

**This item is the archived peer-reviewed author-version of:**

Climate protection gap in the EU and the demand for natural catastrophe insurance

**Reference:**

Van Campenhout Geert, Weyts Britt.- Climate protection gap in the EU and the demand for natural catastrophe insurance  
European journal of commercial contract law - ISSN 1877-1467 - 15:3(2023), p. 71-75  
To cite this reference: <https://hdl.handle.net/10067/2004910151162165141>

## **Climate protection gap in the EU and the demand for natural catastrophe insurance**

---

### **1. Introduction**

Climate change is causing more intense natural catastrophes. Natural disasters produce significant economic losses. Worldwide, losses have increased to USD 280 billion in 2021.<sup>1</sup> Households and communities consider preventive measures and disaster risk management to become more resilient.<sup>2</sup> Insurance could play an important role<sup>3</sup> to better manage natural disasters and facilitate post-disaster recovery, yet most economic losses are uninsured. Such a wide climate protection gap or insurance protection gap is undesirable because it makes households and communities less resilient and lengthens the post-crisis time to recovery. Vulnerable groups are more exposed because they have lower insurance coverage. A wide insurance protection gap thus leads to a less inclusive society and makes it more likely that governments must intervene and provide relief. This, in turn, may lead to higher costs for taxpayers. On the supply side, insurers may adapt existing insurance products, introduce new climate-related insurance products or step up the promotion and distribution of existing products, but they may also struggle to offer insurance coverage at reasonable prices if the demand for catastrophe insurance products is too low.<sup>4</sup>

---

<sup>∗</sup> Geert Van Campenhout is employed by the European Commission and a part-time associate professor of finance at KU Leuven (Belgium). The views expressed in this publication are the sole responsibility of the author and do not necessarily reflect the views of the European Commission. Neither the European Commission nor any person acting on behalf of the Commission is responsible for the use which might be made of the information in this publication.

<sup>∗∗</sup> Britt Weyts is a full professor of private law at the University of Antwerp (Belgium).

<sup>1</sup> See <<https://www.munichre.com/en/company/media-relations/media-information-and-corporate-news/media-information/2022/natural-disaster-losses-2021.html>> accessed 13 July 2022.

<sup>2</sup> See European Commission, ‘Closing the Climate Protection Gap’ (SWD(2021) 123 final of 27 May 2021, 2021).

<sup>3</sup> See eg, European Insurance and Occupational Pensions Authority (EIOPA), ‘Protection Gap for Natural Catastrophes’ (2019).

<sup>4</sup> Marcel Fontaine, ‘Climate Change and Insurance Law’ (2012) *Tijdschrift voor Verzekeringen* 192.

It is therefore important to broaden our understanding of the insurance protection gap and its drivers. This paper discusses the role of the government and insurers and reviews the factors affecting the demand for natural catastrophe insurance. To conclude, we suggest a research agenda.

## **2. Climate-related hazards and economic losses**

The cost of climate-related disasters is substantial and has increased over time. In the EU-27 weather and climate-related losses amounted to EUR 487 billion (in 2020 values) over the period between 1980 and 2020.<sup>5</sup> In addition, losses are expected to increase in the future, although the impact of climate change could be dampened if mitigation and adaptation strategies are implemented successfully.<sup>6</sup> Economic losses are spread unevenly over EU Member States. Economic loss per capita ranged from EUR 127 per capita in Malta to EUR 1,878 in Slovenia, while economic losses per square km were the lowest in Estonia (EUR 5,445) and the highest in Germany (EUR 301,005).<sup>7</sup>

Natural loss events can be subdivided into meteorological, hydrological, geophysical and climatological events. The frequency of loss events has increased over time but also varies considerably from year to year, demonstrating the whimsical nature of extreme weather events. Meteorological events like storms occur most often, followed by hydrological events

---

<sup>5</sup> See European Environment Agency (2022) <[https://www.eea.europa.eu/data-and-maps/daviz/economic-damage-caused-by-weather#tab-chart\\_2](https://www.eea.europa.eu/data-and-maps/daviz/economic-damage-caused-by-weather#tab-chart_2)> - RiskLayer CATDAT loss data accessed 13 July 2022. For a discussion on disaster loss databases see Sadeh Ahmadi Mazhin et al, 'Worldwide Disaster Loss and Damage Databases: A Systematic Review' (2021) 10 Journal of Education and Health Promotion, and European Environment Agency, 'Economic Losses and Fatalities from Weather- and Climate-related Events in Europe' (2022).

