Aviva - ClimateWise response 2017/18

Introduction – background of Aviva’s business

Aviva plc is a composite insurance company where long term insurance and savings business from continuing operations accounted for over 63% of our total business, based on total premiums for the year ending December 2016. General insurance and health insurance together accounted for 37% of total premiums from continuing operations. As an asset owner we have £490 billion assets under management. As an asset manager Aviva Investors provide asset management services to both Aviva and external clients, and currently manages approximately £353 billion in assets as at 31st December 2017.

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. We serve 33 million customers across 16 countries in Europe, Asia and Canada including being the number one insurer in the United Kingdom. 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 are one of four multinational composite insurance companies combining strong life insurance, general insurance and asset management businesses under one powerful brand. We are committed to serving our customers well in order to build a stronger, sustainable business, which makes a positive contribution to society, and for which our people are proud to work.

We are a strong supporter of United Nations Principles for Sustainable Insurance and Principles of Responsible Investment from an asset management perspective and Aviva Staff Pensions Trustees signed the PRI as an asset owner in September 2013. The Asset Owners Disclosure Project Climate Index in 2018 ranked Aviva as the second highest insurance company.

Our 2017 ClimateWise response scored 78 and we were ranked as one of the best responder. Aviva’s Maurice Tulloch completed his three-year tenure as Chair of ClimateWise at the end of 2017 and the chairmanship passed to Aon. We continue to participate in ClimateWise as a member of the management Steering Committee, and Patrick Tiernan – Managing Director, Global Corporate & Speciality Risks now represents Aviva on the Insurance Advisory Committee.

> "There is no greater collective risk we face today than tackling climate change. If we do not take urgent action to limit global temperature increases to within 2°C the impacts upon the economy, society and our business will be nothing short of devastating. Aviva is determined to make its own contribution to tackling climate change. This is not at odds with business or investment. In fact, it is a business imperative."
>
> Mark Wilson, Chief Executive Officer

The revised ClimateWise Principles

(Grey coloured text indicates last years' response providing a foundation to demonstrate this year's progress)

This is the second year Aviva has published our response in respect of the TCFD recommendations in respect of Governance, Strategy, Risk Management and Metrics & Targets. Our TCFD response also aligns to and may enhance our response to the ClimateWise Subprinciples 1.1, 3.2, 3.4, 4.1, 4.2, 5.3 and 6.1.

Our TCFD response can be found here and as an appendix to this document.

1. Lead in risk analysis

1.1 Support and undertake research on climate change to inform our business strategies and help to protect our customers' and other stakeholders' interests. Where appropriate share this research with scientists, society, business, governments and NGOs in order to advance a common interest.

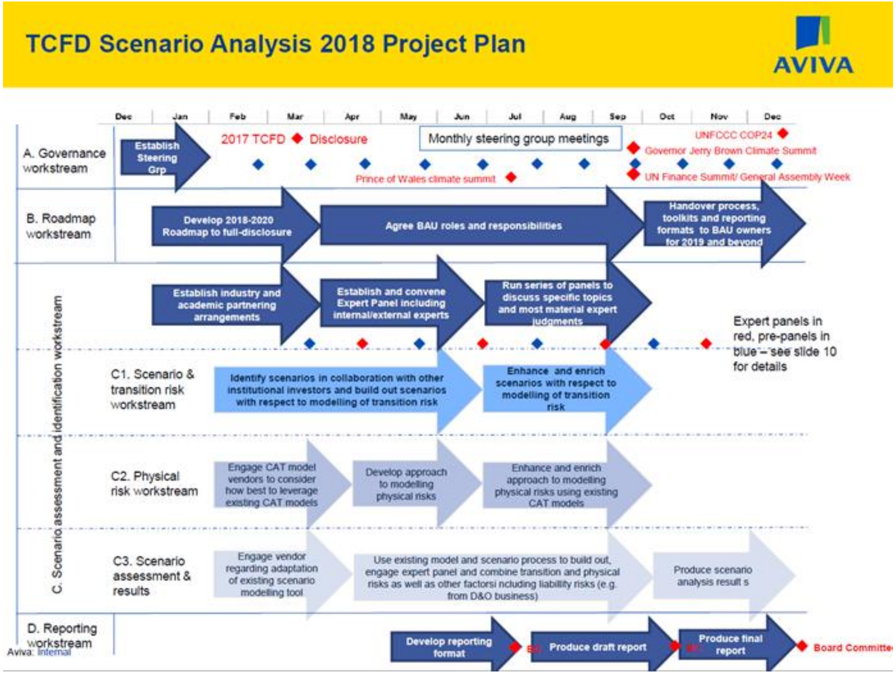
Aviva undertakes research on climate change to inform our business strategies and help protect our customers. We do this from a perspective of an Asset Owner, Insurer – Life and General Insurance, Asset Manager and Healthcare Provider.

Our Board Risk Committee and our Board Governance Committee have oversight of Aviva's Climate risks and impacts. The Board Risk Committee met eight times in 2017 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 2017 Annual Report & Accounts (see pages 31-32) and it is therefore assessed for its proximity and significance to Aviva via our local markets and group emerging risk processes. The Committee has incorporated emerging risk scenarios into our scenario planning, enabling us to review the most significant risks that would affect the Company's strategy. (from Aviva's TCFD response 2017)

1) Aviva continues to be represented on the Financial Stability Board (FSB) launched a Taskforce on Climate-related Financial Disclosures (TCFD) which issued final recommendations at the end of June 2017. Aviva committed to reporting against the TCFD and in April 2018 published a second-year summary and expanded response. The summary is contained in the ARA 2017 (pages 31-32) https://www.aviva.com/content/dam/aviva-corporate/documents/investors/pdfs/reports/2017/Annual_Report_and_Accounts_2017.pdf and the expanded one online https://www.aviva.com/content/dam/aviva-corporate/documents/socialpurpose/pdfs/TCFD-response-expanded-verison-2017.pdf and as an appendix to this submission.

   Our work this year aims to identify appropriate climate related scenarios, assess those scenarios, and develop reporting formats for the results of the scenario analysis. In order to do this, we will continue to partner with industry associations, sector peers (asset owners, asset managers and insurers), academics, professional bodies, external consultancies, as well as regulators and international agencies to drive consistency in scenarios and analysis and so provide comprehensive and comparable information.

This work will draw on significant expertise from the business and involves an inter-disciplinary team including Group Risk, Group Capital, Finance, Aviva Investors, Group Reinsurance, the General and Life insurance businesses, and the Corporate Responsibility and Public Policy teams.



We have already reported on the progress of our work on scenarios to Aviva's Board Risk Committee in June 2018 and aim to first report against scenarios in our disclosure next year.

2) Aviva has worked with other members of ClimateWise supporting the creation of an opensource framework to support investor and regulators in assessing how the transition to a low carbon economy will impact the financial performance of infrastructure investments. We look forward to using the opensource tool with our own infrastructure portfolio to quantify the financial impact of different scenarios.

   Again, Aviva has contributed to ClimateWise's Climate Risk to Physical Assets workstream looking at climate change risk accumulation for commercial finance, infrastructure and real estate owners in the Financial Services, contributing suggestions, data, and other stakeholders for inclusion. The objective is to highlight, to the asset managers (using insurer climate data) that their portfolios are exposed to some degree of risk. Aviva's geocoded real estate and commercial mortgage data sets are being tested via the climate risk tool that ClimateWise along with its members is currently developing. The results and report for this work should be published towards the end of the year, and we will seek to incorporate learning from this in our TCFD reporting going forward.

3) UNEPFI Investors Commission has created a work stream working with thirteen leading asset owners/asset managers, including Aviva to promote climate transparency by piloting the recommendations and jointly develop scenarios, models and approaches which will be made publicly available at the end of the project. This will enable other investors to pick up and expand on this joint work and encourage the wider investment community to assess how they can adapt to and promote a climate-resilient, low-carbon economy.

4) Aviva also signed up to and is working with Carbon Standards Disclosure Board's commitment to implement the recommendations of the Task Force on Climate-related Financial Disclosures within three years. As part of this group we will be disclosing information about the financial implications of climate-related risks and opportunities to understand how business can adapt to a changing climate and exploit the opportunities that the low-carbon economy is already creating

5) In May 2018 Aviva's CEO became the chair of the Geneva Association. Aviva is represented on the work stream looking at a Comparative Analysis of Flood Prevention and Risk Transfer Approaches in Australia, Canada, Germany, Japan and the UK (May 2017-June 2018). The study involved policy research and interviews with key stakeholders from the governments, policy makers, the insurance industry and other relevant organisations. This case will serve as strategic tools to raise awareness, inform, and educate the target stakeholders and facilitate more effective public-private dialogue. These will also be shared with executive training programmes of leading business schools, schools of public policy as well as training programmes of international organisations such as the OECD, United Nations and The World Bank Institute.

6) In March 2016, we contributed to the European Commission Consultation on Sustainable and Long-Term Investments, and the consultation on the non-binding guidelines on methodology for reporting non-financial information. These are an important step forward in scoping a fuller picture of the current state of the market, disclosure, identifying barriers to sustainable investment and providing solutions for effective change. At the beginning of 2017 a representative from Aviva joined the High-Level Expert Group on Sustainable Finance, established by the European Commission. The group has published some key early recommendations to take further steps towards a low carbon, more resource-efficient and sustainable economy.

7) As part of the BRE Trust's Thematic Programme on Resilience of the Built Environment, further research is now being undertaken to develop appropriate technical standards and to enable the industry to realise the business case for flood resilient repair. The aim of the research is to enable the greater uptake of flood resilient repair approaches by homeowners, assisted by appropriate standards and contractors with the skills to deliver cost-effective measures. Damien Cross, Aviva Claims Excellence leader has been involved in this research which will report in the next couple of months.

8) In 2017 and continuing in 2018 we worked with 2 Degree Investing to understand how miss/aligned our global beneficial equities portfolio and our global corporate bond portfolios are to a 2-degree future that we welcomed at COP21 the previous year.

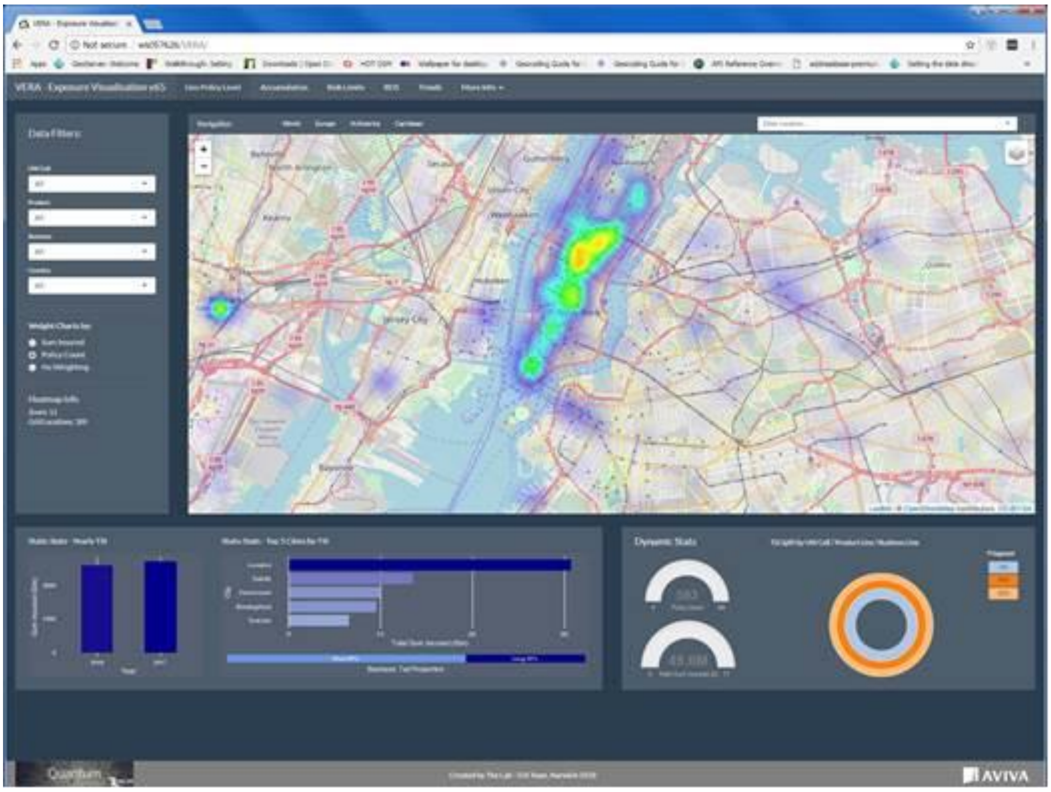
   We have used this research to engage with various investment teams internally including the UK Life team, UK GI Investment team, Aviva's Staff Pension Scheme and Aviva France has used the research for it response to Article 173 in June 2018 as well as developing its understanding of the best way to incorporate climate risk into the business.

   We are currently work with 2Dii to test the BETA version of its opensource online tool.

9) VERA (Visualisation of Exposure and Risk Accumulation) - At the beginning of the year the Geographic Information Systems team began to build an Aviva Global Accumulation and Exposure Management App.

   The premise is simple, in a world where Global Corporate Speciality risk teams and the local business units can be insuring neighbouring properties, we needed to have a complete understanding of the location of the risks we're writing, the corresponding accumulation risk that might exist and the effectiveness of our reinsurance arrangements.

VERA maps all our property risks around the world at address level. The user can see risk accumulations based on policy volume or by Sum Insureds. As well as this, the user can also simply plot the location of risks rather than seeing hotspots. The maps can also be restricted by only rendering business written from individual countries, by product line or business line.



VERA also allows the user to search for specific analysis of interest – for example the latest output from the Realistic Disaster Scenarios, Accumulation hotspots from the UK, Catastrophe Modelling outputs vs Underwriting Risk Loss Limits as well as underwriting trends over time.

Whilst the focus has been on the zero £ spent, the greater win is the flexibility and speed in which we are able to build, support and provide improvements to the high-profile app not to mention the IP being retained within Aviva. The team is currently engaging The Factory to build the app on an AWS cloud or similar making it available to iPads and laptops/desktops around the world.

Going forward, we are also looking to put our real estate, infrastructure, commercial mortgages etc. from the asset side of the business through the model, so that we can look further at climate risks and report on their combined exposure materiality on our balance sheet.

1.2 Support national and regional forecasting of future weather and catastrophe patterns affected by changes in the earth's climate.

1) Over the past several years, changing weather patterns and climatic conditions have added to the unpredictability and frequency of natural disasters in certain parts of the world and created additional uncertainty as to future trends and exposure. Extreme weather events pose a serious risk to our business, with the potential for fluctuations in claims and challenges to risk pricing. We use catastrophe models to help inform our capital requirements. These models are generated from a number of data sources including climate models. More details of the current reserves we hold in respect of our largest

exposure can be found in our Annual Report and Accounts 2017 page 209 , General Insurance Risk section.

In Aviva's TCFD response we have included up to date metrics on how we are managed our reinsurance and reserving needs in respect of weather (pages4-6) and Principle 1.3.

2) Looking ahead we're considering action research into planting trees with the Woodland Trust in key catchment areas to reduce flood risk downstream and include national tree maps into our existing flood maps. This work is ongoing in 2018.

3) In 2016 we launched our three year partnership with the British Red Cross to help communities around the world prepare for and respond to disasters and extreme weather events. The Emergency app that we support provides individual geo-specific warnings of extreme weather events which are forecast. The app has been downloaded over 57,000 times to March 2017.

4) In 2014 Aviva Canada highlighted increasing extreme weather risks and what customers could do to safeguard their homes and possessions from water damage. According to Environment Canada, severe weather events that used to happen every 40 years can now be expected to happen every six years.
In February 2015 Aviva Canada announced that they would be first-to-market in the provision of an Overland Water Coverage Option for home insurance, to provide water damage coverage for certain categories of claims not previously covered by the industry.
While many recent flood claims were actually paid based on sewer back-up coverage provisions, true overland water coverage has never been available to consumers. With improved mapping technology and data to model the severity and frequency of flood losses, we're now able to put that coverage in place. Details of 2017/18 updates are provided to ClimateWise separately.

5) In respect of research that ClimateWise could undertake. We would like to see two work streams: -

Following the Institute and Faculty of Actuaries work on a Climate Index for the US, they published a feasibility study on producing a similar Climate Index for the UK and Europe. The research would focus on the incremental, creeping climate change risk taking into account the combination of rainfall, wind speed, temperature high & low, sea level, drought etc. using a base period of 1961-90 to develop a Climate Index and linking that to damage levels.

