

## CIA Public Position: Climate Change and Sustainability— Risk, Financial Impacts, and the Work of Actuaries

<b>Issue:</b>	<p>Scientific evidence and economic analysis suggest that risks related to climate change, demand for limited resources, and environmental sustainability issues can have material financial impacts. What is the general position of the CIA on the topics of climate change, resource scarcity, and sustainability? How is this position being reflected in actuarial work now and how might this evolve in the future?</p>
<b>Position:</b>	<p>Climate change and resource scarcity are receiving increasing attention from governments, businesses, the media, and society. The Institute recognizes that climate change and other environmental issues are serious risks that need to be assessed and managed in the public interest. For example, the World Economic Forum’s 2014 Global Risks Report identified a number of environmental issues among the global risks of greatest concern. These include the failure to mitigate and adapt to climate change, extreme weather events, and water and food crises.</p> <p>The actuarial profession does not claim special expertise in climate and environmental science. We recognize that there are still uncertainties in the science and that scientific analysis and understanding continue to improve. Actuaries can work with governments, businesses, academics, and other stakeholders in assessing mitigation options, or in raising awareness of the various impacts. Actuaries have an interest in understanding these potential impacts as these may affect the assumptions used in assessing the value of assets and liabilities, as well as operating costs. The experience acquired by actuaries in dealing with these evolving issues can be pooled to develop more appropriate tools and methodologies—for example, discount rates—so that actuarial advice is reliable and of high quality despite uncertainties about potential future impacts.</p> <p>Compared with other professionals, actuaries have a unique set of skills combining statistical and business backgrounds, which allows them to be comfortable with risks and uncertainties that can be a challenge to quantify. That said, climate change and environmental issues are global systemic challenges, and thus require a multi-disciplinary approach. Consequently, the Institute encourages a collaborative dialogue with other actuarial organizations and stakeholders outside of the actuarial profession (e.g., climate and environmental scientists, accountants, economists, governments, businesses, and the public) about key issues. Actuarial expertise combined with stakeholder cooperation can serve the public interest by forecasting and managing financial contingencies associated with the different threats to sustainability, such as:</p>

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- **Environmental issues** (e.g., rising energy consumption, the effect of population on agriculture, natural catastrophes, man-made environmental catastrophes, water and air pollution, scarcity of resources, and increased health risks);
- **Climate change issues** (e.g., global warming, rising sea levels, and a greater incidence of extreme weather events); and
- **Policy risks** (e.g., carbon pricing or potential mandatory disclosure of greenhouse gas (GHG) emissions).

Actuaries are well qualified to compare the costs and benefits of strategic policy options and provide fact-based information to help decision-makers in managing risks arising from climate change and environmental resource depletion, considering their impact on:

- **Insurance policies and/or premiums**  
It is in the public interest that risks be assessed so that the insurance market operates on a sound and sustainable basis and that premiums be fair and competitive.
- **Health, pensions, and other benefits**  
Climate change may affect risk factors that actuaries must consider to provide clients and users with relevant information about costs and liabilities so that programs optimize the well-being of beneficiaries.
- **Cost of prevention initiatives versus damage repair**  
Actuaries can help assess future costs and make comparisons with the costs of investing in measures to mitigate risks. This is an area where actuaries can serve the public interest by quantifying the probable financial impacts.
- **Valuation of asset portfolios in a changing environment**  
The investors' community is paying increasing attention to environmental, social, and governance (ESG) factors, and the investment risks and opportunities.

Actuaries have been interested in climate change for several years. In 2008, the Institute launched a joint working group with the Casualty Actuarial Society (CAS) and Society of Actuaries (SOA) that looked into whether actuaries and climate scientists could work together and if their respective toolkits were compatible. An actuary and a leading climate scientist were paired up and they worked on 100 years of data from eight Chicago weather stations. The results were very positive on both counts and confirmed that both professions can combine resources productively. The American Academy of Actuaries (AAA) later joined the team and work began on the joint Actuaries Climate Index and Actuaries Climate Risk Index.

