



A transition in thinking and action

Mark Carney takes stock of the progress made in
addressing climate-related financial risks since the Paris
Agreement of late 2015

In my remarks I will take stock of the progress made in addressing climate-related financial risks since the Paris Agreement of late 2015. In particular, I will consider how far there has been *a transition in thinking and action*. As we've heard, the thinking has coalesced around three channels through which climate risk affects financial stability:

- the physical risks that arise from the increased frequency and severity of climate- and weather- related events that damage property and disrupt trade;
- the liability risks stemming from parties who have suffered loss from the effects of climate change seeking compensation from those they hold responsible; and
- the transition risks that can arise through a sudden and disorderly adjustment to a low carbon economy.

The last risk is the most challenging. When I first spoke about the financial stability risks from climate change, at Lloyd's of London in 2015, I highlighted two paradoxes relating to transition risk in particular¹.

First, the future will be past. That is, climate change is a tragedy of the horizon which imposes a cost on future generations that the current one has no direct incentive to fix. The catastrophic impacts of climate change will be felt beyond the traditional horizons of most actors. Once climate change becomes a clear and present danger to financial stability it may already be too late to stabilise the atmosphere at two degrees.

The second paradox is that success is failure. That is, too rapid a movement towards a low-carbon economy could materially damage financial stability. A wholesale reassessment of prospects, as climate-related risks are re-evaluated, could destabilise markets, spark a pro-cyclical crystallisation of losses and lead to a persistent tightening of financial conditions: a climate Minsky moment.

The tragedy of the horizon can be resolved in an orderly, effective and productive manner, however, with early transitions in thinking and action.

A transition in thinking

Since 2015, a transition in *thinking* has taken place. At the One Planet Summit in Paris in 2017, financial institutions responsible for managing US\$80 trillion of assets – equivalent to annual global GDP – publicly supported the Task Force for Climate-related Disclosures (TCFD)².

... it is encouraging that central banks and supervisors have come together to found the Network for Greening the Financial System (NGFS) to take forward coordination

The supporters included 20 globally-systemic banks, 8 of the top 10 global asset managers, the world's leading pension funds and insurers, the largest sovereign wealth fund and the two dominant shareholder advisory service companies.

Established by the Financial Stability Board (FSB) in response to a call from G20 Leaders, the TCFD delivered recommendations for voluntary disclosures of material, decision-useful climate-related financial risks for the G20 Summit in Hamburg. Suitable for use by all companies that raise capital, the recommendations:

- include disclosure of governance and risk management arrangements;
- establish consistent and comparable metrics applicable across all sectors, as well as specific metrics for the most carbon-intensive sectors; and
- encourage use of scenario analysis so as to consider dynamically the potential impact of the risks and opportunities of the transition to a low carbon economy on strategy and financial planning.

That financial institutions have come out so strongly in support of enhanced disclosure reflects their recognition that there is a correlation between managing climate risk and long-term value creation as well as their belief in the power of markets. They know that for markets to do what they do best – allocate capital effectively and dynamically – they need the right information. When risks are unknown or ill-defined, the market cannot allocate resources in an efficient and profitable manner.

Until recently, reliable information on how companies were anticipating, responding or failing to respond to climate-related risks and opportunities has been hard to find, inconsistent and fragmented. The information needed goes beyond the static to the strategic. Markets need information to assess which companies are well positioned to seize the opportunities the transition to a low carbon economy brings.

Which car manufacturers are leading the way on fuel efficiency and electrification? How are energy companies adapting their mix of energy sources? This needs to be considered against investors' views of possible transition paths – the International Energy Agency's Sustainable Development Scenario, for example, sees the consumption of natural gas rise by nearly 20% by 2030 to become the largest single fuel in the global mix³.

Given the uncertainties around climate, not everyone will agree on the timing or scale of the adjustments required. And different people will have different views about the effectiveness of timelines of government climate policies. The right information allows sceptics and evangelists alike to back their convictions with their capital.

At the same time as this increased investor focus, there have been signs that global companies are becoming increasingly aware of the risks climate change can pose. Whereas in previous years it barely registered as a risk, now close to a third of global CEOs are 'extremely concerned' about the threat climate change poses to their organisation's growth prospects⁴.

A transition in action

So how far is this transition in thinking translating into action? First, governments. In reaching agreement in Paris, global leaders took *political action* to mitigate the catastrophic impact of climate change.

They committed to curbing carbon emissions to limit the rise in global average temperatures relative to those in the pre-industrial world to 2°C, and to pursue additional efforts to limit the temperature increase to 1.5°C.

Governments are taking some of the necessary policy actions. For example, in the UK, the Government published its Clean Growth Strategy last year, including policies to make homes, businesses and transport more energy efficient, and to lower the carbon intensity of the UK's energy supply. EU Emissions Trading Scheme (ETS) reforms

agreed last year, and due to come into effect from 2021, have driven carbon prices above €10 per tonne for the first time in six years.