<sup>6</sup> The Intergovernmental Panel on Climate Change reports that the net present value of damages in 2100 for the 2°C warming scenario are projected to be USD 69 trillion (<<https://www.ipcc.ch/sr15/chapter/chapter-3/>> accessed 13 July 2022). See the research by the Joint Research Centre for an analysis of the long-term welfare effects of climate change in Europe (Frank Neher and Apollonia Miola, *The Role of Social Inequalities for the Vulnerability to Climate Related Extreme Weather Events* (2015)).

<sup>7</sup> European Environmental Agency (EEA) < <https://www.eea.europa.eu/ims/economic-losses-from-climate-related>> accessed 13 July 2022. The standard deviation is 517 for loss per capita and 87,223 for loss per km<sup>2</sup>.

like floods.<sup>8</sup> Regions<sup>9</sup> in Europe are expected to become more exposed to extreme precipitation, rising sea levels and droughts, increasing flooding risks and wildfire hazards.<sup>10</sup>

### 3. Insurance protection gap

Economic losses due to natural catastrophes are significant but remain largely uninsured. In the EU-27 only 22% of the losses in the period between 1980 and 2020 were insured, resulting in EUR 378 billion of uninsured losses. The insurance protection gap differs substantially between Member States, ranging from below 5% (Malta, Hungary, Lithuania, Romania, Cyprus, Bulgaria, Greece, Finland, Portugal, Spain, Slovakia) to around 55% (Denmark, the Netherlands ).<sup>11</sup> Given the large economic cost associated with climate change damages, governments and the insurance industry should play their part to promote preventive actions and mitigate the economic impact of climate damages for individuals and society.

### 4. The role of the government

Significant differences exist in terms of the role that governments play and the de facto support they provide.<sup>12</sup> Governments may take actions related to loss prevention and

---

<sup>8</sup> Munich RE, *NatCa SERVICE: Relevant Natural Loss Events in Europe 1980-2018* (2019).

<sup>9</sup> Weather-related events show a regional pattern. Extreme precipitation and pluvial flooding are likely to increase in all European regions except the Mediterranean, while relative sea level will rise in all European areas except the Baltic Sea. Coastal flooding is projected to increase due to more frequent and intense extreme sea weather events.

([https://www.ipcc.ch/report/ar6/wg1/downloads/factsheets/IPCC\\_AR6\\_WGI\\_Regional\\_Fact\\_Sheet\\_Europe.pdf](https://www.ipcc.ch/report/ar6/wg1/downloads/factsheets/IPCC_AR6_WGI_Regional_Fact_Sheet_Europe.pdf)> accessed 1 April 2023).

<sup>10</sup> See IPCC, 'Summary for Policymakers IPCC, 2021' in IPCC, *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* (2021).

<sup>11</sup> European Environmental Agency (EEA) < <https://www.eea.europa.eu/ims/economic-losses-from-climate-related>> accessed 13 July 2022.

<sup>12</sup> Susanna Paleari, 'Disaster Risk Insurance: A Comparison of National Schemes in the EU-28' (2019) 35 *International Journal of Disaster Risk Reduction*, 101; OECD, *Enhancing Financial Protection against Catastrophe Risks: the Role of Catastrophe Risk Insurance Programmes* (OECD Publishing 2021).

compensation, but may also introduce regulation to specify minimum insurance coverage requirements.

It is well documented in the legal literature that governments are primarily concerned with *ex-post* compensation and largely ignore *ex-ante* measures.<sup>13</sup> This focus can be explained, among other things, by policy considerations and positive (media) attention. Ex-post measures to compensate victims of climate-related incidents are welcomed by the public. The lack of attention to ex-ante measures is regrettable given that the government is well placed to encourage preventive measures. In addition, preventing climate-related damage is more efficient and fairer than compensating damages ex post. For instance, setting up a compensation fund is costly.<sup>14</sup>

In addition to the above measures, governments could aim to promote the availability and affordability of insurance, establishing solidarity mechanisms among policy holders, or stimulating risk reduction measures. Based on previous research of EU insurance schemes, some argue that it is not realistic to assume that a one-size-fit-all solution for optimal government intervention exists.<sup>15</sup> Governments should consider several trade-offs and account for possible perverse effects.

