



Storm in a teacup

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It's being called the “great flood of 2015”, as Britain has been pummelled by seven storms this winter, including Abigail, Barney, Clodagh, Desmond, Eva and Frank. Further, emergency services and volunteers have been working around the clock to deal with the immense damage caused by the opening of a barrier on the River Foss on Boxing Day for a four-day period, flooding a large swath of York, in a controversial attempt to stop the flood spread caused by the downpour. In total, more than 180 flood warning and flood alerts are now in place across the UK and 27 “danger to life” warnings are in effect across central and norther England and Wales.^[1] www.mirror.co.uk/news/uk-news/uk-weather-nasa-satellite-image-7085048

Along with the floodgates, many questions have been raised as a result of the catastrophic financial consequences of the storms of this winter regarding the state of preparedness of the UK's public and private sector in responding to climate change today. They concern not just how the flood defences are inadequate to handle the “new normal” of more severe and frequent extreme weather events facing the UK, but how risk management solutions such as flood insurance are failing the public as the full extent of the total uninsurable losses, and the slowness in getting EU and national grants and insurance

payments to those in imminent need, is revealed. They both point to the need to explore what financial solutions are available to enable the UK to mitigate climate risk and buy time in the short term while investing in the environmental solutions that scientists have already identified as necessary to reduce climate change in the long-term (eg. replacing the use of fossil fuels with renewables and restocking carbon sinks).

Experts suggest that the weather and the flooding are unprecedented

As with any topic related to the weather, the first question being asked as the flood waters ravage the country is whether there is a precedence for this extreme weather, such that we can consider this normal, even expected.

That doesn't seem to be the case. Some studies suggest that there has been a notable increase in extreme rainfall events since the 1960s in the UK. Others suggest that we must be more exact in analysing the rainfall, and that a close analysis of rainfall in the UK since 1931 finds that the UK isn't actually experiencing heavier downpours recently, but that there are longer periods of intense rain.^[2]www.dailymail.co.uk/news/article-3376903/Put-plug-sockets-halfway-walls-Victims-anger-\nbizarre-advice-cope-future-flooding-luvvie-Michael-Sheen-causes-fury-attack-calls-divert-foreign-aid.html

In any case, British officials concur that these storms are the worst yet, with the environmental secretary, Liz Truss, stating that the rainfall has been "unprecedented", and Prime Minister David Cameron affirming that the flooding is a direct example of a greater frequency of "extreme weather events". He declares the combination of the level of rivers plus the level of rainfall has created an "unprecedented effect", the consequence being serious flooding^[3]yournewswire.com/cameron-blames-climate-change-for-uk-floods/. Similarly, David Rooke, deputy chief executive of the UK government's Environment Agency states, "We are moving from a period of known extremes into a period of unknown extremes"^[4]www.smh.com.au/world/unprecedented-flooding-in-britain-prompts-renewed-discussion-about-climate-change-20151228-glw0lw.html.

The climate change debate is dead, long live the climate change debate

When, in early December, Oxford's Environmental Change Institute pronounced that climate change had increased the change of record rainfall by about 40 per cent, some analysts were quick to point out that weather experts are becoming bolder than ever in linking short-term weather events to long-term climate change.^[5]www.smh.com.au/world/unprecedented-flooding-in-britain-prompts-renewed-discussion-about-climate-change-20151228-glw0lw.html

Indeed, the climate change debate appears to be over with the majority of British officials having immediately blamed climate change and climate change alone for the floods. In fact, before the last storm of 2015 has yet even touched British soil, David Rooke has said British Government has already begun a review of the country's flood defences to assess what new risks have been created by climate change.^[6]www.smh.com.au/world/unprecedented-flooding-in-britain-prompts-renewed-discussion-about-climate-change-20151228-glw0lw.html With 2015 Europe's second-hottest on record (second only by a small margin to the year before), and the world rallying behind the recent Cop21 conference in Paris, responding to climate change is no longer up for debate.

That is, of course, unless you believe that pointing the finger at climate change (wrongfully or rightfully) is merely a cover-up for the government's ineptitude. Many don't want to have their politicians referring to climate change as though they are helpless participants in a greater global warming crisis, but instead want concrete answers on what government has done, or is doing, to adapt to today's climate reality. As the Association of British Insurers (ABI) points out, climate change is just one factor in flooding. Increased building and higher population density, but also poor management of watercourses, and a greater numbers of properties being built on the flood plains all contribute to the issue.^[7]www.dailymail.co.uk/news/article-3376903/Put-plug-sockets-halfway-walls-Victims-anger-