<p><b>Position: (cont'd)</b></p>	<p>In 2014, the Institute established the Climate Change and Sustainability Committee, charged with raising awareness of climate change and environmental sustainability challenges and supporting the Canadian actuarial profession in serving the public interest by addressing these global challenges.</p>
<p><b>Position Support:</b></p>	<p>Climatic data, like socio-economic data routinely used by actuaries, are incomplete and subject to measurement/sampling errors. The use of models to simulate future climate changes and their impact introduces other types of uncertainties unrelated to and in addition to uncertainties in historical data. Actuaries can understand the limitations in the data and the margin of errors that any finite model entails. Their experience in dealing with models, incomplete data, and scenario analysis is a high-value credential. Risks, uncertainties, and probabilities are the domain of actuaries, who can apply the same type of expertise developed decades ago to deal with changes in longevity to climate change and environmental issues.</p> <p>Indeed, actuaries are used to working with incomplete data to extract the best and most useful information. Gaps in data or limitations in the assessment of climate change and environmental risks in existing models present an opportunity for the actuarial profession to provide meaningful and valuable contributions. Few actuaries have direct expertise in climate and environmental science but the profession needs to be prepared to translate the dynamic flow of information that is available from various sources in the scientific community—be they academic, public, or private—into actionable recommendations considering the risk appetite of users of actuarial services.</p>
<p><b>A sampling of references:</b></p>	<p>Please refer to the CIA website for a complete and evolving list of resources <a href="http://www.cia-ica.ca/ccsc-resources">http://www.cia-ica.ca/ccsc-resources</a>.</p> <p><b>Canadian Organizations</b></p> <ol style="list-style-type: none"> <li>1. Chartered Professional Accountants Canada—Climate Change Briefing – Questions for Directors to Ask, <a href="http://bit.ly/1ajGf0c">http://bit.ly/1ajGf0c</a></li> <li>2. Chartered Professional Accountants Canada—A Primer for Environmental &amp; Social Disclosure, <a href="http://bit.ly/1Ed6qAF">bit.ly/1Ed6qAF</a></li> <li>3. Commissioner of the Environment and Sustainable Development—2014 Fall Report, <a href="http://bit.ly/ccscpos9">bit.ly/ccscpos9</a> <ul style="list-style-type: none"> <li>• “Despite some initiatives and progress in certain areas, there remain many unanswered questions,” said [Commissioner] Julie Gelfand. “In many key areas that we looked at, it is not clear how the government intends to address the significant environmental challenges that future growth and development will likely bring about.”</li> </ul> </li> <li>4. Government of Canada—Canada in a Changing Climate: Sector Perspectives on Impacts and Adaptation, <a href="http://bit.ly/ccscpos8">bit.ly/ccscpos8</a></li> </ol>

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Financial risks:

- “Losses from severe weather have been rising across the country. Extreme events, including storms (wind, ice and snow), flooding and heat waves have had significant economic and health and safety impacts on Canadians. In 2011, the Canadian insurance industry paid out a record \$1.7 billion for property damage associated with weather events, such as flooding, wind and wildfires. This record will be broken in 2013, as the insured losses from flooding damage in Southern Alberta (June) and Toronto (July) are finalized.”

Health risks:

- “Climate change will bring increased risks to health from extreme weather and other climate-related events such as floods, drought, forest fires and heat waves.
- Air quality is already a serious public health issue in a number of Canadian communities and is likely to be impacted by increased smog formation, wildfires, pollen production and greater emissions of air contaminants due to changed personal behaviours.
- Climate change is likely to increase risks associated with some infectious diseases across the country, and may result in the emergence of diseases that are currently thought to be rare in or exotic to Canada”.

**International Organizations**

1. Ceres—Insurer Climate Risk Disclosure Survey Report & Scorecard: 2014 Findings & Recommendations, <http://bit.ly/1LkNgdS>
2. The Geneva Association—Leading Insurance CEOs Confirm Geneva Association Climate Risk Statement, [bit.ly/ccscpos14](http://bit.ly/ccscpos14)
  - “66 Chief Executives of the world’s leading insurers have confirmed their commitment to The Geneva Association’s Climate Risk Statement—a set of guiding principles on the substantial role insurance can play in global efforts to tackle climate-related risks.”
3. Global Investor Coalition on Climate Change—Investor Statements on Climate Change, [bit.ly/ccscpos2](http://bit.ly/ccscpos2)

“As institutional investors and consistent with our fiduciary duty to our beneficiaries, we will:

  - Work with policy makers to support and inform their efforts to develop and implement policy measures that encourage capital deployment at scale to finance the transition to a low carbon economy and encourage investment in climate change adaptation.

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- Identify and evaluate low carbon investment opportunities that meet our investment criteria and consider investment vehicles that invest in low carbon assets subject to our risk and return objectives.
  - Develop our capacity to assess the risks and opportunities presented by climate change and climate policy to our investment portfolios and integrate, where appropriate, this information into our investment decisions.
  - Work with the companies in which we invest to ensure that they are minimising and disclosing the risks and maximising the opportunities presented by climate change and climate policy.
  - Continue to report on the actions we have taken and the progress we have made in addressing climate risk and investing in areas such as renewable energy, energy efficiency and climate change adaptation.”
4. Intergovernmental Panel on Climate Change—IPCC Fifth Assessment Report: Climate Change 2013 (AR5), [bit.ly/ccscpos5](http://bit.ly/ccscpos5)
  5. International Monetary Fund (IMF)—A New Multilateralism for the 21<sup>st</sup> Century: the Richard Dumbleby Lecture, [bit.ly/ccscpos6](http://bit.ly/ccscpos6)
  6. IMF—Responding to Climate Change: IMF chief Lagarde warns of “merciless” climate change, [bit.ly/ccscpos7](http://bit.ly/ccscpos7)
  7. United Nations Environment Program Finance Initiative (UNEP FI)—Climate Change: Implications for Investors and Financial Institutions, [bit.ly/ccscpos3](http://bit.ly/ccscpos3)
    - “Investors and financial institutions are, and will continue to be, exposed to downside risks as a result of climate change. The risks include: macroeconomic impacts such as the expected reduction in productivity and economic growth in many developing countries, direct physical impacts of climate change such as flood and storm risks to coastal population centres, and the impacts of policy measures directed at reducing GHG emissions from electricity generation, large industrial sources, transport and other economic sectors.
    - The investment consequences may include dramatic reductions in the value of particular assets, such as conventional coal-fired power stations that are no longer permitted to operate because of constraints on their GHG emissions. There will be indirect and knock-on effects of climate change, such as the threat to social stability posed by high and volatile food prices resulting from changes in agricultural patterns.
    - Climate change also presents opportunities for investors and financial institutions. Policy measures directed at reducing GHG emissions are likely to increase opportunities for investment in areas such as renewable energy and energy efficiency, and in companies with expertise in areas such as flood prevention or flood response.”