Governments can intervene through regulation (eg, by imposing compulsory catastrophe insurance coverage) or by providing ex-post (ad hoc) relief measures.<sup>16</sup> Governments that intervene in insurance markets could cause problems of moral hazard.<sup>17</sup> Households will not take on sufficient insurance if they are convinced that the government will bail them out and bear the costs of a natural disaster. Even without any form of formal governmental assistance in place, households might be convinced that governments will provide (partial)

---

<sup>13</sup> Giuseppe Dari-Mattiacci and Michael Faure, 'The Economics of Disaster Relief' *Law & Policy* (2015) 37, 180.

<sup>14</sup> Stefano Fanetti, 'Insurance Instruments for Adapting to Climate Change' in Barbara Pozzo and Valentina Jacometti (eds), *Environmental Loss and Damage in a Comparative Law Perspective* (Intersentia 2021).

<sup>15</sup> Paleari (n 12).

<sup>16</sup> More generally, OECD makes a distinction between governments taking up the role as insurer, as reinsurer, or as underwriter. See OECD, 'Catastrophic Risk and Insurance' (2005) *Policy Issues in Insurance*.

<sup>17</sup> George L Priest, 'The Government, the Market, and the Problem of Catastrophic Loss' (1996) 12 *Journal of Risk and Uncertainty* 219.

compensation in case of a large-scale devastation.<sup>18</sup> Especially in case of low levels of insurance penetration, governments might be under great pressure to intervene.

Compulsory catastrophe insurance, which is often based on non-risk-based premiums, is associated with moral hazard issues because it does not segregate the insured in appropriate risk pools.<sup>19</sup> At the same time, this equal treatment of policy holders introduces solidarity across policyholders and increases the affordability for those residing in high-risk areas.

Voluntary private catastrophe insurance applies risk-based premiums, and other mechanisms like deductibles, co-insurance, and exclusions of certain risks. This limits moral hazard and stimulates households to take preventive measures but can lead to adverse selection.

Governmental action will affect how insurers and households act. For instance, governments can act as reinsurer of last resort, providing reinsurance for extreme risks while primary (re-) insurers provide coverage for lower risk levels.<sup>20</sup> Governmental support schemes will affect the demand for insurance. According to the charity hazard, uptake will be lower, the higher the expected ex-post compensation by governments, although some researchers conclude that there is no direct link between the design of ex-post government compensation and insurance penetration rates.<sup>21</sup> Households might also disregard preventive measures if they are convinced that governments will take measures that act as a substitute.

## **5. The role of insurers**

Insurers have a multifaceted role with respect to climate risks. Building on their experience and expertise, they could play an essential role in raising public awareness and encouraging preventive measures related to climate change.<sup>22</sup> In this article, however, we will focus on the

---

<sup>18</sup> The expected compensation for households will remain uncertain in such cases, while for governments this leads to unanticipated drains on government budgets.

<sup>19</sup> OECD (n 19).

<sup>20</sup> For a wider discussion, see Véronique Bruggeman, Michael Faure and Tobias Held, 'Insurance against Catastrophe: Government Stimulation of Insurance Markets for Catastrophic Events' (2012) 23 *Duke Environmental Law & Policy Forum* 185.

<sup>21</sup> Paleari (n 12).

<sup>22</sup> AnnaTeresa Memola, 'Environmental Liability, Catastrophic Risk Mitigation and Sustainability' in Barbara Pozzo and Valentina Jacometti (eds), *Environmental Loss and Damage in a Comparative Law Perspective* (Intersentia 2021).

impact of climate change on several types of insurance contracts and the reimbursing role of insurers.

The impact of climate risks on the insurance market is considerable because they affect several types of insurance products. First, property insurance should be mentioned because buildings are susceptible to the effects of climate change. The extent to which buildings are exposed depends on their location and the quality of the construction materials.<sup>23</sup> Machinery, equipment, windmills, or for instance agriculture companies are exposed too.

Climate change also led to new types of liability. This has increased the demand for liability insurance and adjustments to existing liability insurance practices. As climate change increasingly impacts public spaces (for example by damaging dikes and roads), more attention is paid to the duty of care for governments and the precautionary principle.