1.3 Use research and improve data quality to inform levels of pricing, capital and reserves to match changing risks.

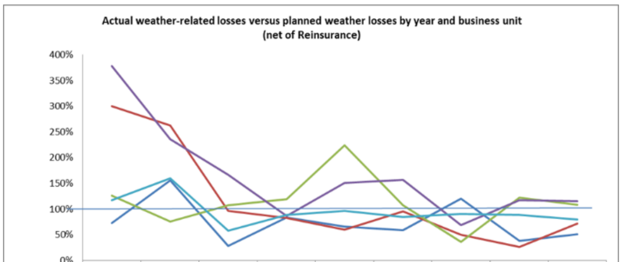
1) We use catastrophe models to help inform our capital requirements. These models are generated from a number of data sources including climate models. More details of the current reserves we hold in respect of our largest exposure can be found in our Annual Report and Accounts 2016 page 209, General Insurance Risk section.

2) Climate Change has been flagged as an emerging risk again this year in the 2017 Annual Report and Accounts (page26). All emerging risks are assessed for their proximity and significance to Aviva via our embedded market and group emerging risk processes. The 'increased incidence of extreme weather events' risk has been assessed Aviva's risk spectrum is used to help us determine the significance of impact and timescales for different external issues. Whilst we are already experiencing the effects of climate change, we only expect it to threaten the viability of our business model in the longer term. We therefore consider climate change to be proximate risk, that is to say we are taking action now to

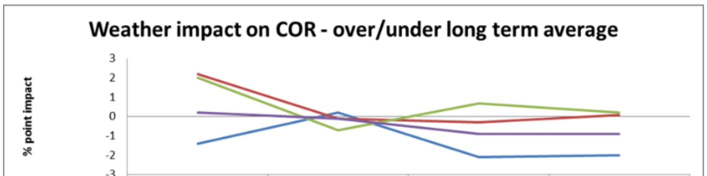
mitigate its impacts in the future. The action we are taking is the work on the TCFD detailed in Principle 1.1.

3) We build this research into our considerations use this research to our pricing capital and reserves as examples below show. In 2017 the total Group potential retained loss from its most concentrated catastrophe exposure peril (Northern Europe Windstorm) is £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.

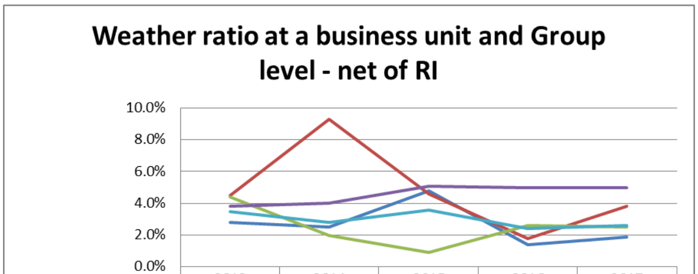
   Again, this year we have included more detail in respect of the how research and improve data quality has informed reserves and reinsurance requirements in our initial expanded TCFD response. (please see the full TCFD response in the appendix).



	2009	2010	2011	2012	2013	2014	2015	2016	2017
UK	72%	156%	28%	83%	66%	59%	120%	38%	51%
Ireland	300%	262%	96%	82%	60%	95%	50%	26%	71%
Canada	126%	75%	107%	119%	224%	107%	36%	122%	108%
France	378%	236%	166%	86%	151%	157%	69%	117%	115%
All	117%	160%	58%	88%	96%	84%	90%	88%	79%



	2014	2015	2016	2017
UK & Ireland	-1.4	0.2	-2.1	-2
Europe	2.2	-0.1	-0.3	0.1
Canada	2	-0.7	0.7	0.2
Total	0.2	-0.1	-0.9	-0.9



	2013	2014	2015	2016	2017
UK weather	2.8%	2.5%	4.8%	1.4%	1.9%
Ireland weather	4.5%	9.3%	4.6%	1.8%	3.8%
Canada weather	4.4%	2.0%	0.9%	2.6%	2.5%
France weather	3.8%	4.0%	5.1%	5.0%	5.0%
Total weather	3.5%	2.8%	3.6%	2.4%	2.6%

5) Aviva began to cede business to Flood RE on 4th April 2016. This will be a gradual rollout to customers. Flood Re will be in place for 25 years and is designed to:

- Enable flood cover to be affordable for those households at highest risk of flooding.
- Increase availability and choice of insurers for customers.
- Allow government, local authorities, insurers & communities to be better prepared for flooding.
- Create a 'level playing field' for new entrants and existing insurers in the UK home insurance market.
- The scheme will improve the availability and accessibility of flood insurance to 350,000 more homes across the UK.

Aviva has been providing prices calculated on the basis of Flood Re since it was launched on 4th April 2016. The new Flood Re Levy was introduced in 2016 and the Aviva share was £23 million. From Flood Re being launched April to the end of 2016, 11,000 Aviva customer policies were ceded to Flood Re. This means for the first time many homeowners in high risk areas are shopping around for their insurance as well as benefiting from lower excesses.

By April 2017 we had ceded 16,000 policies to FloodRe.

On average, we've seen savings of around £500 for new customers, with one customer saving over £1,000 on their premium and with a much lower excess.

In 2017 we ceded 21,875 polices to Flood Re.

6) Aviva Canada's 'Overland Water' endorsement is a good example of respect of matching the premium to the risk. The take up of the endorsement has been high. Due to commercial reasons further information in this area has been reported to ClimateWise on a separate, confidential basis.

1.4 Evaluate the risks associated with new technologies for tackling climate change so that new insurance products can be considered in parallel with technological developments.

1) Due to the makeup of our business, particularly on the General Insurance side with a high proportion of in-market insurance provision and personal lines business, our focus is not on insurance products for new technologies such as CCS for example. In 2011, we created a new endorsement covering the provision of Environment Goods and Services.

   The take up of such covers continues to grow, including for micro –hydro turbines and wind turbine installations – some of which have been in respect of community-based renewable energy generation. However, we have exited the Anaerobic Digestion (waste to energy) UK market due to thin rates and claims volatility. Due to commercial reasons further information in this area has been reported to ClimateWise on a separate confidential basis.

   Similarly, Aviva Canada provides cover for commercial scale PV arrays, onshore wind turbines anaerobic digestions plant and hydro. However, none of these operations are target market areas for us however if approached we will look at the exposure.

2) In 2016 we used drones to identify where we have customers that are flooded in areas that we can't get to. They are exactly what we need when there's uncertainty about where has, and hasn't been impacted so we can decide where we need our people. It doesn't tell us about what's happening inside properties but it does tell us about the amount of resource we need in different areas. We sent the drones to assess flood damage in York, Kendal and Carlisle and it was the first time we used them in this way.

3) We continue to consider the risks and opportunities associated with climate change and the for new insurance solutions.
Recently we have considered performance warranties for renewable technologies. We are not developing this further at this time due to:
- Long tail exposures would be for term of finance and thus 5-10 years which Aviva have little appetite for
- Feedback from market has been that there is limited take up for the rates presented by other markets

We will continue to review the appetite for such products going forward.

We have also reviewed our position on coverage in respect of battery storage for renewables. As it is a proven technology would fall under existing underwriting remit, however we currently do not see this demand for such coverage coming through at the moment.

4) The new category is called Community Legacy. It will have a CAN$150,000 prize, in addition to the usual CAN$1 million from Aviva Community Fund. The category is open to current or aspiring social entrepreneurs aged 18 to 25. To win, participants must submit an original solution to address the consequences of climate change. “This is a special year for Canada (150 years of operation), so we're encouraging young social entrepreneurs to present their innovative idea that benefits the environment and help leave a positive legacy for the next 150 years. We can't wait to see the ideas for this year's competition."

In celebration of Canada’s 150th anniversary in 2017, the Aviva Community Fund challenged young social entrepreneurs aged 18-25 to submit ideas that tackle the consequences of climate change, or an idea that benefits Canada’s environmental legacy.

This category had its own CAN$150,000 fund. The Enactus Student Team, University of Ottawa was awarded the fund with their Polycycle project, which uses specialised plastic recycling machines to transform waste into other products.

2. Inform public policy making

2.1 Work with policy makers nationally and internationally to help them develop and maintain an economy that is resilient to climate risk. This should include supporting the implementation of emissions reductions targets and where applicable supporting Government action that seeks to enhance the resilience and reduce the environmental impact of infrastructure and communities.

N.B. In respect of the work that we do, we see Subprinciple 2.1 and 2.2 as very similar and as such the evidence provided in the two subprinciples should be viewed as interchangeable.

1) We continued our work around support of the Paris Agreement.

We believe that asset owners/ investors have an opportunity to work with policy makers nationally and internationally to help them develop and maintain an economy that is resilient to climate risk.

This year we as Aviva plc and Aviva Investors have again signed the 2018 Global Investor Statement to Governments on Climate Change. As of 16th July, the statement has secured **334 investor signatories, managing just under US $30 trillion** between them.

The statement will be sent formally to all Governments, and then showcased at the Global Climate Action Summit and PRI in Person in San Francisco in September, and then published in advance of the G20 Summit in November, and showcase this further at COP24 in Poland in December.

In parallel, the statement as an engagement tool with our interactions with Governments – for example the policy asks in the statement were presented to the European Union at a recent “Talanoa for EU” conference in Brussels looking at how Europe should scale up its climate ambition.

2) In September 2016 Aviva became the first insurance company to join the UNFCCC’s Climate Neutral Now campaign reaffirming our commitment to maintain their zero-carbon operational stance. Our carbon neutral stance has been maintained for the past ten years, recently working closely with climate and development experts ClimateCare to deliver a multi-faceted carbon offset programme which is designed to deliver outcomes beyond carbon off-setting. In September 2017 it was announced the Aviva’s carbon reduction strategy had been awarded the UNFCCC Momentum for Change 2017 Lighthouse Activity status.

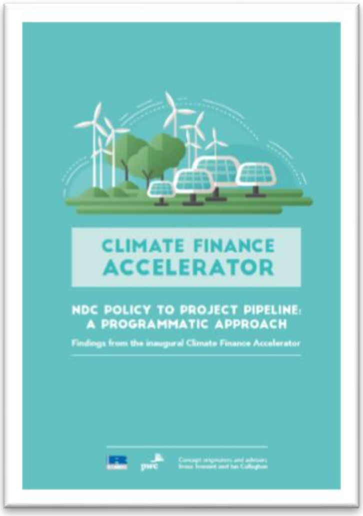
> Extract of letter from UNFCCC to Mark Wilson –
>
> *Though you were personally unable to travel to Bonn for the COP 23, I thank you for sending your team of dedicated staff, whose contributions greatly supported the accomplishments and successes of the Conference.*
>
> *We know only too well that climate change will increasingly impact the health, prosperity, security and well-being of our planet and of people everywhere, unless nations fully and effectively implement the Paris Agreement and the Sustainable Development Goals. Our commitment has never been so important, and your clear and loud message for urgent and tangible climate action is helping to ensure that we leave the world in a better state than we found it. I thank you again for the strong leadership you are demonstrating.*
>
> Patricia Espinosa,
> Executive Secretary of the United Nations Framework Convention on Climate Change (UNFCCC)

3) Aviva continues to be represented on the Financial Services Board Taskforce on Climate Disclosure by Steve Waygood. The final report was included in the G20 Climate and Energy Action plan in July 2017 – see Principles 1.1

4) Maurice Tulloch continues to be a member of the steering group of the World Bank’s Insurance Development Forum – see Principle 3.4-3. Today, nearly 90 per cent of economic losses caused by natural disasters in low-income nations remain uninsured. This means those countries find it difficult to restore vital infrastructure and help local communities and businesses back on their feet. The work continues and the next steering committee will be in September.

5) Aviva was the first insurance/asset management company to be approached to assist with the NDC Accelerator 5-day workshop which will take place in London in September 2017. The workshop will focus on taking the Nationally Determined Contributions (NDCs) of four developing countries – Colombia, Mexico, Nigeria and Vietnam and working with investment and insurance experts in the public and private sector to make the specific projects from the NDCs investable and insurable.

This event took place and was very successful from the point of view that as well as making turning NDCs into investable projects, but also greater cohesion within the country delegations to help develop the projects further to bring them to life.



2.2 Promote and actively engage in public debate on climate change and the need for action.

1) Aviva and Aviva Investors needs a stable public policy framework on climate change so that we can assist our customers to manage climate risk, and invest for the long term in supporting a low carbon economy. The physical and economic risks of climate change will play out over a long-time horizon. However, as a true composite insurer we have to understand and anticipate today what the landscape could look like for us and our customers going forward.

   We believe that organisations need to be more transparent in respect of climate risks and possible future climate impacts that can affect the business model and balance sheet of the company. We also believe that we continue to shape the response from the sector and from businesses generally.

   As such Aviva has joined a number of groups looking at TCFD: -

   a) Climate Standards Disclosure Board committee – Principle 1.1.4
   b) The UNEPFI Asset Owners/Asset Managers TCFD pilot and we're interested in joining the Insurance pilot – Principle 1.1.3
   c) PRI China with the City of London Green Finance Initiative. The aim is to use the trip to generate a distribution friendly case study on frontiers in climate change engagement and to take TCFD to China. Under the strategic partnership of the City of London Green Finance Initiative and China Green Finance Committee, both sides have agreed to set up a pilot to report against the Taskforce on Climate-related Financial Disclosures (TCFD) recommendations in 2018. The pilot is compromise of ten financial institutions: at least four from each side and from across the investment chain - a leading bank, asset manager, insurance company and a pension fund. UK & Chinese regulators would also be invited to take part.

      The group has met twice since December 2017 with the meetings focusing on exchange on UK and China approaches for piloting TCFD; and working towards a final report of pilot disclosures from at least four participating organisations (by November 2018). The result would be presented at the annual UK - China Economic and Financial Dialogue in 2018.

2) Aviva Staff Pension Scheme - In May the Environmental Audit Committee reviewed the UK's largest 25 pension schemes and determined that the Aviva Staff Pension Scheme Trustee were 'less engaged' in respect of the approach to the issue of climate change than other schemes.

The vast majority of funds in the Aviva Staff Pension Scheme is in a defined benefits scheme which is primarily invested in gilts and therefore has negligible climate risk. The fund also includes a small defined contribution scheme in which members are free to choose which fund they invest in, with a couple of environmentally focused funds on offer.

The Aviva Staff Pension is managed by an independent board of trustees and they are actively exploring what more they can do to manage climate exposure.

Aviva plc, including Aviva Investors has responded to the recent DWP's consultation on Clarifying and Strengthening Trustees' Investment Duties. And will be responding to the FCA consultation in the New Year.

4) Aviva was represented on the EC High Level Expert Group on Sustainable Finance. The expert group's final report in 2018 made multiple recommendations, including to:

- Clarify investor duties to better embrace long-term horizon and sustainability preferences
- Upgrade disclosure rules to make sustainability risks fully transparent, starting with climate change
- Include sustainability in the supervisory mandates of the European Supervisory Authorities (ESAs) and extend the horizon of risk monitoring
- Empower citizens to engage and connect with sustainable finance issues through financial literacy and other measures
- Leverage EU action to enshrine sustainable finance at global level, by using EU influence globally
- Encourage sustainability by insurance companies, banks, and other key financial institutions.

Following the HLEG recommendations, the European Commission's Action Plan on Sustainable Finance draws heavily on the recommendations which sets out a number of legislative and non-legislative measures that the Commission intends to take under its current mandate (ends in 2019) to promote the integration of sustainability measures (including, but far from exclusively, climate change) into European financial markets. On prudential recommendations it advises that: -

In Q3 2018, the Commission will invite the European Insurance and Occupational Pensions Authority (EIOPA) to provide an opinion on the impact of prudential rules for insurance companies on sustainable investments, with a particular focus on climate change mitigation. The Commission will take this opinion into account in the report to be submitted to the European Parliament and Council by 1 January 2021 under the Solvency II Directive.

5) Aviva was represented on three of the UK's Green Finance Taskforce workstreams. In March 2018 the Taskforce made a comprehensive set of recommendations to the government on greening the British financial system including many of Aviva's calls to action. Of most relevance to Aviva are:

- Establish a Green Finance Institute. To develop:
  A new green finance diplomatic strategy including taking forward initiatives such as an ISO standard on responsible investment, IOSCO listing rules and ensure UK leadership at UN, G20 and other international fora.