[\nbizarre-advice-cope-future-flooding-luvvie-Michael-Sheen-causes-fury-attack-calls-divert-foreign-aid.html](#) Indeed, analysts at the Financial Times have advised that Britain is building 10,000 homes on floodplains each year, despite warnings over further episodes of flooding.^[8] [www.dailymail.co.uk/news/article-3376935/Put-suffering-Britons-PM-Floods-cost-5-8bn-ex\nactly-giving-fight-global-warming-overseas.html](#) Others suggest that a misguided decision taken by the European Union 15 years ago to stop dredging rivers and constructing banks to protect floodplains in the name of conservation has also had disastrous effects.^[9] [www.smh.com.au/world/unprecedented-flooding-in-britain-prompts-renewed-discussion-abou\nt-climate-change-20151228-glw0lw.html](#) An even larger majority suggest that reduced funding on flood defences between 2011 and 2014 (until severe flooding in Cumbria forced them to reverse their spending cuts), left the Environment Agency underfunded and unprepared for this winter's rain^[10] [www.dailymail.co.uk/news/article-3375830/David-Cameron-says-climate-change-blame-minis\nters-accused-using-global-warming-excuse-failures.html](#).

The economics of flooding from city to countryside

The Association of British Insurers found summer floods in 2007 to cost £3bn, the winter floods of 2012 cost £594m, and the winter floods of 2013/14 cost £451m in insurance claims. Analysts at Pricewaterhouse Coopers (PwC) provided on December 27, 2015 a very initial estimate of economic losses for winter 2015 of between £900m and £1.3bn, with the insurance industry bearing between £700m to £1bn of this.^[11] [pwc.blogs.com/press_room/2015/12/uk-flooding-pwc-estimates-insurance-losses-from-storm\ns-eva-and-desmond-.html](#) The advisors at KPMG think the number could be much worse, rising to £6bn, with a £2bn bill for flood defence repairs and replacement, higher insurance costs on renewal, and a reduction of 0.2-0.3% off GDP growth overall for the quarter as a result of businesses not being open, loss of agricultural output, and reduced spending in retail and travel.^[12] [news.sky.com/story/1613230/flood-impact-could-be-nearly-6bn-report](#) Certainly, the extent of the country's unreported losses may be much greater, as sales losses, increased production costs, and lower yields all continue long after the storms are over and even after the floods have retreated.

Despite the recent turnaround in government spending on flooding defences which sees the Environment Agency's current budget stand at £695m for river and coastal defences, the Association of British Insurers estimate that by 2025, £1bn is needed to be spent on managing flood risk to keep pace with climate change.^[13] [www.floodfreehomes.org.uk/](#)

The limits of traditional insurance solutions

The extent to which traditional insurance is not able to address today's "new normal" of more frequent and severe extreme weather events and the impacts of climate change is being exposed with the UK winter floods. An overwhelming amount of homes and businesses have no insurance in place due to prohibitively high coverage costs. KPMG analysts suggest that the cost to uninsured homes and businesses of the flooding to be £1bn. In addition, they estimate that those who do have insurance policies in place will not have strong enough policies to cover the extent of damage, with limits on policies resulting in a further £1bn in uninsured losses.^[14] [www.dailymail.co.uk/news/article-3376935/Put-suffering-Britons-PM-Floods-cost-5-8bn-ex\nactly-giving-fight-global-warming-overseas.html](#)

It is a distinct possibility that insurance premiums will only rise as the insurance industry has been affected by the flooding, with news of the potential £1.5bn in claims arising from the winter floods resulting in a hefty share losses for insurance giants on the London Stock Exchange, with RSA Insurance and Jardine Lloyd Thompson both falling 2% and Aviva down 0.5%.^[15] [www.dailymail.co.uk/news/article-3376935/Put-suffering-Britons-PM-Floods-cost-5-8bn-ex\nactly-giving-fight-global-warming-overseas.html](#)

Even before the 2015 storms, the government recognized the country's rising flood risk and the 300,000-500,000 flood-risk UK households struggling to obtain affordably priced flood insurance. In June 2013, the government reached an agreement with UK insurers to develop a not-for-profit

company, Flood Re. Expected to be available in April 2016, it is designed to allow insurers to pass the flood risk element of a home insurance policy into a fund that will pay any subsequent flood claim, to enable high flood risk households to obtain affordably priced flood insurance.^[16] www.abi.org.uk/Insurance-and-savings/Topics-and-issues/Flooding/Government-and-insurance-industry-flood-agreement/The-future-of-flood-insurance Essentially, the scheme will work by capping insurance premiums in high flood risk areas, funded by a small premium on all other household policies. However, this scheme does not cover homes built after January 2009 nor any business or commercial properties. The Federation of Small Business suggests that this leaves 75,000 smaller businesses at risk of flooding without access to adequate insurance.^[17] www.dailymail.co.uk/news/article-3376935/Put-suffering-Britons-PM-Floods-cost-5-8bn-exactly-giving-fight-global-warming-overseas.html

