

EU-US INSURANCE DIALOGUE PROJECT
CLIMATE RISK AND RESILIENCE WORKSTREAM
June 2023 Summary Report

I. Introduction and Background

The EU-US Insurance Dialogue Project established the EU-US Climate Risk and Resilience Workstream to further the understanding of insurance laws, regulations, supervisory practices and initiatives on climate risk and resilience across the EU and the US. The EU and US agreed that this workstream would focus on the following areas: the regulatory treatment of: (1) innovative technology to cover climate-related risks; (2) pre-disaster mitigation and adaptation efforts; and (3) the modelling and data challenges for managing natural catastrophes. The workstream met five times during 2022 and covered all areas of focus.

Conscious of the fact that climate risk and resilience would remain a pressing matter for society and regulators in the years to come, the workstream anticipated that future exchanges would continue to be relevant. While making progress in furthering a common understanding on the areas listed, the workstream also aimed to identify areas of common ground for potential future exchanges.

II. Summary of Discussed Topics

A. The role of financial innovation in contributing to improve insurance coverage for climate change related risks: the case of parametric insurance coverage.

To address the insurance protection gap for natural catastrophes and climate related risks, pursuing options to increase insurance penetration can contribute to reducing climate change related losses.

The workstream shared the common understanding that parametric insurance solutions can offer an opportunity for broader coverage and immediacy of pay-outs. As such, they can provide a complementary solution to contribute to post-event resilience. On the other hand, there is an important risk of losses not being covered where the event trigger for coverage has not been met. While traditional indemnity insurance pays out a claim based on the value of the loss suffered, parametric insurance policies pay out only upon the occurrence of specified events. The most obvious downside to a parametric insurance policy is basis risk. The economic losses of the insured could differ from the amount of coverage, or the insured could have losses without the parameter being triggered. The regulatory treatment of these products may differ across jurisdictions; depending on whether there is a legal requirement for an insurable interest (i.e., some element of indemnity/loss evidenced) the product may qualify as an insurance product or, for example, a derivative.

The workstream noted that the difficulty in defining objective relevant parameters for triggering coverage is among the key challenges of parametric coverage. Improved modelling, the sharing of knowledge on loss experience, and effective loss prevention measures between public and private actors could contribute to aligning incentives for risk prevention measures for community-based risk sharing solutions.

The workstream exchanged views on examples of parametric solutions addressing climate change related risks, ranging from public-private cooperation aiming at filling gaps in insurance availability for large systemic risks (e.g., affecting agriculture or utilities) to smart insurance contracts aiming at automatically refunding policyholders for small amounts, for example as part of travel insurance.

Workstream members discussed initiatives for a parametric storm insurance policy by an energy provider offering coverage for transmission and distribution infrastructure damage caused by severe storms (US, Connecticut)¹ and a public-private initiative of the state and academia to seek parametric insurance coverage for flood-related damage at the community level (US, New York)². Further examples included parametric crop insurance coverage for damage due to drought or excessive rainfall, facilitated by a regional government in partnership with an insurer (EU, Belgium)³ or smart policies linked to the travel sector, covering the risk of bad weather, flight delays and luggage de-routing (EU, Italy)⁴.

Considering the COVID-19 pandemic, the workstream exchanged views on the insurance coverage gap for business interruption losses. Members were of the common view that parametric solutions for such pandemic risk coverage face important challenges when it comes to defining relevant and objective parametric triggers for business interruption. Triggers based on government measures are potentially fraught with moral hazard or carry important basis risk. The lack of modelling of socio-economic impacts of the pandemic and its secondary effects limits the effectiveness of parametric solutions⁵.

B. Features of product design and underwriting that can incentivize climate change adaptation/mitigation.

The insurance protection gap for natural catastrophes is likely to grow due to the expected increase in climate-related physical risk exposure over the next decades following increased frequency and severity of natural catastrophes.

The workstream shared a common understanding that adaptation/mitigation to climate change is needed to reduce climate-related insurance losses.⁶ The workstream noted that climate adaptation/mitigation through insurance solutions can happen through structural measures and services implemented before a loss event to reduce the policyholder's physical risk exposure.

¹ Steve Evans, "Arbol launches climate parametric insurance captive in Connecticut," Artemis (5 August 2022), <https://www.artemis.bm/news/arbollaunches-climate-parametric-insurance-captive-in-connecticut/>.

² New York City Mayor's Office of Climate & Environmental Justice, "MOCEJ and CNYCN Launch Innovative Pilot to Address Flooding," news release (March 6, 2023), <https://climate.cityofnewyork.us/mocej-and-cnycn-launch-innovative-pilot-to-address-flooding/>.

³ See Fédération Wallonne de L'Agriculture, [Les produits d'assurance paramétrique](https://www.fwa.be/cultures/les-produits-dassurance-parametrique) (26 March 2020), <https://www.fwa.be/cultures/les-produits-dassurance-parametrique>.

⁴ NetworkDigital360, "[Parametric policies: here is the innovative blockchain testing](https://www.insuranceup.it/en/business/parametric-policies-here-is-the-innovative-blockchain-testing/)" (18 July 2019), <https://www.insuranceup.it/en/business/parametric-policies-here-is-the-innovative-blockchain-testing/>.

⁵ EIOPA, EIOPA Staff Paper on Measures to Improve the Insurability of Business Interruption Risk in Light of Pandemics, (12 February 2021), https://www.eiopa.europa.eu/publications/eiopa-staff-paper-measures-improve-insurability-business-interruption-risk-light-pandemics_en.

⁶ To note: US workstream members use the term **mitigation** for this loss reduction, whereas in the EU context, mitigation aims at reducing the probability of the risk materialising, e.g., applied to climate risk, through reduction of GHG emissions in the first place.

Innovative product design and a risk-based prudential treatment of insurance underwriting that incentivizes climate change adaptation may be an opportunity to seek to reduce losses and ensure future affordability and availability of insurance for climate change related risks.

To illustrate these points, the workstream discussed the challenges associated with short-term non-life contracts and annual re-pricing in the context of climate change. Higher physical risk exposures lead to higher risk-based premium levels, with a negative impact on long-term affordability and availability of insurance coverage against climate-related hazards.⁷ The reduction in insurance availability would increase the already existing natural catastrophe insurance protection gap, which EIOPA is monitoring through its dashboard on insurance protection gap for natural catastrophes.⁸ In this context, EIOPA explained its analysis of pricing and underwriting in an ongoing pilot exercise on impact underwriting.⁹

A further step is being taken by the California Department of Insurance, whose Climate Smart Insurance Products database¹⁰ aims to increase consumers' awareness of available products and to inspire insurers to innovate. Products listed include climate adaptation measures to incentivize consumers to "build back better", as well as requirements for greenhouse gas emission mitigation measures, such as fuel efficiency or green energy certification. California recently adopted regulations that require insurance companies to factor consumer and business wildfire safety actions into their pricing of residential and commercial coverage.¹¹ The regulations also provide consumers with transparency about the wildfire risk score that insurance companies assign to properties.¹²

With a focus on risks prone to protection gaps and the ensuing need for prevention measures and increased risk awareness, workstream members discussed the risk of wildfire, extreme heat, and flooding. Members referred to the recently published UN wildfire report¹³, which discusses the mutually exacerbating effect of wildfires and climate change and calls on governments to focus on prevention and preparedness. New legislation in California introduced a heat wave ranking,¹⁴ to increase awareness on the risks of heat illness and death and incentivize appropriate prevention measures. The Federal Emergency Management Agency

⁷ EIOPA, Report on non-life underwriting and pricing in light of climate change (8 July 2021), https://www.eiopa.europa.eu/publications/report-non-life-underwriting-and-pricing-light-climate-change_en.

⁸ EIOPA, Dashboard on insurance protection gap for natural catastrophes (updated in December 2022), https://www.eiopa.europa.eu/tools-and-data/dashboard-insurance-protection-gap-natural-catastrophes_en.

⁹ EIOPA, Impact underwriting: Report on the Implementation of Climate-Related Adaptation Measures in Non-Life Underwriting Practices (6 February 2023), https://www.eiopa.europa.eu/publications/impact-underwriting-report-implementation-climate-related-adaptation-measures-non-life-underwriting_en.

¹⁰ California Department of Insurance, Climate Smart Products Search, https://interactive.web.insurance.ca.gov/apex_extprd/f?p=142:1.

¹¹ California Department of Insurance, "Commissioner Lara enforces nation's first wildfire safety regulation to help drive down cost of insurance," press release (October 17, 2022), <https://www.insurance.ca.gov/0400-news/0100-press-releases/2022/release076-2022.cfm> (California Insurance Department, "Commissioner Lara enforces nation's first wildfire safety regulation.").

¹² Title 10, California Code of Regulations, Section 2644.9.

¹³ UN Environmental Programme, "Number of wildfires to rise by 50% by 2100 and governments are not prepared, experts warn," press release (23 February 2022), <https://www.unep.org/news-and-stories/press-release/number-wildfires-rise-50-2100-and-governments-are-not-prepared>.

