



EIOPA REGULAR USE
EIOPA-19/199

Workshop on Sustainable Finance

Date: 11 June 2019

Agenda

Venue: EIOPA, Westhafenplatz 1, 60327 Frankfurt am Main

Meeting Room: 28th floor, MR 001

Timeline: 12:00 – 18:00

	12:00-13:00	Lunch
1.	13:00-13:15	Welcome by EIOPA
2.	13:15-15:00	EIOPA Opinion on sustainability within Solvency II <i>EIOPA presents the main elements of its draft Opinion and gathers preliminary views on the topics under consultation.</i>
	15:00-15:15	Break
3.	15:15-16:30	Call for Advice – evidence of potential undue short-termism pressure from the financial markets on corporations <i>EIOPA Introduces the topic and seeks views from stakeholders to develop its advice.</i>
4.	16:30-17:45	NAT CAT Protection Gap <i>EIOPA seeks to engage with stakeholders on the risks of a widening NAT CAT protection gap in the face of climate change.</i>
5.	17:45-18:00	Concluding remarks

The EIOPA Visitor Handbook with hotel information can be found [HERE](#). Please book your accommodation directly with a hotel.

Disclaimer: EIOPA retains its right to reconsider all participation requests of applicants from the United Kingdom in view of their legal status after the final exit date, as agreed between the EU and the UK, in particular where there is no withdrawal agreement in place between the UK and the EU.

Should you have any questions, please do not hesitate to contact us.

Kind regards,
EIOPA Training & Events

Catherine Coucke

From: training&events
Sent: 30 April 2019 15:11
To: [REDACTED]
Subject: Invitation to EIOPA's Workshop on Sustainable Finance, 11 June 2019
Attachments: EIOPA-19-001 AgendaSufi workshop.pdf

On behalf of Fausto Parente, EIOPA's Executive Director

We are pleased to invite you to a **Workshop on Sustainable Finance on 11 June 2019**.
Registration is now open.

The objective of the Workshop is to keep stakeholders informed of the latest developments at EIOPA with regard to sustainable finance, including:

- (1) The Consultation Paper for an Opinion on sustainability within Solvency II;
- (2) EIOPA seeks views from stakeholders on potential short-termism pressure from the financial markets on corporations; and
- (3) EIOPA seeks to engage with stakeholders on the risks of a widening NAT CAT protection gap in the face of climate change.

Background:

<https://eiopa.europa.eu/Pages/About-EIOPA/Organisation/Sustainable-Finance-.aspx>;
Request from DG FISMA to EIOPA for an opinion on sustainability within Solvency II (Letter received on 29 September 2018);
Call for advice to the European Supervisory Authorities to collect evidence of undue short-term pressure from the financial sector on corporations;

Agenda: Attached

Time schedule: 11 June 2019: 12:00–18:00 CEST

Venue: EIOPA Westhafen Tower, 28th floor, Westhafenplatz 1, 60327 Frankfurt am Main.

Registration: Please register using the link below:

https://ec.europa.eu/eusurvey/runner/Workshop_on_Sustainable_Finance_11_June

Registration deadline: Monday, 27 May 2019 by 16:00

WebEx:

Please kindly note that it is possible to attend this Workshop online, via telco (WebEx). Please indicate in the registration link how you wish to attend the meeting.

Important Information

Participation is upon personal invitation only and is free of charges. Participants are responsible for their travel and accommodation arrangements and related expenses.

Please note that the Workshop is not part of EIOPA Stakeholder Groups' meetings and therefore the reimbursement rules do not apply to it.

As the seating capacity is limited, we will initially accept only 1 representative per organisation. If more wish to attend, we will open a waiting list and promptly inform them when a place becomes available.

We advise to organise your travel and accommodation arrangements only after having received our confirmation of your attendance. The notification will be sent shortly after your registration.



EIOPA REGULAR USE

EIOPA-19/279
03 June 2019

Sustainable Finance Roundtable 11 June 2019

Speaking points EIOPA Executive Director

- Since June 2018, EIOPA has held two Roundtables with stakeholders on sustainable finance, seeking to widen and deepen the discussions with regard to the integration of sustainability considerations in the insurance, reinsurance and pension sectors. I am pleased to see - and hear, as we have numerous of you participating in a sustainable manner by dialling in in our webex facility - so many of you, and also some new faces.
- EIOPA has since then been engaging with stakeholders in various areas. For example:
 - We are cooperating with stakeholders¹ for a scenario analysis of climate change-related risks. We may see some results of this in Summer. This can be of potential use in future insurance stress testing. We also expect to raise some questions to stakeholders on possible approaches for climate stress testing in our next Financial Stability Report. [The December 2018 FSR contained a chapter on climate risk and sustainable finance, with an analysis of climate-related risk in insurers' and pension funds' investment portfolios.]
 - We have started engaging with our Members and NAT CAT specialists (vendors, large (re)insurers, brokers and data specialists active in EIOPA's CAT Network) on the risks of a protection gap in the coverage of natural catastrophes in Europe. We are looking forward to engage with a broader circle on this, today.
 - The Joint Committee has established its sub-group on ESG disclosures, with the aim of developing a number of technical standards on the disclosure of sustainability risks and sustainable investments in the areas of IORPs and IBIPs. [6 mandatory RTS - 5 of which due within 12 months of the entry into force of the disclosure regulation, for

¹ 2 Degree Investing Initiative

which political agreement has already been reached in March, 1 optional ITS].

- EIOPA aims to issue own initiative Supervisory Opinions with regard to ESG risks and on Governance documents for IORPs after our June Board of Supervisors.
 - From a supervisory perspective, members have actively engaged with their industry in light of EIOPA's request for information on the integration of sustainability in underwriting and investment activity of insurers. The results of this request for information have been used for drafting the opinion, which is being presented to you today [consultation was launched on 3 June]. We expect more to come with regard to supervision and sustainability.
 - At international level, we are actively engaging in particular with the Sustainable Insurance Forum and the Network for Greening the Financial System.
- We will soon [24 June] see the report of the COM Technical Expert Group (TEG) on the proposed activities that contribute to climate change mitigation and adaptation. EIOPA actively participates in the work of the TEG and supports the role of non-life insurance as an activity that can contribute to climate change adaptation. In particular, the role of (re)insurers in providing insurance coverages against extreme weather events, or natural catastrophes, should be highlighted here.
 - Insurers, reinsurers and pension funds are familiar with the long-term perspective, as they have to assess the risk of events taking place in the future. The Commission has recently invited EIOPA, and the other ESAs, to provide evidence of potential undue short termism pressure from the financial markets on corporations. We are looking forward to starting the dialogue today with stakeholders on this issue.

I have briefly mentioned the three particular areas which will be addressed today at the workshop. I will share some thoughts on them with you before the experts guide you through the discussions.

1. The consultation on the Opinion on sustainability in Solvency II.

- The consultation paper is exploring the frontier of quantitative measures for integrating sustainability considerations in the Solvency II framework.
- Assessing the financial impact of future and uncertain climate changes is not straightforward. But a lack of evidence or methods today cannot be an excuse for complacency. We have to get our heads together in developing appropriate scenarios which translate global warming and increased frequency and severity of extreme weather events into manageable scenarios for financial losses. Historical data will not be sufficient to this effect; but we also need to be realistic as to which time span we can cover with these forward-looking scenarios. We will engage with modellers, brokers and industry on this.

- As mentioned, EIOPA supports the role of the (re)insurance industry in supporting climate change adaptation, or sustainable development more generally. Akin to impact underwriting, we want to explore with you the possibility for more sustainable underwriting, "impact underwriting". It is here that the potential of the industry, which is most knowledgeable about risks and risk management, will come to full effect, not only in its pricing and design of products, but also as an invaluable source of information and advice to many stakeholders.
- I thank you for your input so far, and for the important contributions you will make in responding to the consultation paper which has been published on 3 June.

2. Potential undue short termism pressure from the financial markets on corporations

- EIOPA will focus its efforts on:
 - searching evidence of generalised or increasing short term behaviour in insurers and IORPs which could eventually propagate to corporates

and, if that were the case,

 - highlighting the potential implications for the sustainability goals and undesired consequences for the financial stability
- EIOPA is keen to continue as a key contributor in the European insurance and occupational pension's landscape for establishing globally consistent data on portfolio turnover with sufficient granularity. Therefore we will continue our technical work comparing investment behaviour, focusing on time horizons and classifying investors accordingly.
- EIOPA believes that appropriate remuneration policies and practices for executive staff members should set the right incentives, hence should be useful preventing undue short-term pressures. In this context, the regulation already requires that remuneration policies are defined according to certain principles. Particularly relevant among those principles is that remuneration policies have to be in line with the undertaking's risk profile, objectives, management strategies and **the long-term interests and performance of the undertaking as a whole.**
- In April EIOPA advised to the European Commission to enhance the remuneration principles set up by Solvency II and IDD with regards to sustainability aspects. In particular by considering explicitly sustainability risks and factors as non-financial factors which are relevant when defining the remuneration policies and practices.

- The EIOPA annual work programme includes, in the area of supervisory convergence, the work that EIOPA is undertaking with the NCAs aiming at increasing consistency in the supervisory assessments of the remuneration policies across Europe.
- Key aspects on the assessment of the remuneration practices for specific staff members (decision makers) and their potential impact on short-termism are:
 - modulating the supervisory attention according to the actual ratio between fix and variable remuneration
 - considering pluriennial periods to assess the performance leading to variable remunerations or
 - supporting that the payments of a significant portion of the variable remunerations are sufficiently deferred.
- From this workshop we expect to enrich our analysis with your views on how the pressure for short-term returns manifests in Insurers or Pension Funds management and affects their decision-making. But more importantly, we are keen to learn whether you have observed or experienced short term pressures from insurers or pension funds, what are in your view the reasons behind, and what can be done to prevent those pressures.