Even so, the national determined contributions towards meeting the Paris goals, summed to no more than 2.7°C, making it clear climate policy will need to tighten further if the Paris commitments are to be achieved.

Second, climate disclosures. There has been a series of actions to transform climate disclosures. 2017 was a record year for climate-related shareholder resolutions, with a threefold increase in motions (184 vs 63) and with investment managers controlling over 45% of global assets under management backing shareholder actions on carbon disclosure.

Several of the world's largest asset managers – including the two largest, Blackrock and Vanguard – have written to a number of public companies calling for such disclosures. Other long-term investors have joined forces to press for disclosure through groups such as Climate Action 100+ and the International Investors Group for Climate Change (IIGCC). Meanwhile ISS and Glass Lewis, who account for over 90% of the shareholder advisory services market, have updated their 2018 proxy voting policies to make clear that they will assess the adequacy of climate disclosure⁵.

With the providers of capital demanding enhanced disclosure, and the TCFD recommendations providing a framework for doing so, a number of public companies have begun disclosing their climate-related financial risks for the 2017/18 year end. Reporters drawing on the TCFD include energy giants and extractors through to financials and consumer goods companies.

The Task Force is delivering two initiatives to support this process. First, in time for the Argentine G20 Summit, drawing on the work of the Big Four accounting firms, the Task Force will report on implementation experience, focusing

on examples of good practice to foster wider adoption. Second, the Task Force is launching a Resource Hub to provide technical support, data, and collaborative partnerships – all aimed at helping companies implement the recommendations in as effective and efficient a manner as possible.

As preparers, financials and investors ‘learn by doing’, a virtuous cycle will be created where more and better information creates the imperatives for others to adopt the TCFD and for everyone to up their game on the quality of information they provide.

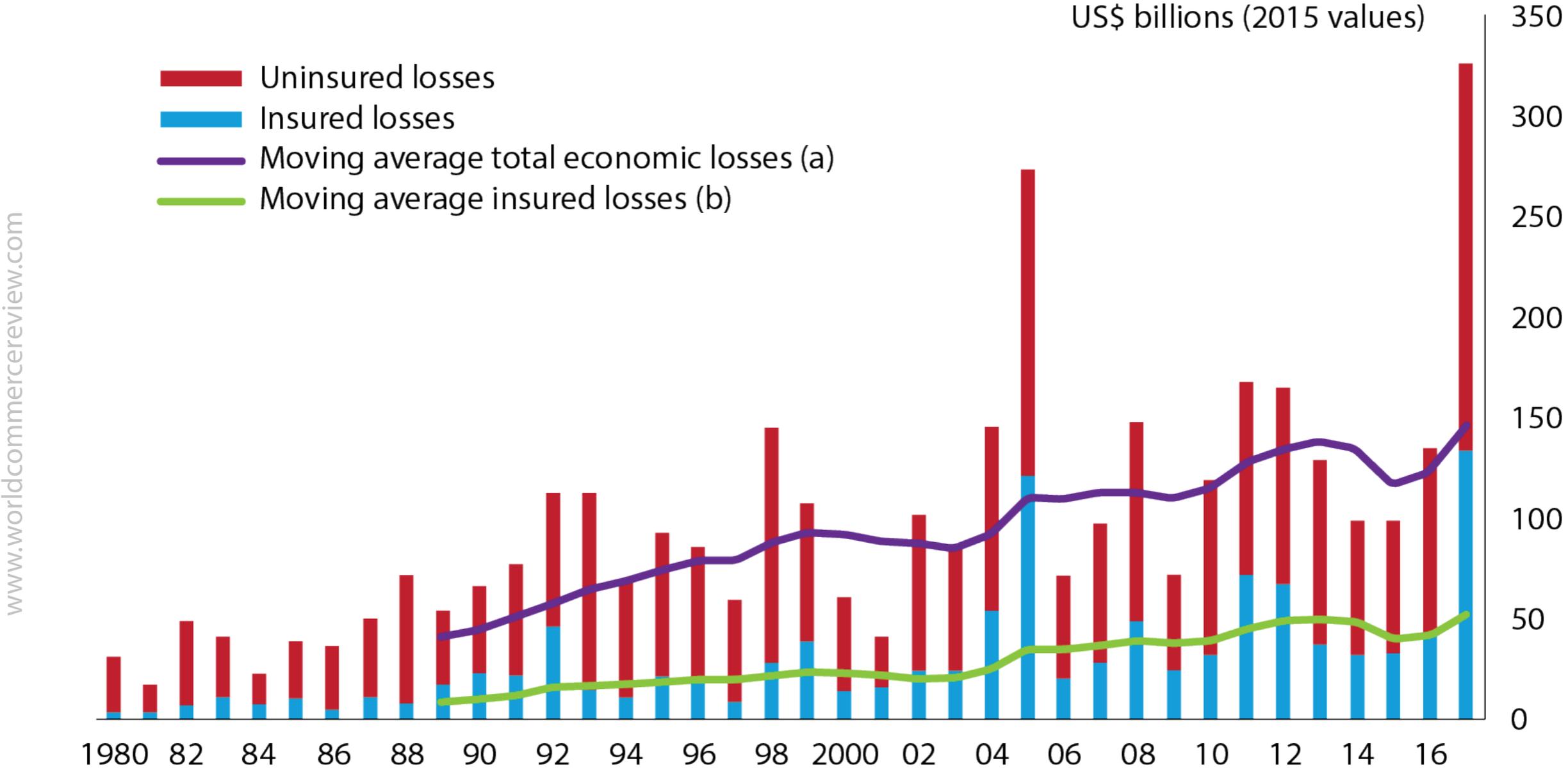
This iterative process is a reason why there is likely cause for the Task Force to continue beyond the Argentine Summit in late 2018 and into the Japanese presidency. In particular, it will be important to get feedback from investors on which disclosures are truly decision useful so that this process is as efficient and effective as possible.