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8. UNEP FI—2013 Global Insurance Industry Statement, [bit.ly/ccscpos15](http://bit.ly/ccscpos15)
  - “We have come together as leaders in global risk management to issue a collective call to action to proactively address climate threats and build societal resilience.”
  - “The insurance initiatives represented in this statement have a combined membership that includes more than 100 of the world’s leading insurers across Africa, Asia, Europe, North and South America, and Oceania:
    - ClimateWise
    - The Munich Climate Insurance Initiative
    - UNEP FI”.
9. UNEP FI—The PSI Global Resilience Project: Building disaster-resilient communities and economies—Part one of a research series by the UNEP FI Principles for Sustainable Insurance (PSI) Initiative, [bit.ly/ccscpos16](http://bit.ly/ccscpos16)
  - “As of June 2014, 70 organisations have adopted the Principles, including insurers representing approximately 15% of world premium volume and USD 8 trillion in assets under management.”
  - Ban Ki-moon, United Nations Secretary General: “The Principles for Sustainable Insurance provide a global roadmap to develop and expand the innovative risk management and insurance solutions that we need to promote renewable energy, clean water, food security, sustainable cities and disaster-resilient communities.”
10. World Economic Forum—Global Risks 2014, [bit.ly/ccscpos1](http://bit.ly/ccscpos1)

Global risks of highest concern include:

  - Water crises;
  - Failure of climate change mitigation and adaptation;
  - Greater incidence of extreme weather events (e.g., floods, storms, fires); and
  - Food crises.
11. World Health Organization—Quantitative risk assessment of the effects of climate change on selected causes of death, 2030s and 2050s, [bit.ly/ccscpos4](http://bit.ly/ccscpos4)
  - “Overall, climate change is projected to have substantial adverse impacts on future mortality, even considering only a subset of the expected health effects, under optimistic scenarios of future socioeconomic development and with adaptation.”
  - However, “a main limitation of this assessment is the inability of current models to account for major pathways of potential health impact, such as the effects of economic damage, major heatwave events, river flooding and water scarcity.”

<p><b>A sampling of references: (cont'd)</b></p>	<p><b>Other Actuarial Organizations</b></p> <ol style="list-style-type: none"> <li>1. Institute and Faculty of Actuaries—Research report – Resource constraints: sharing a finite world. Implications of Limits to Growth for the Actuarial Profession, <a href="http://bit.ly/ccscpos12">bit.ly/ccscpos12</a></li> <li>2. SOA, CIA, CAS and AAA—Determining the Impact of Climate Change on Insurance Risk and the Global Community Phase 1: Key Climate Indicators, <a href="http://bit.ly/ccscpos13">bit.ly/ccscpos13</a></li> </ol>
<p><b>Contacts</b></p>	<p><b>Primary Contacts:</b></p> <ul style="list-style-type: none"> <li>• Jacques Tremblay, President, Canadian Institute of Actuaries, through Elliot Hughes at 613-236-8196 ext. 148 or at <a href="mailto:elliott.hughes@cia-ica.ca">elliott.hughes@cia-ica.ca</a></li> </ul> <p><b>Other Contacts:</b></p> <ul style="list-style-type: none"> <li>• Karen Lockridge, principal, Mercer (work) 416-868-2233   (cell.) 1-416-209-7705 <a href="mailto:karen.lockridge@mercer.com">karen.lockridge@mercer.com</a></li> <li>• Catherine Jacques-Brisette, consultant, pension and actuarial services, Bell 514-870-1341 <a href="mailto:catherine.jacques-brissette@bell.ca">catherine.jacques-brissette@bell.ca</a></li> </ul>

## Public Position Approvals Form

Title: **Climate Change and Sustainability—Risk, Financial Impacts, and the Work of Actuaries**

**Statement prepared by:**

Date: January 16, 2015

Climate Change and Sustainability Committee

**Statement reviewed by:**

Date: January 20, 2015

Public Positions Committee

**Authorizing Committee:**

Date: January 26, 2015

Claudette Cantin

Mike Hale

Kelley McKeating

Gary Mooney

Jacques Tremblay

**Public Position Approved**

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Date: