

Please use this template to comment on the exposure draft of the IAA Paper – The Climate Change Adaptation Gap: An Actuarial Perspective and its associated Glossary.

The IAA invites comments on these papers, and on the questions set out below.

Comments are most helpful if they:

- (a) Are comments on the questions as stated;
- (b) Take full account of what will be addressed under the topics in other papers in the series of papers as stated in the cover e-mail;
- (b) Indicate the specific row or group of rows to which they relate or the definition;
- (c) Contain a clear rationale; and
- (d) Include any alternative that the IAA should consider, if applicable within the scope of the [Statement of Intent for IAA Activities on Climate-related Risks](#).

Identification and instructions		
Name of Individual:	Please indicate if your comments are personal, or represent your organization:	Hélène Pouliot, CIA President, representing the
Name of organization		Canadian Institute of Actuaries (CIA)
Disclosure of comments:	Please indicate if your comments should be treated as confidential, and if so why. If you do not request confidentiality then your comments will be made available to all commenters of the paper; otherwise your comments will be viewed only by the Climate Risk Task Force, its relevant Drafting Team and the Secretariat.	No
Instructions for filling in and sending the template	<p>Please follow the following instructions for filling in the template:</p> <ul style="list-style-type: none"> ⇒ Do not write in the yellow shaded cells ⇒ Write in the white cells ⇒ When commenting on a specific paragraph: <ul style="list-style-type: none"> ○ Please use a separate row for each paragraph, sub paragraph, or bullet. ○ Please include the full reference to the row number(s) you are commenting on under the first column “Full row number reference”; e.g., Rows 223-225 ○ Please insert/append extra rows to this format as needed. <p>Please send the completed template by e-mail, attached in <u>MSWord format</u>, to climaterisk.comments@actuaries.org</p>	

	<p align="center">Specific Questions asked by the IAA Climate Risk Task Force</p>	<p align="center">Response</p>
<p align="center">Q1</p>	<p>Considering the previous five IAA papers in this series, and the topics of papers to follow (as outlined in section 8 of this paper),</p> <p>Does the paper’s flow of information make sense? E.g., Is the paper easy to read?; Is terminology used in a way that is consistent with your understanding?</p>	<p>The flow of the paper generally makes sense, but we would suggest putting more emphasis up front on the purpose of the paper (e.g., by adding a Purpose or Objectives section). We also suggest the following changes to improve the flow of the paper and to bring the actuarial perspectives into greater focus:</p> <ul style="list-style-type: none"> • Sections 1.3 (Key Considerations) and 5 (Further Considerations) deal with somewhat disparate and loosely connected considerations. They are not organized in a particularly intuitive manner. Consider combining Sections 1.3 and 5 into one section titled “Considerations”. • Section 5.1 (Cascading and Compounding Risks) seems to deal with climate risks in general, with no obvious link to adaptation. We suggest removing this section or highlighting its relevance to adaptation. • Section 5.2 (Systems Thinking) would fit better in Section 2 (Climate-Related Risk Management), where the paper defines a risk management process for adaptation. • It may be helpful to discuss actuarial perspectives and the role of insurance (currently Section 6) before the case studies (currently Section 4) to make it easier to highlight actuarial implications in the case studies and tie those back to points made in an earlier section.

<p>Q2.</p>	<p>Does the paper adequately cover the actuarial perspectives of climate change adaptation?</p> <p>Are there parts that are superfluous; if so which parts? Should the paper cover other important material in relation to climate change adaptation; if so what should be added (beware that the paper should have reasonable length)?</p>	<p>Generally, yes, but in some places, the role of actuaries seems more aspirational than grounded in existing practice.</p> <p>In addition, while Section 1.4 (The Role of Disclosure) notes that most disclosure standards are focused on mitigation rather than adaptation, it may be helpful to include a summary of the disclosure standards or taxonomies focused on adaptation that exist today (or that are being developed). This would be a natural fit in this paper, especially since the last paper in this series was focused on disclosures. One example could be the EU Taxonomy, in which climate change adaptation is one of the six objectives.</p> <p>Also, Section 2 (Climate-Related Risk Management) could include more commentary on risk management activities that can be performed by actuaries, such as helping insurers better understand the impact on their financial condition.</p> <p>Perhaps another area that could be covered in more depth (besides the introduction to the topic and examples in rows 104-111) is the interactions between climate change adaptation and mitigation (e.g., whether the disclosure standards require any considerations on that front, whether there are frameworks that exist to evaluate the trade-offs between the two, etc.). For example, the EU Taxonomy stipulates that to be considered sustainable, economic activities must contribute significantly to at least one of its six objectives without doing significant harm to the others. In this context, it may be useful to discuss examples of adaptation</p>
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		<p>actions that do or do not classify as sustainable because of their adverse consequences for mitigation (the first objective of the EU Taxonomy).</p> <p>Rows 585-590 in Section 3.3.6 (Supply Chains) could benefit from examples of climate change adaptation that are more relevant to actuaries.</p>
<p>Q3.</p>	<p>Do you think the case studies are useful for demonstrating some of the most important underlying messages of the paper?</p> <p>Would you suggest other case studies that perhaps better demonstrate some of the most important underlying messages of the paper?</p>	<p>The case studies are useful for bringing some of the paper’s messages to life, but they feel somewhat lacking in their coverage of the actuarial implications (e.g., it is not always obvious what roles actuaries might play in the case studies and whether actuaries would add more value than individuals from other professions).</p> <p>Section 6 (Actuarial Perspectives and the Role of Insurance) highlights some important actuarial perspectives and insurance mechanisms around adaptation. Some of these (e.g., the use of premium pricing or underwriting techniques to incentivize adaptation, the development of new product features to facilitate adaptation, concrete examples of cost-benefit analysis applied to adaptation, etc.) may resonate better with the actuarial profession through case studies than the issues currently illustrated in the case studies in Section 4.</p> <p>In particular, we would suggest removing case study #2 and potentially case study #3 (which is not a case study per se but more of an example of analysis relating to climate change adaptation – it may be better suited as an example in what is currently Section 6).</p>

