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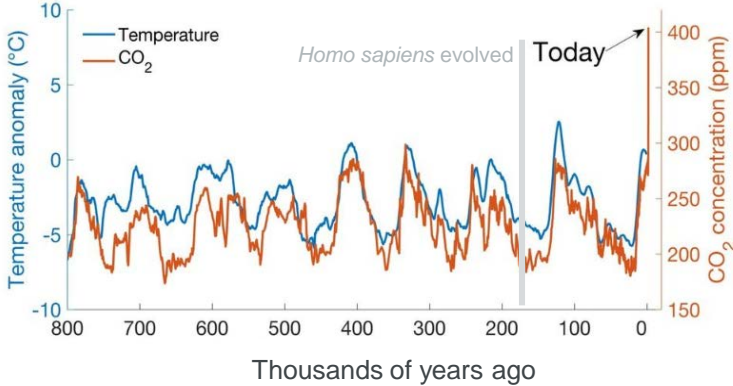


Climate change-related disclosures and how it's changing our business

Marte Borhaug | Russ Bowdrey FIA
Aviva & Aviva Investors

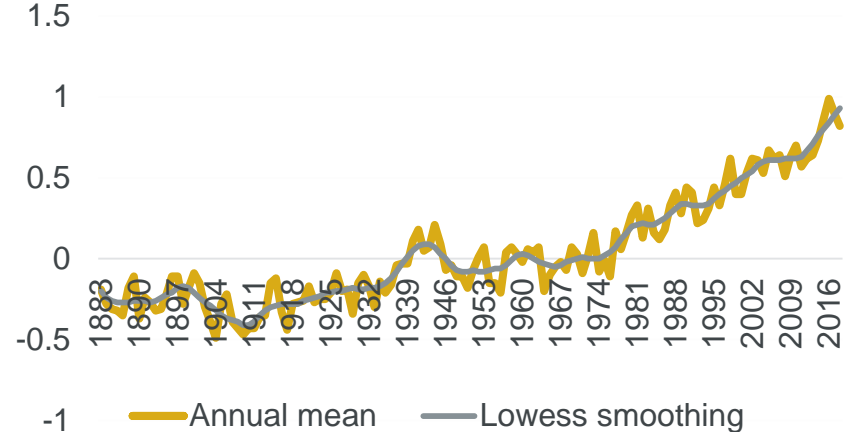
The Science – past correlations, indicate future changes

CO₂ concentration and temperature anomalies' correlation, an ominous sign



Data from Parrenin et al., 2013; Snyder et al., 2016; Bereiter et al., 2015.
Ben Henley and Nerilie Abram/The Conversation

Global surface temperatures change relative to 1951-1980 average

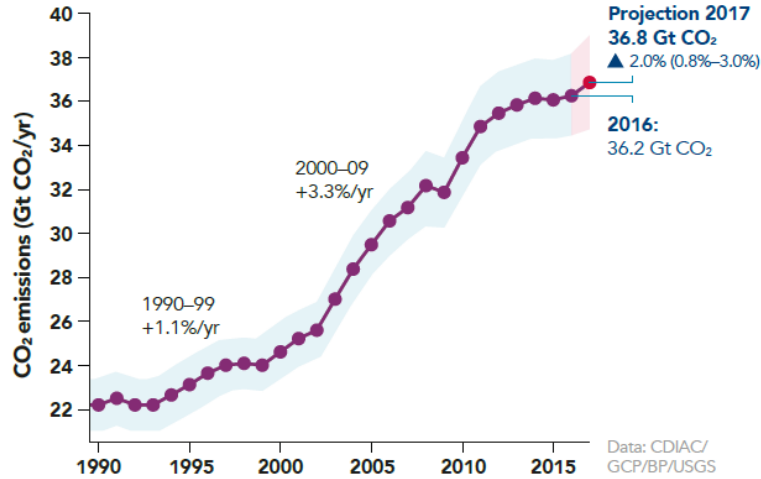


• Data source: NASA's Goddard Institute for Space Studies (GISS). Credit: NASA/GISS