- Implement the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD).
    - TCFD should be integrated within existing corporate governance frameworks.
    - Government should conduct a review of disclosure in 2020 to monitor and encourage market adoption amongst both issuers and users. If take up is low government should mandate disclosure.
    - Government and regulators must clarify that disclosing material environmental risks is already mandatory under existing law and practice.
- Clarify investor roles and responsibilities
    - Regulators should ensure fiduciary duty clearly states the importance of ESG issues.
    - Government should clarify that trustees should engage with their beneficiaries to understand their preferences and can make investment decisions that are based on these preferences.
    - Require that the Statement of Investment Principles include statements on the extent to which social, ethical and environmental issues (including climate change) are considered.
    - Investment advisors should ask clients about their sustainability preferences.
    - Launch a financial literacy campaign to educate finance professionals and citizens about how their money is invested and how this shapes the world they retire into.
- Support the World Benchmarking Alliance in creating league tables ranking corporate sustainability.
- Build a green and resilient infrastructure pipeline
- Establish a national resilience unit to coordinate and champion climate resilience and ensure investment is 'future proofed' to climate change.
- Publish an action plan to develop the resilience market. Drawing on the Property Flood Resilience Action Plan and the outputs of the Bonfield report.
- Address barriers to sustainable investment (this is listed as a 'recommendation for the future')
- Government and prudential regulators should identify and remove unnecessary regulatory barriers that prevent sustainable investments. This includes reviewing capital treatment of sustainable infra investment and amending supervisory regulation.

6) Aviva is represented on the a Just Transition Advisory Committee. The Investing in Just Transition (IJT) project is a new initiative led by LSE's Grantham Research Institute and Harvard's Initiative on Responsible Investment to explore the role of investors in the just transition and is being delivered in partnership with the Principles for Responsible Investing and the International Trade Union Confederation. As part of the IJT we're working with a growing number of Europe investors who recognise the need to connect the environmental and social dimensions of the transition to a zero-carbon economy. This would help not just to avoid the downside risks of "stranded assets", "stranded workers" and "stranded communities" but also to realise the strong potential for the transition to deliver prosperity, job creation and regional renewal across Europe. The Just transition is mentioned in the Outcomes Document of the Paris Agreement – *'Taking into account the imperatives of a just transition of* *the workforce and the creation of decent work and quality jobs in accordance with nationally defined development priorities.'*

7) We worked with ClientEarth in the second half of 2017, completing their survey on climate risk, followed by a meeting between Aviva, members of Aviva's IGC and Client Earth. As a result of ClientEarth's work with us and other insurers, they submitted some recommendations to the FCA.

   Further to the publication of the report, we had a further conversation with the FCA, to discuss the recommendations and the guidance that pension providers need.

   Going forward the FCA are going to consult further with pension providers at the beginning of 2019.


February 2018

Contract-based pensions and climate risk: Report and recommendations to the Financial Conduct Authority

ShareAction»

ClientEarth

8) Aviva Poland has been attempting to meet with officials in the Polish Minstry of Finance since May to discuss how we can look to support the country's transition to low carbon future. We hope that this meeting will take place before the end of the year.

9) We are organising an Investor visit for Aviva colleagues to Poland to engage with seven thermal coal mining and coal powered electricity generators to discuss our concerns on climate change and their current business model and plans going forward to help the world transition to a low carbon future

10) We intend to attend COP24 in Poland in November 2017, partnering with others on side events to highlight the need for sustainable finance; taking account of the physical and transition risk on climate change for business and society.

3. Support climate awareness amongst our customers

3.1 Inform our customers of climate risk and provide support and tools so that they can assess their own levels of risk.

1) Further to our work on flood prevention immediately prior to the 2013/14 winter floods (reported last year) we continued to work with customers who had been flooded. We made customers aware of the £5,000 government grant in respect of flood resilient measures that could be installed; the take up of the grant was varied greatly depending on the Local Authority application process. The Government reported that this total grant allocated was £11.5 million to 2,300 buildings.

   We still have colleagues working with our customers in Somerset following the floods, no longer dealing with the immediate loss, but the long terms effects of flooding on the community. We are working with Bristol University to understand more fully the wider implications to our customers that such a loss causes, and how the way in which those claims are handled can influence the longer-term impacts of a flood event on our customers. After the 2007 summer floods, mental health symptoms such as anxiety and distress we two to five times higher among those who had been affected by flood water in the home, something that the Lancet report highlights as an issue and that we intend to do further work on going forward. Building on this work we linked our experts in our Healthcare business and the British Red Cross, and in August we began some psychosocial support training for frontline employees in dealing with flood claims.

This work was recognised at the Post Magazine's British Insurance Awards in June 2017 when we won the Customer Care Award for our work with the British Red Cross on psychosocial support training. With our clear focus on customer, it was great to get this recognition externally.

In 2017, 9% of our Home Insurance claims and 8% of our commerical property claims in the UK were as a result of storm damage. We also try to help prevent damage before it's happened. In the event of an expected flood, we often have claims teams on the ground beforehand, knocking on doors to advise customers to move valuables if they have time. This is vital in helping to protect lives and to limit any damage. However, we recognise that our job doesn't end there; our in-house surveyors and adjusters can stay with communities for many months after a flood to help customers with claims, oversee repair work and
use our contacts to support the wider community.

In the second half of 2017 we committed supporting the British Red Cross's Community Reserve Volunteer project for two years. The project is creating a national taskforce of volunteers to support existing BRC volunteers in an emergency. Our recent research showed that people want to help their local communities in a disaster such as flood, or extreme cold but do not always know what to do. To date we have signed up nearly 5,000 volunteers, including 80 Aviva employees and 30 customers. We are just about to direct mail 2,000 customers to get further support.

Going forwards, along with the Community reserve voluteering, we will be running Community Resilience workshops in the UK for those places at highest risk of flooding. These workshops will bring together communities, key stakeholders and emergency actors to facilitate conversations and where needed, help to change the approach to emergency response.

2) In 2016 we launched our three year partnership with the British Red Cross to help communities around the world prepare for and respond to disasters and extreme weather events. The partnership aims to support communities vulnerable to natural disasters and help them be better informed and prepared for crises.

In addition, as a member of the Red Cross's Disaster Relief Alliance, Aviva aims to share its expertise in risk management to support the Red Cross in its work to minimise the damage done by disasters.

"Aviva and the Red Cross are both committed to helping people prepare for and cope with emergencies," said Kirsty Cooper, general counsel and company secretary for Aviva Group, in a statement. "Together, we will help communities become more resilient, safer and stronger in times of uncertainty and crisis." One of the first activities was to sponsor their Emergency Response app which provides severe weather warning flood warnings at a local level. A large number of customers downloaded the app and used it in the flooded areas of Cumbria and Yorkshire.

By March 2017 the Emergency app had been downloaded over 60,640 times.

3) 33 of the 50 most polluted cities in the EU are in Poland. There are on average 44,000 premature deaths due to respiratory illness caused by pollution and poor air quality. Insurance is not just about risk transfer but, raising cuatomer awareness of risk, prevention and protection. In 2017 Aviva Poland launched an "I know what I'm breathing" campaign to help address this real problem.

whilst seeking to change attitudes towards insurance companies. The programme tackled the problem both a community and individual customer point of view. We installed sensors around the country to monitor air quality. The public could vote for their town to be part of the programme. The sensors around the towns send push notifications to a free to use app on smart phone so that people could understand the level of air pollution where they were. This was coupled with a educational platform. We received 3,000 requests from local communities for external sensors to be placed, and 150,000 votes for the where they should be placed.

As part of Poland Life product range, we provide anti-smog insurance and rehabilitation, access to on-line doctors, free indoor sensors and discounts for anti-smog equipment such as air purifiers.

The campaign has been a huge success. There have been 2 million views on YouTube, judged as number 1 brand in Poland for social media – engagement and interaction. This has led to a 39.5% uplift in leads generated for the Life product, an 66.4% increase in meetings with intermediaries for the Life product and a 9.6% uplift in new Life sales. The second part of the SMOG campaign will run in Autumn 2018.

4) Together we are taking a leadership role in encouraging Canadians to take steps to better protect themselves from the increasingly frequent and extreme weather events. In Canada, beyond financial support, our employees and broker partners are being trained to be ready to respond in times of disaster through our partnership with the Canadian Red Cross' Ready When the Time Comes programme. Aviva Canada has become the first insurance company to join as National Corporate Partner of the Canadian Red Cross committing over $500,000 to the partnership over the next three years.

'Ready When the Time Comes' recruits and trains corporate employees as disaster volunteers to provide assistance following natural disasters. Not only does this programme provide the Red Cross with much needed volunteer capacity during large-scale disasters, it also allows organizations like Aviva Canada to build stronger relationships, leadership, and motivation among their own teams. (see also Principle 5. 4.1)

5) In October 2017 Aviva Canada hosted Canada's first-ever DisasterTech Hackathon in partnership with OneEleven. This was a public hackathon, and over 80 people from across Ontario came together to create innovative, technology-based solutions to mitigate the impact of natural disasters on urban communities.

   We split the participants into 12 teams and asked them to use technology to:
   1.Help support real-time communications during disasters
   2.Help coordinate public volunteer efforts during disasters, or
   3.Help the public better prepare in advance of disasters to minimize the impact on personal property and wellbeing

   The results
   First place: $5,000 - Team PAJR tackled the first challenge by creating an automated triage system to work alongside existing emergency phone systems. During the demo, everyone texted a database that triaged and prioritized the messages. They were one of the only teams to develop a working prototype in the 48 hours.

   Second place: $1,500 - Team TBD tackled the third challenge by addressing the lack of digital disaster preparedness resources for children, parents and teachers. They created a solution called Disaster forecaster that helps the public prepare in advance of disasters.

   Third place: $500 - Team DHR tackled the second challenge by creating Spaget2, a real-time volunteer recruitment task allocation app.

Not only did this event align with our digital first strategy, but it also aligns with our commitment to be there for Canadians when they need it most and help them prepare for severe weather and disasters. As this was such a successful event we aim to run more events like this in the future.

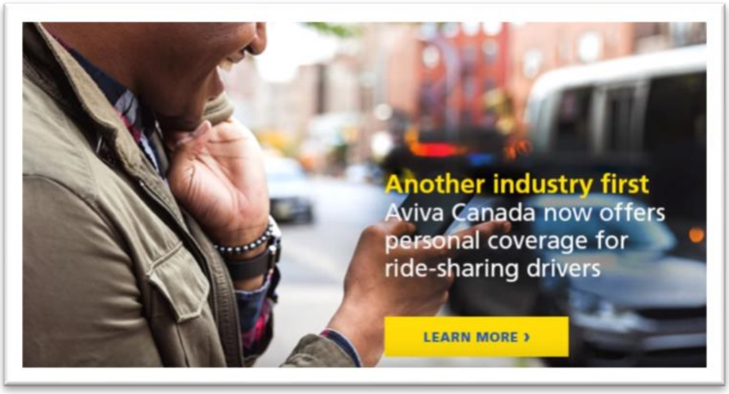
3.2 Encourage our customers to adapt to climate change and reduce their greenhouse gas emissions through insurance products and services.

1) In Aviva Canada, further to the endorsements that we made available to household customers in respect of coverage for domestic Solar PV and wind through our Green Home Power – discounted coverage for customers who choose solar panels and wind turbines to generate electricity. Two years ago we launched a new policy endorsement available to all household insurance which, on reinstatement upgrades the damaged items from new for old to the most energy efficient through Green Assure – customers can do their part for the environment by replacing damaged items with eco-friendly replacements (for example, bamboo/cork flooring and energy star appliances), replacing a broken double-glazed window with a tripled-glazed argon-gas filled unit, improving insulation and therefore reducing future household emissions.

   We researched the potential take-up of this endorsement prior to launch, and take up of this endorsement has continued to remain steady in 2016/17. Due to the commercial reasons this information has been reported to ClimateWise on a separate basis.

2) We also continue to provide Hybrid/ electric car discounted insurance cover to provide customers with get a discount for saving fuel and contributing to a greener planet.

3) In 2016, responding to the growing use of ride-sharing services and the need to protect both passengers and drivers, and recognising the environmental reduction of such behaviour changes, we now offer "first of a kind" coverage for drivers that carry paying passengers in their own vehicles. The coverage is available for Ontario and Alberta drivers. We are also working with regulators across the country to make the solution available in other provinces.

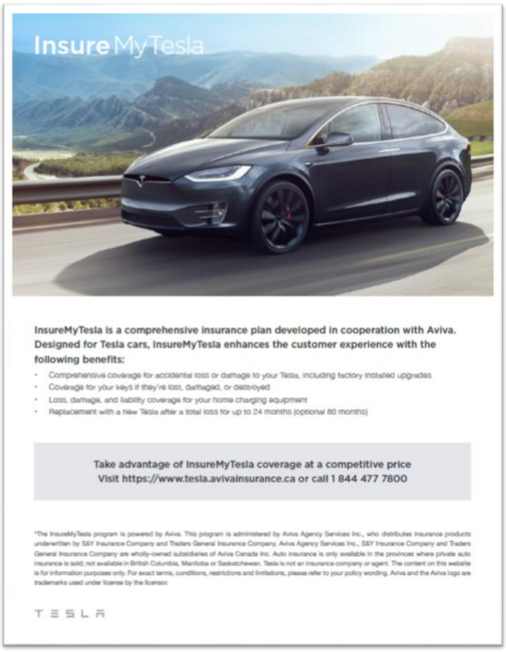


Building the general ride-sharing insurance product, we have launched a number of products that support the sharing economy. For example, we have two products in Canada.
When Lyft expanded into Canada in 2017, Aviva became its official auto insurance provider, offering comprehensive coverage to all its registered vehicles, drivers and passengers in Ontario. We have also developed another partnership with Outdoorsy, the largest RV rental marketplace and online platform, introducing an insurance solution representing the height of innovation in the sharing economy.

4) Aviva Canada's Overland Water endorsement is the first Canadian personal insurance product that protects homeowners from the risk of damage from river, lake and urban flooding. As we help our customers to understand particular risks we will offer them suitable endorsement. Obviously, only the proportion customers who exposure to the risk of perils such as flood will take up the endorsements. Due to the commercial reasons this information has been reported to ClimateWise on a separate basis.

5) The future of mobility – This year, we took action to better meet the needs of customers driving electric vehicles and reward them for making cleaner and greener decisions.

In 2017, we launched InsureMyTesla, powered by Aviva. Designed exclusively for Tesla drivers, InsureMyTesla enhances the ownership experience by providing access to an online platform and offering custom insurance and coverage solutions. Owners may obtain coverage for their charging equipment as well as Electric vehicle and Automatic Emergency Braking discounts. Aviva Canada also now offer up to a 20% discount on electric car insurance and have emergency braking systems, and sponsored the 2017 Electric Mobility Conference. Due to the commercial reasons further information on this as been reported to ClimateWise on a separate basis.



3.3 Seek to increase the proportion of non-life claims that are settled in a sustainable manner.

1) Coverage to improve building resistance to future losses is covered under our Building Upgrade coverage – in March 2018 Aviva Canada built enhancements into the Commercial Property lines that

made that enables the customer to choose to 'build back better' and therefore increase sustainability and resilience.
This is a standard upgrade and does not need to be taken up as a separate endorsement.

This coverage provides up to 10% of the loss or damage to the "building" (which includes utilities) or up to the limit shown on the Policy Declarations to use to reduce or eliminate future losses, including: -

- hurricane clips to hold the roof to the walls
- anchors to hold the walls to the foundation
- extra nails to hold down shingles – (safety precautions for windstorm losses)
- backwater valves and or sump pump and/or monitoring alarms to reduce sewer backup losses
- improve the type of roofing in hail areas to more hail resistant products - this would be of great benefit in Alberta where hail damage can be quite extensive

The intent is to improve the building we insure, so if there is a future loss, the amount paid will be significantly less or not at all. Many commercial buildings do not have backwater valves (same as many homes) and with increases in heavy rains we are experiencing due to climate change, we are going to see more flooding which would include the backing of sewers. If the occurrences happen every 5 years, the additional money we pay in the first instance will be money we may not need to pay out again or may reduce the cost of the claim significantly in future events. We offer anywhere from $50,000 to $100,000 as our default limit and insureds can purchase up to maximum of $2.5 mill for an additional cost.

Alternatively, the customer could choose the Environmental Upgrade option which provides coverage to repair or replace "building" and "equipment" components damaged in a claim with ones that improve the energy efficiency or environmental emissions. Again, it is 10% of the claim to building and equipment, subject to deductible up to the maximum shown on the policy declarations.

This would include things like: -

- carpet damaged in a water damage claim with bamboo flooring,
- refrigeration equipment with more energy efficient equipment,
- electronics with more energy efficient – uses less electricity than what would be provided under the functional replacement cost we provide in the policy upgrade to more energy efficient LED lighting and presence sensors

2) Big Property Data launched a unique £1m solution within environmental risk reports with Aviva - No-one really knows the full history of every single piece of land in the UK**.** When contamination is found on commercially and domestically-used land that previously came up as clear within environmental searches, it can have devastating consequences, with clean-up bills often running into tens of thousands of pounds. To avoid this unquantified property market risk, next-generation search provider Big Property Data (BPD) has teamed up with Aviva PLC and Henderson Insurance Brokers to offer a first-of-its kind insurance against such risk.