¹⁴ California Department of Insurance, "First-in-nation legislation for early warning and ranking of extreme heat waves introduced in California Assembly," press release (February 16, 2022), <http://www.insurance.ca.gov/0400-news/0100-press-releases/2022/release018-2022.cfm>.

established a Community Rating System to incentivize community-level flood mitigation through premium discounts on flood policies purchased through the National Flood Insurance Program (NFIP). Other initiatives for risk assessment and alignment for risk prevention measures across public and private initiatives include the Floodlabel tool,¹⁵ which allows for flood risk assessment by homeowners, and the Alabama wind credit programme for fortified homes.¹⁶

At the federal level in the United States, FIO, as a member of the Mitigation Framework Leadership Group (MitFLG), supported MitFLG's implementation of its National Mitigation Investment Strategy.¹⁷ In 2022, MitFLG's work focused on assisting the implementation of the Infrastructure Investment and Jobs Act (IIJA) (also known as the Bipartisan Infrastructure Act), which was enacted in 2021 and provides \$1.2 trillion to federal agencies in support of wide-ranging new and improved infrastructure.¹⁸ The IIJA includes funding for federal infrastructure resilience programs, such as the Department of Transportation's Promoting Resilient Operations for Transformative, Efficient, and Cost-saving Transportation Program, the Federal Emergency Management Agency's Building Resilient Infrastructure and Communities Program, and the Department of Energy's Preventing Outages and Enhancing the Resilience of the Electric Grid Program, as well as billions of dollars allocated to states for roads and highways, bridges, ports, airports, and water systems.¹⁹ MitFLG member agencies worked together to prepare for the funding under that IIJA to ensure that new and existing programs complemented each other in support of whole community resilience.

C. Pre-disaster mitigation and adaptation: public-private measures.

Following from the discussions on product design and the incentives for climate risk mitigation/adaptation to improve the loss experience via underwriting standards, members of the workstream engaged in further discussion on public measures such as standardised land use and building codes to reduce losses, which can then in turn be reflected in lower insurance premiums.

The members of the workstream noted that insurance supervisors can play a role in pre-disaster risk management in various ways, including by contributing to improve risk awareness of consumers, ensuring access to and take-up of prevention measures and relevant insurance solutions, or incentivizing insurers to reflect loss reducing measures in their price-setting. Stakeholder cooperation is essential in realizing the benefits to the industry, supervisors, and the general public of reducing future loss. Sharing of data is an important element of such

¹⁵ Utrecht University, Floodlabel: A smart tool for governance towards flood-resilient cities, <https://www.uu.nl/en/research/human-geography-and-planning/floodlabel-a-smart-tool-for-governance-towards-flood-resilient-cities>.

¹⁶ Strengthen Alabama Homes, <https://strengthenalabamahomes.com/>.

¹⁷ MitFLG provides a coordinating structure for mitigation across the federal government and with partners in mitigation nationally. MitFLG is composed of federal and state, local, tribal, and territorial public sector representatives.

¹⁸ FEMA, Mitigation Framework Leadership Group 2022 Year in Review, 1 (January 2023), https://www.fema.gov/sites/default/files/documents/fema_mitflg-year-review_2022.pdf (MitFLG 2022 Year in Review); Biden Administration Releases Bipartisan Infrastructure Law Guidebook for State, Local, Tribal and Territorial Governments, The White House (January 31, 2022), <https://www.whitehouse.gov/briefing-room/statements-releases/2022/01/31/biden-administration-releases-bipartisan-infrastructure-law-guidebook-for-state-local-tribal-and-territorial-governments/>.

¹⁹ Infrastructure Investment and Jobs Act, Public Law 117-58 (November 15, 2021), <https://www.congress.gov/bill/117th-congress/house-bill/3684/text>.

multi-agency cooperation. EIOPA published jointly with the European Central Bank a discussion paper outlining public and private policy options to tackle the insurance natural catastrophe protection gap. The options are aimed at boosting the uptake and efficiency of climate catastrophe insurance while creating incentives to adapt to and reduce climate risks.²⁰

The US workstream members presented the objectives of the NAIC Climate and Resiliency Task Force's workstream on pre-disaster mitigation. EIOPA introduced its framework for shared resilience solutions. To improve pre-disaster risk mitigation, shared resilience solutions would build on access to data and modelling of risks, incentives for mitigation and adaptation, and improved risk assessment and coordinated action on prevention measures as a prerequisite for public-private risk transfers.