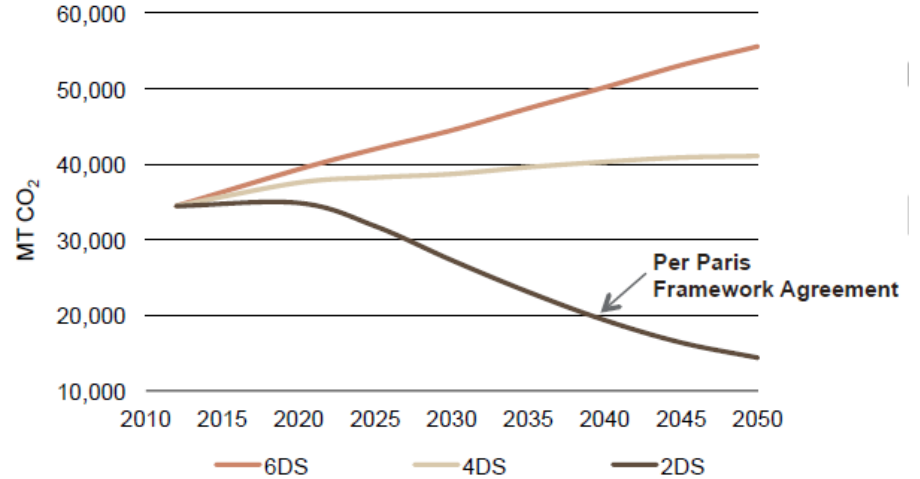


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Growth in emissions - forecast



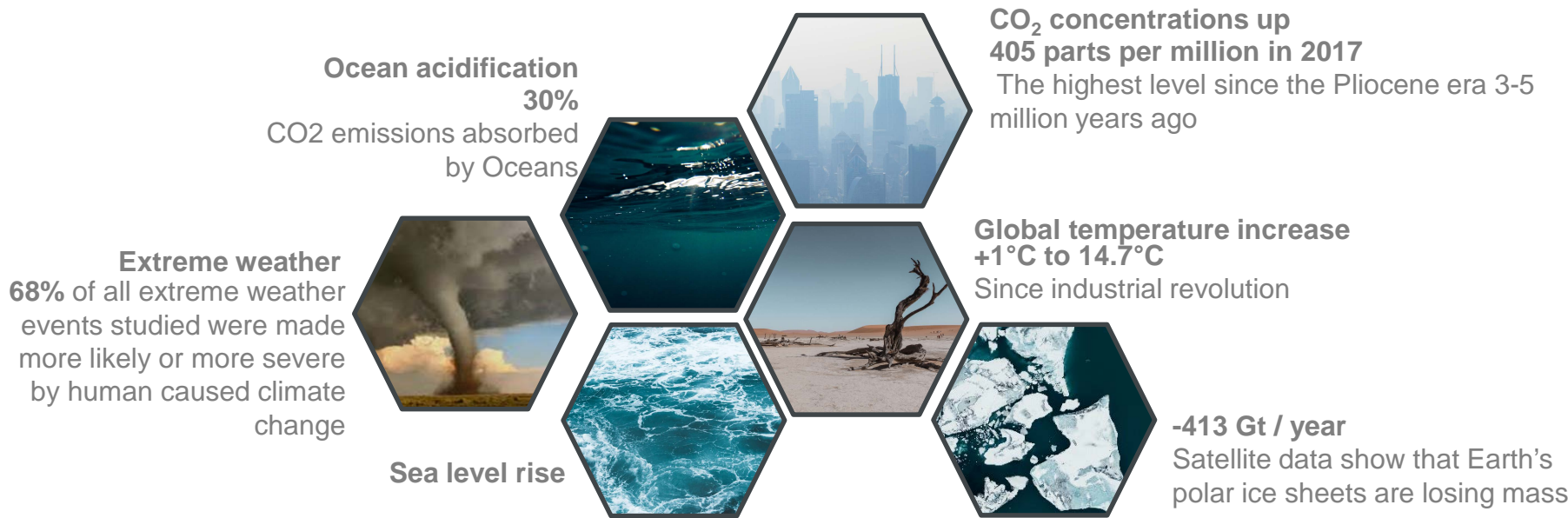
Absolute CO₂ emissions (MT CO₂)



Source: Exponential Climate Action RoadMap, GCAS, 2018



The reality of climate change



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Aviva's Climate-Related Financial Disclosure 2018