The new Contaminated Land Policy, provided through Aviva, insure for up to £1million, on any commercially and domestically-used land or property which passes our environmental searches without risk of contamination being found from our trusted databases. This cover will be automatically included within Big Property Data's Environmental Risk Reports as standard, with no additional cost to the purchaser. The policy covers not only the affected property, but surrounding ones within a designated area as well for up to 15 years.

3.4 Through our products and services assist markets with low insurance penetration to understand and respond to climate change.

1) The majority of Aviva General Insurance business is in Canada and Northern Europe; as such we do not have the opportunity of providing micro-insurance products in developing countries from a GI cover. Aviva's presence in the markets with overall low insurance penetration is in respect of Life business lines. For example, in India we provide affordable life insurance products to rural communities. In 2016/17 Aviva India continued to comply with the rural and social sector obligations prescribed by IRDAI. During the year under review Aviva over achieved its regulatory target by selling 29% policies in rural sector as against the target of 20%. In case of social sector, Aviva covered 17% lives during the year under review against a regulatory target of 5%. This has been achieved through a focused distribution and marketing plan to service micro financial institutions, regional rural banks and other players in this segment. This was done with a continued focus on the rural and social sector business by penetrating deeper into this segment by establishing new partnerships and look forward to enhanced engagement, unique products, technological innovations and brand awareness in this segment.

2) Aviva's CEO, Mark Wilson addressed the UN General Assembly Plenary session calling for a number of actions including a UN Resolution on Sustainable Finance and Insurance in 2015. We continue to drive forward the calls made then and seeking agreement of such a resolution by September 2017, with Mark speaking at SDG Week at the UN in September 2018. The most material SDGs for our business were included in our 2017 CR Summary.

	Impact we can have on the goal	Impact of the issue on our business (materiality)	Aviva strategic priority
1. No poverty	✓	✓	✓
2. Ending hunger			
3. Health and well-being	✓✓✓	✓✓✓	✓✓✓
4. Quality education	✓	✓	
5. Gender equality	✓✓	✓✓	✓✓
6. Water and sanitation			
7. Affordable and clean energy	✓	✓	
8. Decent work and economic growth	✓✓✓	✓✓✓	✓✓✓
9. Infrastructure	✓✓	✓✓	✓✓
10. Reduce inequality	✓✓	✓✓	✓
11. Sustainable cities and communities	✓✓✓	✓✓✓	✓✓✓
12. Sustainable consumption and production	✓✓	✓✓	✓✓
13. Climate action	✓✓✓	✓✓✓	✓✓✓
14. Life below water	✓		
15. Life on land	✓		
16. Peace and justice	✓✓	✓✓	✓✓
17. Partnerships	✓✓✓	✓✓✓	✓✓✓

3) In May 2015 the G7 Finance group committed to increasing access to insurance to as many as 400 million more people to access insurance cover against weather and climate risks by 2020. Maurice Tulloch continues to be Aviva's representative on the Insurance Development Forum (IDF). See Principle 2.1.6.

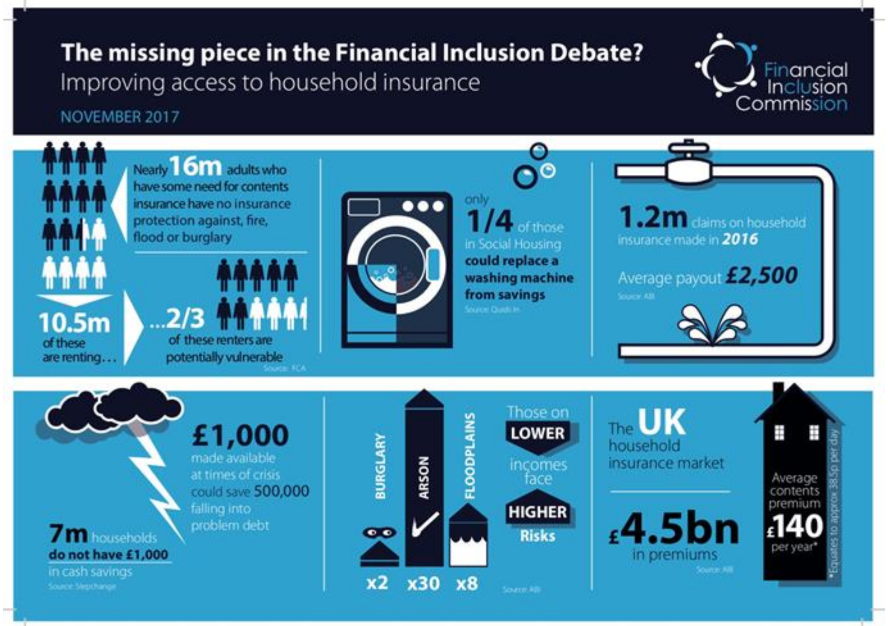
3) In September 2017 Aviva supported the Climate Finance Accelerator – an NDC workshop to help four developing countries turn their NDCs into projects that are investable and insurable. Se Principle 2.1.7.

4) As part of our British Red Cross partnership we are developing a Resilience Cup competition for Aviva markets. Aviva Group is investing £250,000 into Red Cross / Red Crescent resilience projects ("Resilience Cup"), with a goal to build the resilience of vulnerable communities, thereby making people safer from the effects of disasters. We are looking for project consideration of how the activities and

outcomes help to meet the Global Goals and Priorities outlined through the SDGs and Sendai Framework.
For example:
SDG 3: Ensure healthy lives and promote well-being for all at all ages
SDG 11: Make cities and human settlements inclusive, safe, resilient and sustainable
And, the Sendai Framework:
Priority 1. Understanding disaster risk
Priority 2. Strengthening disaster risk governance to manage disaster risk
Priority 3. Investing in disaster risk reduction for resilience
Priority 4. Enhancing disaster preparedness for effective response and to "Build Back Better" in recovery, rehabilitation and reconstruction
The projects will be submitted in August and in October we'll announce the funding to the markets and local Red Cross Societies.

The competition resulted in several projects being funded in difference markets which provide impact and are aligned to our business priorities. These projects are currently in their very early stages.

- Aviva Canada's project is a very impactful project which built on the legacy of the existing relationship with the Canadian Red Cross and our British Red Cross Missing Maps programme in the UK. Working with first nations peoples to map infrastructure and resources so vital to the way of life in the communities feeling the impact of climate change already.
- Singapore's project builds vital resilience amongst a vulnerable ageing population, aligning to our purpose to defy uncertainty, and helping us tackle the issue in a digital first way.
- For Poland the project provided a strong link to our core business of supporting flood-hit communities
- Italy's project took an innovative approach to tackling the issue of urban resilience, strongly aligned to our purpose to defy uncertainty
- In Lithuania and Vietnam £5,000 was awarded to support the work with the local Red Cross moving forward. This could take the form of employee volunteering or education awareness campaigns for example.



5) In the second half of 2017 Aviva supported a UK Financial Inclusion Commission research project and report that focused on the poor penetration of content insurance and recommendations for improving access. Nearly 16m adults who have some need for contents insurance have no insurance protection against fire flood or burglary and of that 10.6m are renting accommodation. The same research found that those same people are eight times more likely to be living on a floodplain – those on lower incomes face higher risks. We have had a Tenant's Content

Insurance offering in place with local councils and housing associations. We are now look at how we can make an even similar product providing the kind of support that this customer segment needs.

5) We continue to investigate how our support of carbon finance projects aligned to the various goals. We are currently reviewing our carbon offsetting programme and looking how we can further build the security of the supply of voluntary emission reduction (VER) credit, whilst focusing even further on climate resilience and a number of the interconnected SDG. We believe this will take the form of a 10-year bespoke project in one of the developing countries where we have operations.

4. Incorporate climate change into our investment strategies

4.1 Evaluate the implications of climate change for investment performance and shareholder value.

1) As a major asset manager, Aviva Investors sees both the risks and the opportunities that issues such as climate change present to our clients. This is why environmental, social and governance (ESG) considerations form an integral part of both our investment and research processes across all asset classes and all regions.
This approach enables us to offer better quality, more risk-aware investment propositions for our clients. For us, it's about aligning our organisation and investment philosophy for the long term.
We believe our industry has a fiduciary duty to do what we can to protect and enhance the value of client assets. This includes putting pressure on policymakers to address the key sustainability challenges within our capital markets and the broader economy. More detail around our involvement in making this happen is given in Principle 2.

Aviva Investors is a long term, active investor. We aim to invest in a responsible and sustainable way, encouraging transparency, more sustainable business practices and good governance in the companies we invest in. This benefits our customers, by identifying and reducing environmental, social and governance (ESG) risks in our holdings, and in many cases benefits society and the broader economy by promoting more sustainable companies. Aviva Investors are due to publish the Responsible Investment Review 2017 in July; this will provide the most update position and can be viewed here. We have a bespoke ESG integration approach (policy and process) and aim to have at least one nominated Responsible Investment Officer (RIO) for the relevant asset class or region. Our RIO network now comprises over 40 fund managers, analysts and support functions with specified responsibility to work with our Global Responsible Investment (GRI) team of seven dedicated governance and responsible investment specialists, who seek to embed ESG data and analysis fully into each desk's investment process. Their activity includes working with the GRI team on the most appropriate use of ESG data and the development of integration tools.

The RIO network meets formally on a quarterly basis, and works collaboratively with the responsible investment team in developing and implementing bespoke ESG integration strategies across asset classes and regions. Members of the RIO Network also receive regularly internal and external ESG training.

Further details can be found in the Strategy and Risk and Metrics section of our TCFD response which is an appendix to this response.

In February 2015, The Board Governance Committee approved a 5-year Low Carbon Investment Strategy which was launched on 24th July. This strategy builds on work which already in train around increasing investment in low carbon infrastructure, engagement with policymakers, engagement with companies consistent with a low carbon future, further integrating climate change issues in our investment decision making, and if/when engagement with a limited number of highly carbon intensive fossil fuel companies using divestment as an option on a balanced and proportionate basis. 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. Through Aviva's TCFD response this year, we provided a further update. The Strategy included an investment target of £2.5 billion by 2020. In the first two and a half years we have invested over £1.26 billion in low carbon infrastructure – including £527m over the last year from a combination of solar, onshore wind, biomass and energy efficient CHP plants.

2) The French Energy Transition for Green Growth Law (or Energy Transition Law) was adopted in August 2015 and came into force on 1st January 2016. Article 173 of the Energy Transition Law strengthened mandatory carbon disclosure requirements for listed companies and introduced carbon reporting for institutional investors. Aviva France is subject to the additional reporting requirements under Article 173.

   We have published our second annual response to Article 173 demonstrating progress both in the way we measure our impact and how we are refining our strategy further. See also Principle 4.3

4.2 Incorporate the material outcomes of climate risk evaluations into investment decision making

1) At Aviva Investors, we believe that fiduciary duty requires that when we are made aware of an issue we must act and in a manner, that is in the best interests of our clients.

Our ESG Heat-map is our key company specific integration tool. It includes a range of material ESG data and analysis, including our internal governance rating, which is based on our historic voting records. This is available to all investment teams through the Bloomberg platform.
The ESG Heat-map is supplemented by additional fund manager and analyst briefings, provided before company meetings, votes or investment decisions. These briefings draw on our Heat-map and more detailed independent ESG data and research. We leverage the expertise of the GRI Team, bespoke research commissioned from brokers and research organisations, and additional information from less conventional sources such as NGOs and civil society to build a rich picture of ESG impacts and risks.
The GRI Team meets with equity and fixed income teams in formal weekly, monthly and quarterly meetings to exchange perspectives and insights on individual companies and emerging issues.

Here is an example heatmap for an issuer:

Fund manager ESG briefing

Aviva Investors' proprietary Heat-map — Glencore Plc

Average Final Voting Score	Governance Rating Global	Governance Rating Home	ESG Rating	Controversies Overall Flag	Controversies Overall Score
C	B	C	BB	Orange	E
AGR Rating	Carbon Emissions Exposure	Carbon Emissions Management	Water Stress Exposure	Water Stress Management	AHA Score
C	6.5	4.3	5.8	2.9	4.71

Clearly, climate change is one such issue. Failing to acknowledge, address and mitigate the significant economic risks raised by climate change means a failure to meet our fiduciary duty. As such, investment managers should be required to act in order to mitigate the consequences of climate change. Our strategic response to climate change highlights our commitments.

- We look to provide leadership and help shape financial markets that do not yet adequately take into account the risks and opportunities of climate change to future shareholder value to be more sustainable. As such Aviva is represented on the FSB Taskforce on Climate-related Financial Disclosure and is seeking to engage companies we invest in in respect of the recommendations. Aviva was also represented on the EC High Level Group on Sustainable Finance which published an interim report in June (see Principle 2.2)

1) In 2015, we identified 40 companies (C40) with more than 30% of their business revenue associated with thermal coal mining or coal power generation and undertook focused engagement with them, including 64 in-depth conversations to date. These meetings set out our expectations on their governance, business strategy, operational efficiency, responsible climate and energy policy advocacy. We also asked, whether any of those companies have any plans for new investment in coal generating capacity, as we believe this, would go against our approach to helping meet the Paris Agreement of limiting global temperature rise to well below 2 degrees Celsius.

   We continue to engage with a number of these companies to encourage them to transition to a low carbon future. We believe it is better to be an engaged owner lobbying for change rather than divesting and walking away as these are the companies in need of the greatest challenge from their shareholders. Indeed, five companies we have engaged with have committed to Science Based Targets following our discussions.

   However, where we don't see any prospect of movement then we will divest. In September 2017 we added two companies to our Investment Stoplist: PGE and JPower and divested our active beneficial holdings wherever possible. We have also placed a further 15 companies on the Stoplist and are in the process of divesting them from Aviva's own investment portfolios. A further six companies have been classified for a final approach from us, we will then move to divest. Once we have divested, we will disclose the names of these divestments. We currently have no exposure to six of the companies that we included in the original C40 list in 2015.

   Some examples of where engagement has led to clarification of companies' plans to transition include the confirmation of mine closures, an announcement on Bloomberg that no additional mining operations would take place, and Aviva Investors being asked to feed advice into early drafts of a company's strategy. (from Aviva's latest TCFD response)

There are some companies that we are unable to divest from as they sit in passive funds or are held by Aviva entities where Aviva plc as a shareholder is not able to influence the investment strategy of the Independent Board overseeing the portfolios. However, we can and do still vote our shares and we will continue to engage. In September we will be going to Poland to engage with a number of thermal coal mining and power companies, we are also seeking to meet with local regulators and policymakers to understand how what actions can be taken going forward to reduce our climate risk and look at opportunities to help support a lower carbon pathway.

- Continuing to challenge policymakers to address climate change and support a lower carbon future – climate change is a market failure and requires government action to correct. For as long as there is money to be made by extracting oil, gas and coal, companies involved in those activities will continue to do so - despite the long-term consequences for the environment, society, and the economy. We therefore focus resources on government engagement. Further detail on this can be found in Principles 1. and 2.

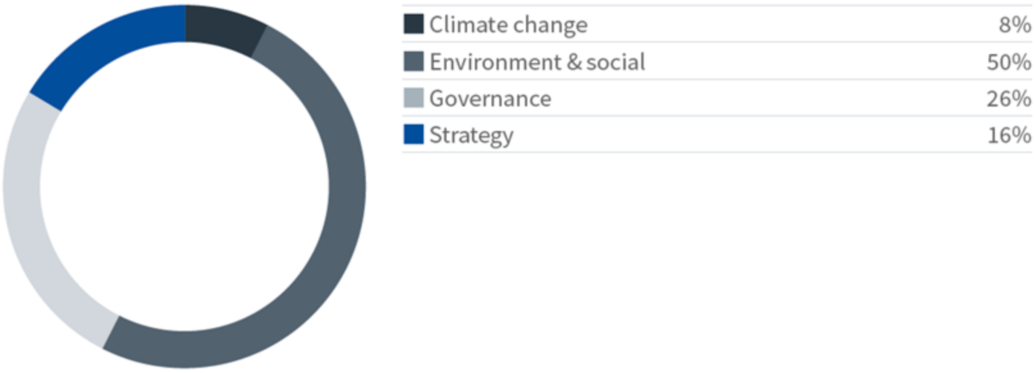
- Aviva Investors (AI) once again has included engagement around companies responses to TCFD in the wording of its 2018 UK Corporate Governance and Corporate Responsibility Voting policy. – "to support shareholder resolutions that reflect our general views on issues such as climate change and the governance and disclosure of climate risk, as set out by the Financial Stability Board's Task Force on Climate Related Financial Disclosure (TCFD)".