Examples were shared of various US public-private initiatives to improve awareness of exposures to climate-related risks and take up of insurance or incentives for mitigation and adaptation. The Maryland Insurance Administration's (MIA) Consumer Education and Advocacy Unit coordinates educational campaigns to promote Marylanders' awareness of exposures to climate-related risks and advocates for the uptake of insurance. US state insurance departments' regulatory assessment of insurance rates also consider their adequacy, fairness, and whether they are excessive. This can include the reflection in the pricing of loss reductions generated by prevention measures. The Building Code Effectiveness Grading Schedule of the Insurance Services Office, Inc., a subsidiary of Verisk Analytics, assesses the building codes in effect in a particular community as well as how the community enforces its building codes. Many insurers use the grading for underwriting and to issue premium credits related to buildings constructed under certain levels of building codes. In addition, in June 2022, the White House and FEMA announced the National Initiative to Advance Building Codes (NIABC) as a whole-of-government approach to support community resilience through the adoption of modern building codes.²¹ The MitFLG Implementation Team for the NIABC created a new interagency Building Codes Task Force, which, among other things, continued the Federal Landscape Analysis process to collect data from federal agencies on gaps and opportunities that may impact the adoption, administration, or enforcement of modern building codes and oversaw the creation of agency building codes implementation plans.

Examples of European public-private initiatives included Ireland's government funded programme, Major Flood Relief Schemes, as well as France's public-private natural disaster compensation scheme, a financing mechanism for natural catastrophe prevention measures (Fonds Barnier), and new legislation on crop insurance. In addition, Spain has a public insurance entity to cover extraordinary risks (Consorcio the Compensación de Seguros) and a Pool for Environmental Risks. Belgium's disaster funds (Fonds de Calamités) and regional initiatives aim to raise awareness on risk of drought and prevention measures.

Finally, assessing the availability and take-up of coverage is part of pre-disaster risk mitigation. EIOPA highlighted the risk of increasing exclusions of coverage, product complexity and unclear policy wording, raising the attention for product oversight and governance. Therefore,

²⁰ See, EIOPA, EIOPA and ECB call for increased uptake of climate catastrophe insurance (24 April 2023), https://www.eiopa.europa.eu/eiopa-and-ecb-call-increased-uptake-climate-catastrophe-insurance-2023-04-24_en.

²¹ MitFLG 2022 Year in Review, 2.

EIOPA issued a supervisory statement on exclusions²² and is conducting studies related to exclusions from insurance for natural catastrophes, identifying risks to affordability and availability (protection gaps), as well as expectation gaps from policyholders on the extent of coverage.

D. Supervisory approaches to natural catastrophe (nat cat) models and (open source) access to data and models.

The rise of nat cat risks is an important impetus for improving the modelling of these risks and integrating mitigation factors into the models. Workstream members noted that forward-looking approaches in models can complement the traditional modelling approaches. However, access to relevant data is an important challenge to measuring and modelling nat cat risks, and there is a need for geospatial data on exposures, as well as data on insured and economic losses. The availability of nat cat models and data is an important element to limit/reduce protection gaps.

Workstream members shared a common understanding that supervisors can contribute to improving risk assessment (including through the collection and sharing of data) and risk awareness (e.g., through training) by bringing together supervisors, public entities and modelers. Supervisors can promote model development for nascent risks, access to open-source data or models as well as set standards, building on expertise from nat cat modelers, among others. For example, EIOPA has built an interface for an open-source modelling tool to support stakeholders in modelling catastrophe risks.²³ Workstream members agreed to share further information on their respective data collection initiatives and templates for collecting/sharing information on natural catastrophe modelling.

The NAIC presented on its Catastrophe Modeling Center of Excellence (CoE). The purpose of the CoE is to provide state insurance supervisors with the necessary technical expertise, tools, and information to effectively regulate their markets. Impetus for the creation of the CoE, among others, is the fact that nat cat models are used by the industry for capital reserve calculations, underwriting and ratemaking and therefore, supervisors should have resources and training about how they are developed. The lack of commercial models for the increasing risk of wildfire contributed to the need to enhance wildfire model development and improve the collection of loss data. In addition to nat cat risk, the scope of the CoE's activities also include man-made risks like cyber risk and terrorism risk.