| Retirement | Investments | Insurance | Health |

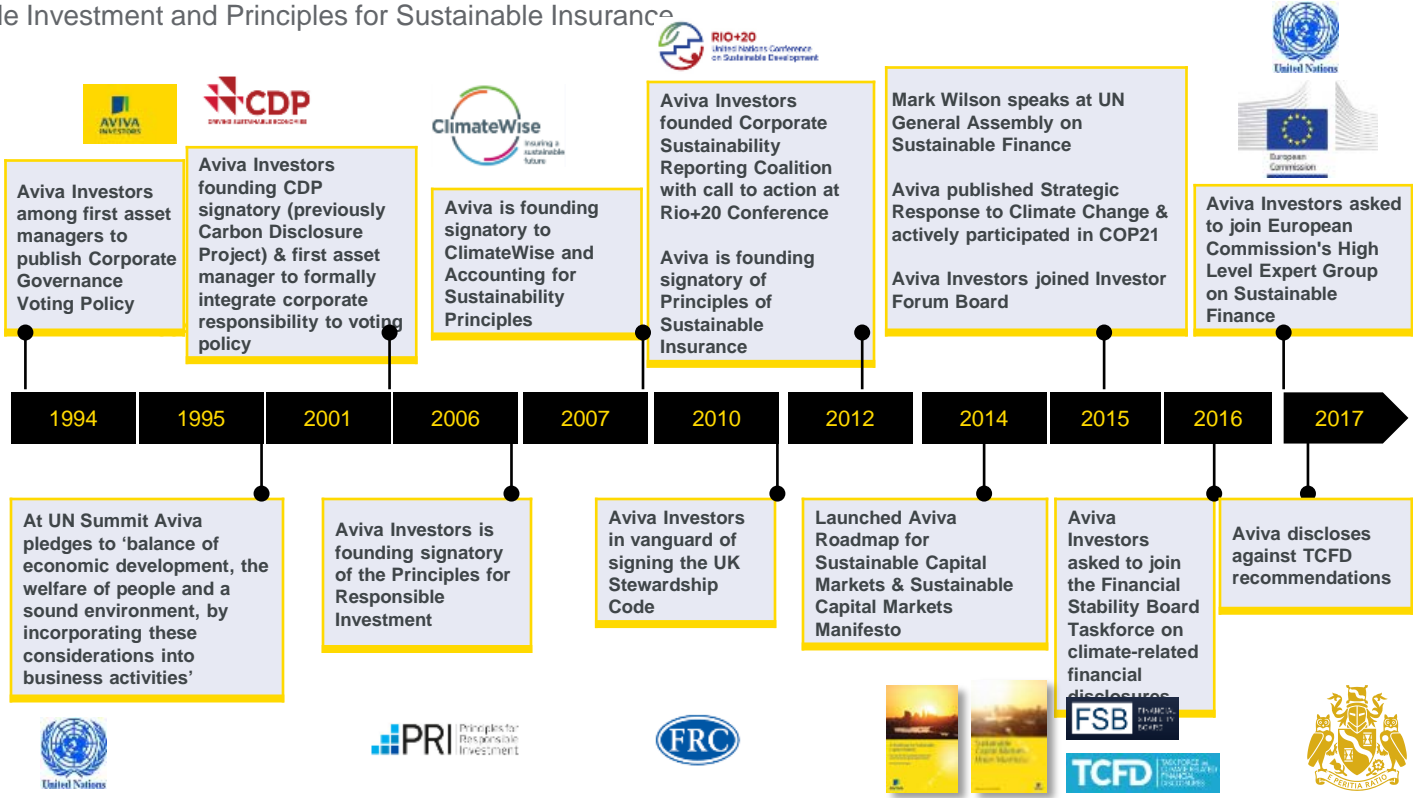


This billboard is not an ad.
It's an air filter which cleans air pollutants generated by 91K cars.



Heritage

Aviva has been at the forefront of industry developments with respect to sustainable finance since the 1990s. We were the first asset manager to formally integrate corporate responsibility into our Voting Policy and were a founding signatory of the Principle for Responsible Investment and Principles for Sustainable Insurance



Taskforce on Climate-related Financial Disclosures (TCFD)

The Financial Stability Board established an industry led task-force: the Taskforce on Climate-related Financial Disclosures. The Task force was asked to develop voluntary, consistent climate-related financial disclosures that would be useful to investors, lenders, and global insurance underwriters.

Recommendations and Supporting Recommended Disclosures			
Governance	Strategy	Risk Management	Metrics and Targets
<p>Disclose the organization's governance around climate-related risks and opportunities.</p>	<p>Disclose the actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning where such information is material.</p>	<p>Disclose how the organization identifies, assesses, and manages climate-related risks.</p>	<p>Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material.</p>
Recommended Disclosures	Recommended Disclosures	Recommended Disclosures	Recommended Disclosures
<p>a) Describe the board's oversight of climate-related risks and opportunities.</p>	<p>a) Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term.</p>	<p>a) Describe the organization's processes for identifying and assessing climate-related risks.</p>	<p>a) Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process.</p>
<p>b) Describe management's role in assessing and managing climate-related risks and opportunities.</p>	<p>b) Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning.</p>	<p>b) Describe the organization's processes for managing climate-related risks.</p>	<p>b) Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.</p>
	<p>c) Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.</p>	<p>c) Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management.</p>	<p>c) Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.</p>



Why? It's systemic and the PRA have high expectations

- The CRO/Chief Actuaries' frame of reference: PRA SS 3/19

“Climate change, and society’s response to it, present financial risks which are relevant to the PRA’s objectives...”