- Harnessing our existing ESG integration strategy to further integrate climate change into our investment thinking – we integrate a range of environmental, social and governance issues into our investment analysis and decision making. Two specific case studies on engagement can be found in AI's Annual Responsible Investment Review 2017 – on Exxon and Shell. (link)

- Offering choice – our investment platforms – corporate, adviser and direct to customer offers a range of funds containing different assets including those underweighted in fossil fuels.
    - Direct – 70 individual classes of fund which Morning Star class as ethical (which includes low carbon and fossil free)
    - Corporate – 48 ethical funds available
    - Adviser – we now offer 173 different ethical investments on the platform

- Our environmental, social and governance voting and engagement work has continued and strengthen over the year. We publish our voting effectiveness on an annual basis, but also on an individual company voting results three months after each AGM.

Engagement by Category (substantive engagements)[11]



In 2017 Aviva Investors: -

- Were awarded Responsible Investor Magazine Award for Innovation & Industry Leadership (2017)
- Voted 50,451 Resolutions at 4,151 shareholder meetings representing 92% of meetings where we had a legal right to do so (95% when excluding French domiciled funds)
- We voted against 12,501 management proposals (25.8%) and supported 646 shareholder resolutions (55%). However, 114 of these shareholder resolutions were in effect management approved items that were proposed by major shareholders (frequently occurred in China).
- In the same period, we supported 52% of climate change related shareholder resolutions. The reason that we were only able to support just over half of such resolutions was because some proposals were overly prescriptive and micro-managerial. We are looking to work with NGO partners to support guidelines for the creation of ESG-related resolutions which institutional shareholders can then support. (from our TCFD response)

2) We incorporate all the research and climate risk evaluation into investment decision making. One funding tool which we continue to be involved in developing is environmental bonds. The development of green bonds as a legitimate funding tool to attract significant mainstream investment in climate change initiatives is extremely welcome. Green bonds typically focus on financing low-carbon energy generation, energy efficiency in buildings, industry and transport as well as broader environmental investments, such as forestry or water and waste, which incorporate an element of climate adaptation. The market has grown rapidly in recent years and this trend is likely to continue for a number of years.

   Aviva Investors is playing an active role in developing the green bond market by investing in themes such as those described above across a range of our funds. Indeed, where the bond's characteristics are comparable and we are presented with a choice, we will generally opt for the green bond. Increased standardisation is critical to the growth of this asset class.

   We are working with issuers and policy makers to ensure the momentum behind green bonds continues apace and issues such as standardisation are addressed.

   From the perspective of a mainstream fund manager it is important to recognise the important role that green bond standardisation could play, particularly with 64% of our asset base being fixed income. For the sake of the green bond market, the move towards green bond standards is very clearly a positive step.

Aviva currently holds £744m in Green bonds, more than doubling our holdings from 2016, and more widely and recently in the Sovereign Bond asset class Aviva Investors' approach is the purchase of a 10-year sustainability bond issued by the Community of Madrid. Proceeds from the bond issue will be exclusively utilised for affordable housing, health, education, social inclusion and tackling climate change. The investor presentation explicitly connected the intended use of the proceeds to seven of the Sustainable Development Goals.

3) In September 2015, Aviva Investors signed the Montreal Pledge which seeks to measure the carbon footprint of investment funds. In November 2015 we had reported that we had measured the carbon footprint of four funds. We are working with 2 Degree Investing to understand how mis/aligned our beneficial equities portfolio is to a 2-degree future.

4) A resolution was included in Exxon's AGM voting in 2017. It was put forward by the New York State Common Retirement Fund and the Church of England Endowment Fund, which accused Exxon's board of lagging behind other major oil companies in its stance on tackling climate change.

   The funds secured the support of major institutional investors including Aviva Investors as well as Aegon Asset Management and Axa Investment Management as well as proxy advisory services ahead of the vote. Almost two thirds of ExxonMobil shareholders voted in favour of a motion asking the company to report on how its business will be affected by worldwide efforts to reduce carbon emissions by cutting back on the use of fossil fuels.

5) We were founding members of the Global Real Estate Sustainability Benchmark (GRESB), the industry-driven organisation assessing the ESG performance of real assets globally, and have maintained a seat on the GRESB Advisory Board since its launch in 2010. It is supported and used by both our direct and indirect real estate businesses in different ways. In 2018, we are submitting 18 funds for assessment. The GRESB results are fed back to each underlying fund and follow-up discussions are held with every manager.

   As part of our real estate investment management we engage in many areas on an informal basis with tenants, including on sustainability matters. And as part of our Managing Agents' occupier engagement, they conduct quarterly tenants' meetings at the multi-let properties that they manage on our behalf.

   These property specific meetings, which apply to 50-90% of our real estate assets, can cover a number of areas, including any relevant sustainability issues including:
   - Provision of feedback on energy and water consumption and/or waste generation
   - Provision of feedback on waste generation
   - Transportation initiatives for those business parks that have a travel plan i.e. highlighting public transport services, car sharing schemes etc

   In 2017 over 85% of our new leases during 2017 contained all or some green lease clauses. Over 83% of our lease renewals contained all or some green clauses.

4.3 Communicate our investment beliefs and strategy on climate change to clients and beneficiaries

We believe that clients and beneficiaries should understand how companies shape our world and the fact that they themselves can be shaped by clients.

1) We responded to 59 letters going to the CEO over the last year. The focus was mainly in respect of investment considerations of climate change and low carbon investment.

Customer campaigns 2017/18	**No. of emails**
Christian Aid – Make the big shift fossil fuel to renewables	56
Polish coal	2
Invest in renewables	1
Total	59

N.B. This does not include the amount of comments on Twitter, Facebook etc.

2) Aviva regularly commissions Consumer Attitude surveys from IPSOS MORI. In the November 2017 survey of 1,000 adults from the UK they found the found the following:

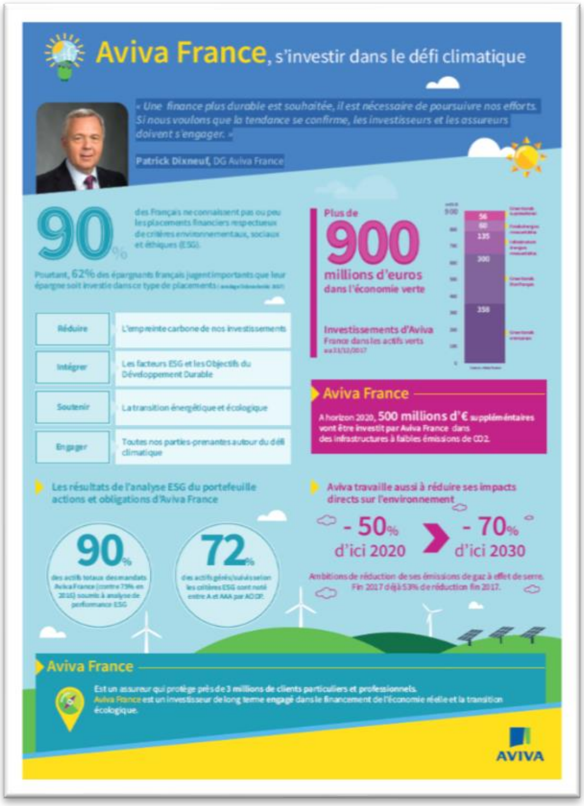
31% of those surveyed advised that it is important to them that their pension money is invested in projects that will help build a better future

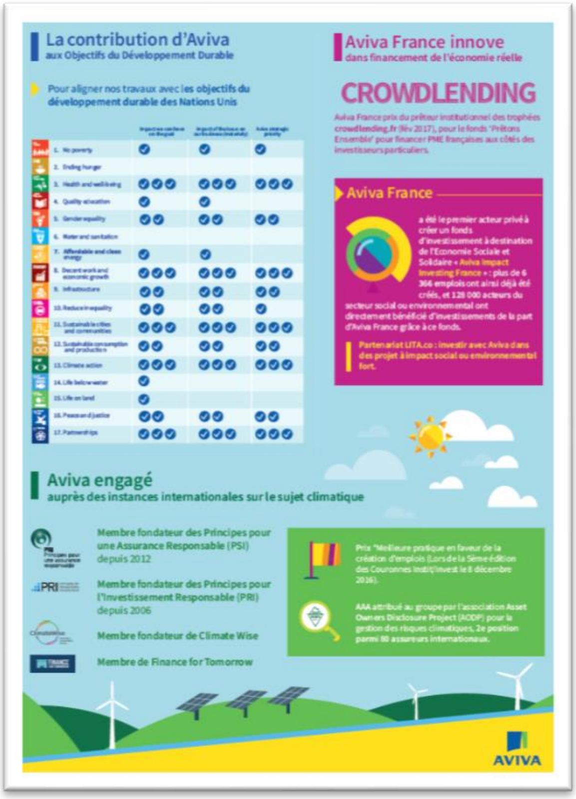
45% advise that they would like their pension provider to inform me on where my money goes/is invested

34% say it is important to them that a company they purchase products from/invest money in has a strong social purpose:

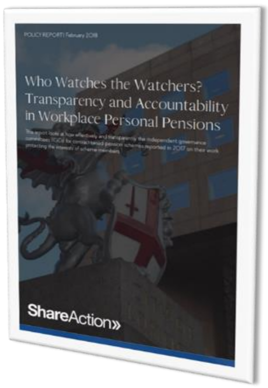
We will use this and other results to build a picture, monitor and help inform the pace and focus of our work going forward.

3) As part of the launch of its response to Article 173 it has created a customer-friendly summary of the highlights of its response.





4) Aviva has sought to engage with workplace pension employers, and held the first Thought Leadership lunch on Creating a Sustainable Future in January. The 17 companies represented round the table have over 85k scheme members and an AUM of over £1.4 bn. The discussion generated a great deal of interest and similar events are being planned.
   We have also been working with our Workplace Benefits Financial Education team to make them aware of the sustainability issues that are increasingly being talked about by stakeholders, which will help them have a better conversation with their ongoing customer relationships. The team engaged with 28,000 customers or pension scheme members last year.



5) Aviva Life's Independent Governance Committee is interested with the Value for Money Aviva's workplace pensions provide to customers. Again, in their 2018 Annual Report they have reviewed the environmental, social and governance considerations of these products and the value provided to customers. As mentioned In Principle 2.2.7 have engaged with both ClientEarth and the FCA on the guidance pension providers need to incorporate climate risk and other ESG issues considerations into workplace pension scheme to mirror the values of the members.

   The Aviva IGC report came top in ShareAction's ranking of 16 IGCs. The review included Value for Money, Investments, charges and costs, communications and engagement, service and administration and long-term factors including Environmental Social & Governance ('ESG').

5. Reduce the environmental impact of our business

5.1 Engage with our supply chain to work collaboratively to improve the sustainability of their products and services.

1) We include environmental considerations as standard with our Procurement standards and processes. We have a Supplier Code of Behaviour which refers to the need for our suppliers to consider and manage the environmental impacts of their business and the products and services they provide to us and our customers.
2) In October 2017 we contracted with Smartest Energy for our UK electricity. The tariff that we are using is the UK's first 100% renewable electricity product with independent certification, from the Carbon Trust. Every megawatt hour that we use has come from renewable sources backed with UK-recognised origin certificates for the length of our contract. We could therefore report against the new GHG Protocol Scope 2 – market definition for the UK, however with no clear way of reporting the rest of our global portfolio against this change in methodology we continue to report against Scope 2 – location definition.

3) We monitor all aspects of what we buy to understand the operational carbon impact they present, and how we can minimise the impacts. One area is business travel both our company car fleet, private vehicle being used for business travel, hire cars, taxis, air and rail travel.

   Our UK company car fleet comprises of 771 'tool of trade' vehicles; used by our motor engineers, claims inspectors and risk surveyors. In the fleet we have 154 hybrid vehicles on the fleet and out of that number we have 47 hybrid plugins.

   More generally, we have a policy CO_2 cap of 130g/km on new car orders, however the average CO_2 emissions of Aviva's UK fleet is 106g/km, with Ireland at 114g/km. Looking forward, this is set to drop further, as more than 50% of new car orders are plug-in hybrids, with the fleet team working to make sure they can be utilised correctly.

   Twenty electric vehicle charging stations have so far been installed at six key office locations in the UK and the team is working together with the rest of our facilities management department to ensure coverage matches the locations of plug-in hybrid – or full electric – car drivers, so we make sure that the drivers who take on plug-in or electric vehicles have the ability to charge their vehicles within our company car parks.

   We are also looking at further opportunities to support the transition to a low carbon economy through our operations and business infrastructure, including solar PV clad car ports up that will provide electricity to the office as well as providing carpark lighting and EV charging points.

4) In the UK, through our claims process in 2017 we could build a 180m-tall tower of all the washing machines, dryers
   and dishwashers we replaced – the height of London's Gherkin. Our preferred supplier for these items is AO.com; when they replace an item for us they will remove and recycle the old appliance and deliver and fit the replacement one at no additional charge to the customer. We also replace any white goods with at least an A rated energy efficient item, regardless of if the customer had a less efficient model previously. This is standard across all our personal lines contents insurance products (subprinciple 3.3)

5.2 Measure and seek to reduce the environmental impact of the internal operations and physical assets under our control.

1) We disclose the key environmental impacts of our business operations in detail through our 2017 ESG data sheet. Our progress against our Environmental KPIs can be seen our Corporate Responsibility Key Performance Indicators and Assurance Statement. https://www.aviva.com/content/dam/aviva-corporate/documents/investors/pdfs/reports/2017/Aviva_CR_KPIs_assurance_statement_and_reporting_criteria_2017.pdf

From a 2010 baseline, we set ourselves an ambitious target to cut CO2e emissions by 20% by 2020, with a minimum 5% reduction each year. In 2014, we exceeded that target, achieving a 32% reduction well ahead of plan (ARA page 53).

In 2015, with the purchase of Friends Life we restated our 2010 baseline to include the expanded operations and set a carbon reduction target of 40% in 2020 and 50% to 2030. By the end of 2015 our long-term carbon reduction figure stood at 39%.

Towards the end of 2016 we further revised our operational long-term carbon reduction target to 50% by 2020 and 70% by 2030, from a 2010 baseline. We believe this is aligned with the science-based targets using the 2-degree threshold (which helps companies determine how much they must cut emissions to prevent the worst impacts of climate change). We are waiting to see the mandatory investment methodology that we may look to commit to this. By the end of 2017 we exceed our target of 50% carbon reduction by 2020, with a 53% reduction in emission. We have decided not to set another target for 2020 but instead work towards the 2030 target of a 70% reduction.

2) With renewable energy generation and energy efficient technologies reducing in price, trials proving the savings and therefore the ROI that such initiatives represent is becoming clearer, over the past year we have progressed a number of new projects to reduce our energy consumption and begin generating our own on-site renewable electricity supply. For example, we are seeking consent to erect a wind turbine on our Pitheavlis, Perth.

3) With the installation of solar panels on three of our locations in the UK, this is the first year we have started to generate renewable electricity in the UK generating 352MWh in 2017 (2016: 294MWh) of electricity over the year. We are now conducting feasibility studies to install enough onsite renewables to take several locations off-grid over the next couple of years. Please see the turbine proposal and Solar PV clad car port (5.1)

4) Greening our spaces – In 2017 2,000 Aviva Canada employees relocated to a newly-constructed headquarters building in Markham, Ontario, which was built to Leadership in Energy and Environmental Design (LEED) Gold standards. This move has reduced the equivalent operational footprint by 25%. Open collaboration areas make efficient use of space and innovative design features include: Improved waste programmes – centralised waste disposal allows us to divert and recycle/compost operational waste and drive culture change around waste management. Daylight harvesting – a control system reduces electric light when daylight is available to reduce energy consumption.

5) Aviva India, according to its 2016/17 FY report has reduced its electricity consumption by 17.33% over the previous fiscal year through controlling wastage of energy. Awareness in this regard was created through regular emails and personal interactions with stakeholders. Approximately 115 tonnes of old air conditioners were replaced to reduce electricity consumption.
The Company has embarked on yet another ambitious project of managing energy consumption electronically. Also, a pilot project with a service provider for branch offices has been initiated and some actions like regulated timings for switching on air conditioner plants and automation of generators have been taken based on data received during the project.

