Initial expanded response to the Financial Stability Board's Taskforce on Climate-related Financial Disclosure (TCFD) – year end 2016 (online version)

Aviva plc is a composite insurance company where long term insurance and savings business from continuing operations accounted for over 61% of our total business, based on total premiums for the year ending December 2016. General insurance and health insurance together accounted for 39% of total premiums from continuing operations. As an asset owner we have £450 billion assets under management. As an asset manager Aviva Investors provide asset management services to both Aviva and external clients, and currently manages approximately £345 billion in assets as at 31st December 2016.

As an international insurance group, risk management is at the heart of what we do. It is an integral part of maintaining financial stability for our customers, shareholders and other stakeholders. Our sustainability and financial strength is underpinned by an effective risk management process which helps us identify major risks to which we may be exposed, establish appropriate controls and take mitigating actions for the benefit of our customers and investors.

We believe that unmitigated climate change presents a real threat to financial stability over the coming decades both at a governmental and corporate level to the point of permanent impairment to total assets. We have been reporting on climate change in our Annual Report & Accounts since 2004 and we recognise the financial implications of climate change and the associated risks for Aviva.

We strongly welcome the Financial Stability Board's interest in the implications of climate change, and we were pleased to be represented and involved in the Taskforce's work to help businesses disclose climate-related financial risks and opportunities within their existing disclosure requirements, both as a responder, and as users of such disclosures.

This expanded response, constitutes Aviva plc's 2016 initial response to the TFCD framework in our multiple roles as an asset owner, insurer, investor and asset manager. We note this framework is subject to change. We intend to continually improve our response over time.

Governing climate-related risks

At the Aviva Plc Board level, the following two Committees oversee our management of climate related risks:

1) **Board Risk Committee** – this Committee met six times in 2016 and reviews, manages and monitors all aspects of risk management in the Group, including climate risk. Climate change is highlighted as an emerging risk in the 2016 Annual Report & Accounts, as it has been in previous years. It is therefore assessed for its proximity and significance to Aviva via our embedded market and group emerging risk processes. Emerging risks are regularly reviewed and their potential impact is evaluated to understand if they are significant at an Aviva level over longer time periods than the current business plan. This is to ensure all risks to both the medium and long term future of Aviva receive appropriate attention.
2) **Board Governance Committee** – one of this Committee's key responsibilities is to oversee Aviva's conduct in relation to its corporate and societal obligations, including setting the guidance, direction and policies for Aviva's customer and corporate responsibility agenda and advising the Board and management on these matters. This Committee met six times in 2016 and formally considered Aviva's strategic approach to climate change during the year including approval to divest from ten companies (two due to their further planned investment in coal capacity and eight companies on the basis of non-responsiveness). The Committee continues to ensure the Board remains informed on the issue.

Strategy

Whilst Aviva's climate change strategy relates to the entire Group, the businesses that form Aviva work to different risk horizons. For example, general insurance has primarily an 18 month outlook (although recognising there are longer term risks) with a financial plan outlook of 3-5 years, compared to the much longer term outlook taken by Aviva's life and asset management businesses, as providers of pensions and long term savings.

We recognise that the increased severity and frequency of weather related losses has the potential to turn earnings events into capital events. Consequently, large catastrophic losses are explicitly considered in economic capital modelling to ensure Aviva and its subsidiaries are resilient to such scenarios.

In July 2015, we published Aviva's Strategic Response to Climate Change setting out our approach to acting on climate-related investment risk over the next five years (2015-2020)[1]. This encompasses how we allocate our capital and how we use our influence to support the transition to a lower carbon – '2 °C aligned' - economy. We provided an update to this Response in 2016[2] and our response received a special mention by Ségolène Royal in the 1st Edition of the International Awards on Investor Climate-related Disclosures.

We are closely monitoring our exposure to sectors or subsectors particularly exposed to transition risk and analysing at a more granular level the individual company level risk. We are therefore particularly supportive of the Financial Stability Board's TCFD as we believe this would provide the ideal framework for this type of disclosure.

