Please use this template to comment on the IAA Paper - Application of Climate-Related Risk Scenarios to Asset Portfolios.
The IAA invites comments on this paper, 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 memo;
(b) Indicate the specific row or group of rows to which they relate;
(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:	**Jacqueline Friedland, President**
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:	**No**
Instructions for filling in and sending the template	Please follow the following instructions for filling in the template: ⇨ Do **not** write in the yellow shaded cells ⇨ Write in the white cells ⇨ When commenting on a specific paragraph: ○ 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. **Please send the completed template by e-mail, attached in MSWord format, to climaterisk.comments@actuaries.org**	

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

	Specific Questions asked by the IAA Climate Risk Task Force Considering the previous three IAA papers Importance of Climate-Related Risks for Actuaries, Introduction to Climate-Related Scenarios, and Climate-Related Scenarios Applied to Insurers and Other Financial Institutions and the topics of papers to follow in this series (as outlined in section 7 of this paper),	**Response**
Q1.	Does it cover the right level of background information on the impact of climate-related risks on asset portfolios?	For the most part.
Q2.	Does it adequately cover the principles needed for application of climate-related risk scenarios to the management of asset portfolios?	Please see comments below.

	General Comments on the Paper	
	• The paper is good quality introductory material for actuaries who usually do not deal with this topic. • Since the paper is addressed to actuaries, we would recommend more discussion on the impacts of climate change scenarios on liabilities. The paper is written from the standpoint of asset-liability management and portfolio management. What it doesn't cover is the impact on the discount rate used by actuaries to determine contribution requirements for pension plans. One of the methods to determine a discount rate allowed by the CIA is an expected rate of return on assets based on passive investment. Therefore, we would recommend more discussion on the top-down approach in this context, i.e., how overall markets are expected to be affected by the transition. The joint work done by the CIA, IFoA, and ORTEC could be referenced in this context. • One issue with the paper is that the role of market values is not brought in. The key determinant for whether companies will have problems with the effects of climate change is how it will affect the financial statements. Scenarios should show	

	whether a company will continue to do business, or even stay solvent, in the future as this is a key concern. IFRS 17 is based on market values for assets. The paper does not address market values as the starting point of the scenario projections; rather, it is based on book values (i.e., purchase cost). • For many asset types (e.g., equities, real estate, public bonds, mortgages) the market values of the assets already include a view of the future including climate change risks. For instance, the market value of a building on the coast of Florida will be different than the market value of the same building in Denver because the risk of increasing sea levels is already built into the Florida value. The view of this risk may not be the same as the scenario one runs but part of it is already included in the starting market value. The methodology in the paper avoids any specific accounting methodology in order to keep it general. It seems to be using a book value type of starting point and observing the effects of the adverse scenarios on that starting point. But ignoring the constantly changing effects on the market values of assets from the changing market perception of climate risks does not seem to be realistic. The “market” has historically captured changes in the value of assets due to perceived future risks (e.g., climate change) are recognized. The market may over or under react to these future risks, but it does recognize them to some degree. • A more suitable title might be “Assessing Climate Risks in Asset Portfolios.” For example, Section 2 doesn’t talk about scenarios at all. Section 3 mentions scenarios but only at a macro-economic level and doesn’t really address what it means for one portfolio vs. another. • The paper is a bit disjointed in terms of top-down vs. bottom-up. Usually, one would think of these approaches as “meeting somewhere in the middle,” but here they are presented as two separate, unrelated approaches that serve different purposes. • In a few places throughout the paper, physical risks for life insurance companies are downplayed. This seems both unnecessary and premature. We would highly recommend softening the wording in these areas until more research is available to support such statements.