“**ORSA**...should include at a **minimum**...all material exposures relating to the **financial risks** from climate change”

“... few firms are taking a strategic approach that considers how actions **today** affect **future** financial risks.”

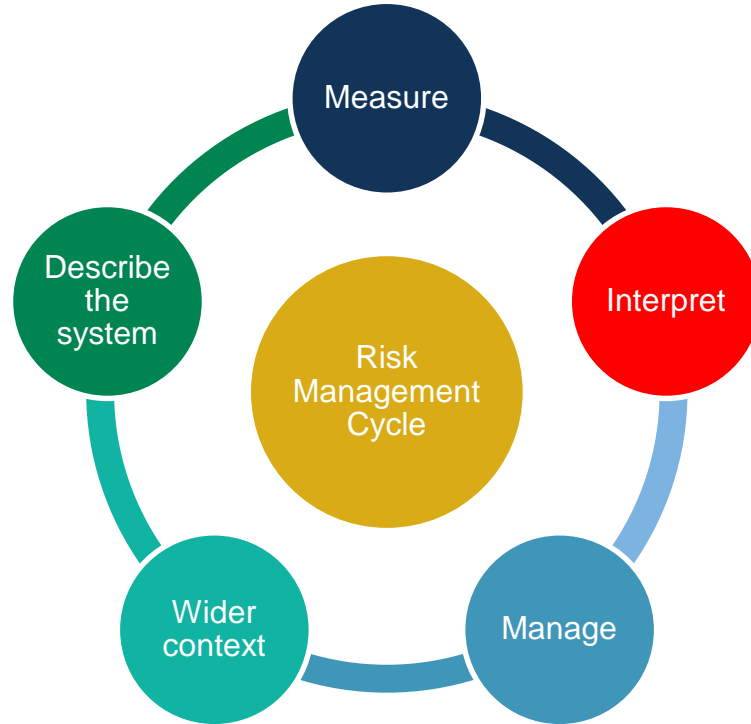
“...(robust) **governance**...embed climate change into **existing risk management**...”

“...use **long term scenario analysis** to inform strategy”

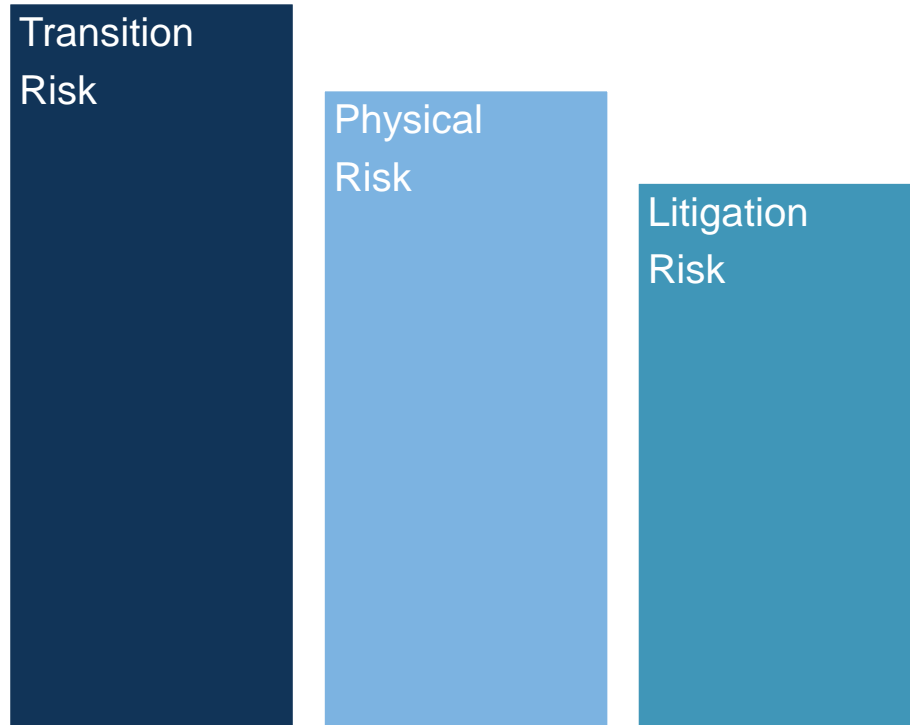
Measurement is the first step to management



But you need to understand what you're looking at...