We remain deeply committed to ensuring environmental, social and governance issues are included in our investment analysis and decision making and continue to drive better integration of carbon and climate risk factors into investment decisions. The dynamic and interconnected nature of climate risk, in addition to current limitations in some necessary data sets, means understanding and managing climate related risks remains an important focus for our business.

Climate change is part of our asset management House View, which outlines our view of the economic outlook and is updated on a quarterly basis to provide key climate-related physical or policy trends and developments. We have held a number of briefing sessions with fund managers and analysts to discuss the implications of climate change across asset classes. We have explicitly incorporated corporate responsibility disclosure and performance into Aviva's voting policy since 2001 and we were one of the first asset managers to do so globally. Aviva Investors has also revised its 2017 UK Corporate Governance and Corporate Responsibility Voting policy to include the following wording:

"to support shareholder resolutions that reflect our general views on issues such as climate change and the governance and disclosure of climate risk, as set out by the Financial Stability Board's Task Force on Climate Related Financial Disclosure (TCFD)".

Risk Management – identification, assessment and management

The ways in which the insurance sector could be impacted by climate change are diverse, complex and uncertain. In reality, a 4°C temperature increase would effectively see us bowing out of the market. However, for the purposes of our response we have focused on the three risk factors that the Prudential Regulation Authority identified in its 2015 report – Physical, Transition, and Liability.

Physical Risk

Insurance risks - We recognise that the increased severity and frequency of weather-related losses is a driver of results volatility and may impact our ability to write profitable new business over the longer term. This has driven a focus on explicitly considering the impact of climate/weather in financial planning and pricing. Our exposure is limited by our general insurance business being predominantly in Northern Europe and Canada. Large catastrophic losses are explicitly considered in economic capital modelling to make sure the Group and its subsidiaries are resilient to such scenarios.

We consider our top three insurance climate-related risks to be:

1. *Adverse impact to validity of actuarial pricing assumptions and projections*
2. *Potential need to restrict coverage levels to make assets insurable*
3. *Managing volatility of financial results emanating from increased severity and frequency of weather related losses*

Reinsurance - We purchase reinsurance to protect against the severity and frequency of large catastrophe losses (CAT) events, and review the adequacy of the cover and programme structure annually at renewal. The total Group potential retained loss from its most concentrated catastrophe exposure peril (Northern Europe Windstorm) is approximately £150 million on a per occurrence basis and £175 million on an annual aggregate basis. Any losses above these levels are covered by the group-wide catastrophe reinsurance programme to a level in excess of a 1 in 200 year return period.

We have further strengthened our approach to managing operational risk ensuring we are clear on the key risks we face as a business, making sure we have good controls in place to manage them. As well as climate change appearing as a risk theme at a group level, it is also a risk theme in a number of our GI markets. Climate change covers impacts such as change in rainfall, temperature, windstorms and frequency of catastrophic weather events. Secondary impacts of climate change such as geo-political conflict and food security are covered by other risk themes.

Aviva France GI considers that climate change could impact the business through:

1. *increased volatility of large claims,*
2. *change in weather patterns,*
3. *increase in reinsurance costs.*

[1] http://www.aviva.com/media/upload/Avivas-strategic-response-to-climate_change_Ga2cIqW.pdf

[2] http://www.aviva.com/media/upload/Avivas_strategic_response_to_climate_change_-_2016_update_ysSf6TN.pdf

All this would then be reflected in GI tariffs and thus on Aviva's competitive position. Products providing longer periods cover such as construction would be affected more than others.

Aviva Italy has identified the direct effect of these climate change related events will be the increase of diseases (allergies/nervous system) and related medical costs. The effects of recurrent natural disasters, such as earthquakes impacting in the national economy and social balance could mean that government creates legislation which may commit the company to provision of cover outside Aviva's risk appetite. The National Association of Italian Insurers (ANIA) is working on a project for the creation of a national insurance catastrophe system, with similar characteristic to other schemes in developed countries; such a system may impact the local GI business.