Companies must also behave carefully to avoid climate damage by taking sufficient preventive measures, complying with environmental standards, fulfilling duties, etc.<sup>24</sup>

Life insurance is also affected by climate change.<sup>25</sup> More people suffer from climate-related diseases (eg, skin cancer) and mortality rates increase because of global warming and heatwaves.<sup>26</sup> The World Health Association estimates that in the period between 2030 and 2050, climate change will cause about 250,000 additional deaths per year due to malnutrition, malaria, diarrhea and heat stress.<sup>27</sup> Evidently, this has implications for life and hospitalisation insurance policies.

---

<sup>23</sup> Fanetti (n 14).

<sup>24</sup> Fontaine (n 4).

<sup>25</sup> Gilles Benoist, 'Climate Change Impacts on Personal Insurance' (2007) 23 *The Geneva Papers* 16.

<sup>26</sup> See *The Lancet Regional Health – Europe*, 'Preparing for a Hotter World' (2022) 19 *The Lancet Regional Health - Europe*, 100484, which mentions that in July 2022, heatwaves swept much of Europe with temperatures soaring to extreme and record highs of 46°C in Spain, 47°C in Portugal, and 40°C in London. In Spain and Portugal, 1,700 deaths have been attributed to the extremely high temperatures. The heatwave was accompanied by deadly wildfires across the continent, which resulted in thousands of people having to evacuate parts of France, Spain, Portugal, Greece, and Croatia.

<sup>27</sup> <<https://www.who.int/news-room/fact-sheets/detail/climate-change-and-health>> accessed 1 February 2023.

## 6. Demand for natural catastrophe insurance

Households decide to purchase a natural disaster insurance based on their risk assessment, the product features, the price and affordability of insurance and the probability that the government might bail them out after a natural catastrophe has taken place.

The households' *perception of climate change* affects their willingness to buy catastrophe risk insurance.<sup>28</sup> A recent survey<sup>29</sup> shows that Europeans consider climate change to be the single most important problem in the world. Perceptions vary considerably between countries, and within countries based on the socio-economic characteristics of citizens. Climate change is, however, often perceived as a distant problem. Individuals tend to underestimate the magnitude of losses caused by natural disasters and the probability that such events would affect them personally.<sup>30</sup> This behaviour is strengthened by the availability bias or the behavioural tendency of judging the likelihood of events based on how salient they are.<sup>31</sup> For instance, the demand for insurance increases after a large-scale disaster has taken place, but the effect is only short-lived and does not result in a permanent shift in insurance uptake.<sup>32</sup> The effect on risk perception is even stronger if the person has incurred personal damage.<sup>33</sup> The discussion above helps to explain why the households' demand for catastrophe insurance remains low despite the perception that climate change is problematic.

---

<sup>28</sup> See eg, Robert E O'Connor, Richard J Bard and Ann Fisher, 'Risk Perceptions, General Environmental Beliefs, and Willingness to Address Climate Change' (1999) 19 *Risk Analysis* 461; Walter Gillis Peacock, Samuel David Brody and Wes Highfield, 'Hurricane Risk Perceptions among Florida's Single Family Homeowners' (2005) 73 *Landscape and Urban Planning* 120.

<sup>29</sup> European Commission, *Climate Change* (Special Eurobarometer 513, 2021).

<sup>30</sup> Päivi Lujala, Haakon Lein and Jan Ketil Rød, 'Climate Change, Natural Hazards, and Risk Perception: the Role of Proximity and Personal Experience' (2015) 20 *Local Environment* 489, and Yang Liu, Charlene Xie and Shengxiang She, 'Perception of Delayed Environmental Risks: Beyond Time Discounting' (2014) 23 *Disaster Prevention and Management* 112.

<sup>31</sup> Amos Tversky and Daniel Kahneman, 'Judgment under Uncertainty: Heuristics and Biases: Biases in Judgments Reveal Some Heuristics of Thinking under Uncertainty' (1974) 185 *Science* 1124.

<sup>32</sup> Ajita Atreya, Susana Ferreira and Erwann Michel-Kerjan, 'What Drives Households to Buy Flood Insurance? New Evidence from Georgia' (2015) 117 *Ecological Economics* 153.

<sup>33</sup> Manuel Frondel, Michael Simora and Stephan Sommer, 'Risk Perception of Climate Change: Empirical Evidence for Germany' (2017) 137 *Ecological Economics* 173.



In addition, the general attitude towards loss will affect the households' risk assessment and insurance demand. A country's risk culture influences the households' level of loss aversion and demand for insurance.<sup>34</sup> For instance, the demand for non-life insurance is found to be higher in countries that score high on uncertainty avoidance and individualism.<sup>35</sup> Apart from the prevailing risk culture, idiosyncratic factors<sup>36</sup> will help to explain differences between individuals within a country.