4) Furthermore, we have once again this year completed the Asset Owners Disclosure project (AODP) Global Climate 500 survey, which focuses on climate risk management. We were ranked 22nd overall and second highest ranking insurance company by AODP. Our rating improved from ‘A’ to ‘AA’. For the first year AODP also surveyed Asset Managers and Aviva Investors received a rating of B.
This year Aviva’s rating improved again, we are only one of two companies out of 80 insurers round the world to have be rated as AAA.

5) We have a three-year contract in place in respect of purchasing carbon credits from renewable energy and energy efficiency community projects to account for our unavoidable carbon emissions. We have done some further work with ClimateCare to better understand the value of the community impact of the projects that we purchase carbon credits from. This year we have purchase another 80,000 credits from projects providing energy efficient cookstoves, low carbon irrigation, safe water, biogas, and wind energy whilst improving the lives of nearly 1 million people in respect of health, livelihoods and empowerment.

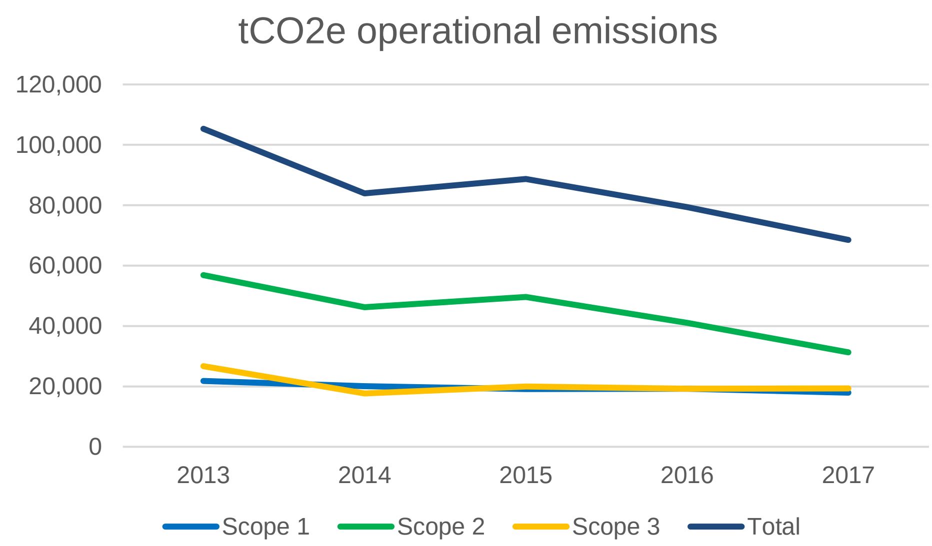
Building on this work in 2017 Aviva’s Carbon Neutral programme that has been running for the last 10 years was awarded the UNFCCC’s Momentum for Change Lighthouse Project award.

5.3 Disclose our direct emissions of greenhouse gases using a globally recognised standard.

1) We publish annual Group performance data forCO2e emissions, waste and water consumption. Our carbon footprint boundaries identify the scope of the data we monitor and the emissions we offset. Our total operational carbon emissions for 2017 were 68,500 tCO_2e (2016: 79,410 tCO_2e).

Aviva plc – Global greenhouse gas emissions data				
Tonnes CO2e	2017	2016	2015*	2014
Scope 1	17,915	19,210	19,112	20,031
Scope 2	31,280	41,008	49,595	46,231
Scope 3	19,305	19,193	19,991	17,662
Absolute CO2e footprint**	68,500	79,410	88,698	83,924
CO2e tonnes per employee	1.6	2.0	2.2	2.4
CO2e tonnes per GWP	2.48	3.12	4.05	3.87
Carbon offsetting ***	-68,500	-79,410	-88,698	-83,924
Total net emissions	0	0	0	0

Scope 1 – operational emissions from owned sources e.g. gas, vehicle fleet as part of product/service.
Scope 2 – operational emission from non-owned sources e.g. electricity.
Scope 3 – business activity emissions from non-owned sources – e.g. business travel, waste, water
*This includes Friends Life operations for the whole of 2015
**Limited assurance provided by PricewaterhouseCoopers LLP.
*** Carbon offsetting through the acquisition and surrender of emissions units on the voluntary market.



We report on all of the Greenhouse Gas (GHG) emission sources on a carbon dioxide emissions equivalents (CO2e) required under the Companies Act 2006 (Strategic Report and Directors' Reports) 2013 Regulations, which are material to our business operations. We report our emissions using the operational control approach as defined by our organisational boundary. We do not have responsibility for any emission sources that are not included in our business operations or included in our carbon footing boundaries. Our reporting follows the GHG Protocol Corporate Accounting and Reporting Standard, and emission factors from UK

Government's GHG Conversion Factors for Company Reporting 2016. We use the Department for Environment, Food and Rural Affairs (Defra) latest factors that are annually revised for our emissions factors: http://www.ukconversionfactorscarbonsmart.co.uk/

We have used the two most appropriate intensity measures to our business CO2e per employee and CO2e per £ million GWP which are expressed in the table above. Aviva also reports on a number of our Scope 3 emissions which go beyond the requirements of the 2013 Regulations.

From a 2010 baseline we reset set ourselves an ambitious target to cut CO2e emissions by 40% by 2020 and 50% by 2030, with a minimum 5% reduction each year in 2015. As w achieved a 39% reduction well ahead of plan we again set new long-term targets of a 50% reduction by 2020 and 70% by 2030. In 2017 we achieved a 53% reduction in carbon emissions compare to our 2010 baseline figure.

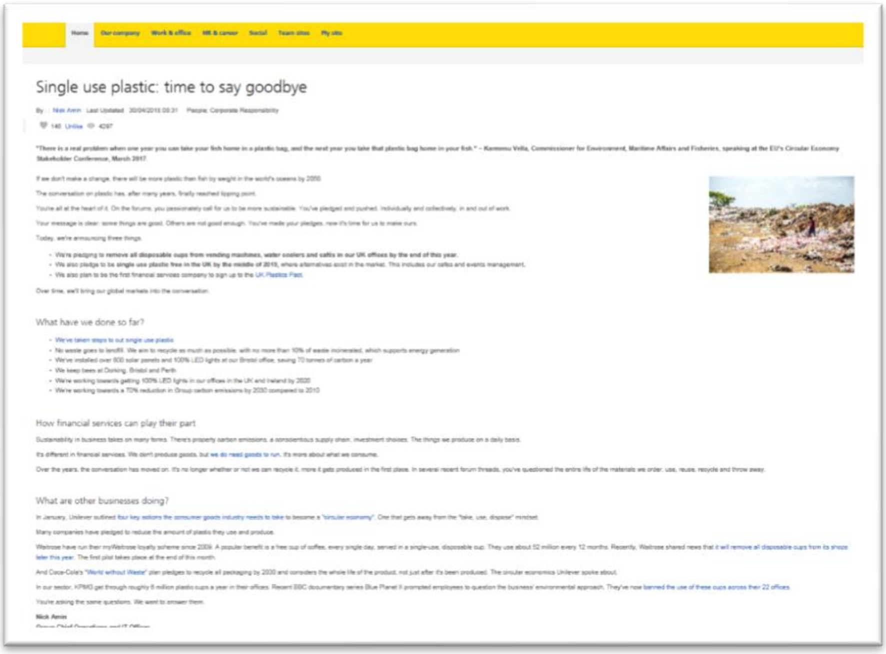
We are still waiting for the investment methodology of the Science-based targets to be released: this is a mandatory section of the commitment for financial services companies. Again, we have had our data verified by Third Party Assurance providers.

2) Through RE100 we have committed to purchase 100% of our electricity worldwide from renewable sources by 2025. We purchased 61% (2016: 61%) of our electricity from renewable sources round the world. Through these figures is would seem that we have not made any progress on these figure from last year, this due to the fact the majority of the energy efficiencies and use of onsite generation is taking place in the markets where we purchase renewable electricity already. We have provided RE100 with our annual report in respect of our progress. For our unavoidable remaining carbon emissions, we offset these to the value of 100% through the acquisition and surrender of emission units on the voluntary carbon market (VERs). In September 2016 we reaffirmed our commitment by signing the UNFCCC Climate Neutral Pledge, 10 years after we first became carbon neutral.

5.4 Engage our employees on our commitment to address climate change, helping them to play their role in meeting this commitment in the workplace and encouraging them to make climate-informed choices outside work.

1) In 2015, Aviva Canada became the first insurance company to become a national partner of the Canadian Red Cross' Ready When the Time Comes (RWTC) programme. With more than 400 trained employee and broker volunteers across the country, in 2017 our responders supported evacuees affected by the New Brunswick ice storm, the spring floods in Ontario and Quebec, and flooding in Manitoba's First Nations communities.

2) The environmental issue that has had our employees talking this year is single use plastics. We have been spent the last number of years looking at the sustainability of the drinks and catering options we provide for our employees in the office, and have sought to reduce food miles, waste packaging, food waste etc.



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Single use plastic: time to say goodbye

By: Nick Amin Last Updated: 30/04/2018 08:31 People, Corporate Responsibility

140 Unlike 4297

"There is a real problem when one year you can take your fish home in a plastic bag, and the next year you take that plastic bag home in your fish." – Karmenu Vella, Commissioner for Environment, Maritime Affairs and Fisheries, speaking at the EU's Circular Economy Stakeholder Conference, March 2017.

If we don't make a change, there will be more plastic than fish by weight in the world's oceans by 2050.

The conversation on plastic has, after many years, finally reached tipping point.

You're all at the heart of it. On the forums, you passionately call for us to be more sustainable. You've pledged and pushed. Individually and collectively, in and out of work.

Your message is clear: some things are good. Others are not good enough. You've made your pledges, now it's time for us to make ours.

Today, we're announcing three things.

- We're pledging to remove all disposable cups from vending machines, water coolers and cafés in our UK offices by the end of this year.
- We also pledge to be single use plastic free in the UK by the middle of 2019, where alternatives exist in the market. This includes our cafés and events management.
- We also plan to be the first financial services company to sign up to the UK Plastics Pact.

Over time, we'll bring our global markets into the conversation.

What have we done so far?

- We've taken steps to cut single use plastic
- No waste goes to landfill. We aim to recycle as much as possible, with no more than 10% of waste incinerated, which supports energy generation
- We've installed over 800 solar panels and 100% LED lights at our Bristol office, saving 70 tonnes of carbon a year
- We keep bees at Dorking, Bristol and Perth
- We're working towards getting 100% LED lights in our offices in the UK and Ireland by 2020
- We're working towards a 70% reduction in Group carbon emissions by 2030 compared to 2010

How financial services can play their part

Sustainability in business takes on many forms. There's property carbon emissions, a conscientious supply chain, investment choices. The things we produce on a daily basis.

It's different in financial services. We don't produce goods, but we do need goods to run. It's more about what we consume.

Over the years, the conversation has moved on. It's no longer whether or not we can recycle it, more it gets produced in the first place. In several recent forum threads, you've questioned the entire life of the materials we order, use, reuse, recycle and throw away.

What are other businesses doing?

In January, Unilever outlined four key actions the consumer goods industry needs to take to become a "circular economy". One that gets away from the "take, use, dispose" mindset.

Many companies have pledged to reduce the amount of plastic they use and produce.

Waitrose have run their myWaitrose loyalty scheme since 2009. A popular benefit is a free cup of coffee, every single day, served in a single-use, disposable cup. They use about 52 million every 12 months. Recently, Waitrose shared news that it will remove all disposable cups from its shops later this year. The first pilot takes place at the end of this month.

And Coca-Cola's "World without Waste" plan pledges to recycle all packaging by 2030 and considers the whole life of the product, not just after it's been produced. The circular economics Unilever spoke about.

In our sector, KPMG get through roughly 6 million plastic cups a year in their offices. Recent BBC documentary series Blue Planet II prompted employees to question the business' environmental approach. They've now banned the use of these cups across their 22 offices.

You're asking the same questions. We want to answer them.

Nick Amin

At the end of April, we announced that: -

- We pledge to remove all disposable cups from vending machines, water coolers and cafés in our UK offices by the end of this year.
- We also pledge to be single use plastic free in the UK by the middle of 2019, where alternatives exist in the market. This includes our cafes and events management.
- We also plan to be the first financial services company to sign up to the UK Plastics Pact. (WRAP is currently building a 'Friends of the UK Plastic Pledge').

Over time, we'll bring our global markets into the conversation.

To raise further awareness of single use plastic pollution in our rivers and oceans, we embarked on a project with Thames21 where employees collected single use plastic waste from a part of the Thames in just 1.5 hours. We then commissioned 'Shelley the turtle' which toured the Aviva offices and was on show at our shareholder AGM in May.

Aviva UK achieved our Zero Waste to Landfill Target in 2015.

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Aviva world

Aviva forum · Cupless pilot August, St Helens and Norwich Island

Cupless pilot: August, St Helens and Norwich Island

16 replies

Matthew Deakin

Throughout August you'll need to bring your own cup or mug when you're using a vending machine or water machine/tap or when you're buying your favourite hot drinks from our cafes and restaurants.

We're trialling a period of no plastic disposable cups within Norwich Island Site and London St Helens in August.

Remember, you can always buy a Keep Cup from any restaurant or café for £2 (regular) or £3 (large) with all the money raised from the sale of Keep Cups being donated by Aviva to the Marine Conservation Society Clean Seas Programme. Plus, with all our hot drinks priced 20p less as a result of the change, if you're buying a Keep Cup or sourcing your own you should soon be making your money back. Please note that the larger cups will be here in time for the trial along with a fresh order of regular cups.

As you may know, we use nearly 6 million disposable cups a year in our UK offices alone. We're committed to removing plastic from our restaurants and moving to sustainable alternatives.

If you have any questions, here's an FAQ. If your question's not there, please contact Jason Fletcher, Property & Facilities Contract Manager or muyself, Matt Deakin, Corporate Responsibility Manager.

5 days ago Reply Alert me

All replies

Oldest Newest

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Aviva world

Aviva forum · Should we be doing more for the environment

Should we be doing more for the environment?

19 replies

Holly Pratt

Did you see my article on avivaworld recently about the EAT forum and how Aviva are helping to influence businesses to be more sustainable?

Find it an interesting read?

I'd love to know if content around the environment, the food we eat, how we recycle our rubbish and everything sustainability floats your boat...?

Let me know if there's anything in this area you'd like me to write about next!!

4 days ago Reply Alert me

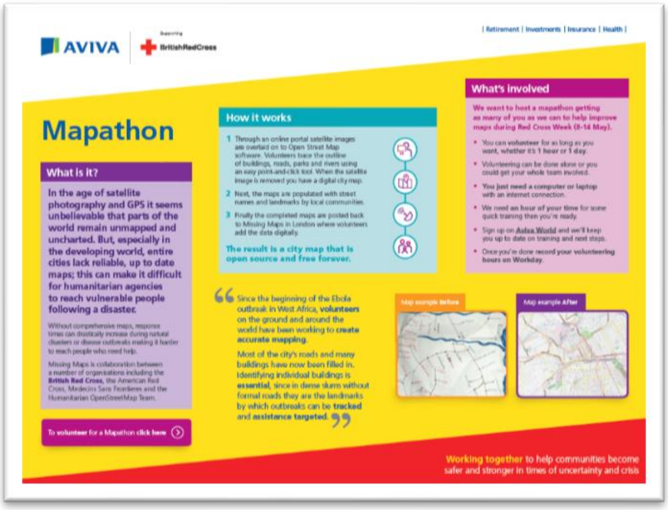
All replies

Oldest Newest

Thomas Pickering

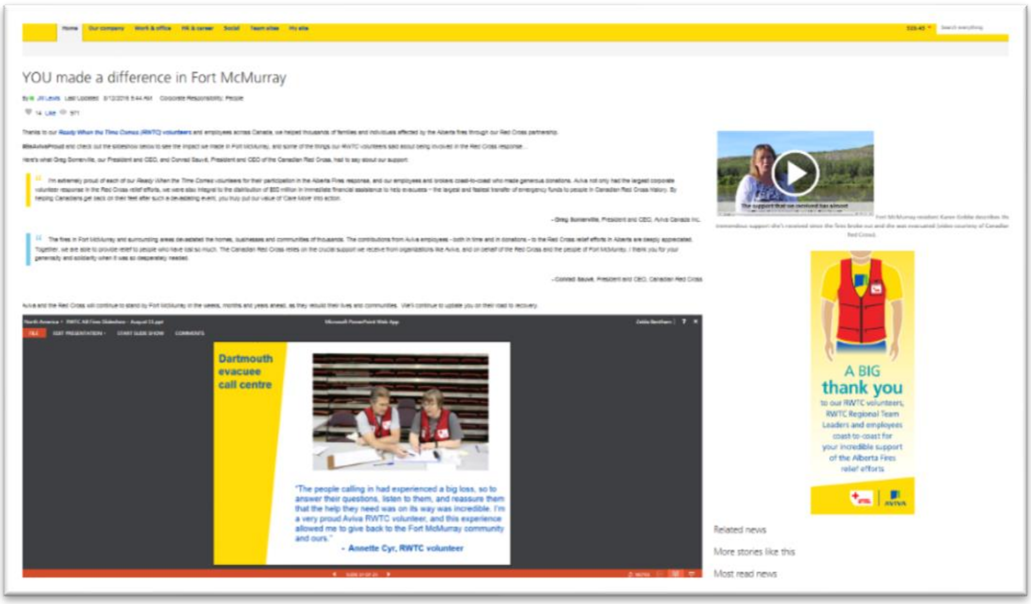
I think anything we can do to raise awareness in this area is a great thing. Realistically, we can probably all do more when it comes to the enviroment. My focus now is going to be on avoidance of specific products rather than recycling (I'll still of course recycle, but where possible I'll avoid the need for this entirely, or at least try my best). I do think many of us don't realise the role our diets play in impacting the environment - I read a stat recently that suggested a switch to plant based foods for just one day a week would save billions in gallons of water, drastically reduce our carbon emissions, provide a huge increase in crops no longer needed to feed livestock, push back against the antibiotic crisis we face etc. I'm paraphrasing here but you get the idea - personally, the problem I think we face is too many people believe their actions won't make a difference. Once we get out of that mindset and understand we all have a role to play, then we will instigate change for the better.