From a shareholder and underwriting perspective we are comfortable with the extent we and modelling partners able to keep pace. But there are clearly risks due to the complexity of the modelling and the ability for the models to give predictive output over the longer term and factoring in climate change through degree-warming scenarios.

Investment risks - When acquiring property, Aviva Investors' strategy is to commission an Environmental Assessment, as well as a standard Building Defects Report. The former covers important potential risks, such as flood exposure and historic and potential pollution. Within our real estate portfolio, we use the Global Real Estate Sustainability Benchmark (GRESB) to understand the climate resilience and broader sustainability of individual properties and funds. Our real estate and infrastructure investments are located predominantly in Europe. In 2016, Aviva Investors submitted nine funds to be assessed against the benchmark. Five funds were awarded the 'Green Star' and were in the top half or better of their respective peer groups.

Transition Risk
With the Paris agreement to pursue efforts to limit the temperature increases to well below 2^{o}C, there will be an increasing number of climate–related policies and regulations to assist this transition; these will impact sectors in different ways. We consider active stewardship to be a fundamental responsibility for us as investors. This includes considered voting and engagement on climate risk, disclosure and performance. We have focused on in-depth engagement with companies strategically exposed to climate related risks due to their significant carbon impact and exposure to transition risks (and opportunities). We undertake this engagement individually and collaboratively, actively supporting shareholder resolutions, and co-filing similar resolutions as appropriate.

We continue to be committed to increasing our investment in low carbon infrastructure and to considering how best we support the financing of the transition to a lower carbon economy.

Liability Risk
Aviva has negligible exposure to litigation risks on the insurance side through liability contracts such as professional indemnity for Directors' and Officers' and Pension Trustee Liability insurances. However, in certain jurisdictions we are aware of regulatory and legal challenges with respect to corporate climate related impacts and disclosures, which may impact us given our equity and corporate debt exposures. Direct impact from legal challenges and any associated fines are likely to be limited to specific companies.

Metrics and targets used to assess and manage relevant climate-related risks and opportunities

Investment
As Aviva Investors are signatories to the Principles of Responsible Investment (PRI), we already report on the recommended disclosures of TCFD which are aligned to PRI Reporting Framework 2016 Strategy and Governance – SG12.1, SG12.2 and SG12.3[3]. As responders to the Asset Owner Disclosure Project (AODP) Global Climate Risk Survey 2017 for Asset Managers, we already report on the recommended disclosures of TCFD which are aligned to questions 2.13 and 3.01

We have enhanced our Environmental, Social and Governance (ESG) heat map to include proxy climate risk metrics. This heat map is available to our analysts and fund managers via Bloomberg and updated on a monthly basis. This includes a composite carbon exposure metric based on the carbon-intensity of business activities, the extent of operations in jurisdictions with stringent carbon emissions regulations and the quality of a company's carbon management.

We targeted a £500 million annual investment in low-carbon infrastructure from 2015-2020, and an associated carbon saving target of 100,000 CO2 tonnes annually. We worked with an independent consultant to develop a 'carbon calculator' tool to enable us to measure the carbon equivalent savings associated with low carbon infrastructure investments aligned with the Green Investment Bank ''Green Impact Reporting Criteria' guidance.

In 2016 funds managed by Aviva Investors signed £450 million of new investment into wind, solar, biomass and energy efficiency, and our Infrastructure Income Fund will deliver over 150,000 tonnes of CO_2e savings annually when the projects are operational. We welcome the growth in this asset class and have participated in a number of purchases where this is in line with our investment approach. Aviva holds over £247 million (as at 30th June 2016) in green bonds including an investment by

[3] http://www.aviva.com/media/upload/RI_Transparency_Report_Aviva_Investors.pdf

Aviva France of €50m investment in green bonds issued by the European Investment Bank (EIB) and structured by BNP Paribas (Tera Neva) which Aviva France has invested in.