The affordability of climate insurance also directly affects the households' willingness to buy climate insurance. The level of household income will largely determine whether insurance contracts are affordable to all households or only to certain segments of the population.<sup>37</sup>

In addition, the premiums, contract specification (deductibles, exclusions, ...), and product appeal determine whether insurance is affordable and attractive to buy.<sup>38</sup> Risk-based premiums limit moral hazard, but high premiums may discourage people in high-risk areas to take insurance. Since more deprived people often live in such areas, it adds to the problem of

---

<sup>34</sup> Mei Wang, Marc Oliver Rieger and Thorsten Hens, 'The Impact of Culture on Loss Aversion' (2017) 30 *Journal of Behavioral Decision Making* 270.

<sup>35</sup> Sojung Carol Park and Jean Lemaire, 'The Impact of Culture on the Demand for Non-life Insurance' (2012) 42 *ASTIN Bulletin: The Journal of the IAA* 501.

<sup>36</sup> Individual risk-taking behaviour is determined by psychologic, genetic, and cognitive factors. See eg, Rüdiger M Trimpop (ed), *The Psychology of Risk Taking Behavior* (Elsevier 1994); David Cesarini and others, 'Genetic Variation in Financial Decision-making' (2010) 65 *The Journal of Finance* 1725; Camelia M Kuhnen and Joan Y Chiao, 'Genetic Determinants of Financial Risk Taking' (2009) 4 *PLOS ONE* e4362; or Thomas Dohmen and others, 'On the Relationship between Cognitive Ability and Risk Preference' (2018) 32 *Journal of Economic Perspectives* 115.

<sup>37</sup> See also Hoon Park, Stephen F Borde and Yoon Choi, 'Determinants of Insurance Pervasiveness: A Cross-national Analysis' (2002) 11 *International Business Review* 79.

<sup>38</sup> Kai-Uwe Schanz, *Underinsurance in Mature Economies: Reasons and Remedies* (The Geneva Association 2019); Thomas Holzheu and Ginger Turner, 'The Natural Catastrophe Protection Gap: Measurement, Root Causes and Ways of Addressing Underinsurance for Extreme Events' (2018) 43 *The Geneva Papers on Risk and Insurance-Issues and Practice* 37.

providing affordable climate insurance to disadvantaged households.<sup>39</sup> Compulsory schemes with flat rates lower the cost of insurance for inhabitants of high-risk areas, but these schemes are prone to moral hazard.<sup>40</sup>

Research shows that households are sometimes reluctant to pay for insurance despite the risk they face. For instance, only about half of homeowners in areas with high flood risk are willing to pay a premium that matches the expected benefit for insurance.<sup>41</sup> In such a context, insurers may shy away from offering climate risk insurance contracts. The incorrect risk-reward assessment of households makes it difficult for insurers to offer contracts at prices that are sustainable over time. Certain factors, including reliable historical risk data, the availability of reinsurance, market-based hedging opportunities like catastrophe bonds, or a government backstop could however stimulate insurers to offer contracts for high-risk low-probability events.<sup>42</sup>

Despite their importance, price and affordability are not the only factors that explain insurance coverage. The insurance uptake only responds partially to price decreases.<sup>43</sup> In addition, households may prefer to invest in preventive measures as an alternative to insurance, or indeed, may count on governments to provide post-disaster assistance.

---

<sup>39</sup> Swenja Surminski and Paul Hudson, ‘Investigating the Risk Reduction Potential of Disaster Insurance across Europe’ (2017) 42 *The Geneva Papers on Risk and Insurance - Issues and Practice* 247; Max Tesselaar and others, ‘Regional Inequalities in Flood Insurance Affordability and Uptake under Climate Change’ (2020) 12 *Sustainability* 8734.

<sup>40</sup> Paul K Freeman and Kathryn Scott, ‘Comparative Analysis of Large Scale Catastrophe Compensation Schemes’ (2005) *Policy Issues in Insurance* 187.

<sup>41</sup> Katherine Wagner, ‘Adaptation and Adverse Selection in Markets for Natural Disaster Insurance’ (2022) 14 *American Economic Journal: Economic Policy* 380.