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)

25	It seems unlikely that GDP growth and inflation would be broken down by sector (credit spreads and defaults perhaps).	
46	It is not clear what single statistic is being referred to here. There is a distinction between simple/complex models/methods, but on the surface, what is said about the complex methods would seem to also apply to simpler ones – i.e., that methodologies differ– and what is said about the simpler methods – i.e., that they reveal trends – would seem applicable to complex ones too.	
52	There are direct (e.g., damage to property) and indirect (e.g., subsequent events such as supply chain disruptions) physical climate-related risks from extreme weather events. The paper does not mention the latter.	
65	This would be a good place to mention the IFoA Risk Alert as a reminder of the professional obligation of actuaries.	
78	The word “selection” may not be needed.	
79	It may not be possible to “evaluate” different metrics using this paper. Suggest “distinguish between.”	
80-81	Suggest moving this up above the previous bullet for consistency with the structure of the paper.	
86-98	Not clear what this is trying to address.	
88	The figure does not seem to refer to the sources used by OECD as stated.	
90	Sovereign Wealth Funds contains two decimals, as opposed to one for everything else.	

100	Is there a reason why IPCC scenarios aren't discussed further in the paper, unlike IEA and NGFS?	
104	This subtitle seems to suggest that bottom-up could only be used when assets are being selected to build a portfolio, as opposed to applying a ground up analysis to an existing portfolio. This section doesn't deal with scenarios at all, as it seems to be more about assessing individual securities' exposure to climate-related risks.	
121	Should read "has" instead of "have."	
146	Consider removing the word "even."	
147	Should read "makes" instead of "make."	
159	The Netherlands example requires more context. Is it just for banks or for any financial institution that invests in mortgages?	
165	Is this pole role sufficiently different from droughts (referred to in the previous paragraph) to be called out separately? Perhaps expand with other examples if there is a bigger point that's being made here.	
176	Should read "Figure 2." It is unclear if this refers to global assets or a specific portfolio. Are droughts included under "water stress"?	
189	Consider removing the word "obviously."	
226	This section starts off with broad macroeconomic impacts per NGFS, IEA, etc., and then jumps into open-source tools and third-party data services without really connecting these things very well. What is missing is how an actuary might relate	

	NGFS, IEA, etc. to their specific portfolios without relying on open-source tools and third-party providers.	
257	Consider removing the word “obviously.”	
277	Not clear what “as expected” is based on (e.g., common sense). It might be worth stating that other research has led to similar conclusions.	
286	There are some inconsistencies with the use of “while” and “whilst.”	
335	Suggest referring to “green” energy.	
363	“CDP” should be defined.	
421	Suggest “could” instead of “may.”	
435	It would be very useful to expand on potential impacts at the sector level.	
441	Suggest “scarcity” instead of “lack.”	
453	Not sure this is true for insurance companies. The location of the policy-holders or insured property may be more relevant.	
489	Should read “obsolescence” instead of “obsolescent.”	
609	Consider removing “of course.”	
635	Consider removing “clearly.”	

637	This section should be moved to the first part of Section 2 to give an introduction to the paper.	Section 5.5 of the paper (Consistency of Climate-Related Risk Modelling Between Assets and Liabilities) is very helpful in getting an overview of the link between assets and liabilities.
642	Life insurers could have more claims as well.	
651	Consider rewording so this is less cumbersome.	
655	Suggest “carefully examine” instead of “be carefully examining.”	
660	This line should be reworded for clarity.	
662	Future tense is used here. The paper would be easier to read in present tense.	
667	Suggest removing “of course.”	
671	Should read “economic” instead of “economy.”	
678	Suggest “for decision making” instead of “managing decision making events.”	
692	Should have one convention, i.e., life insurer vs. life insurance company, non-life insurer vs. P&C insurance company vs P&C insurers.	
710	If this is referring to US RBC, it should read “risk-based capital” instead of “regulatory based capital.”	
711	“Own funds” is not a term that’s used in North America. Most Canadian actuaries will not know what this is if they’ve never done Solvency II. This is essentially referring to the numerator in the LICAT solvency ratio.	

719	It is not necessary to underplay the liability side impact for life insurers. In a hothouse scenario, it could become more material depending on the country, etc. We are not aware of any studies to support limited impact on the liability side, although it may be true.	
743	This somewhat contradicts the earlier statement that the impact will be limited.	
765	This study is presumably the EU only. It might be worth including a caveat if there are reasons to believe results might differ elsewhere.	
784	Should read “exceeds” instead of “exceeded.”	