Existing solutions to compensate for the shortfalls of insurance

Where insurance has not met the needs of UK homes and businesses, the government has thus far stepped in with grant money for the agricultural community. On December 18, a funding programme for flood-affected farmers in the North of England was opened to provide grants to help farmers whose agricultural land has been affected by the impact of flooding with uninsured losses. Grants up to £20,000 are being provided by the Farming Recovery Fund via the Rural Payments Agency (RPA) as part of a wider £60 million package of government support for the area to help restore agricultural land and assist in covering the damage to agricultural machinery and buildings that cannot be insured. However, farmers will have to provide evidence that their claims for uninsured losses are eligible and provide good value for money. Further, the RPA has issued advice that those seeking recovery fund grants should document properties before and during the flooding (including the extent of any damage, such as flooded fields, buildings, landslides and damaged walls), and to provide maps showing the flooded area and items damaged being claimed for (for example, the position and length of fencing or gates).^[18] www.gov.uk/government/collections/the-farming-recovery-fund

As of 8 December, the RPA had issued 36,083 payments (which accounts for 41.4% of 88,000 eligible farmers in England), with the agency on track to meet its commitment to pay more than half of eligible claimants in England by the end of December. However, for farmers whose land has been flooded and are experiencing extreme hardship, “targeted support” is available.^[19] www.fwi.co.uk/news/take-photos-of-flood-damage-to-support-claims-farmers-told.htm

This targeted support does not seem to be helping those in Cumbria, where the highest percentage of English commons are, as they have been told by the RPA that they must wait on Basic Payment Scheme (BPS) payments, because processing common-land payments is too complex to be dealt with until other claimants have been handled.^[20] www.fwi.co.uk/news/double-whammy-leaves-flood-hit-cumbrian-farmers-facing-crisis.htm As early as December 8, three weeks before the final storm of winter 2015 hits the region, NFU Mutual was estimating that damage in the region of £20m had already been inflicted on farms and rural businesses in Cumbria alone. This is devastating news for a region that has seen cereal crops destroyed, cattle being moved to higher ground to prevent huge losses to livestock and sheep being lost to the flooding in some areas.^[21] www.fwi.co.uk/news/cumbrian-farm-flood-claims-to-cost-at-least-20m.htm

Thus, as with traditional insurance, the grant system seems to have three major flaws: it requires an assessment of losses which is time-consuming and largely subjective, payouts are slow to process, and the administrative process is costly and intensive.

Innovative solutions to mitigate the effects of climate risk

Fortunately, for those wishing to mitigate the financial effects of unfavourable weather, other financial hedging solutions are available which pay in case of adverse weather conditions. These instruments are called weather-index products, and can be offered to businesses, agricultural cooperatives, municipalities and others as weather derivatives or as insurance products, depending on the local tax,

legal and accounting situations. They can also be offered to insurance companies, particularly to cover the severe events. Index-solutions are not new; they were initially introduced in the energy market in the United States some 20 years ago to compensate energy distribution companies in the case a temperature threshold was crossed which would result in lower sales of heating or cooling products by consumers. However, with significant advances in data processing, modelling and forecasting, these products have evolved substantially and are now cheaper, more effective and more widely available than ever.

Index-based weather derivatives and insurance products protect businesses when weather conditions adversely impact their sales or profits or generate additional cost. The index can be a temperature threshold, rainfall levels, sunshine duration, wind speed, or any other weather variable or combination of variables that represent the weather risk your business is exposed to. The cover is designed to compensate exactly or partially the losses incurred through adverse weather conditions.

The compensation may be fixed when the weather index exceeds a predefined value or progressive if the losses caused by the weather increase in line with the index value. As with any index-based insurance, it is when a pre-defined index value is exceeded that the loss, in traditional insurance terms, occurs. The index value is the sole trigger for compensation, resulting in a quick and automatic payment. Unlike traditional insurance, there is no claim adjustment process, and no additional administrative procedures are required. The result is a more cost-effective, streamlined process.

Meteo Protect, for instance, has the largest team in Europe dedicated to weather risk management. The company offers both index-based weather derivatives and insurance and has revolutionized the weather risk management market by controlling every step of the process from risk assessment to the hedging solution, thanks to its own weather databases, pricing platform and in-house meteorologists, climatologists, analysts, statisticians, computer scientists and actuaries to deliver the right product and transfer the risk in a cost effective way. Without the need for intermediary companies to make a price, there are no unnecessary costs between the client and the risk taker.

For the UK this is particularly relevant, as a recent White Paper released by Meteo Protect entitled, "The Impact of Climate Variability on the Private Sector", demonstrated that the Gross Domestic Product of the UK is particularly exposed to unseasonal weather. It found that weather anomalies in fact impact the UK more than any other leading economic EU country (including Germany, Spain, France, and Italy). Climate impacts on gross value-added (GVA) for temperature anomalies in the UK total 7,9b Euros and the impact on precipitation anomalies for the UK is second highest (trailing only Germany), totalling 5,2bn Euros. The sectors most affected in the UK by unseasonal weather are public services, retail and transport, and manufacturing and industry. Of these, the retail and transport sector of the UK is the most affected or both temperature and precipitation anomalies, with a combined impact of 1,3bn Euros.^[22] www.meteoprotect.com/front/_media/pdf/en/WHITEPAPER_Climate-variability_2015-09.pdf

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