3 Pillars of climate change's financial impact





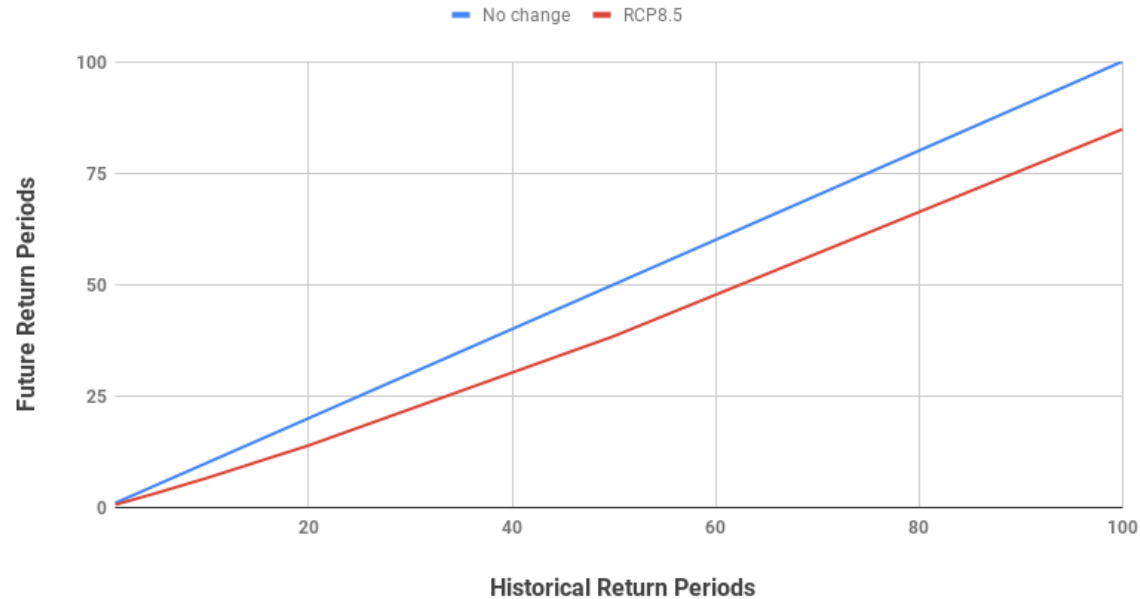
Transition risk: the cost of putting things right



Physical risk: the cost of inaction

Physical risk: leveraging catastrophe models

Future changes in windstorm for Great Britain

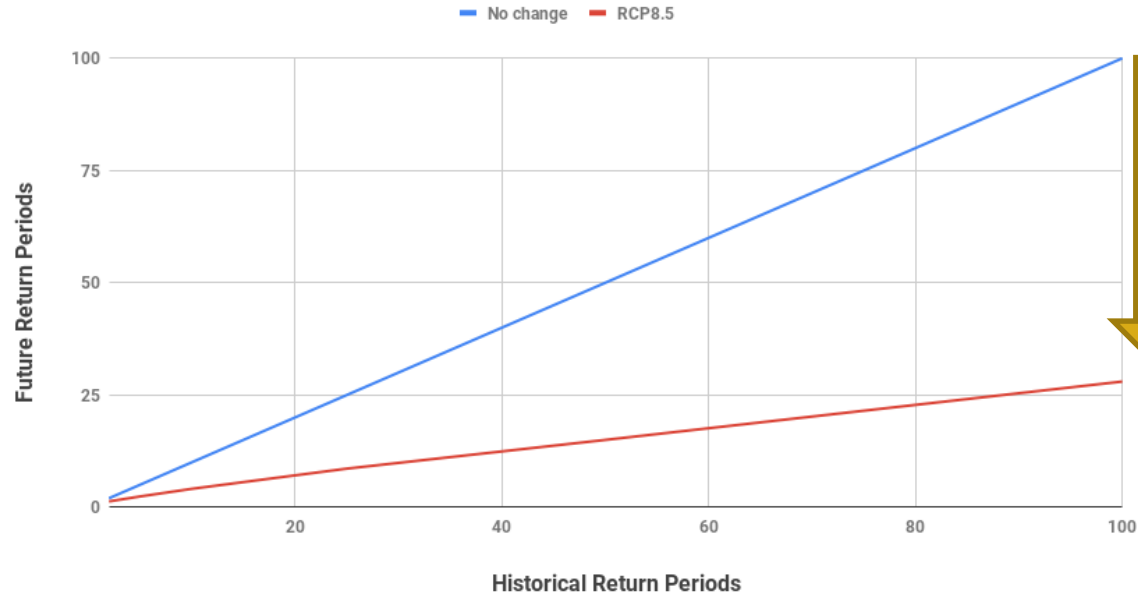


In a “BAU” scenario, the 1-in-100 year event could become the c.1-in-90



Physical risk: leveraging catastrophe models

Future change in floods for Northumbria in 2050



In a “BAU” scenario, the 1-in-100 year event could become the c.1-in-30



Litigation risk:
It's all their fault!