<sup>42</sup> Andrew Dlugolecki and Erik Hoekstra, ‘The Role of the Private Market in Catastrophe Insurance’ (2006) 6 *Climate Policy* 648 and Mary Kelly, Steven G Bowen and R Glenn McGillivray, ‘The Earthquake Insurance Protection Gap: Tale of Two Countries’ (2020) 20 *Journal of Insurance Regulation* 1.

<sup>43</sup> For instance, Tom LaTourrette and others, *Earthquake Insurance and Disaster Assistance: The Effect of Catastrophe Obligation Guarantees on Federal Disaster-Assistance Expenditures in California* (RAND Technical Report, 2010) demonstrated that the number of households purchasing earthquake insurance in California would only increase with about 5% following a 10% decrease in price.

## 7. Suggestions for further research

Previous research often focused on specific aspects like the uptake of certain types of natural catastrophe insurance (eg, earthquake or flood insurance). Research was also often limited to analysing the aggregate protection gap or analysing the developments in a single country.

Below we formulate several suggestions for further research that would help to provide a more comprehensive and profound understanding of the insurance protection gap.

*First*, while the development of the aggregate insurance protection gap over time has been documented, more research is needed to understand the dynamics. For instance, the societal benefits of closing the insurance protection gap depend on who is causing it. If highly vulnerable or less wealthy individuals enter into natural catastrophe insurance contracts, social benefits will be higher compared to a similar reduction in the insurance gap that is driven by wealthy households. Segmented analysis (for instance based on quantile regression analysis) on the insurance protection gap over households' income distribution would be welcome. In addition, the relationship between the level of the insurance protection gap and the time to recovery is unclear: Does the time to recovery decrease linearly when the insurance protection gap shrinks?

*Second*, current research on the uptake of specific types of climate change insurance could be complemented by research that follows a more holistic approach and considers a household's overall insurance portfolio. Which other insurance products do households that purchase insurance against climate catastrophes hold? How does the decision to take one kind of insurance affect (future) purchase decisions of other insurance products? These kinds of trade-offs and interlinkages are currently not well-documented.

*Third*, micro-economic and legal analysis of insurance policy conditions is missing. This kind of analysis is crucial to understand how the household demand for insurance is affected by contract specifications like exclusions, deductibles, and compensation limits. Experiments could help to investigate the extent to which individuals consider such factors when making insurance decisions, while surveys could help to unravel whether differences exist over population cohorts. Do, for instance, financial (il)literate persons or persons with a high/low social-economic status (SES) behave differently? From a legal perspective, it is currently unclear how cross-country differences in contract specifications are relevant to explain differences in insurance uptake across countries. Finally, more academic legal research on how insurance firms might have adopted their contract specifications over time in view of the increased climate risk would be welcome. Admittedly, such research is difficult to conduct in

the absence of insurance contract databases but would be valuable to better understand how the supply of climate change insurance could evolve in the future.

*Fourth*, research on the influence of behavioural factors could be further explored. Such analysis might shed light on the role of cultural differences across countries. In addition, the influence of societal trends on behavioural biases is largely overlooked. For instance, has the availability bias decreased in view of the increased media attention for climate change?

*Finally*, several suggestions are made in the literature to increase the affordability of insurance. Yet, empirical research that tests these suggestions is largely lacking and would need to be further developed to assess whether some of these suggestions are sufficiently robust to be put forward as policy recommendations.

## **8. Conclusion**

The insurance protection gap for natural catastrophes in the EU poses significant challenges for households, communities, and governments because it raises the proportion of the population that is vulnerable to climate risk catastrophes. It also affects the community resilience and increases the time to recover after a natural disaster has taken place. Closing the insurance protection gap has gained in importance given that many people remain underinsured while extreme weather conditions have increased in intensity over time and are expected to occur more often due to climate change.

Insurance could play an important role in encouraging preventive measures related to climate change and managing the impact of climate change on various types of insurance contracts. Governments may take actions related to loss prevention and compensation, or may introduce regulation to specify minimum insurance coverage requirements.

Understanding the drivers of the insurance protection gap, including the role of governments and insurers, and the factors that influence the demand for natural catastrophe insurance is critical and requires further research. It seems promising that future research will examine the dynamics of the insurance protection gap, assess contract specifications and behavioural factors, analyse linkages with other insurance products, and explore measures to improve affordability. Closing the insurance protection gap is essential to building resilience and mitigating the economic impacts of climate-related disasters.