In July 2015, we identified an initial set of 40 companies with more than 30% of their business (by revenue) associated with thermal coal mining or coal power generation. We undertook focused engagement with these companies setting out our expectations on their governance, business strategy, operational efficiency, responsible climate and energy policy advocacy and crucially whether any of those companies have any plans for new investment in coal generating capacity. Since then we have had meaningful engagement, often with multiple meetings or calls with 80% of the companies concerned. We are in the process of divesting from ten companies (two due to their further planned investment in coal capacity and eight companies on the basis of non-responsiveness).

In 2016, we met with a further 127 companies to discuss sustainability governance, sustainability disclosure and climate change, and environment.

Over the same period, we supported 86.8% of climate change-related shareholder resolutions. In 2015, we actively supported the 'Strategic Resilience for 2035 and beyond' shareholder resolutions, lead by the Aiming4A Coalition, proposed at the BP, Shell, and Statoil AGMs. We attended both the BP and Shell AGMs in support of the resolution and to question the Board. In 2016, we co-filed similar resolutions at the AGMs of Anglo American, Glencore and Rio Tinto.

In September 2015, we signed the Montreal Investment carbon foot-printing pledge. At the time, we were one of the largest asset managers to support this initiative. In November 2015, we published the carbon footprint of our four largest equity portfolios collectively totalling £13 billion. This represented one third of our equity assets and 5% of our total assets under management.

Insurance

We build the possibility of extreme weather events into our planning to help us understand the impact and ensure our pricing is adequate. Whist there may be incremental changes in the level of risk during the planning period these are not considered to be material relative to longer term climate change impacts.

The new Flood Re Levy was introduced in 2016 and the Aviva share was £23 million. Since the Flood Re was launched in April 2016, 11,000 Aviva customer policies have been ceded to Flood Re.

Catastrophic event model results are supplemented by in-house disaster scenarios to quantify cross class accumulation risks such as a major weather event, aggregation of major weather events and a scenario of a long dry summer driving a subsidence event year; these have been considered as Realistic Disaster Scenarios (RDSs) and have had their potential impact assessed. To date activity has been limited to stress and scenario testing; for example in 2016 we have examined the impact of an extreme windstorm in Northern Europe.

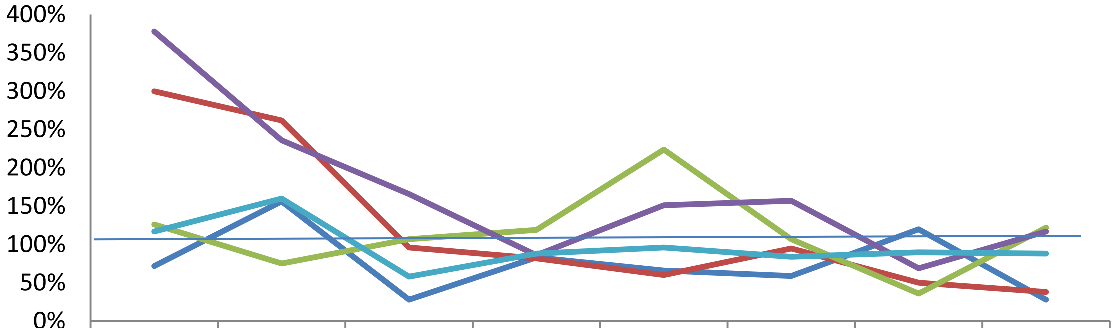
We continue to invest in analytical solutions such as flood mapping, predictive analytics, exposure management tools and risk mitigation techniques that help us better understand risk being transferred to us from our customers and to respond more rapidly when our customers need us.

The following data demonstrates how we incorporate risk into our reserving and pricing in our business.

<u>Fig.1</u>

Outlines actual weather-related losses versus planned weather losses by year and material general insurance markets, net of reinsurance. A value above 100% indicates that weather losses were worse than expected, whereas a value under 100% indicated better than expected weather losses. Over a number of years we have improved our risk reserving and reinsurance practices which are reflected in the actual figures being closer to, or below our planned weather losses.

