

Executive Summary

Climate Change and Resource Sustainability An Overview for Actuaries

Climate Change and Sustainability Committee

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Executive Summary

Actuaries are becoming more aware of the combined impact of climate change and limitations of resources—two separate and very significant issues—putting at risk the sustainability of the current socio-economic systems that support our way of life. Although actuaries do not claim professional expertise in environmental issues, they can be guided by the growing body of knowledge publicly available from reliable scientific sources. Being particularly qualified to deal with modelling financial consequences of risks and uncertainties, the actuarial profession has a duty to provide training and education on climate change and sustainability so that its members are qualified to contribute to the well-being of the society as a whole. In undertaking this exercise, the actuarial profession needs to be cognizant of the fact that even within the climate change science community there are differing views on the nature and amplitude of the risks and the profession should be aware of these differing views.

Climate change is more than global warming. The rise in average temperature is only one indicator of broader changes also translating into extreme temperatures, drought, flooding, storms, rising sea levels, impacts on food production, and infectious diseases. Although the scientific community has been aware of the link between greenhouse gases (GHGs) and climate change for many years, world leaders have been slow to react and implement measures to mitigate the risks.

Key sources of information on climate change are synthesised by the successive reports of the Intergovernmental Panel on Climate Change (IPCC) created by the United Nations and the World Meteorological Organization in 1988. The prevalent view is that there is a significant anthropogenic contribution to the increase in atmospheric CO₂ and other GHGs resulting from fossil fuels emissions and deforestation. Unless new policies are implemented, global warming will exceed the threshold of 2°C agreed to by the parties to the UN Framework Convention on Climate Change for which Canada is a signatory.

In 1970, a paper by the Club of Rome pointed out that limited planet resources cannot support unlimited exponential growth. Even renewable resources will be depleted if they cannot be renewed fast enough. By some estimates, we are now using 50% more resources than the sustainable level. The 8 billion population projected by 2030 is twice the 4 billion the earth had to feed as recently as 1974. The pursuit of economic growth is compounding the growth in demand. Global warming is exacerbating the sustainability challenge as it may reduce agricultural production and will result in physical damage resulting from extreme weather events, sea-level rise, etc.

Mitigating resource scarcity entails adopting new approaches such as a “circular economy”. This refers to an industrial economy that is restorative by definition. It aims to rely on renewable energy; favors recycling; minimizes, tracks, and hopefully eliminates the use of toxic chemicals; and eradicates wastes through careful design. The mitigation strategy can be guided by a new paradigm defining a planetary boundary framework providing a science-based analysis of the risk that human overuse of resources will destabilize the earth system at the planetary scale.

The potential impact on actuarial methods and assumptions, especially future growth expectations, is pervasive in the work of actuaries and affects traditional life and non-life,

health and pensions areas, investment practices, and newer areas like enterprise risk management. The actuarial profession has created interest groups at the national and international levels to help deepen the understanding of the quantitative aspects of sustainability. It can collect feedback and provide critical reviews of actuarial risk models, establish standards of practice, and promote the adoption of best practices. The North American actuarial associations are jointly creating actuarial climate and risk indexes that will monitor future changes and provide comparisons of benchmarks with the data published by climate scientists.

Actuaries can examine the different scenarios for climate change and use of resources to quantify the risks and provide guidance through cost/benefit analyses. Given the multidisciplinary nature of these issues, actuaries can benefit from inputs by non-actuarial entities and work in cooperation with other professionals to serve the public interest through optimizing policy options.