What the modelling tells us

- There is greater cost from inaction
- PV of physical risk costs more than transition risk
- Climate change is a non-diversifiable risk
- The output is decision useful, despite the uncertainty
- Simple actions can have large impacts
- Modelling sophisticated but immature
 - How useful are dollar losses given the huge modelling uncertainty?
- Learning to interpret the data
 - Expert insight, pragmatism experience required



Why should you carry on listening?

Mandatory reporting is around the corner

Wow the PRA with your insights!

The PRA expects climate change to be integrated from the Board down

Competitive advantage



“The how-to bit” - Aviva’s TCFD journey: Governance

- Executive sponsors
- Run out of Risk function
- Very wide participation
 - Investment | Actuarial | Underwriting | Reinsurance | Risk | Public policy...
- Governance in line with risk calibration
 - Expert judgement panels
 - Robust challenge from wide body of stakeholders
 - External expert input and specialist review



“The how-to bit” – Getting the modelling done

- The modelling is specialist and deeply non-trivial
- Growing number of specialist vendors
- Physical risk is similar, but vitally different, to catastrophe modelling
- Transition risk requires strong skills in:
 - Cost projection
 - Company valuation
 - Instrument valuation
 - Scenario analysis
- Litigation risk requires deep legal, policy and climate change knowledge



“The how-to bit” – Data is crucial

- Listed securities are relatively easy
- Unlisted less so
- Real estate-linked
 - Location and building type needed for physical
 - Transition risk data is a challenge, so modelling needed
- Sovereigns is a puzzle
 - Large portfolio exposures
 - Opaque and complex exposure to climate change
 - Based our analysis on ND-GAIN, but room for improvement



“The how-to bit” – Outputs by pillar

- Dollar “losses”
 - Be wary of Climate “VaR” measures, is it a Value at Risk or stressed value?
 - Take time to due diligence the modelling
 - How meaningful/useful is a dollar loss?
- Some providers output exposure indices
 - More intellectually honest? More useful?
- How will we use this data?
 - Share it and walk through
- How trustworthy is it for BIG decisions?



“The how-to bit” - Aggregation

- Borrowed from our Operational Risk modelling
- Bayesian networks
 - Map together interactions
 - Better reflect uncertainty
 - Provide overall exposure figures and granular attribution



“The how-to bit” – The “use test”

- Executive sponsors
- Run out of Risk function
- Governance in line with risk calibration
 - Expert judgement panels
 - Robust challenge from wide body of stakeholders
 - External expert input and specialist review



“The how-to bit” – Open issues

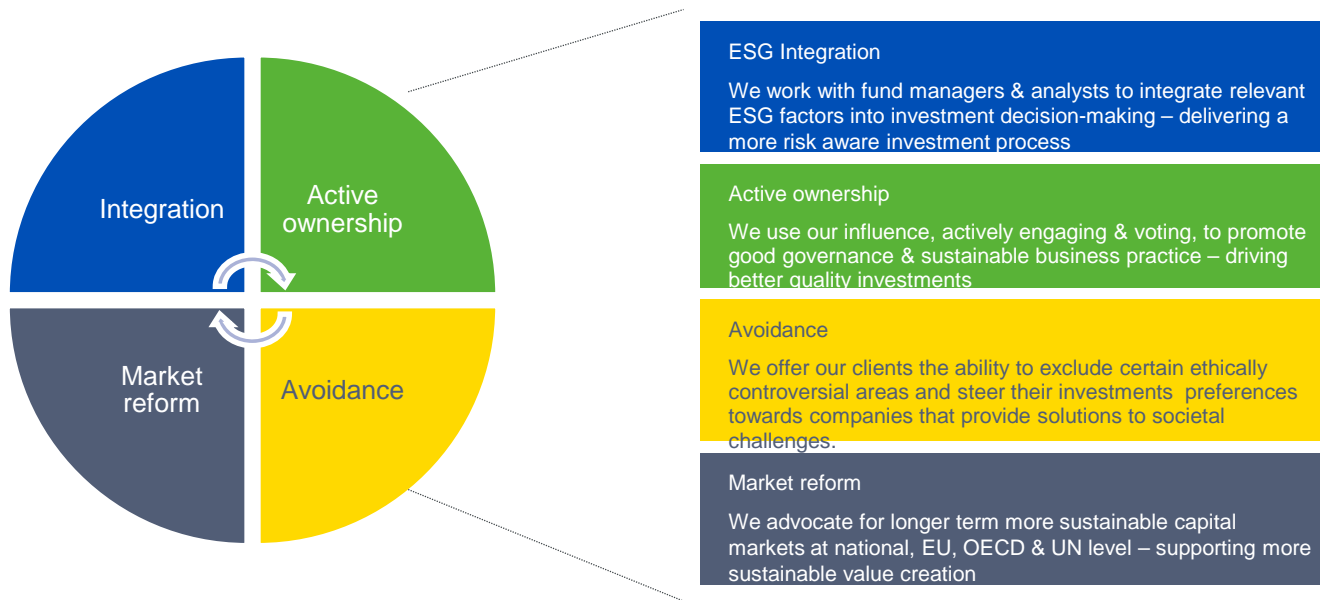
- IEA derived scenarios
- Analysis of sovereign exposure
- Regulatory intervention
- Carbon price rises
 - What/when/how?
- Integrating more deeply into SAA
 - Requires climate-change aware economic models



Aviva's exposure to climate change across our business

	Impacted By	Impacts On
Insurer	General insurance – increasing weather claims Life insurance & pensions	Underwrite negative activities (e.g. coal) Promote positive (e.g. driving)
Asset Owner	Value of assets in future scenarios Liabilities	Emissions from portfolio Green vs brown investment
Asset Manager	CC on financial returns	Active stewardship Stock selection/valuation

Aviva Investors Responsible Investment approach



2015 – Published “Aviva’s strategic response to climate change”

2018 – Published “Aviva’s climate change stocktake”



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Active ownership - Voting

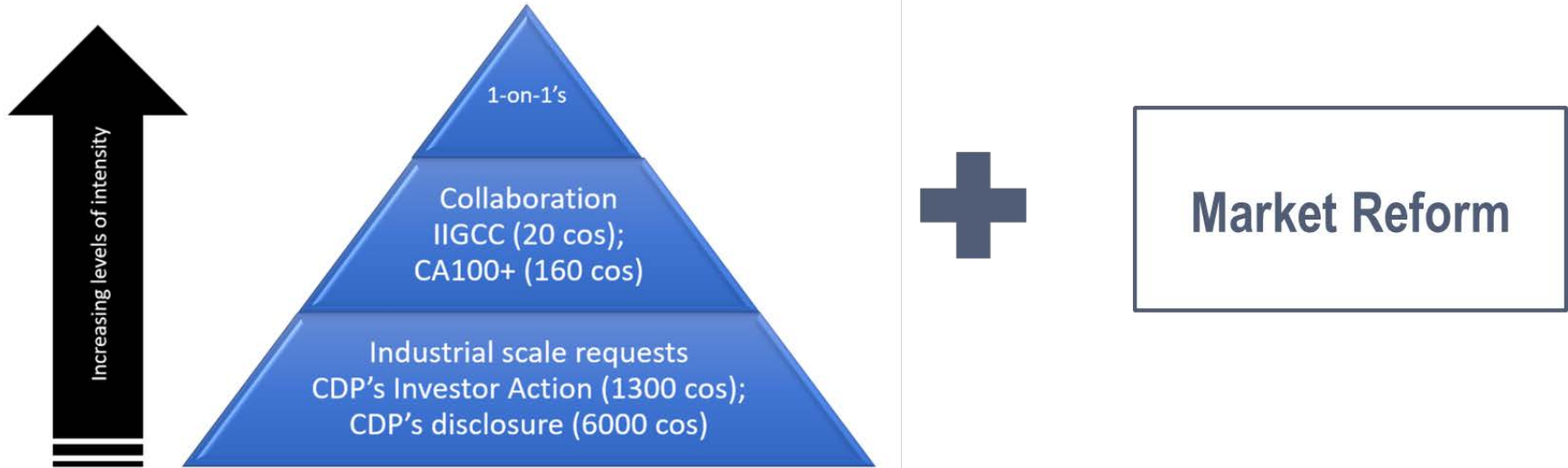
Corporate Governance Policy

- Disclosure
 - 2001: withhold support for a company's if their disclosure on ESG issues is absent or non-existent
 - 2019: withhold support for AR&A if not sufficient climate disclosure (TCFD)
- Shareholder resolutions

	Shareholder Resolutions (SHR)							ESG disclosure	
	Climate Change strategy	Greenhouse gases	Deforestation	Methane	Renewable Energy	Water	Total SHR	# companies	# companies CDP specific
2015	28	15	3	5	5	0	56	181	6
2016	35	11	1	5	12	1	65	176	88
2017	33	12	3	4	13	0	65	184	104
2018	8	11	2	6	14	2	43	183	111
Total	104	49	9	20	44	3	229		



Active Ownership - Engagement



Active ownership - Engagement

Collaborative Engagement:

- Institutional Investors Group on Climate Change
- Climate Action 100+
 1. Implement a strong governance framework
 2. Take action to reduce greenhouse gas emission across the value chain
 3. Provide enhanced corporate disclosure inline with TCFD