General Comments on the Paper

Overall, we thought the paper was quite interesting, particularly Sections 1.1, 3.3 and 6. Thank you to the authors.

Comments on specific content/wording in the Paper (rows have been numbered for easy reference)

Full row number reference	Change proposed to the row(s) (markup preferred)	Reason the change is needed (can be kept very brief or left blank if obvious from the change)
5	Not sure the word "our" is necessary.	This might be interpreted as referring to actuaries as opposed to all of humanity.
12	It would be helpful to state why this is relevant to actuaries in this paragraph. The role of actuaries is not mentioned until three paragraphs later. There is no succinct, clearly stated purpose for this paper at the moment.	Having a clear purpose statement would help engage the reader.
13	Substitute "climate-related risks" for "climate change risks"	Consistency with glossary.
37	Substitute "engaged" for "activated"	"Activated" could be interpreted to mean these countries are being manipulated.
48	Clarify who the audience is (e.g., actuaries and actuarial organizations or others).	
53	Also list governments, regulators and supervisors.	
65	Include reference point for temperature increase (e.g., "The global temperature has already increased by around 1.2°C since ####").	
128-129	Recommend expanding on this section.	This would benefit from further elaboration to be more convincing, rather than just stating that something is fundamentally important – especially at the end of a long section.

130	Should this be called “Other Key Concepts” given that the first sentence starts with “in addition to”?	The structure of the document could be made clearer.
144-145	“despite efforts to mitigate and adapt to climate change due (e.g., <u>due</u> to economic, ...”	
150	The flow/structure of this section is not particularly intuitive – some suggestions below.	
157	Consider highlighting that actuaries could contribute by quantifying some of this uncertainty (e.g., using confidence intervals).	
159-165	Incentivization through insurance price mechanisms should be described here (currently in Section 1.3.4) and should cover both premium discounts (like later in the document) and increases.	While it can be fostered and/or required by supervisors, it is a part of insurers’ role.
166	Consider combining this with the Role of Insurance.	
171	Section 1.3.4 is one of the only references to supervisors in the paper. Consider also mentioning supervisors as applicable throughout the paper when governments are mentioned.	
178-181	<p>While we agree that public policies are required to bolster effective adaptation, this is an ineffective argument to support this statement, as some effects of climate change are felt now and resulting price increases can create incentives for adaptation. For instance, people in California would say that property insurance coverage for wildfire becoming unaffordable or unavailable from one year to the next is a strong incentive for home hardening.</p> <p>Instead, this section could refer to Section 1.3.3, as affordability and availability concerns are one major reason why we need public policy responses. Wildfires in California are a good example again, as the Department of Insurance will now require insurers to provide premium discounts for properties with adaptation features, i.e., to address the issue of insurers not reflecting those features properly in their pricing framework.</p>	
183	Perhaps call this “Role of Capital Markets”	
191-195	Briefly introduce the concept of social discounting.	Despite the reference to an SOA paper on the topic, it may be helpful to the reader to briefly introduce the concept of social discounting directly in the body of this paper, especially since this is the only section

		where it is mentioned.
196	Suggest moving this to Section 5.4, where it may be more related and reduce repetition here.	
203-210	We think TNFD should be mentioned here, as there is a strong relationship between nature and climate change.	
204	“Task Force on Climate-related Financial Disclosures (TCFD)”	
216-218	“refers to the process used to manage activities and methods used employed by individuals, organizations, and governments to facilitate their climate-resilient decision-making.”	
272-281	From a physical risk standpoint, as stated later in the document, some effects of climate change are observable now, hence the need to consider these risks in the near term too. From a business model standpoint, insurers should now consider the long-term sustainability of their organization and the industry, i.e., have considerations beyond traditional planning horizons.	
296	It is not clear what a prescriptive model is.	
302	Substitute “available” or “relevant” for “applicable.”	“applicable” is not the appropriate word to use in reference to people (experts).
306	“Data collected include ” current (and anticipated) best practices...”	Remove typo.
315	Is it clear to actuaries what decision-support and decision-analytic tools are? We have not come across this terminology before.	
347	Define what is meant by “decision-useful criteria.”	
362-363	It should be mentioned that innovation is also needed to reflect less-developed countries’ realities.	
366	Consider the example in this paragraph for inclusion in the case studies section (this could be a case study with potentially more relevance to the actuarial profession, per the response to Question 3 above).	

417	Add that it would be beneficial to be able to quantify these safety margins.	
427	There is no mention of actuaries in this section.	
439	Substitute “climate-related risks” for “climate change risks”	Consistency with glossary.
456-467	Define “adaptive capacity,” explain why it is relevant and state what the implications of reaching the limits of adaptive capacity may be (e.g., what can be done about it).	It is not obvious what purpose is served by Section 3.1. The section does not really define adaptive capacity, nor does it highlight why it is important. It only states that there may be limits to adaptive capacity and provides a few examples.
461	Add a definition for “hothouse world” in the Glossary.	
480	Some of the subsection titles refer to hazards while others refer to adaptation measures. It would be easier to follow if they were more consistent – some suggestions below.	
480	Actuaries are only mentioned in relation to building codes. It would improve the document if potential actuarial roles were mentioned for each adaptation action.	
522	Rename this “Agricultural Practices.”	
543	Rename this “Responses to Sea Level Rise”	
557	Rename this “Measures Against Water-Related Risks and Impacts”	
557	Technically, sea level rise (mentioned previously) is also a water-related risk	
568	Rename this “Supply Chain Management Strategies”	
581	Substitute “resilience” for “resiliency”	Clarity/consistency of wording.
589	Substitute “climate-related risks” for “climate change risks”	Consistency with glossary.

593-604	Suggest moving “Managed Relocation” to before “Learning from Experience”	Managed Relocation could be considered another specific example of adaptation action, whereas Learning from Experience is a broader concept.
602-603	“Their limited experience and adaptive capacity may thus expose them to more severe losses and damages, <u>hence the need for proactivity and innovation.</u> ”	
652-653	“the loss of beachfront in certain areas, <u>undercut areas</u> , severely reduced use of areas resulting in...”	
719	It does not seem necessary to imply that actuaries are only thought of as being involved in pension plans and insurance.	
791	“farming, etc.”	Missing comma, if this is IAA style.
798	The suggestion that actuaries can be of assistance by advising “riverine stakeholders” could be made more actionable.	
801	“insurance products, etc.”	Missing comma, if this is IAA style.
893-912	State clearly the purpose of summarizing these specific observations from the report in these three bullets (e.g., adaptation actions can be much more cost-effective than mitigation actions).	Our understanding is that the purpose of these three bullets is to demonstrate that adaptation actions can be much more cost-effective than mitigation actions (i.e., the benefit-to-cost ratio is a lot higher), but it is not obvious. Before getting to the third bullet, it is not evident why this paper has two bullets on mitigation strategies as opposed to adaptation.
945	Consider adding political risk as another example of climate-related risk drivers exacerbating non-climatic risk drivers (e.g., strife from scarcity of resources).	
1043	What comes after “therefore” is not fully explained by what comes before it.	
1051	“floods, surges, etc.”	Missing comma, if this is IAA style.
1068	Is the point being made here that reinsurers can provide geographic diversification? The paper seems to suggest reinsurers are going to accept all kinds of volatility from climate change, but this presumably would come at a price.	

1076-1077	“For example, Flood Re, a reinsurance scheme, was set up”	Missing comma.
1116-1118	See comment on rows 178-181	
1126-1129	As a result, to the extent that insurers not provide insurance cover <u>only</u> to projects or companies with inadequate <u>sufficient</u> adaptive features, they can contribute to greater protection against climate-related risk.	For clarity of wording.
1141	Is “climate-induced risk” different from “climate-related risk”?	Clarity/consistency of wording.
1156-1157	It might be worth mentioning that IPCC AR6 uses CMIP 6 iteration, under which future scenarios are based on SSPs (Shared Socioeconomic Pathways) which aim to describe plausible alternative trends in the evolution of society and ecosystems, i.e., they are not just emission-based scenarios.	
1162	It would be good to provide an example of services provided by natural infrastructure.	
1251	Include expected timing for the next steps (seventh paper and review of existing IAA publications), if possible.	

Please note the separate Glossary accompanying this paper, which the IAA will update as further papers on climate-related risks are developed.

Comments on specific definitions in the Exposure Draft of the updated Glossary		
<i>Note that only the proposed revisions (marked up in the Glossary) are open for comment</i>		
Defined Term	Change proposed to the definition (markup preferred)	Reason the change is needed (can be kept very brief or left blank if obvious from the change)
European Green Deal	“...making the European Union <u>climate</u> neutral in 2050.”	Was it meant to be climate or carbon? If the former, it would be worth defining “climate neutral.”