Embedded in policy and research activities, the CoE is assisting states to use catastrophe model outputs to assess their risk from natural hazards and understand how that may impact their insurance markets. The CoE is collecting model documentation to be shared in a confidential and secure manner with supervisors and creating executive summaries on the various models. The CoE is also developing training on catastrophe models and will offer courses to supervisors. The CoE brings together modellers, supervisors and researchers, such as the Insurance Institute for Building and Home Safety (IBHS), which benefits the discussion on the development of models, and the integration of mitigation measures in the models. Finally, resilience is also part of the initiatives supported by the CoE. The CoE will provide support to

²² EIOPA, Supervisory statement on exclusions related to risks arising from systemic events (22 September 2022), https://www.eiopa.europa.eu/publications/supervisory-statement-exclusions-insurance-products-related-risks-arising-systemic-events_en.

²³ The application is publicly available on EIOPA's website: [Open-source tools for the modelling and management of climate change risks \(europa.eu\)](https://www.eiopa.europa.eu/publications/open-source-tools-for-the-modelling-and-management-of-climate-change-risks_eu)

the states to work with community partners to address health impacts of disasters, for example funding medical devices for underserved community members to continue functioning after disasters or addressing mold and health degradation after flooding events. Further, the CoE will undertake additional consumer outreach events in 2023 allowing supervisors to share resources and experiences.

EIOPA's initiatives on nat cat modelling include initiating the first of a series of regular reassessments of the nat cat standard formula model, with the support of EIOPA's Cat Risk Expert Network, composed of (re)insurers, modelers, and brokers. EIOPA's Internal Model Unit has been collecting data on nat cat models which it is currently reviewing. Workstream members discussed the backward nature of models and the importance of forward-looking reviews. Workstream members also discussed whether the reassessment of the standard formula can reflect a forward-looking view. Certain models start developing forward-looking projections.

EIOPA publishes its nat cat insurance protection gap dashboard,²⁴ which assesses the protection gaps across the EU Member States; only one fourth of losses caused by natural catastrophes that are part of the dashboard, are insured today. Conclusions as to whether the gap is widening, need to be assessed cautiously at the EU Member State level. The impact of public-private partnerships is not always reflected in the EU Member States' insured loss data, and the picture may also be different across regions or communities. Access to relevant and comparable data remains a constant challenge.

The absence of commercial models for certain risks, such as for wildfire, prompted EIOPA to start looking at open-source model initiatives. EIOPA is engaging with academics to support access to open-source data via a practical user interface to allow supervisors and stakeholders to improve their risk assessment. The value of the data is increasing, as is its usefulness for various purposes. EIOPA's aim is to improve the access to data on insured loss data for risk assessment more generally (e.g., for the purpose of buying property or community developments).

III. Conclusion and Next Steps

EU and US workstream members agree that the insurance industry as well as insurance regulatory and supervisory initiatives are well positioned to contribute to reducing losses from climate change. This can be achieved by increasing risk awareness and risk prevention, supporting the take-up of insurance, but also through improved modelling and sharing of information across public and private entities to improve risk assessments of (emerging) perils.

Going forward, exchanges on approaches and practical examples for promoting climate resilience through regulatory and supervisory measures can be deepened.

The purpose and operational approach for such deepened involvement could be to aim for establishing good regulatory or supervisory practices, based on deep dive case studies. This would involve sharing more in-depth knowledge and information, based on practical expert cooperation, on a selected number of areas, to potentially support common approaches where appropriate to address global risks, especially where products are sold world-wide and global reinsurance coverage applies. As losses to properties and businesses arising from natural

²⁴ EIOPA, Dashboard on insurance protection gap for natural catastrophes, https://www.eiopa.europa.eu/tools-and-data/dashboard-insurance-protection-gap-natural-catastrophes_en.

catastrophes are growing due to climate change, reinsurance capacity is also under pressure. Going forward, to assess the resilience of the insurance industry and society to climate-related events, reinsurance natural catastrophe capacity should also be addressed.

Based on the discussions held so far, focusing on the role of insurers as risk managers for society, and based on the depth of the discussion during 2022, two selected areas for a further deep dive starting in 2023 could be:

- **Underwriting to promote climate resilience.** Understand prudential or conduct supervisory and regulatory measures to support the integration of prevention measures through product design and product oversight. Include analysis on issues relating to availability of reinsurance coverage. Discuss regulatory and industry-based good practices.
- **Catastrophe risk modelling and access to data.** Discuss good practices for improving transparency, knowledge on natural catastrophes and understanding of natural catastrophe models by insurance supervisors. Discuss good practices of open-source data collection initiatives and natural catastrophe modelling for selected perils. EU and US workstream members agreed to share further information on their respective data collection initiatives and templates for collecting and sharing information on natural catastrophe modelling.