3. Insurance protection gap for natural catastrophes

- In light of climate change, the risk of increasing frequency and severity of natural catastrophes is becoming more and more apparent. Whereas insurance penetration varies across Europe, the impact of natural catastrophes across regions may change under influence of climate change. Hence, the risk of a widening protection gap for natural catastrophes (NatCat) materialises.
- EIOPA is concerned that the impact of a protection gap on households and businesses as well as on the financial system will be systemic (losses affecting banking books, e.g. loss of collateral) and aggravated by public financing options of Member States (e.g. depending on the scope for investing in recovery from natural disasters).
- Therefore, the potential widening of the protection gap for natural catastrophes in Europe requires a concerted European action. Here, (re)insurers, ideally in cooperation with public authorities can contribute to mitigate and adapt to climate change risks.
- We are convinced that an important first step forward is to create commonly available data and analysis on NatCat events in Europe to inform policy decisions. Such a step could prove to be instrumental in

developing an ecosystem to foster innovation in modelling and risk transfer solutions through (re)insurance and capital markets.

- I am sure that you will have much to say on this critical topic.

To conclude my introductory remarks, I would like to say that EIOPA is proud to work on the important topic of sustainable finance, which we consider of strategic importance. Insurers and pensions funds, as well as other institutional investors, have to play a stewardship role taking into account the impact of their activities (investment, underwriting, lending) on a sustainable economy and environment. Europe needs to consider duly the risks and the effects of our actions on the future generations.

We are grateful for your participation in this workshop and your contributions to our work.



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European Insurance and
Occupational Pensions Authority

Workshop on Sustainable Finance

**Summary of the workshop on sustainable finance organised by
the European Insurance and Occupational Pensions Authority (EIOPA)
on 11 June 2019 at EIOPA's premises in Frankfurt am Main**

On 11 June, EIOPA organised its third discussion with stakeholders on sustainable finance. Those participating, on site and via videoconferencing, included members of EIOPA's Stakeholder Groups, the European Commission, consumer representatives, representatives of the insurance and pensions industries, of asset management and rating industries, and representatives of civil society.

In his welcoming remarks, EIOPA's Executive Director Fausto Parente stated that the topic of sustainable finance is a strategic area of work for EIOPA. He also stressed the need for insurers and pension funds to take into account the impact of their activities on the sustainability of the economy and environment.

He referred to the areas of work EIOPA has been engaging in during the recent months. In April, EIOPA delivered its advice to the European Commission on the integration of sustainability in the Solvency II Directive and the Insurance Distribution Directive. EIOPA is cooperating with stakeholders on a scenario analysis of climate-change related risks, and has started, together with the European Securities and Markets Authority (ESMA) and the European Banking Authority (EBA), to develop technical standards for the disclosure of sustainability risks and sustainable investments. Supervisory opinions with regard to Environmental, Social and Governance (ESG) risks and on Governance for Institutions for Occupational Retirement Provision (IORPs) are expected to be published this summer and supervisory activity will include the sustainability provisions within the IORP II Directive. At international level, EIOPA is actively engaging with the Sustainable Insurance Forum and the Network for Greening the Financial System.

He mentioned the upcoming report from the European Commission's Technical Expert Group on the proposed activities that contribute to climate change mitigation and adaptation. EIOPA supports the role which the (re)insurance industry can play in supporting climate change adaptation, or sustainable development more generally. In particular, more sustainable underwriting practices should contribute to achieving these goals. This is one of the areas addressed in the draft Opinion on integrating sustainability within Solvency II, which is under consultation until 26 July 2019.

Looking ahead, EIOPA will be collecting evidence on the short-term pressure on/from (re)insurers and IORPs and the potential implications for sustainability goals and undesired consequences for financial stability. EIOPA is being asked by the European Commission to deliver its report by end December 2019. He invited the participating stakeholders to provide their views and input to this collection of evidence.

EIOPA has also taken up the discussion on the (insurance) protection gap for natural catastrophe risks. The increasing frequency and severity of natural catastrophes, under the influence of climate change, can have systemic repercussions. This requires concerted European action in gathering relevant information and data and fostering innovation in modelling and risk transfer solutions.

He thanked the participants for their participation to the workshop and their upcoming contributions to the consultations and discussions.

Session 1: Consultation on the draft Opinion on sustainability within Solvency II

EIOPA presented the key elements of the draft opinion, which is under consultation until 26 July 2019 (Consultation on an opinion on sustainability within Solvency II). The following main points were addressed during the discussion:

- Capital requirements should not be used to promote certain (green) investments. Stakeholders would not support a specific calibration for sustainable assets. EIOPA has pointed out in its opinion that there is not sufficient evidence on a difference in risk profile for green investments, compared to general investments today.
- Scenario analysis by (re)insurers is considered a good way forward for embedding a more quantitative risk assessment of the effects of climate change. Standard requirements for scenarios, in particular for the ORSA, should help undertakings in establishing their practices in a proportionate manner. This may help small and medium insurers to assess risks on their assets and liabilities using available consistent scenarios. Challenges lie in the definition of the time horizon and the choice of assumptions. The exercise should not be confused with a public stress testing exercise or understood as to imply the public disclosure of the Own Risk and Solvency Assessment (ORSA) results.
- Further thought should be given to the integration of ESG considerations in the valuation of the best estimate for life and health insurance business. In addition, environmental issues beyond climate change would have to be considered going further (e.g. biodiversity or other sustainable development goals).
- There is support for integrating measures of climate risk adaptation in the underwriting policies, which should eventually contribute to lowering the risks to the underwriter.
- Investment practices with regard to climate change require a nuanced approach, which amounts to assessing the risk each investment poses to the climate.

Session 2: Call for advice on undue pressure for short-termism.

In February, the European Commission launched a call for advice for the three European Supervisory Authorities (ESAs) to collect evidence on potential undue pressure for short-termism from financial markets on corporations. The aim is to foster transparency and long-termism in financial and economic activities by exploring possible drivers of short-term pressures. During the workshop, EIOPA presented the approaches, the sources and the key steps foreseen to collect evidence. Building on available literature, EIOPA is analysing the

portfolios' evolution over time and the asset holding periods' development. Among others, EIOPA is assessing the relevance of reporting frequency, remuneration policies and R&D trends on the investment decisions. EIOPA plans to make use of relevant work published on the insurance and occupational pensions sectors, as well as information already available from regular reporting or other existing information requests. EIOPA stands ready to engage with insurance undertakings on qualitative information to complement the quantitative information available at EIOPA, and beyond supervised entities. EIOPA invites the participants in the workshop to submit their views on particular questions or more broadly on the topic via the feedback statement on anonymous basis or bilaterally by email to the EIOPA Studies & Statistics team (St-team@eiopa.europa.eu).

The following remarks were made during the discussion:

- Shareholder expectations and remuneration schemes are potential drivers of short-term pressure on corporates. Pressure from activist investors for buy-back programs and dividend payouts from reserves, increase short-term pressure.
- On the other hand, stakeholders highlighted that insurance undertakings are mainly long-term investors, with their investment strategy being driven by their liability profile. Therefore, they should be less subject to short-term market pressures.
- Financial institutions are not always originators of short term behaviour but sometimes import the consequences of short term behaviours from external sources and transfer those to the investees (such as those arising from tax incentives, corporate reporting requirements).

Session 3: Protection gap for natural catastrophe risks.

EIOPA is keen to engage with stakeholders on a discussion concerning the widening of the (insurance) protection gap for natural catastrophe (NatCat) risks.

In light of climate change, the risk of an increasing frequency and severity of natural catastrophes is becoming more and more apparent. The insurance penetration varies across Europe and the impact of natural catastrophes across regions may change under the influence of climate change.

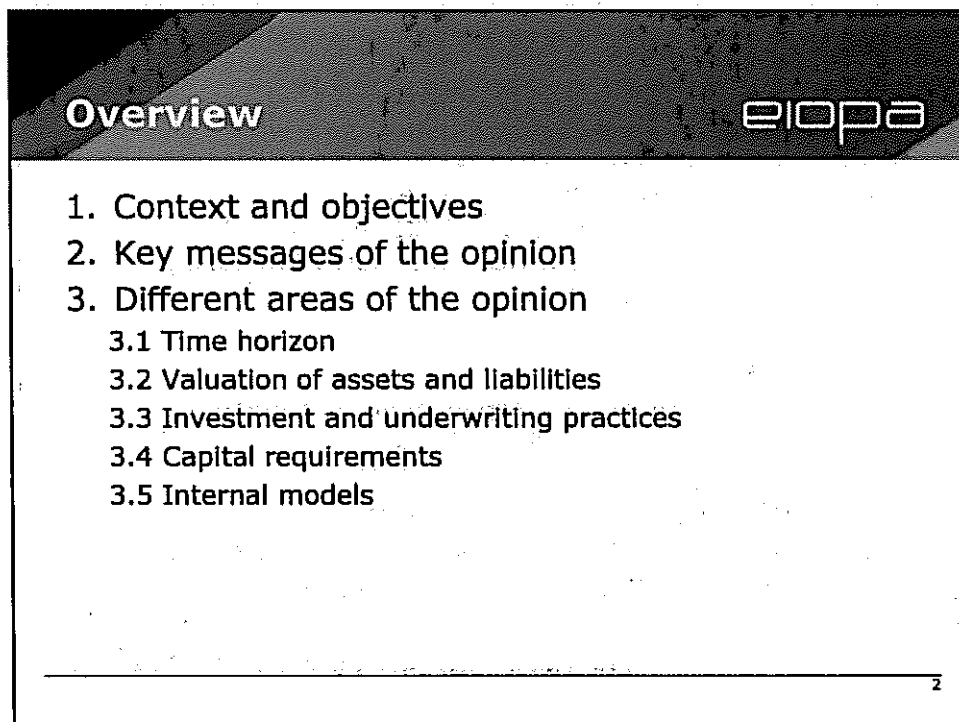
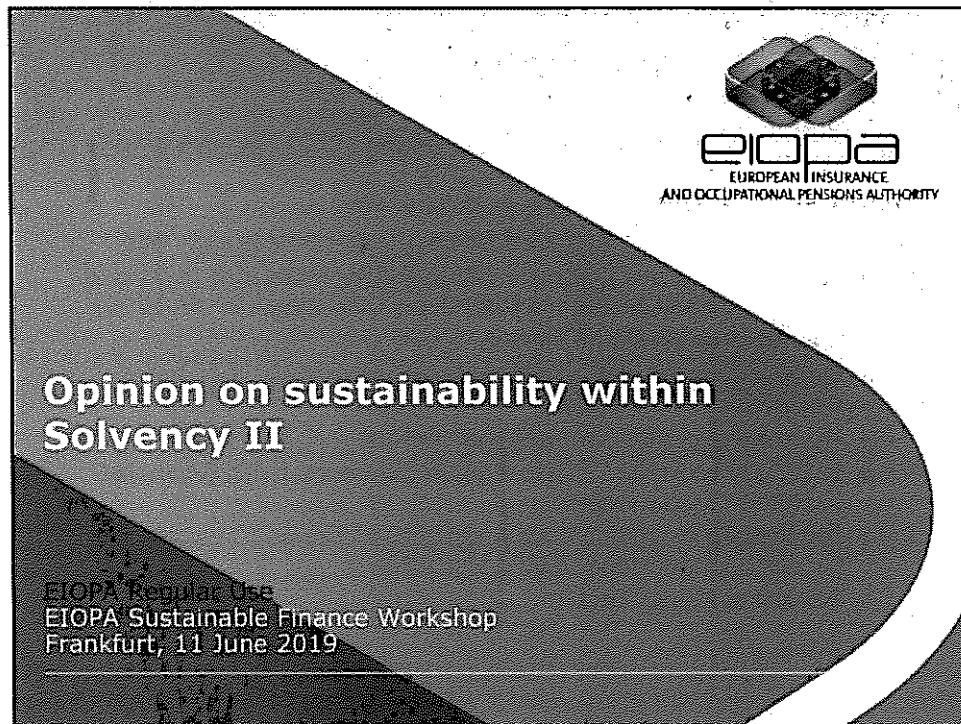
EIOPA is concerned that the impact of a protection gap on households and businesses as well as on the financial system will be systemic (losses affecting banking books, e.g. loss of collateral) and aggravated by public financing options of Member States.

Therefore, the potential widening of the protection gap for natural catastrophes in Europe requires a concerted European action.

EIOPA sought views of stakeholders on the role of the insurance industry, as well as of the public sector. Questions include how measures can contribute to achieving an optimal insurance penetration across Member States, securing affordability of insurance, and promoting adaptation, preparation as well as risk management incentives in (re)insurers' underwriting policies and product design. EIOPA stressed the need for commonly available data and analysis on NatCat events in Europe to raise awareness on risk management gaps and to anticipate solutions.

Following observations were made during the discussion:

- Stakeholders stressed the need for public solutions, considering that the primary issue would be affordability of insurance. Climate change is likely to affect the most vulnerable members of society, who may not be able to afford insurance.
- Education to citizens about risks and risk mitigating behaviour should be promoted to sustain insurability. Insurance policy conditions are likely to change in light of climate change and it is worth exploring this impact on the protection gap.
- Risk mitigation and adaptation should be the first safeguards against the widening of an (insurance) protection gap. The European Flood Directive was cited in this respect.



1. Context and objectives

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EIOPA sustainable finance action plan

Covers prudential, conduct and financial stability areas, incl.:

- o EIOPA **advice to COM on sustainability risks and factors** in Solvency II and Insurance Distribution Directive (30.04.2019)
- o **Scenario analysis** on transition risk
- o **Opinions on IORPII implementation** on ESG risks and Governance documents
- o **Insurance protection gap for NatCat**
- o Collecting evidence on **short term pressure from financial sector** on corporations
- o **Disclosure** of sustainability risks and sustainable investments for personal pensions, IORPs and IBIPs
- o **Pensions stress test**

3

1. Context and objectives

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COM call for opinion: main objective

Provide an opinion on the impact of SII on sustainable investments and current practices in underwriting taking account of sustainability risks

Evidence used

- Public call for opinion (33 respondents, 3 confidential)
<https://eiopa.europa.eu/Pages/About-EIOPA/Organisation/Sustainable-Finance-.aspx>
- Confidential request for information (NCAs)
 - o 153 solo undertakings (20 % of total assets at EU level)
 - o 31 groups (38 % of total assets at EU level)

Consultation: 3.6-26.7.2019

We look forward to your response!

2. Key messages of the opinion

- Forward-looking approach to be implemented, in ORSA, via the use of a **standardised set of scenarios** translating global warming in scenarios for impact on the (re)insurers' balance sheet
- Historical data is not good predictor for climate change; absence of data and methods should not lead to complacency
- No evidence to justify different capital requirements
- **"Impact underwriting"**: instil risk mitigating behaviour and limit risks to insurability

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3. Different areas of the Opinion



3.1 Time horizon

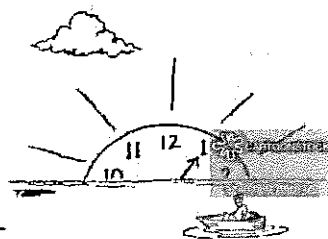
EIOPA

Prudential and climate change time horizons differ

- o Global warming is likely to reach 1.5° C between 2030 and 2052 if it continues to increase at the current rate (IPCC Report 2018)
- o The SCR shall correspond to the VaR of the basic own funds of a (re)insurer subject to a confidence level of 99,5% over a 1-year time horizon (Art. 101 SII Directive)

EIOPA opinion:

No change to SII time horizon
But need to implement a prudential forward-looking approach for climate change via **long-term scenario analysis in ORSA, possibly based on standardised scenarios**



3.2 Valuation of assets and liabilities

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Valuation of assets: evidence received

- o Undertakings do not value sustainable investments differently than other investments
- o Availability and quality of information on sustainability risks and sustainable investments may not be sufficient
- o Undertakings refer to using ESG ratings

EIOPA opinion:

- Importance of public disclosure to inform prices
- Transparency of ESG ratings
- Need for scenario analysis to assess uncertainty and future developments

3.2 Valuation of assets and liabilities

EIOPA

Valuation of liabilities: evidence received

- Climate change risk not explicitly considered by undertakings; "implicitly" captured via historical data

EIOPA opinion

- Short term business – annual validation of assumptions may be sufficient to integrated developments. Longer term non-life business (>2 years): sensitivity or scenario analysis is needed.
- Good practices: Ensure historical loss data is up-to-date, Consider events not captured by historical loss dataset, Use forward-looking CAT modelling, Apply stress testing or scenario analysis
- Longer term life business: economic scenario generators?

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3.3 Investment and underwriting practices

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Investment practices: evidence received

- Close to 1/3 of groups and undertakings do not plan to implement sustainability considerations in investment strategy
- Reliance on sustainability ratings/scorings
- Exclusion / ("Impact") divesting & Inclusion / ("Impact") investing in sustainable economic activities

EIOPA opinion

- Need for transparency on sustainability ratings
- Need to assess transition risks in the portfolio.

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3.3 Investment and underwriting practices

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Underwriting practices: evidence received

- Majority of groups and undertakings do not currently take explicit account of climate risks in U/W policies and pricing.
- Some expect increase in premia. Risk mitigants: reliance on national (re)insurance schemes and reinsurance

EIOPA opinion

- Need to consider actuarial analysis when underwriting climate-related risks
- Short term increase in pricing – long term risk to Insurability (protection gap!)
- Risk mitigating action: **"impact underwriting"**. Embed risk mitigation and adaptation in underwriting. Development of products and risk management practices which aim at reducing risk.

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3.4 Capital requirements

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Market risk general - evidence received

- SII is a risk-based framework – no incentive or disincentive for sustainable investments
- No conclusive evidence on risk differentials between "green" and general assets.
- Lack of database for long-term trend analysis
- Absence of green/brown taxonomy

EIOPA opinion:

- Need to obtain more granular data on the risk profiles of "green"/"brown" investments
- Further work expected on standards (e.g. green bonds)

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3.4 Capital requirements

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Natural catastrophe risks – evidence received

- o Most consider that the current calibration of NAT CAT sufficiently capture climate-related developments; regular updates would allow for capturing developments

EIOPA opinion:

- SF does not explicitly take into account climate change (only through historical data in the calibration process)
- Regular recalibration of the standard formula for NAT CAT should take into account future developments (e.g. also "secondary" hazards, such as wildfire, drought...)
- But need a forward-looking approach!
- CAT modelling community to increase transparency on methods and data for CAT models

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3.5. Internal models

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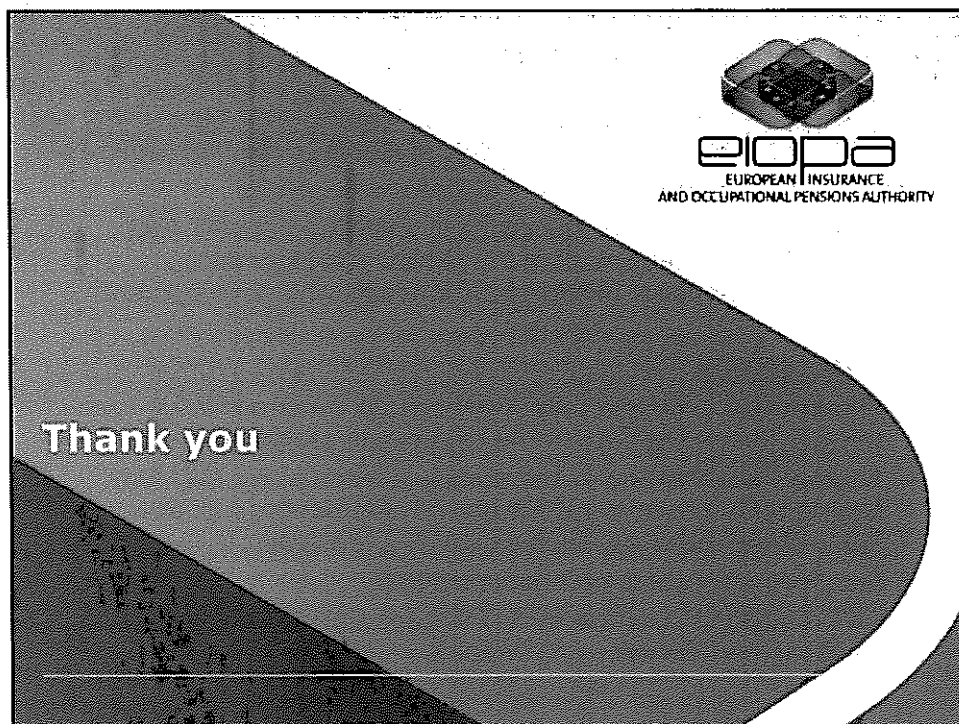
Evidence received:


- o IMs are designed to allow undertakings to better reflect their specific business model and risk profile
- o Most undertakings do not plan to integrate sustainability factors in the market risk module of their internal model

EIOPA opinion:

- The regulatory framework does not prevent the integration of sustainability factors
- Use of external models: undertakings to engage with their providers on how climate change is integrated in the model
- Also here: historical data does not predict climate change... Hence: need for a forward-looking approach

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Call for Advice on undue pressure for short-termism

EIOPA Regular User
SUFU Workshop
Frankfurt, 11 June 2019

Objectives of the CfA¹



- Collect evidence of undue short-termism pressure from financial markets on corporations:
 - building on the conclusions of the relevant literature
 - considering the evolution of asset holding periods
 - consequences of undue short-termism for sustainable finance
- Identification of areas in regulation which:
 - contribute to mitigating or
 - exacerbate short-term pressures
- Recommendations assessing whether policy action is needed in specific areas.
- Short-termism for the purpose of the CfA can be defined as *"the focus on short time horizons by both corporate managers and financial markets, prioritizing near-term shareholder interests over long-term growth of the firm"*².

¹ https://eiopa.europa.eu/Publications/Advices/190201-call-for-advice-to-esas-short-term-pressure_en.pdf

² Mason, 2015

Milestones 2019 - CfA

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- February - COM published Call for Advice
- Ongoing - Coordination with ESAs
- June - Workshop sustainable finance
- July - Survey (tbc)
- Sept.- Oct. - Interim discussions with COM
- December - Final Report Publication

3

Organisation - process

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- Coordination with COM, EBA and ESMA
- EIOPA organisation
 - o Stressing links to financial stability
 - o Conscious of resources
 - Refer to previous work – e.g. Investment behaviour report 2017
 - Synergies with ongoing projects - e.g. IORPs ST 2019, LTG Reports
 - Stylised qualitative survey for undertakings
 - Use SUFI workshops to collect stakeholders' views

4

Approach and sources to collect evidence

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- A. Revision of the relevant financial stability literature:
- B. Quantitative Analysis
- C. Qualitative Information

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A. Review of the relevant financial stability literature:

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- Sources:
 - Recommended by COM - not necessarily insurance/pensions specific
 - Relevant EIOPA's work
- Recurrent topics :
 - Financial reporting
 - High-quality reporting can improve investment efficiency, reduce information risk, help estimate future performance therefore it can facilitate innovation
 - Shorter reporting frequency can damage LONG TERM strategies-views
 - Ways to overcome short-termism
 - Role of corporate governance
 - Remuneration policies for key staff members (decision-makers)
 - Internal CEO turnover related to firm's performance
 - Capital moves influencing the trends in R&D Investments – focus on value
 - Investing environment and time horizon
 - Understanding the circumstances and relevant determinants of decision-making process
 - Evidences on trends of assets turnover ratios

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B. Quantitative Analysis

EIOPA

- Areas of interest:
 - Situation and trends of asset holding periods and
 - Evolution of average durations
- Build on available data and previous work
 - EIOPA IORPs ST 2019 baseline (ongoing)
 - Regular Quantitative Reporting Templates QRT
 - EIOPA Illiquid liabilities data request 2019 (ongoing)
 - EIOPA LTG reports (2016-2018, 2019 (ongoing))
 - LTG measures impact in shorter vs. longer term behaviour
 - EIOPA Investment behaviour report (2017);
 - It revealed for Insurance Groups ahead of Solvency 2 (2011 to 2016):
 - trend towards more illiquid investments
 - average maturity bond portfolio overall increased those years
 - Investment allocation - aggregate marginal changes in main categories

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C. Qualitative Information

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- Stakeholders
 - Coordinate with Policy Department activities on sustainable finance
 - Discuss Short-termism item in workshop - Follow up inputs after workshop
- Sources for Insurance:
 - EIOPA work on Long-term illiquid liabilities, LTG Review and Investment behaviour, among others
 - Remuneration policies
 - EIOPA advice COM to integrate sustainability risks and factors under Solvency II and IDD (May 2019)
 - reference to sustainability aspects to be added to Art. 275 Solvency II Delegated Regulation
 - EIOPA work plan **supervisory convergence** – includes remuneration principles
- Sources for IORPs:
 - Investment behaviour questionnaires in Stress Test 2019

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Lines of action – among others

EIOPA

- Establishing globally consistent data on portfolio turnover by asset managers with relevant granularity
- Comparing investment behaviour, focusing on time horizons and classifying investors accordingly
- Bringing sustainability aspects into regulation
- Ensuring the executive remuneration policies are in line with the undertaking's risk profile, objectives, management strategies and the long-term interests and performance of the undertaking as a whole.
- Other

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Stimulating the debate

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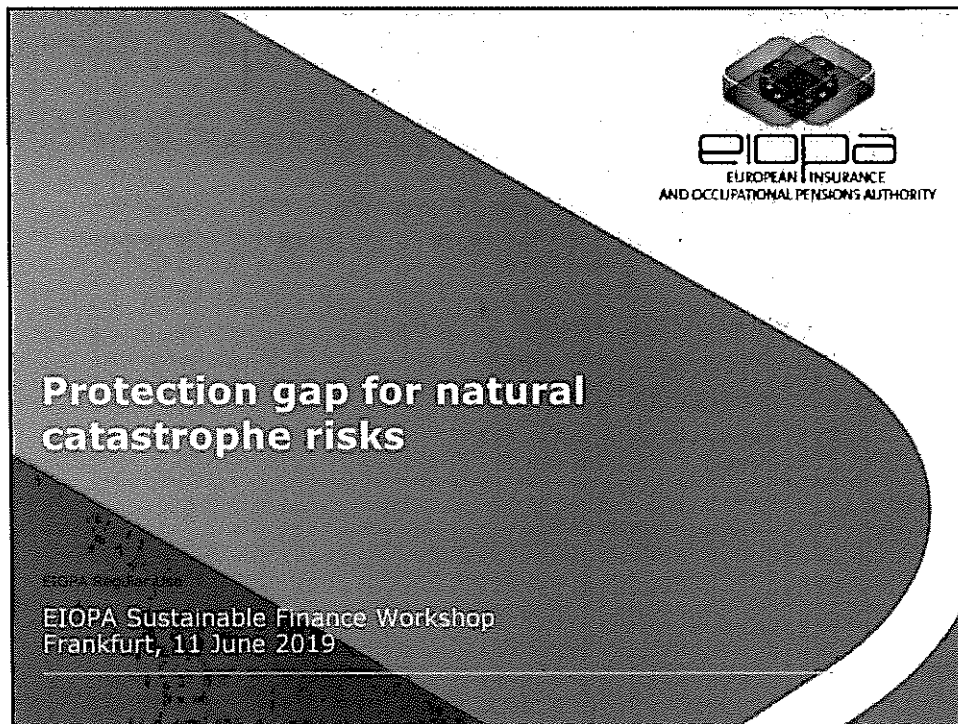
- Do you observe or experience misalignment between Insurers/Pension Funds targets and beneficiaries aims or needs derived from short-termism?
 - o How the pressure for short-term returns manifests in Insurers/Pension Funds management and decision-making?
 - o Have you observed or experienced short term pressures?
 - From Insurers/Pension providers to corporates
 - From financial markets to Insurers/Pension providers and then affecting beneficiaries
 - o Have you put in place any measures or policies to avoid or limit this phenomenon?
 - o Have you observed any consequences/reactions to this pressure?
- To what extent the following factors can contribute to short-termism pressure on or by in Insurers/Pension funds:
 - o financial reporting
 - o executive remuneration structures
 - o performance benchmarks influencing investment time horizons
 - o examples in insurance/pensions regulation (exacerbating - mitigating)
 - o Other factors, e.g. stakeholder's interests or market movements

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Thank you for your attention!

EIOPA
European Insurance and Occupational Pensions Authority
<https://eiopa.europa.eu>



EIOPA's objective



- Part of the sustainable finance goals of EIOPA
- Engage in discussion with Member States, (re)insurance sector, academics, modellers, policymakers on the risks of a NatCat protection gap in light of climate change
- Collect information on extent of the protection gap
- Seek areas for contributing to reducing the protection gap
 - seek views on the role of the (re)insurance sector
 - seek views on the role of model vendors and data providers

2

Context
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- Economic losses caused by weather and climate-related extremes in the EEA - in light of climate change
 - Increased frequency and severity
 - "New" ("secondary") perils
 - Natural disaster "hotspots"
 - Exposure, vulnerability, risks...

3

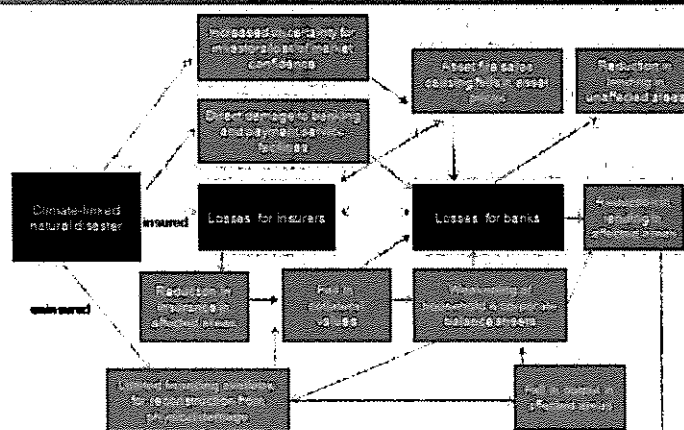
Systemic relevance
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- Non-insured losses will hit households and business even if Governments intervene
 - public interventions usually rely on taxes or debt issuances
 - both deviate public resources from its original goals
 - likely impacting stability and growth
- Financial system destabilised by
 - impacts in the real economy
 - generalised increase in risk premia
 - non-insured damages in collaterals

4

Illustrative transmission map of NatCat losses to macro-economy

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Source: Bank of England, 2015

• Included in IAIS Issues Paper on Climate Change Risks to the Insurance Sector 2018

5

Mitigation and adaptation measures

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- 1st line of defence –
 - o Transfer & management of risk
 - (Re) Insurance
 - Alternative risk transfer systems
- 2nd line of defence –
 - o Climate change adaptation and mitigation measures
 - o Pre-funded public/private protection systems

Public finance considerations: size of economy and debt



Note: Average loss data based on 1980-2016.
Source: EEA. Public finance data from Eurostat.

6

Role of (re)insurance industry

- (Re)insurance industry covering NatCat risks
 - Insurance penetration across Member States
 - Pricing – availability / business strategy
 - Product design – risk management incentives
 - Reliance on reinsurance
 - Relation with state-sponsored (re)insurance

7

Role of data providers and CAT modellers

- Availability of data to assess the risks across Europe
- Insight of climate specialists and model vendors on scenarios for climate change – scenario analysis for forward-looking approach in underwriting
- EIOPA exchange with CAT modellers, (re)insurers and brokers held on 28 May

8

Towards a forward-looking approach to addressing the risk of the insurance protection gap

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Historical insurance
and economic losses

Projected insurance
and economic losses
(short term)

Optimal insurance
penetration

9



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EUROPEAN INSURANCE
AND OCCUPATIONAL PENSIONS AUTHORITY

Thank you



Circulated to the participants at the EIOPA workshop on Sustainable Finance on 11 June 2019 as background information only

Not to be distributed or made public

Discussion paper on natural catastrophes: protection gap

The current paper, which is for discussion, addresses the issue of a protection gap for natural catastrophes in Europe in light of available evidence about the impact of climate change on the frequency and severity of extreme weather and climate-related events.

The paper builds on research conducted by various stakeholders so far and sets out elements for discussion.

In particular, we highlight the potential systemic impact of situations across Europe where a lack of coverage is combined with high exposures compared to the size of the economy and public revenues as well as high levels of public debt.

A coherent European approach, involving private and public actors, with a focus on mitigation and adaptation, should address the risks caused by climate change with regard to natural catastrophes in Europe.

EIOPA aims to engage with stakeholders on the issue, including the (re)insurance industry, central banks, ESRB and the European Commission¹ to collect further views and discuss potential areas of concern.

¹ See also Commission Green Paper of 2013 on the insurance of natural and man-made disasters

Economic losses caused by weather and climate-related extremes in the EEA, in light of climate change

1. Over the period 1980-2016, the total amount of weather and climate-related economic losses in the EEA member countries was EUR 436 billion (at 2016 Euro values), at an average of EUR 12 billion per year, EUR 76 300 per square kilometre or 784 per capita.²
2. Climate change affects the frequency and severity of certain extreme weather and climate-related events, such as droughts, heat waves and heavy precipitation events:
 - Among long-term climate extremes, **heat waves** are expected to increase across Europe and **droughts** are expected to increase in most regions in southern Europe. The direction of future changes is uncertain for short-term meteorological extremes, such as wind and hailstorms. Model projections show a likely increase in hydrological extremes (i.e. **floods**). Such an increase is likely to occur across Europe for coastal floods owing to the projected sea level rise; projections for river floods differ for different parts of Europe.³
 - '**Natural disaster hotspots**' are likely to develop along the following lines: The greatest accumulation of future risks will occur in coastal regions bordering the North Sea such as the British Isles and the Netherlands, which are densely populated and economically pivotal for Europe. Regions in Southern Europe (including the Iberian Peninsula, southern France, Northern Italy and the Balkan countries along the Danube) will see a progressive and strong increase in overall climate hazards. The frequency of riverine floods will triple (with current 100-year events occurring roughly every 30 years in the 2080s in Southern France and northern Italy, and perhaps sub-annually in the Danube region); and the frequency of heat waves, droughts and wildfires will increase more than 10-fold in the same period (mainly in Southern Europe). The overall exposure to multiple (independent) hazards shows a positive gradient that is 'even more pronounced than in single-hazard scenarios'.³
3. Increasing extreme events will presumably lead to greater (economic and insured) losses. According to a study carried out by the European Commission's Joint Research Centre⁴, in the absence of measures for adaptation or mitigation, the impact of direct and indirect effects of climate change in Europe over a very long term (2071-2100) could cause annual total damages across EEA of around 190 billion.
4. Exposure (through value accumulation - growing population, economic wealth and urbanisation) is currently the main driver of increase in predicted

² Source: European Environment Agency (EEA), Economic losses from climate-related extremes, 2018. Weather and climate-related events include meteorological, hydrological and climatological events (storms, floods, mass movements, heatwaves, cold waves, droughts, forest fires), but exclude geophysical events (earthquakes, tsunamis, volcanic eruptions). Natural disasters comprise the four types of events.

³ EEA, Climate change, impacts and vulnerability in Europe 2016. An indicator-based report. EEA Report No 1/2017.

³ EEA, Climate change adaptation and disaster risk reduction in Europe. Enhancing coherence of the knowledge base, policies and practices. EEA Report no. 15/2017.

⁴ European Commission, Joint Research Centre, JRC Scientific and Policy Reports, Climate Impacts in Europe, The JRC Peseta II Project, 2014.

losses by natural hazards. The extent to which observed climate change has already contributed to growing disaster losses is still difficult to estimate.⁵ The losses may just be at the lower bound: economic losses arising from business interruption in the absence of any structure damage are captured only occasionally and ecosystem impacts are not monitored routinely.⁶ Economic losses mainly reflect monetised direct damages to certain assets. The loss of human life, cultural heritage or ecosystem services is not part of the estimation.⁷

5. Climate events in the EU cross national borders, and with it the economic impact, mainly due to high economic integration between EU Member States (e.g. through (contingent) business interruption impact on business value chains), potentially adding around an extra 25-30 % impact at EU level.⁸
6. Europe is also susceptible to spill-over effects from climate change impacts occurring outside European territories through the trade of (non-) agricultural commodities, infrastructure and transport (e.g. disruptions to transportation networks), geopolitics and security risks, human migration and finance (e.g. climate-related price volatilities).⁹

The role of insurance and reinsurance in covering extreme weather and climate-related risks

Role-benefits - The insurance and reinsurance sector plays a key role in absorbing losses arising from natural catastrophe risks through the risk-pooling mechanism and incentivising risk mitigating behaviour. Sound risk pricing requires (re)insurers to have adequate models and sufficient data for their estimations, including risk maps for underwriting natural catastrophe risks. This aspect is key for providing risk management solutions inducing risk-sensitive behaviour and advice on preventive measures.

Challenges - Low insurance penetration, the capacity to factor in climate change in reserving and concentration risk in reinsurance are notable challenges for the insurance sector in covering extreme weather and climate-related risks due to climate change.

Concerns - Affordability and insurability are likely to become an increasing concern in a climate change context.

7. Insurance business allows to pool resources to spread risks over a large number of policyholders, in exchange of a risk-based premium. The transfer of risks from insurers to reinsurers mitigates the risks which insurers are exposed to. Prudential regulation requires (re)insurers to cover expected and unexpected losses arising from various risks, including underwriting risk

⁵ EEA, Climate change, impacts and vulnerability in Europe 2016. An indicator-based report. EEA Report No 1/2017.

⁶ EEA, Climate change adaptation and disaster risk reduction in Europe. Enhancing coherence of the knowledge base, policies and practices. EEA Report no. 15/2017. Also: European Environment Agency (EEA), Economic losses from climate-related extremes, 2018.

⁷ European Environment Agency (EEA), Economic losses from climate-related extremes, 2018.

⁸ European Commission, Joint Research Centre, JRC Scientific and Policy Reports, Climate Impacts in Europe, The JRC Peseta II Project, 2014.

⁹ EEA, Climate change, impacts and vulnerability in Europe 2016. An indicator-based report.

with regard to natural catastrophes. The valuation of liabilities is based on forward-looking estimates taking into account expected future developments that will have a material impact (such as e.g. climate-related hazards). In their projections, (re)insurers shall take account of all uncertainties in future cash-flows. A risk margin is added on top of the best estimate to ensure transferability of the liabilities, and capital requirements should cover unexpected losses. The (re)insurance industry also plays an important role as a user and/or developer of CAT models, to assess, price and manage risk, for example for managing physical climate risk.¹⁰ Insurance, through risk transfer, helps to mitigate the macroeconomic cost of disasters and the potential systemic risk.¹¹

8. Nevertheless, certain factors may influence the (re)insurance industry's capacity to play this role and to deal with the increased frequency and severity of natural catastrophes across the EEA in light of climate change. These are low levels of insurance protection and/or insurance penetration in a particular sector or country, the capacity to factor in climate change in reserving (risk of inadequate reserving potentially due to impact of very far-out tail events) and concentration risk in reinsurance.

- Overall, only 35 % of the total losses caused by extreme weather and climate-related events across Europe are currently insured. This leaves an insurance protection gap, i.e. the difference between the level of insurance (measured by insured losses) and the amount of economic losses, of 65%.¹² It does not necessarily follow however that it would be optimal for all losses to be insured.
- Nevertheless, to palliate the lack of insurance, some countries provide a structured public or public-private (re)insurance solution to address protection gaps for catastrophe risks. These include state-sponsored direct insurance programmes, such as for example the Consorcio de Compensación de Seguros in Spain, the Natural Catastrophe Insurance of Iceland or the Danish Storm Council. Other measures include statesponsored reinsurance programmes, including the French Caisse Centrale de Réassurance or the UK FloodRe. Regional risk pooling also exists in Europe, for example the regional catastrophe reinsurance company "Europa Re", covering southeast Europe catastrophe and weather risk insurance. However, such solutions do not exist for all countries or regions. At European level, the European Union Solidarity Fund has provided financial relief to regions affected by extraordinary natural disasters amounting to 5 billion euro, since its creation in 2002.
- Climate variability and uncertainties related to climate change or to the regional impact of extreme weather events due to climate change may impact on the capacity of the (re)insurance industry to capture sufficiently the future developments in their underwriting practices. The extent, to which insurance and reinsurance pricing and reserving practices would effectively integrate an increased frequency or severity

¹⁰ See: The Geneva Association. Managing Physical Climate Risk: Leveraging Innovations In Catastrophe Risk Modelling. November 2018.

¹¹ See: BIS Working Papers, No 394, Unmitigated disasters? New evidence on the macroeconomic cost of natural catastrophes, Goetz von Peter, Sebastian von Dahlen, Sweta Saxena, December 2012.

¹² European Environment Agency (EEA), Economic losses from climate-related extremes, 2018.

of extreme weather-related events, without reducing the insurance penetration, will determine largely the sustainability of the coverage of natural catastrophes in Europe.

- While the 2018 EIOPA insurance stress test confirmed high resilience of the biggest European insurance groups to a series of natural catastrophes¹³, it also showed that the current high resilience relies on reinsurance, even to a larger extent than for market risks losses. Participating firms in the stress test were among the 42 biggest European insurance groups who transferred 55% of the losses caused by the so-called Nat Cat scenario to reinsurers through the actual treaties in place. Accordingly, the most affected participants by this scenario were reinsurers and direct insurers largely involved in reinsurance activities. Furthermore, we noted that the losses were ceded to a limited number of counterparties, highlighting a potential concentration of risk. From a geo-political perspective, 45% of the ceded losses went to reinsurance carriers based in non-EU jurisdictions.
9. Affordability and insurability are likely to become an increasing concern. Peaks in losses and necessary risk-based regulatory adjustments are likely to lead to higher premiums or more restrictive terms and conditions in insurance products. Insurers may have to become more selective on the risk quality, and consider not underwriting certain risks. The economic impact of climate change is difficult to quantify in monetary terms (e.g. impact of climate change on ecosystems). Sometimes the risks are technically uninsurable, such as for example the impact of climate change on human migration.

Public finance and other considerations in light of climate change and natural catastrophes

10. Natural catastrophes can affect critical economic resources and infrastructure, including energy production, transport, and agriculture, financial infrastructure, such as banking and payment services, as well as human welfare. In addition to the cost of the direct (physical) losses and supply bottlenecks ("demand surge"), indirect impacts arise from increased uncertainty from investors, loss of market confidence leading to asset fire sales, causing further falls in asset prices. This affects directly the financial (banking) sector, limiting in turn financing available for reconstruction, leading to fall in output in affected areas, further weakening households and corporate balance sheets.
11. Damages caused by natural catastrophes may put additional strain on public finances where, in the absence of sufficient coverage via insurance and reinsurance solutions, the government is called to step in to provide relief and potentially compensation (incl. emergency response and financial aid), but will also need to restore damaged government property and infrastructure.

¹³ The stress test showed a limited impact of a set of catastrophic losses over Europe from various perils supposed to materialise over a short period of time, like windstorms, floods and earthquakes. It needs to be pointed out that the events tested were not designed taking into account climate change, yet. In addition, the short time horizon does not take into account longer term developments due to climate change. Nevertheless, the results are useful to illustrate the effect of an increased severity and intensity of natural catastrophes hitting different geographical areas in Europe.

12. Particular sovereign risk mitigation or transfer mechanisms aim to address (financial) risks arising from climate change, including issuance of CAT bonds, insurance for the management of fiscal risks, the existence of reserve funds, contingent credit arrangements, and the insurance of public assets.¹⁴ These are designed to alleviate the pressure on public finance – in some cases transferring the risk back into the economy. However, without additional government action on climate change adaptation and mitigation, the impact of climate risks on sovereign borrowing costs may become more costly.¹⁵
13. This section provides some measures of identifying potential issues in relying on this type of Government backstop in terms of the ability of Governments financing such actions.
14. The charts below make it possible to identify relative risk exposure and financial strain, which may have systemic relevance. Figure 1 shows historical loss figures (as share of GDP and government revenue) and the debt-to-GDP ratio plotted against historical insurance coverage for those losses. Figure 2 sheds some additional light on public debt sizes and the ability to finance potential additional losses.
15. Some countries may be particularly prone to suffer from risks related to climate change, for example regions in Europe's South/South-East will see a progressive and strong increase in overall climate and extreme weather-related hazards.
16. Other regions/countries are also at risk of suffering important losses from climate change. The materiality of the impact on public finance will depend also on the type of natural event which will materialise and the concentration of exposures to those perils.
17. The impact of climate change and extreme weather-related events also differs across sectors and regions and the expected impact of adaptation and mitigating action. Figure 4 shows that under a scenario consistent with a 2 degree climate goal, for additional flood-induced damages to road infrastructure, the most relevant part of damages would occur in the Northern European region.¹⁶ Sea flood damage would mainly affect, in both scenarios, the Central Northern European region.^{17,18}

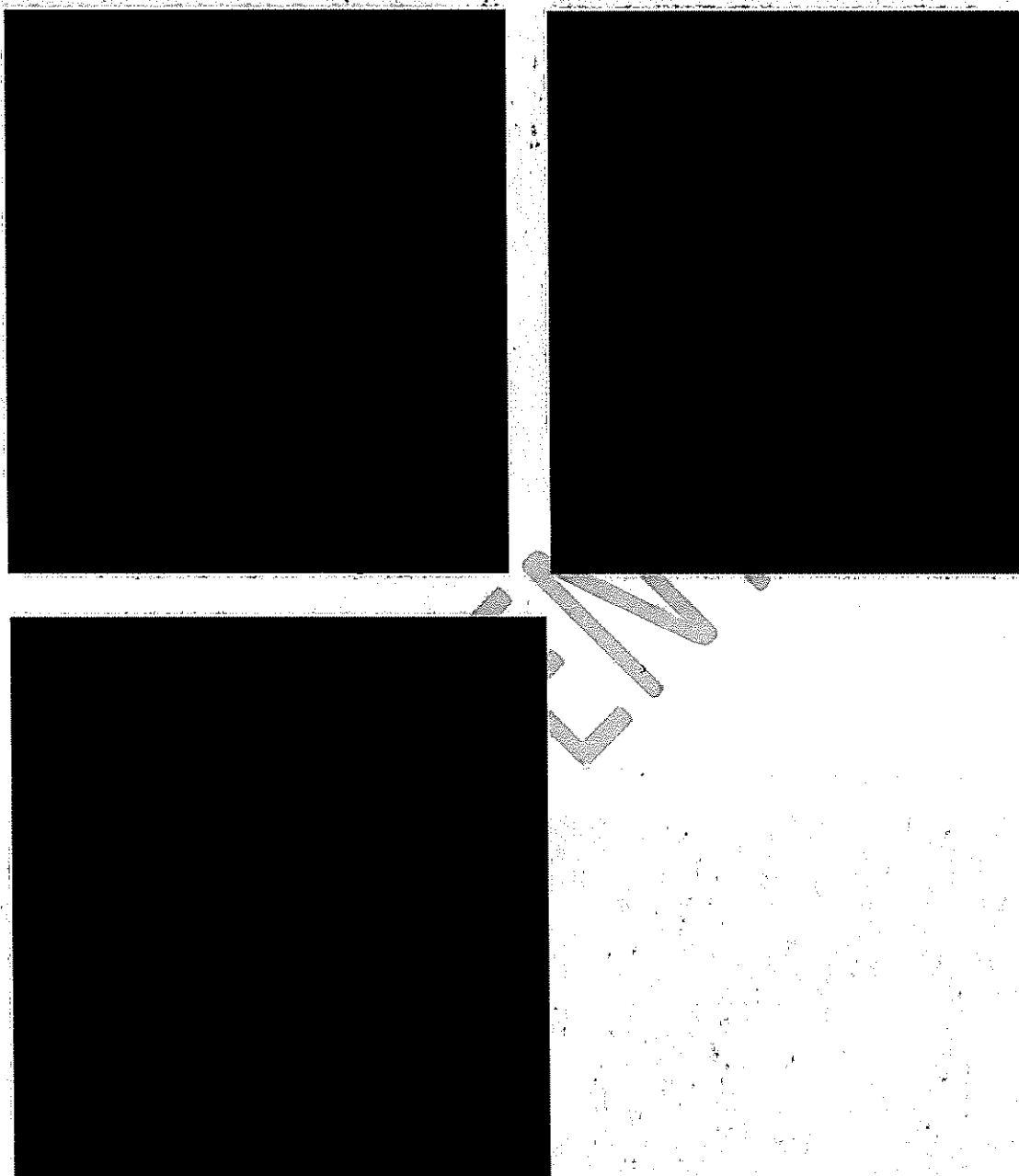
¹⁴ See OECD (2015), Disaster Risk Financing: A global survey of practices and challenges, OECD Publishing, Paris.

¹⁵ See Imperial College Business School, Climate Change and the Cost of Capital in Developing Countries. Assessing the impact of climate risks on sovereign borrowing costs.

¹⁶ JRC Peseta II Project, 2014, table 20 and 22. Climate simulations under the reference scenario are derived from a medium-high emission scenario without mitigation ("business as usual scenario"). Under the assumption that no measures for adaptation or mitigation are taken, projections were made for the period 2070-2100. The 2C simulation is consistent with the EU 2°C climate goal.

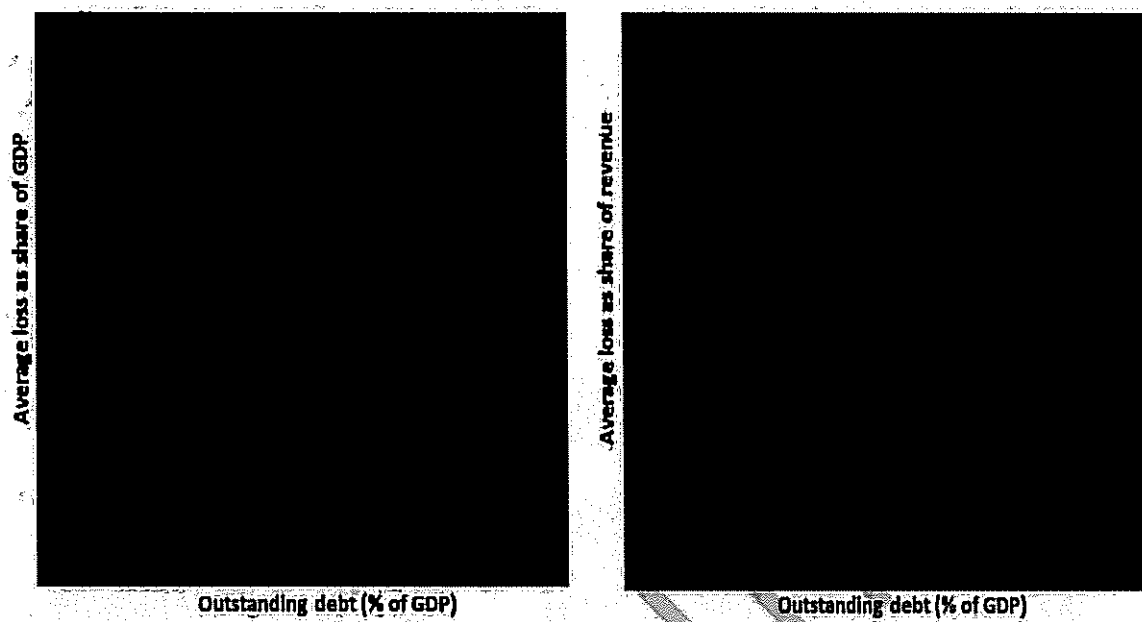
¹⁷ Countries with no direct access to the sea coast can be arguably impacted by sea floods damage estimate is 18 to 60 times more material than induced-flood damages, therefore the impact allocated to the area of Central Southern Europe most likely corresponds only to some of the countries involved.

Figure 1: Historic insurance coverage, debt and losses as share of public finance



Note: Historic non-life insurance coverage and average annual loss based on data from 1980-2016
Sources: EEA and Eurostat.

Figure 2: Losses and outstanding public debt



Note: Average loss data based on 1980-2016. Source: EEA. Public finance data from Eurostat.
Sources: EEA and Eurostat.

Figure 3: Additional flood induced damage across Europe

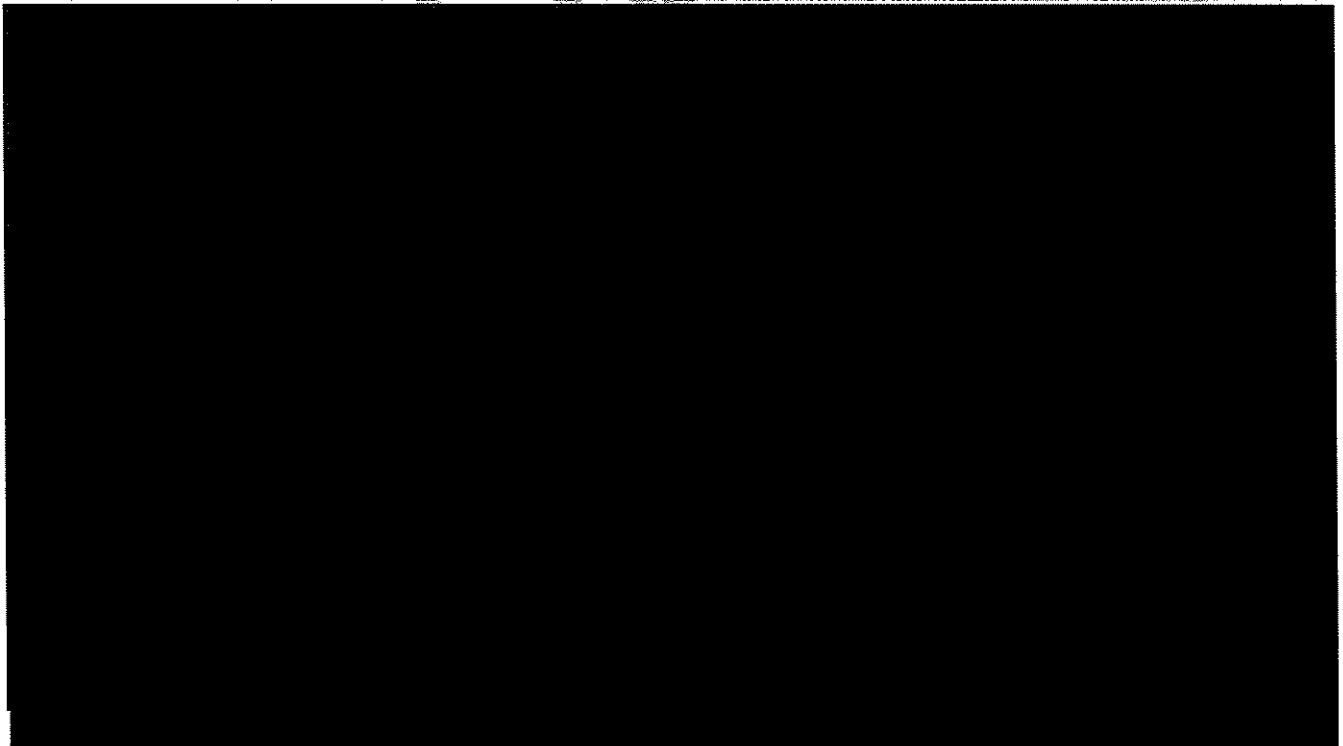


Figure 4: Contribution of to additional flood damage across regions

Additional flood-induced road infrastructure Impact on sea damages to floods damages

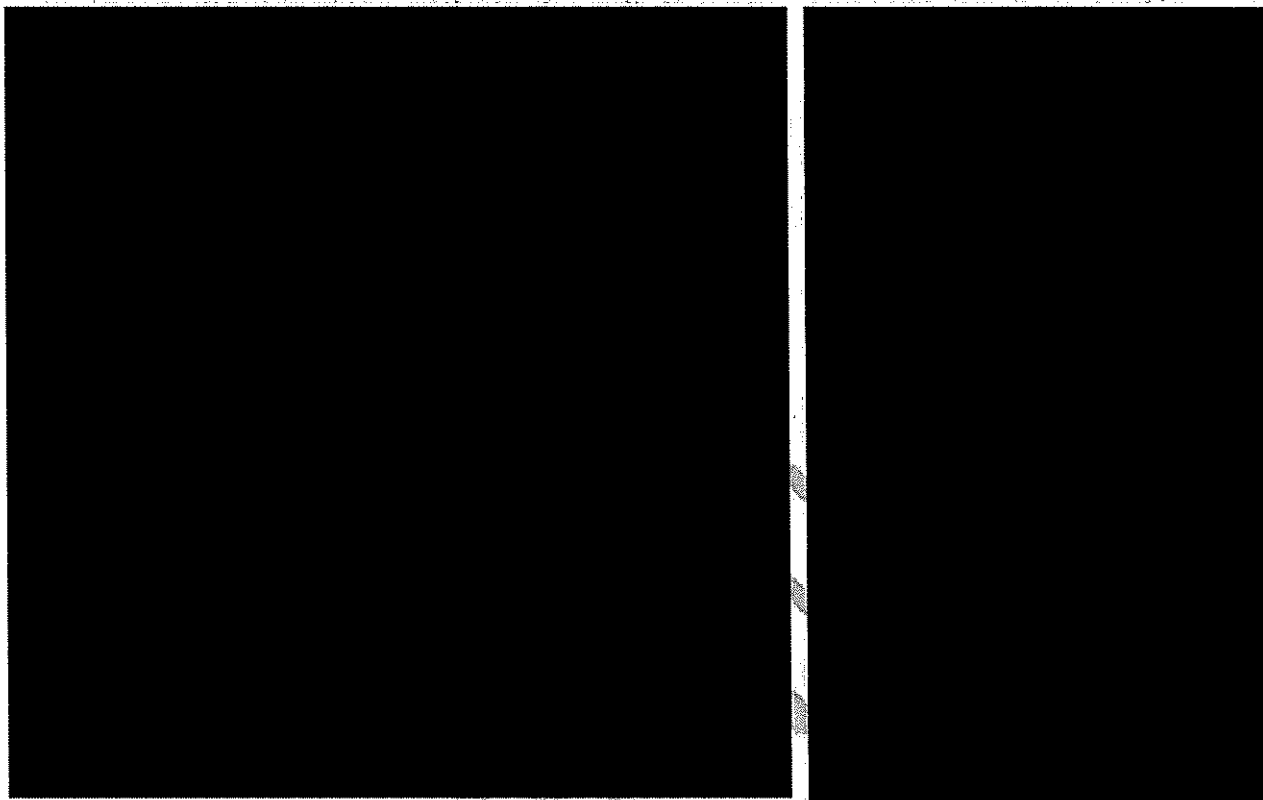


Table 20

Elements for discussion

Table 22

18. One of the most important risks today in relation to climate change is the failure to take measures in respect of climate change mitigation and adaptation.¹⁹ As exposure and vulnerability are key drivers of the expected losses from climate change²⁰, truly transformative measures geared towards adaptation and mitigation are likely to be most effective.
19. There is an important role for the (re)insurance industry, through their risktaking activity, to drive adaptation and mitigation measures. Insurers and reinsurers' risk management practices in assessing, modelling, pricing and underwriting natural catastrophe risks are crucial tools in managing risks from climate change. However, considering potential systemic implications on the overall economy, with vulnerabilities that may build up, and the possible impact on public finances, relevant government action should inherently be part of the solution.
20. Sustainable European natural catastrophe management will necessarily be multi-faceted and involve actors at local, national, regional and European level from industry, government, academia and civil society.

¹⁹ World Economic Forum, The Global Risks Report 2019.

²⁰ European Commission, Insurance of weather and climate-related disaster risk: Inventory and analysis of mechanisms to support damage prevention in the EU, Final Report, August 2017.

21. Three areas are presented for taking the discussion forward.

Adaptation – insurability and affordability

22. Various measures are already available for improving insurance penetration.²¹ In particular, higher insurance penetration for “new” catastrophe risks will be needed. Heat waves, drought and forest fires are the least insured today, even if they show sizeable losses, and increasingly due to climate change. The practice of the combining multiple risks in a single policy or by connecting the purchase of extreme weather insurance to more commonly required and mandatory products (e.g. mortgage contracts, fire insurance), could be a solution.
23. Measures to maintain insurability and affordability may in addition require public policy solutions.²² National, regional or European risk pooling mechanisms should actively be considered, particularly in light of the crossregional and cross-sectoral relevance of certain climate and weather-related developments.
24. Other measures, aiming at promoting risk-mitigating behaviour by insurance takers, or increasing the transparency on conditions and pricing for insurance coverage, may further support affordability and insurability.

Adaptation - risk management and modelling

25. By coordinating the gathering and exploitation of knowledge on natural disaster risk at a European level between European, national and regional authorities, scientists and industry, a European hazard map should be developed and made commonly available. Institutional agreements on knowledge and data (PPP) could further centralise and broaden the scope for synergies in collecting and analysing data, improving the responsiveness of adaptive and preventive measures. In this respect, big data analytics could play a part and the collection of sufficiently robust data provide a more granular risk mapping.
26. As a crucial input, the insight from climate specialists, and analysts and model vendors on the scenario(s) for climate change should help in unpinning the next phase of model development for future natural catastrophe events, enabling the use of common stress scenarios across Europe.²³ This will increase the predictive value of reserving and capital allocation practices of (re)insurers to address risks arising from future extreme weather and climate-related events.

Mitigation – national and European concerted action

²¹ See the analysis conducted by the Geneva Association: Understanding and Addressing Global Insurance Protection Gaps, April 2018.

²² See CRO Forum

²³ See: The Geneva Association. Managing Physical Climate Risk: Leveraging Innovations in Catastrophe Risk Modelling, November 2018.

27. Private sector initiatives on risk mitigation (or adaptation) will need to be paired with overarching national government or European initiatives to ensure coherency of prevention or adaptation measures. Cross-border effects of natural hazards will also need to be increasingly taken into account in assessing the impact on regions across Europe.
28. At national level, governments should evaluate and disclose the potential (financial) exposures to extreme weather and climate-related risks in order to assess the sustainability of catastrophe risk coverage in their country.²⁴ Assessing and pursuing public risk financing options should be part of governments' adaptation and mitigating action, as well as pursuing, possibly in close exchange with private sector initiatives, concrete risk prevention measures and regulatory measures supporting sound risk management practices by their industry and citizens.
29. Advanced European solutions for providing financial relief and disaster management to countries who need to make relatively larger efforts compared to their GDP, due to higher exposure or higher financial strain, may be needed. Successful examples of national frameworks for (re)insuring natural catastrophe risks may prove relevant in developing further national, regional or European frameworks. Coordinated disaster recovery may mitigate the impact of extreme weather and climate-related events across Europe.²⁵ Cross-border (re)insurance and disaster management facilities may be of increasing relevance in certain EU regions and neighbouring countries. Institutional arrangements for sharing experience on national governments' intervention programmes should also increase the efficiency of disaster risk management and prevention.

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²⁴ See: OECD Recommendation on Disaster Risk Financing, February 2017.

²⁵ At European level the European Civil Protection Mechanism provides direct disaster risk management. The European Commission proposes to strengthen the EU civil protection response to disasters (known as 'rescEU') by increasing preparedness and prevention. See: https://ec.europa.eu/commission/news/resceu-2018-dec12_en.

9-

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Participants List, 11 June 2019 EIOPA

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[REDACTED]	[REDACTED]	EIOPA	EIOPA
[REDACTED]	[REDACTED]	EIOPA	EIOPA

...and the

Figure 1. Schematic representation of the experimental design. The subjects were divided into two groups: the control group and the experimental group. The control group was divided into two subgroups: the control group and the experimental group. The experimental group was divided into two subgroups: the control group and the experimental group.

[illegible]

22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000 1001 1002 1003 1004 1005 1006 1007 1008 1009 1010 1011 1012 1013 1014 1015 1016 1017 1018 1019 1020 1021 1022 1023 1024 1025 1026 1027 1028 1029 1030 1031 1032 1033 1034 1035 1036 1037 1038 1039 1040 1041 1042 1043 1044 1045 1046 1047 1048 1049 1050 1051

1. *Phragmites australis* (Rostk & Schmidt) Bosc.

[illegible]

1. *Chlorophyll a* (Chl *a*)

$\frac{1}{2}$
 $\frac{1}{2}$
 $\frac{1}{2}$

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Year	Number of cases (approx.)
1990	15,000
1991	20,000
1992	25,000
1993	30,000
1994	35,000
1995	40,000
1996	45,000
1997	50,000
1998	95,000
1999	25,000

[illegible]

Figure 6

8. $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$

1. *Chlorophyll a* and *Chlorophyll b* were determined by the method of Arar and Collins (1971).

2000

... ..

... ..

• **Prevalence** = the proportion of a population that has a disease at a particular point in time

1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 26

[illegible]

Figure 1. Schematic representation of the experimental design. The subjects were divided into two groups: the control group and the experimental group. The control group was divided into two subgroups: the control group and the experimental group. The experimental group was divided into two subgroups: the control group and the experimental group.

$\frac{d}{dt} \left(\frac{\partial L}{\partial \dot{x}} \right) = \frac{\partial L}{\partial x}$

1. *Chlorophyll a* and *Chlorophyll b* were determined by the method of Arar and Collins (1997).

1. *Chlorophyll a* (Chl *a*)

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$\frac{d}{dt} \left(\frac{\partial L}{\partial \dot{x}} \right) = \frac{\partial L}{\partial x}$

4. $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$

11. *Chrysomelidae* (10 spp.)

Journal of Management Studies, 20(6), 791-806.

Journal of Management Education 30(6)

[illegible]

Age Group	1980	1990	2000	2010	2020
0-14	15.0	14.0	13.0	12.0	11.0
15-24	12.0	11.0	10.0	9.0	8.0
25-34	10.0	9.0	8.0	7.0	6.0
35-44	8.0	7.0	6.0	5.0	4.0
45-54	6.0	5.0	4.0	3.0	2.0
55-64	4.0	3.0	2.0	1.0	0.0
65-74	2.0	3.0	4.0	5.0	6.0
75+	1.0	2.0	3.0	4.0	5.0

1. *Journal of the American Medical Association*, 1997; 277: 1033-1036.

Number of hauls	<i>P. setiferus</i> (%)	<i>P. setiferus</i> + <i>P. setiferus</i> + <i>P. setiferus</i> (%)	<i>P. setiferus</i> + <i>P. setiferus</i> + <i>P. setiferus</i> (%)
1	~10	~10	~10
2	~10	~10	~10
3	~10	~10	~10
4	~10	~10	~10
5	~10	~10	~10
6	~10	~10	~10
7	~10	~10	~10
8	~10	~10	~10
9	~10	~10	~10
10	~10	~10	~10

Country	1950	1960	1970	1980	1990	2000	2010	2020	2030	2040	2050
Japan	7.0	7.5	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0
Germany	10.0	10.5	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0
France	11.0	11.5	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0	20.0
Italy	12.0	12.5	13.0	14.0	15.0	16.0	17.0	18.0	19.0	20.0	21.0
Spain	13.0	13.5	14.0	15.0	16.0	17.0	18.0	19.0	20.0	21.0	22.0
Sweden	14.0	14.5	15.0	16.0	17.0	18.0	19.0	20.0	21.0	22.0	23.0
Belgium	15.0	15.5	16.0	17.0	18.0	19.0	20.0	21.0	22.0	23.0	24.0
United Kingdom	16.0	16.5	17.0	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0
United States	17.0	17.5	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
Canada	18.0	18.5	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0	27.0
Australia	19.0	19.5	20.0	21.0	22.0	23.0	24.0	25.0	26.0	27.0	28.0
South Korea	20.0	20.5	21.0	22.0	23.0	24.0	25.0	26.0	27.0	28.0	29.0
China	21.0	21.5	22.0	23.0	24.0	25.0	26.0	27.0	28.0	29.0	30.0
India	22.0	22.5	23.0	24.0	25.0	26.0	27.0	28.0	29.0	30.0	31.0
Brazil	23.0	23.5	24.0	25.0	26.0	27.0	28.0	29.0	30.0	31.0	32.0
South Africa	24.0	24.5	25.0	26.0	27.0	28.0	29.0	30.0	31.0	32.0	33.0
Argentina	25.0	25.5	26.0	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0
Chile	26.0	26.5	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
Colombia	27.0	27.5	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0	36.0
Venezuela	28.0	28.5	29.0	30.0	31.0	32.0	33.0	34.0	35.0	36.0	37.0
Peru	29.0	29.5	30.0	31.0	32.0	33.0	34.0	35.0	36.0	37.0	38.0
Ecuador	30.0	30.5	31.0	32.0	33.0	34.0	35.0	36.0	37.0	38.0	39.0
Bolivia	31.0	31.5	32.0	33.0	34.0	35.0	36.0	37.0	38.0	39.0	40.0
Paraguay	32.0	32.5	33.0	34.0	35.0	36.0	37.0	38.0	39.0	40.0	41.0
Uruguay	33.0	33.5	34.0	35.0	36.0	37.0	38.0	39.0	40.0	41.0	42.0
Costa Rica	34.0	34.5	35.0	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0
Panama	35.0	35.5	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
Dominican Republic	36.0	36.5	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0	45.0
Honduras	37.0	37.5	38.0	39.0	40.0	41.0	42.0	43.0	44.0	45.0	46.0
Nicaragua	38.0	38.5	39.0	40.0	41.0	42.0	43.0	44.0	45.0	46.0	47.0
Guatemala	39.0	39.5	40.0	41.0	42.0	43.0	44.0	45.0	46.0	47.0	

[illegible][illegible]

4. Do you observe an
experience
relationship
between
investors' position
and funds' targets and
beneficiaries' line of
needs derived from
short-termism?
(Please explain)

2. security and
operating in steam
a. detecting pipes
with low rates in
pressure
pressure

at 11:30 p.m. on
Monday, Aug. 10, 1992
at the University of
California, Berkeley.

Joining the new European
Commission's work
programme in 1990

To safeguard future returns, investors and pension funds must make a major bulldoze now on four fronts: ways to cut costs, ways to increase productivity, ways to change old mindsets and ways to change the value of a large part of the workforce. If it would be good to bring it across, it would be good to bring it across.

What could be the regulatory trigger to limit the permission of retail insurance?

It is difficult to see how the insurance industry could be regulated in a way that would be effective. The industry is too large and too complex to be regulated in a way that would be effective. The industry is too large and too complex to be regulated in a way that would be effective.

**Representative James
W. Studdert**
**State Representative,
District 60**

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