since the earthquake risk is frequently not part of the required household insurance coverage in mortgages, leaving the banking system also largely unprotected and potentially vulnerable.</p>	<p>Noted. EIOPA will improve the insurance penetration metric also by conducting a data request in summer 2021. EIOPA took note on the comment about the score assessment for a 15% penetration and will review accordingly.</p>

**Question 7: Do you have any other comments on the work made by EIOPA on the protection gap?**

Number	Name Stakeholder	Public/Confidential	Response	Comment	Proposed Resolution
37	German Insurance Association (GDV)	Public	Yes	We offer EIOPA our full cooperation to determine the information required for an effective and transparent dashboard and to develop a workable concept. We suggest that EIOPA should reach out to other insurance associations and deploy an expert group for enhancing the idea and establishing an effective tool.	Noted. EIOPA will organise a workshop to allow for discussion. EIOPA will also strongly encourage the national supervisors to work with relevant national associations to fill the data gap.
38	Actuarial Association of Europe	Public	Yes	<p>It is important to focus on the impact of large events, the underwriting cycle, higher public awareness following an event and education on the protection gap; furthermore, it would be interesting to focus on silent covers (covers that aren't unambiguously covered or excluded e.g. automatically covering subsidence, flash floods, wildfire, under traditional house insurance, where these might be explicitly excluded at some point in future if these risks start to materialise or increase in frequency) as a potential source of future protection gap.</p> <p>We would recommend considering the protection gap and climate change issue as a joint issue for the entire market (governments, insurers, and policyholders). There should be an agreed approach between governments and insurance companies to find sustainable solutions to close the protection gap, whilst mitigating the effect of the climate changes on the risks. (e.g. building flood barriers, building code standards, areas with new development taking into consideration projected future climate changes, agriculture policies to increase the water retention/water absorption).</p>	Noted.
39	Insurance Europe	Public	Yes	Insurance Europe offers EIOPA its assistance in determining the information required for an effective and transparent dashboard and in developing a workable concept. EIOPA should consider the creation of an expert group, with the involvement of the insurance community, to enhance the concept and establish an effective tool.	Noted. EIOPA will organise a workshop to allow for discussion. EIOPA will also strongly encourage the national supervisors to work with relevant national associations to fill the data gap.
40	Federation of European Risk Management Associations	Public	Yes	We see potential for the work in this area to be complemented by the workstream on Open Insurance, and Common European Data Spaces. FERMA looks to keep in touch with EIOPA on this front.	Noted. EIOPA will organise a workshop to allow for discussion.

41	Association of Bermuda Insurers and Reinsurers	Public	No		
42	APS - Portuguese Association of Insurers	Public	Yes	<p>Definition: Contrary to what is said in the report, the Exposure to hazard formula does not normalise the results by GDP, but rather by country area (the two GDP elements in the formula cancel each other's effect, the reason why GDP is not even used in the excel calculation).</p> <p>Data: The report misses to mention the country area.</p>	<p>EIOPA decided to use the methodology as shown in the technical paper. For the historical losses, EIOPA divides the losses by the GDP. This result in a unitless factor. The same approach was used for the hazard i.e. the JRC gives the number of square km impacted, which is then multiplied by (GDP/total country area) to have an economic estimation of the impacted region (which would be equivalent to the "losses"). These losses are then divided by the GDP to have the same unitless factor as done for the historical losses. EIOPA is working with the JRC to have an estimation of the economic losses instead of the impacted square km as this could then be divided by the GDP.</p>

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