Actual weather-related losses versus planned weather losses by year and business unit (net of Reinsurance)

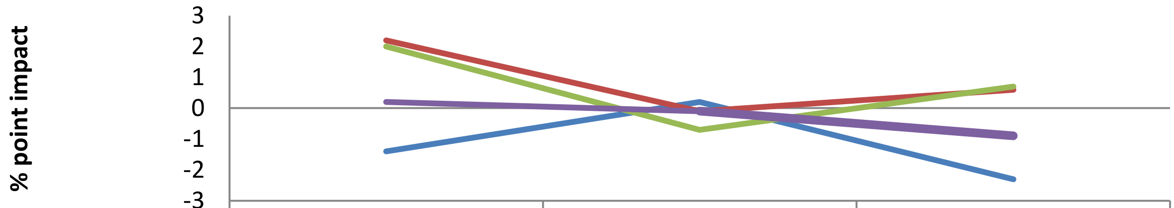


	2009	2010	2011	2012	2013	2014	2015	2016
UK	72%	156%	28%	83%	66%	59%	120%	28%
Ireland	300%	262%	96%	82%	60%	95%	50%	38%
Canada	126%	75%	107%	119%	224%	107%	36%	122%
France	378%	236%	166%	86%	151%	157%	69%	117%
All	117%	160%	58%	88%	96%	84%	90%	88%

Fig 2.

Shows the impact of weather on Aviva's Combined Operating Ratio (COR) at a Group and material general insurance market level. This shows on a percentage point basis the difference between the reported net ultimate cost of general insurance claims that have occurred as a result of weather events and the long term average expected costs, gross of the impact of profit share. These figures exclude reinsurance reinstatement premium costs.

Weather inpact on COR - over/under long term average

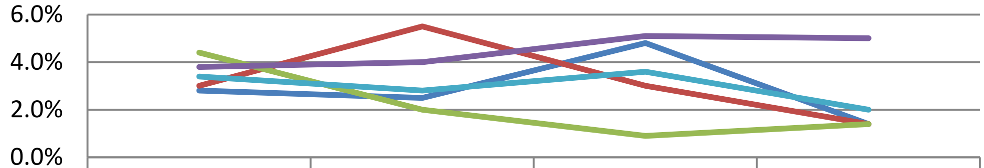


	2014	2015	2016
UK & Ireland	-1.4	0.2	-2.3
Europe	2.2	-0.1	0.6
Canada	2	-0.7	0.7
Total	0.2	-0.1	-0.9

Fig.3

Shows weather losses ratios - the difference between the ratio of premiums paid and the claims settled by the company.at a material general insurance market and an aggregated Group level (net of reinsurance). It should be noted that different business lines within the markets and the markets themselves have differing thresholds for what is regarded as a Catastrophe events. The losses are added to adjustment expenses and then divided by total earned premiums.

Weather ratio at a business unit and Group level - net of RI



	2013	2014	2015	2016
UK weather	2.8%	2.5%	4.8%	1.4%
Ireland weather	3.0%	5.5%	3.0%	1.4%
Canada weather	4.4%	2.0%	0.9%	1.4%
France weather	3.8%	4.0%	5.1%	5.0%
Total weather	3.4%	2.8%	3.6%	2.0%

As a founding member of ClimateWise, we have been reporting on the recommended disclosures of TCFD of Governance, Strategy, Risk Management and Metrics & Targets since 2006 through our response to the ClimateWise's Subprinciples 1.1, 3.2, 3.4, 4.1, 4.2, 5.3 and 6.1.[4] We are also a founding signatory to the UN Principles for Sustainable Insurance (UNPSI) where the TCFD recommendations are aligned to Principle 1.

[4] http://www.aviva.com/media/upload/Aviva_-_ClimateWise_response_2016_-_final.pdf