4 days ago Reply



3) We will be running the 24-hour mapathon again this October to assist with the provision of information about on the ground infrastructure.

Our most effect communications channel in respect of employees is Aviva World, our intranet. This helps employees to keep up to date with our views of what is happening externally, what our people are doing to help in extreme weather events, and what is happening closer to home at different locations.

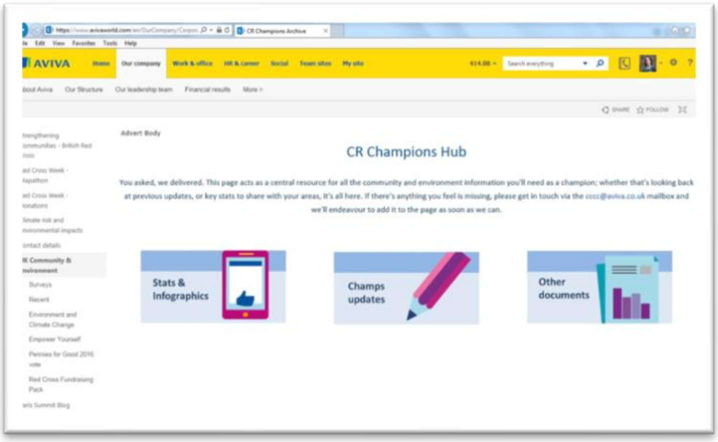


3) Such communications are adapted from English speaking countries to be picked up in markets throughout the group. Our intranet AvivaWorld is accessible to all employees on a worldwide basis.

4) We included some question on Corporate Responsibility in our Employee Snapshot Survey in April. We asked the question 'Which of the following areas of Aviva's responsible business approach would you

like to hear more about or get more involved in?' Improving the environmental impact of our business came top with 52% of those surveyed global saying they would like to do more. The figure was higher in Singapore (66%), Asia Regional Office (61%) Vietnam (60%) and the UK (53%).

5) We continue to work with 150 CR/Environmental champions in place across the UK locations that help disseminate information on what Aviva is doing or calling for on a group wide basis, as well as being a local contact for questions and local challenges. The role is voluntary, but is formal in terms of having a role profile and included in the performance process.



6) In July 2017, as part of our graduate training scheme for leadership, we tasked 30 graduates in our different markets worldwide to design, plan and teach at least one primary school class in their respect markets the Sustainable Development Goal's 'World's Largest Lesson' focusing on one or more of the Global Goals – such as Goal 7- Renewable Energy or Goal 13 - Climate Action, working with Project Everyone. This pioneering work, will then involve engaging with other employees in their market to also deliver a lesson with a target of reaching 10,000 children by July 2018. We were advised by 'Project Everyone' – the Communications team of the SDGs that we were the first corporate where employees went into the classroom to teach the children/

   By the time the task was wrapped up the graduates had taught XXXXX children and run a Sustainability Hackathon with the National University of Singapore. https://vimeo.com/260873697

6. Report and be accountable

6.1 Ensure that the organisation is working to incorporate the Principles into business strategy and planning by encouraging the inclusion of the social and economic impacts of climate risk as part of the Board agenda.

Overall responsibility for Aviva's corporate responsibility and therefore climate change lies with Aviva's Group Chief Executive and the Aviva plc board.

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

Board Risk Committee - This Committee met eight times in 2017 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 2017 Annual Report & Accounts (see pages 31-32) and it is therefore assessed for its proximity and significance to Aviva via our local markets and group emerging risk processes. The Committee has incorporated emerging risk scenarios into our scenario planning, enabling us to review the most significant risks that would affect the Company's strategy.

Board Governance Committee - One of this Committee's responsibilities is to oversee the way Aviva meets its corporate and societal obligations. This includes setting the guidance, direction and policies for Aviva's customer and corporate responsibility agenda and advising the Board and management on this. This Committee met six times in 2017 and formally considered Aviva's strategic approach to climate change during the year. The Committee continues to ensure the Board remains informed on the issue.

Further, the Board Audit Committee has reviewed and signed off the contents of the Annual Report & Accounts including the summary climate related financial disclosure.

With climate change being highlighted again this year as one of four key risk trends and movements and an emerging risk in the 2017 Annual Report & Accounts – page 26, the Board Risk Committee will review, manage and monitor the risk as it may impact our ability to write profitable new business over the longer term. All emerging risks are assessed for their proximity and significance to Aviva via our embedded market and group emerging risks processes. The "Increased incidence of extreme weather events" risk has been assessed as 'less remote' therefore requiring regular analysis and its potential impact is considered significant at an Aviva level, though not over the current planning horizon. Emerging risks are assessed over longer time periods than the current business plan to ensure all risks to both the medium and long-term future of the company receive appropriate attention.

The Board Governance Committee signed off the 2017 TCFD response that is on pages 31-32 of the 2017 Annual Report and Accounts. Aviva's expanded response to the TCFD recommendations are attend to the end of this submission as an appendix.

Aviva's strategy to implement the TCFD recommendations includes conducting climate-related scenario analysis consistent with the recommendations, wherever possible using commonly agreed sector/subsector scenarios and time horizons. The results of the scenario analysis should promote the embedding of environmental, social and governance (ESG) factors in all internal decision-making and business processes. In particular, it should assist the identification of climate risks and opportunities so that appropriate action is taken in order to manage the risks and grasp the opportunities.

We will report on the progress of our work on scenarios to Aviva's relevant board committees and aim to first report against scenarios in our disclosure next year. (from Aviva's 2017 TCFD response)

Aviva continues to incorporate the ClimateWise Principles into business strategy and planning. ClimateWise established an Insurance Advisory Council to build on existing partnerships with international regulators and policy makers. The council will meet twice a year with executives from across the global insurance industry. They will support international regulators and policy makers as they explore ways to promote a more systematic response to climate change right across the global financial system. Patrick Tiernan, MD Global GCS now represents Aviva on this group.

"The advisory council is designed to be a regular forum for the global insurance industry, and its regulators, to work together. It will address the growing gap between societal exposure to climate risk, on the one hand, and a corresponding reduction in societal access to commercial insurance cover on the other. With its emphasis on generating the evidence needed for change the council will provide all stakeholders with the knowledge needed to further the collective action in this crucial area."

Maurice Tulloch – Global Chairman, GI.

The French Energy Transition for Green Growth Law (or Energy Transition Law) was adopted in August 2015 and came into force on 1st January 2016. Article 173 of Aviva France is subject to the additional reporting requirements under Article 173 and the second report, covering the period from 1 January 2017 to 31 December 2017, was published by end June 2018.

6.2 Publish a statement as part of our annual reporting detailing the actions that have been taken on these principles.

This document constitutes Aviva's 2017/18 response to the ClimateWise Principles and is the basis of our actions taken in continuing to address the issue of climate risk/climate change. We have not excluded ourselves form responding to any of the sub-principles.

Similar information is available in Aviva's Annual Report & Accounts, our summary Corporate Responsibility Report ESG Data sheet, as well as information on the Social Purpose section of our website.

However, this report provides the level of detail which cannot realistically be included in other public reports that seek to cover a wider scope of information. This response is publicly available on our website with our previous year's responses.

We have also published an Initial Summary and expanded response to Taskforce on Climate-related Financial Disclosure recommendations, which also forms an appendix to this document and contains further information that has not been recorded against a particular principle in this report. This report therefore should be read in conjunction with the appendix to have a fuller picture of Aviva's response to the climate risks and opportunities we face.

Une finance plus durable est souhaitée, il est nécessaire de poursuivre nos efforts. Si nous voulons que la tendance se confirme, les investisseurs et les assureurs doivents s'engager.

Patrick Dixneuf, DG Aviva France

(As more sustainable finance is desired, it is necessary to continue our efforts. If we want the trend to be strengthened, investors and insurers must become involved.)

Aviva’s climate-related financial disclosure 2017

As an international insurance group, our sustainability and financial strength is underpinned by an effective risk management system. Our business will be directly impacted by the effects of climate change and therefore we need to build resilience to and mitigate the risk of the impact of climate change for our customers and investors. We believe unmitigated climate change presents a real threat to financial stability over the coming decades, both at a governmental and corporate level, to the point where it will permanently impair total asset value.

We have been reporting on climate change in our Annual Report & Accounts since 2004. This disclosure builds on our 2016 initial response and takes into account the final version of the Taskforce on Climate-related Financial Disclosure (TCFD) recommendations published in July 2017.
This expanded response builds on the summary in our Annual Report and Accounts (link) and constitutes our further statement of intent to fully report against the recommendations of Financial Stability Board’s Taskforce for Climate related Financial Disclosure framework next year. We make this disclosure in respect of Aviva in our multiple roles as an asset owner with assets to the value of £490bn, an insurer with gross written premiums of £27.6bn, and asset manager with assets under management of £353bn.

Governing climate-related risks

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

Board Risk Committee

This Committee met eight times in 2017 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 2017 Annual Report & Accounts (see pages 31-32) and it is therefore assessed for its proximity and significance to Aviva via our local markets and group emerging risk processes. The Committee has incorporated emerging risk scenarios into our scenario planning, enabling us to review the most significant risks that would affect the Company’s strategy.

Board Governance Committee

One of this Committee’s responsibilities is to oversee the way Aviva meets its corporate and societal obligations. This includes setting the guidance, direction and policies for Aviva’s customer and corporate responsibility agenda and advising the Board and management on this. This Committee met six times in 2017 and formally considered Aviva’s strategic approach to climate change during the year. The Committee continues to ensure the Board remains informed on the issue.

Further, the Board Audit Committee has reviewed and signed off the contents of the Annual Report & Accounts including the summary climate related financial disclosure.

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 (GI) has primarily an 18 month outlook (although recognising there are longer term risks) and focuses on the physical impacts of climate change. As a life insurer and pension provider we also make investments. This is, first and foremost, to ensure we can cover our future commitments and meet the promises we have made to our customers, so insurance claims and pensions will be honoured. To do this we look very carefully at how different investments meet our risk appetite in the longer term, when transition risks become much more important.
Aviva’s strategy to implement the TCFD recommendations includes conducting climate-related scenario analysis consistent with the recommendations, wherever possible using commonly agreed sector/subsector scenarios and time horizons. The results of the scenario analysis should promote the embedding of environmental, social and governance (ESG) factors in all internal decision-making and business processes. In particular, it should assist the identification of climate risks and opportunities so that appropriate action is taken in order to manage the risks and grasp the opportunities.

Our work this year aims to identify appropriate climate related scenarios, assess those scenarios, and develop reporting formats for the results of the scenario analysis. In order to do this we will continue to partner with industry associations, sector peers (asset owners, asset managers and insurers), academics, professional bodies, external consultancies, as well as regulators and international agencies to drive consistency in scenarios and analysis and so provide comprehensive and comparable information.

This work will draw on significant expertise from the business and involves an inter-disciplinary team including Group Risk, Group Capital, Finance, Aviva Investors, Group Reinsurance, the General and Life insurance businesses, and the Corporate Responsibility and Public Policy teams.

The UNEPFI Investors Commission has created a work stream working with nine leading asset owners/asset managers, including Aviva to promote climate transparency by piloting the recommendations and jointly develop scenarios, models and approaches which will be made publicly available at the end of the project. This will enable other investors to pick up and expand on this joint work and encourage the wider investment community to assess how they can adapt to and promote a climate-resilient, low-carbon economy.

We will report on the progress of our work on scenarios to Aviva’s relevant board committees and aim to first report against scenarios in our disclosure next year.

We recognise that the increased severity and frequency of weather-related losses has the potential to turn events that could benefit our earnings, to ones that will negatively impact our profitability. Consequently, large catastrophic (CAT) losses are already explicitly considered in our economic capital modelling to ensure we are resilient to such CAT scenarios.

We are closely monitoring sectors or subsectors particularly exposed to transition risk and analysing the risk to Aviva of our individual company level investments. In 2017, we worked with 2 Degree Investing Initiative to analyse how close we are as an asset owner to achieving a 2°C future. Using the European Commission's Sustainable Energy Investment metrics, the reports show how our equity and bond portfolios are aligned to the Paris Agreement, both now and in 5 years' time. We have fed them into the investment strategy reviews of our businesses to help further shape our ongoing response. Further strategic work is ongoing to understand the impacts of our investments through all asset classes and on a more granular basis.

Our French business unit, Aviva France, has been developing its understanding of the best way to incorporate climate risk into the business. In 2017, it published its first ESG and Climate report in line with the requirements of the French law for energy transition and green growth. As part of this exercise, Aviva France evidenced how it, through its asset manager - Aviva Investors France - incorporates ESG requirements into its investment process, considers ESG and climate change related issues in its governance process and manages climate change related risks (I.e. physical, transition and legal risks) impacting its investments. The report also covers how Aviva France aims at aligning its investment strategy to the UN COP 21 goal of limiting climate warming to 2 degrees compared to a pre-industrial world.[1]

As part of the on-going development of its ESG and climate change investment related framework, Aviva France is now refining its approach to further translate climate change considerations into investment targets through scenario analysis, green investments and carbon foot-printing of investments. Aviva France also decided to go beyond the requirements of the French law by embedding the United Nations' Sustainable Development Goals into is investment process.

Climate change is part of our asset management House View, which outlines the framework we use to analyse the global financial markets. It is updated quarterly to provide key climate-related physical or policy trends and developments. We again include our position on the TCFD in Aviva Investors Corporate Governance and Corporate Responsibility Voting Policy 2018[2] advising that we expect companies to begin reporting climate risks, strategy, policies and performance against the Taskforce disclosure framework, including stress testing of business models and assets against various climate policy scenarios. Aviva Investors will begin voting against the report and accounts of companies operating in high impact sectors that have not made sufficient progress in providing the market with investment relevant climate disclosures.

Over the past few years we have developed insurance products and services that support customers' choices to reduce their environmental impact, such as bespoke electric vehicle policies and generation of domestic scale renewables. We are also building our support of commercial-level opportunities around environmental goods and services. In 2017, we had 20 such products across our markets.

The Aviva Staff Pension scheme Board has recently commenced a review of their wider ESG policy which incorporates climate change risk. Their work has considered the actions taken by Aviva as an asset owner to ensure consistency.

Risk management – identification, assessment and management

Aviva's risk spectrum is used to help us determine the significance of impact and timescales for different external issues. Whilst we are already experiencing the effects of climate change, we only expect it to threaten the viability of our business model in the longer term. We therefore consider climate change to be proximate risk, that is to say we are taking action now to mitigate its impacts in the future.

When making investments we need to think long term, since many of our liabilities fall decades in the future. This means we need to be careful and considered in our investments. We therefore regularly review the climate related issues that can impact our investments. Within these constraints we have an appetite to invest in low carbon projects around the world.