1-on-1 engagement:

- Request for change
- Fact Finding

	1-on-1	Collaboration
2015	75	60
2016	55	21
2017	33	65
2018	74	17

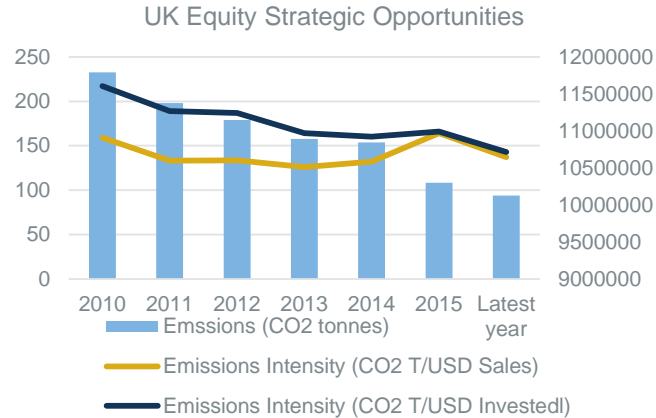
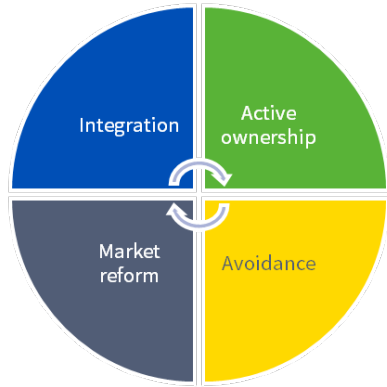


Active ownership – Market reform

- 2014 – “Roadmap for Sustainable Capital Markets” & “Sustainable Capital Markets Manifesto”
- 2016 – Represented on Financial Stability Board’s Taskforce on Climate-related Financial Disclosures
- 2016 – Joined European Commission's High Level Expert Group on Sustainable Finance
- 2018 – Launch of World Benchmark Alliance
- 2018 – Recognised by UN for work on sustainability



Aviva and engagement on climate change - Conclusion



+ **< 1.5°C**



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Three key messages

- 1) **Why?** It's systemic and the PRA have high expectations
 - The PRA are paying attention – read SS 3/19
 - Measurement is the first step to understanding

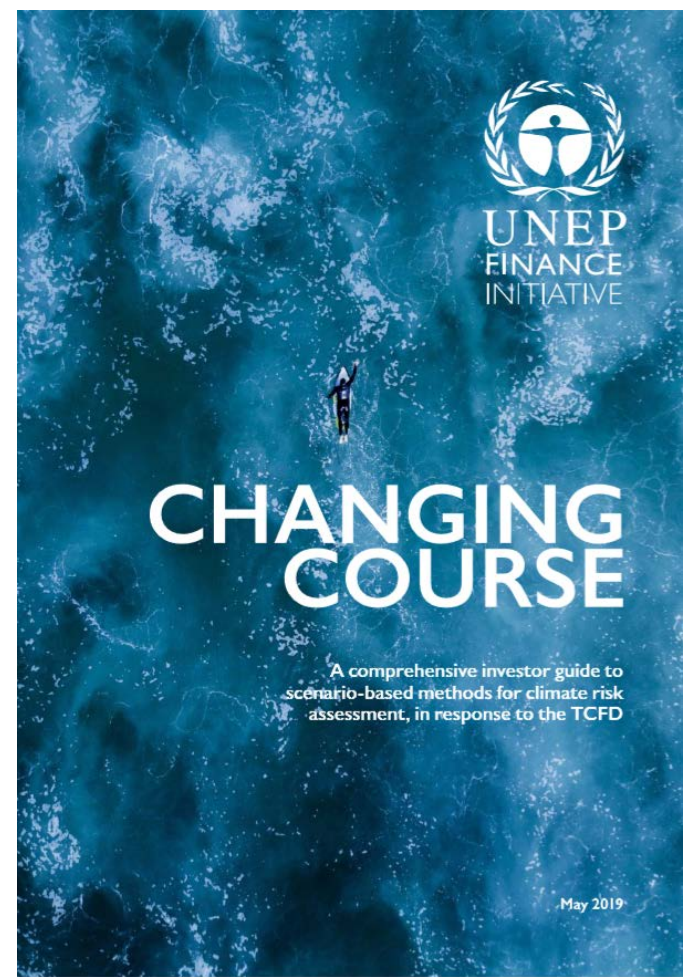
- 2) **Why?** The greatest cost to shareholders and customers is from **inaction**

- 3) **How?** Plenty can be done by taking an active approach to asset ownership



Some further information

- <https://www.unepfi.org/investment/tcfd/>



Questions

Comments

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