The ways in which the insurance sector could be impacted by climate change are diverse, complex and uncertain. However, for the purposes of our response we have focused on the three risk factors that the Prudential Regulation Authority identified in its 2015 report2– Physical, Transition, and Liability.[3]

1. Physical risk (acute and chronic impacts)

a. Insurance risks

We recognise that weather-related events may become more frequent, severe, clustered and persistent. These single and cumulative losses 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 and weather in financial planning and pricing. Our GI business exposure is limited by being predominantly in Northern Europe and Canada. We require our GI businesses to protect against all large, single catastrophe events in line with local regulatory requirements, or where none exist, to at least a 1 in 250 year event. Factors determining these decisions include: capital efficiency, appetite for GI earnings volatility, predictability of cash flows and dividend paying capability and reinsurance market competitiveness. Canada is moving to 1:500 reinsurance limits in line with government requirements.

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[1] link - https://www.aviva.fr/aviva-france/nous-connaitre/rapports-annuels.html

[2] https://www.avivainvestors.com/content/dam/aviva-investors/united-kingdom/documents/institutional/uk-corporate-governance-and-corporate-responsibility-voting-policy-2018.pdf

[3] https://www.bankofengland.co.uk/-/media/boe/files/prudential-regulation/publication/impact-of-climate-change-on-the-uk-insurance-sector.pdf?la=en&hash=EF9FE0FF9AEC940A2BA722324902FFBA49A5A29A

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

Our actuarial pricing assumptions and projections which may prove incorrect
The levels of coverage available to make assets insurable
Financial results volatility resulting from the potentially increasing scale of weather losses.
We purchase a group-wide catastrophe reinsurance programme to protect against the severity and frequency of large CAT events, and review the adequacy of the cover and the programme structure annually at renewal. The total Group potential retained loss from its most concentrated catastrophe exposure peril (Northern Europe Windstorm) is £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.

On a separate note, a change in climate can mean that disease may spread to new and expanded geographic areas. Therefore Aviva uses external reinsurance for its life business to manage its exposure to life insurance risks such as pandemics, and manages capital in an efficient manner in line with the Aviva Group's risk appetite.

b. Investment risks
When acquiring property, Aviva Investors' strategy is to commission an Environmental Assessment Report. This 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. The majority of our real estate and infrastructure investments are located in Europe. When considering or reviewing fixed income or equities investments, our fund managers consider any relevant climate change factor that could adversely impact the credit quality of a fixed income security or the valuation of equity.

2. Transition risk (policy, legal, technology, political, market, reputation impacts)
With the Paris agreement to pursue limiting global temperature increases to below 2^{o}C, there will be an increasing number of climate–related policies and regulations to assist this transition, which will impact sectors in different ways. We consider active stewardship to be a fundamental responsibility for us as investors. This includes considered voting at AGMs and engagement on climate risk, disclosure and performance. We continue to deliver on our five year Strategic Response to Climate Change (2015-2020) which sets out our approach to acting on climate related investment risk. 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 or co-filing shareholder 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.

3. 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, we may have holdings in companies that could be subject to regulatory and legal challenges due to their climate-related impacts and level disclosures. The direct impact from legal challenges and any associated fines are likely to be limited to specific companies.

Metrics and targets

Operational
We have measured, monitored and reduced our operational carbon emissions since 2004, on an absolute and relative basis, and disclose related metrics on an annual basis in our public filings. Although we do not consider these to be material, we have exceeded our long term reduction target of 50% by 2020 and continue to work towards the more ambitious reduction target of 70% by 2030, from a baseline of 2010. These figures can be found at www.aviva.com/ESGdatasheet2017

Our operational footprint boundaries show the scope of the data we monitor and the emissions we offset. We report on the Greenhouse Gas (GHG) emission sources on a carbon dioxide emissions equivalent basis. We also refer to the GHG Protocol Corporate Accounting and Reporting Standard and emission factors from the UK Government's GHG factors to company reporting 2017. Our total CO2e emissions for 2017 are 68,500 tCO2e. This is an absolute reduction from the previous year. An LED retrofit programme across our UK business, use of onsite renewable electricity, and consolidation of old inefficient office space into new LEED Gold energy efficient office space in the Canadian business has contributed to this reduction.

Tonnes CO2e	2017	2016	2015*
Scope 1	17,915	19,210	19,112
Scope 2	31,280	41,008	49,595
Scope 3	19,305	19,193	19,991
Absolute CO2e**	68,500	79,410	88,698
Carbon offsetting***	(68,500)	(79,410)	(88,698)
Total net emissions	-	-	-

* This includes Friends Life business operations for the whole of 2015.
** 2017 Assurance provided by PricewaterhouseCoopers LLP available at aviva.com/CRkpisandassurance2017
*** Carbon offsetting through the acquisition and surrender of emissions units on the voluntary and compliance markets.

Scope 1 – natural gas, fugitive emissions, oil, and company owned cars.

Scope 2 – electricity.

Scope 3 – business travel and grey fleet waste and water.

	2017	2016	2015
CO2e tonnes per employee	1.6	2.0	2.2
CO2e per £m GWP	2.48	3.12	4.05

Investment

As a life insurer, we must match the long nature of our liabilities with similarly long dated investments. It is therefore key for us to identify measure and mitigate the long term risks that might adversely impact the value our investments. Climate risk is of one of the most material long term risks.

Aviva is also committed to be a good ancestor. One way of achieving this is to integrate ESG and climate risk into our investment process in order to deliver long term sustainable and superior investment outcomes for our customers. Our clients' welfare will be determined not only by the size of their savings but also by the state of the world that they retire into.
We integrate ESG and climate related factors to our investment process. To that end, we have enhanced our Environmental, Social, and Governance heat map to include proxy climate risk metrics. This heat map is available to our analysts and fund managers and updated on a monthly basis. It 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. Last year, we disclosed the carbon intensity of our French investments.
Through our Strategic response to Climate Change we targeted a £500m annual investment in low-carbon infrastructure from 2015-2020, and an associated carbon saving target of 100,000 CO_2e tonnes annually. In 2017, we signed £527.5m of new investment into wind, solar, biomass and energy efficiency. We are progressively increasing our holdings in Green bonds. Aviva currently holds over £744m in green bonds, more than doubling our holding in 2016 .

In 2015, we identified 40 companies (C40) with more than 30% of their business revenue associated with thermal coal mining or coal power generation and undertook focused engagement with them, including 51 in depth conversations. These meetings set out our expectations on their governance, business strategy, operational efficiency, responsible climate and energy policy advocacy. We also asked, whether any of those companies have any plans for new investment in coal generating capacity, as we believe this in particular would go against our approach to helping meet the Paris Agreement of limiting global temperature rise to well below 2 degrees Celsius.

We continue to engage with a number of these companies to encourage them to transition. We believe it is better to be an engaged owner lobbying for change rather than divesting and walking away as these are the companies in need of the greatest challenge from their shareholders. Indeed, five companies we have engaged with have committed to Science Based Targets[4] following our discussions.

However, where we don't see any prospect of movement then we will divest. In September 2017 we added two companies to our Investment Stoplist: PGE and JPower and divested our active beneficial holdings wherever possible[5]. We are also in the process of divesting a further fifteen of companies from our portfolio. A further six companies have been classified for a final approach from us, we will then move to divest. Once we have divested, we will disclose the names of these divestments. We currently have no exposure to six of the companies that we included in the original C40 list in 2015.

Some examples of where engagement has led to clarification of companies' plans to transition include the confirmation of mine closures, an announcement on Bloomberg that no additional mining operations would take place, and Aviva Investors being asked to feed advice into early drafts of a company's strategy.

In 2017, we were asked to review our holdings against a list of 120 coal companies. We had beneficial holdings in 26 companies with a total market value of £55.6m or 0.01% of our total assets. 11 of these companies are also part of the list of 40 companies identified and engaged with since 2015.

More details of this engagement can be found on aviva.com/cr.

More broadly, in 2017, we engaged with 989 companies on strategic, social and/or governance (ESG) issues. In the same period we supported 52% of climate change related shareholder resolutions[6]. The reason that we were only able to support just over half of such resolutions was because some proposals were overly prescriptive and micro-managerial. We are looking to work with NGO partners to support guidelines for the creation of ESG-related resolutions which institutional shareholders can then support.

We also continue to focus on improving the sustainability of our real estate investments. Now in its eight year, in 2017 the Global Real Estate Sustainability Benchmark (GRESB) assessed 850 real estate portfolios, jointly representing more than USD 3.7 trillion in assets under management, as well as more than 200 infrastructure assets and funds. In 2017, Aviva Investors improved overall GRESB scores for all 19 fund submitted funds, and were awarded 7 Green Stars in total (up from 5 in 2016). An example of the work Aviva Investors has done with partners on one of our investment properties is the Corn Exchange, Manchester. The energy saving project has delivered £48,000 savings in 5 months and is forecast to achieve £91,000 saving over the year. Landlord energy consumption has

[4] Science based targets - Targets adopted by companies to reduce GHG emissions are considered "science-based" if they are in line with the level of decarbonisation required to keep global temperature increase below 2°C compared to pre-industrial temperatures, as described in the Assessment Report of the Intergovernmental Panel on Climate Change (IPCC).

[5] For example – due to regulatory restrictions around pension provision in Poland in respect of the investment strategy and independent governance arrangements, we are not able to influence the exposure of portfolios to companies we have chosen to divest from elsewhere.

[6] https://www.avivainvestors.com/content/dam/aviva-investors/united-kingdom/documents/institutional/ai-vote-disclosure.pdf

reduced by 42% and the project payback was 3 months. Actions like these means that our investment stock becomes more energy efficient; achieving higher energy efficiency certification and so attracts a higher leasing premium.

Insurance

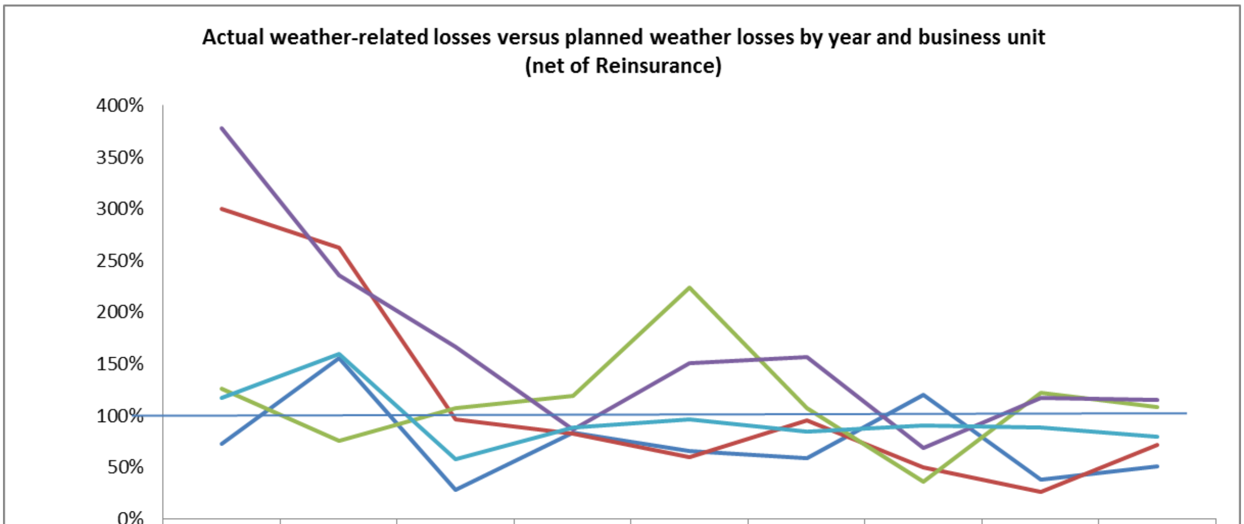
We build the possibility of extreme weather events into our planning to help us understand the impact and ensure our pricing is adequate. Catastrophic event model results are supplemented by in-house disaster scenarios. A 1:800 CAT event is required in order for Aviva to incur losses (after reinsurance) above £1bn. Therefore, multiple very large CAT events would have to occur in a year in order to adversely impact Aviva's capital position (Solvency II capital surplus £11.3bn).

Each of our GI businesses has a Major Incident Response in place to provide customer service and manage costs of major claim events and service demand surges. We continue to invest in analytical solutions such as flood mapping, predictive analytics and risk mitigation techniques that help us better understand risks 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.

Fig.1 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.

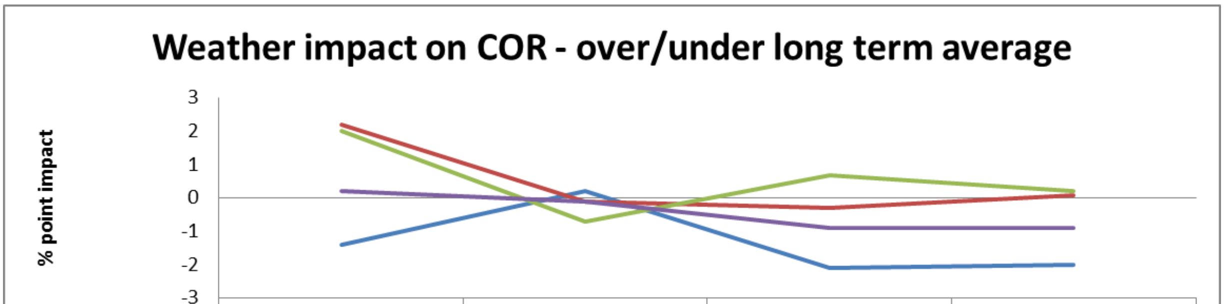
Fig1.



	2009	2010	2011	2012	2013	2014	2015	2016	2017
UK	72%	156%	28%	83%	66%	59%	120%	38%	51%
Ireland	300%	262%	96%	82%	60%	95%	50%	26%	71%
Canada	126%	75%	107%	119%	224%	107%	36%	122%	108%
France	378%	236%	166%	86%	151%	157%	69%	117%	115%
All	117%	160%	58%	88%	96%	84%	90%	88%	79%

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.

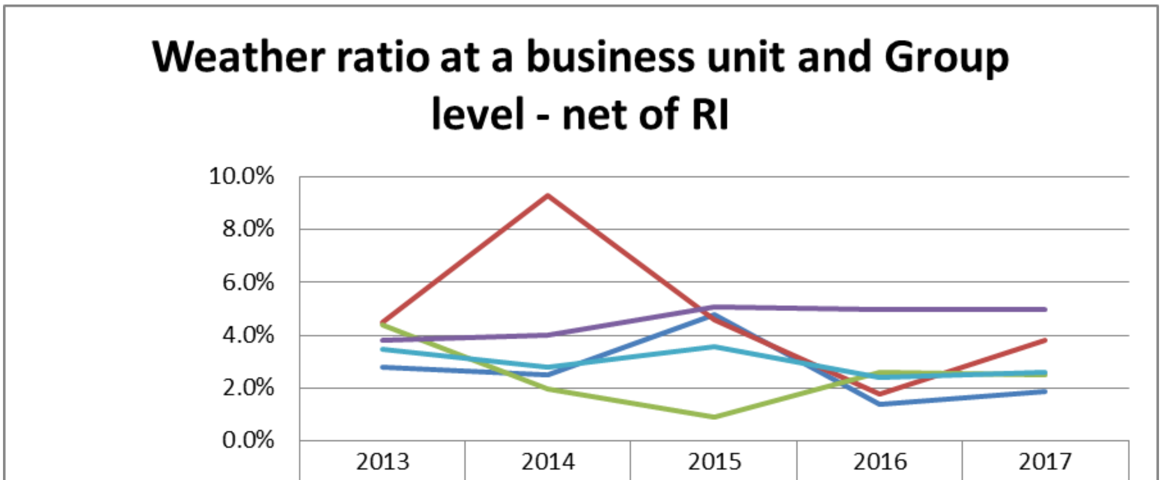
Fig.2



	2014	2015	2016	2017
UK & Ireland	-1.4	0.2	-2.1	-2
Europe	2.2	-0.1	-0.3	0.1
Canada	2	-0.7	0.7	0.2
Total	0.2	-0.1	-0.9	-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.

Fig.3



	2013	2014	2015	2016	2017
UK weather	2.8%	2.5%	4.8%	1.4%	1.9%
Ireland weather	4.5%	9.3%	4.6%	1.8%	3.8%
Canada weather	4.4%	2.0%	0.9%	2.6%	2.5%
France weather	3.8%	4.0%	5.1%	5.0%	5.0%
Total weather	3.5%	2.8%	3.6%	2.4%	2.6%

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.[7] We are also a founding signatory to the UN Principles for Sustainable Insurance (UNPSI) where the TCFD recommendations are aligned to Principle 1.

The Asset Owners Disclosure Project annual climate survey in 2017 ranked Aviva among the top 6% of asset owners in the world in relation to managing climate risk.

Find out more about our approach at www.aviva.com/social-purpose

[7] https://www.aviva.com/content/dam/aviva-corporate/documents/socialpurpose/pdfs/Aviva-climateWise-response-2017-clean08.pdf