Third, insurers and banks. Insurers have long been on the front line of the physical risks posed by climate change such as extreme weather events.

Since the 1980s, the number of registered weather-related loss events has tripled. Inflation- adjusted insurance losses have increased from an annual average of around US\$10 billion in the 1980s, to around US\$55 billion over the past decade (Chart 1).

General and reinsurers insurers have long deployed sophisticated modelling of climate and weather-related physical risks, and have adjusted their cover and business models accordingly. Lloyd’s of London underwriters, for example, are required to consider climate change explicitly in their business plans and underwriting models. Their genius has been to recognise that the past is not prologue and that the catastrophic norms of the future are in the tail risks of today.

Chart 1. Weather-related losses worldwide (1980-2017)



(a) Total Economic Losses = Insured + Uninsured losses. (b) 10-year moving average Source: Munich Reinsurance Company, Geo Risks Research, NatCatSERVICE

For example, by holding capital at a one-in-200 year risk appetite, under a forward-looking capital regime, UK insurers were able to withstand the events of 2017, the worst year on record for weather-related insurance losses at around US\$130 billion.

Given evidence that suggests increasing levels of physical risk, insurers will need to consider the potential impact of more intense and clustered weather-related events. Work by Bank colleagues finds that intense hurricanes, of the type most likely to cause large insurance losses, seem to be getting more frequent and the chance of two or more intense hurricanes occurring close together may be higher than previously thought⁶. So improvements in insurers' risk modelling must be unrelenting.

While the ability to re-price annually or to withdraw cover can mitigate risks to general insurers in the short-term, as climate change progresses, they will need to consider the longer-term impacts on their business models.

And as the PRA found a few years ago in its review of the sector, insurers need to be wary of cognitive dissonance within their organisations whereby risks that are managed prudently by their underwriters are ignored by the firm's asset managers, such as in their real estate exposures⁷.

Consistent with the tragedy of the horizon, the risks posed to banks from climate change have tended to be beyond their planning horizons. A recent survey by the PRA of banks accounting for around 90% of the UK banking system, found that these horizons averaged four years – before physical and litigation risks would be expected to manifest, and prior to stringent climate policies likely taking effect.

There are signs, however, that banks are beginning to treat climate-related risks like other financial risks. The PRA survey finds that a majority of banks now see them as financial risks – rather than just a reputational or corporate

social responsibility issues. As such, oversight of climate-related risks and overall responsibility for setting the climate risk strategy, targets and risk appetite has been elevated to Board level.

Banks have begun considering the most immediate physical risks relevant to their business models – from the exposure of mortgage books to flood risk or, for globally active banks, the impact of extreme weather events on country risk. And they have begun to assess exposures to transition risks where government policy is already pulling forward the adjustment. This includes exposures to carbon-intensive sectors, consumer loans secured on diesel vehicles and buy-to-let lending given new efficiency requirements.

But many banks have indicated that there is some way to go to identify and measure climate-related risks more comprehensively, including given the need to improve data and expertise. This includes developing their approaches to stress testing for climate-risks as well as, over longer horizons, more dynamic scenario analysis. It is clear, however, that the TCFD framework is helping, including to identify metrics and promote use of climate-related scenario analysis.

Fourth, financial policymakers. At the Bank of England, the risks posed by climate change are currently most directly relevant to our micro prudential responsibilities for the safety and soundness of the banking and insurance sectors.

Assessing how well general insurers and reinsurers are identifying, measuring and mitigating weather-related risks, has long been part of supervising insurers. We published a stocktake of insurers' progress in adapting to climate change in late 2015, and are working to update and deepen our assessment with a second stocktake in 2018. More recently, we have extended our focus to the financial risks faced by the UK banking system, and will publish the full results of the survey I referred to in the coming months.

The aim for both pieces of work is to consider whether insurers and banks have adequate governance arrangements to develop strategies for identifying and mitigating climate risk across their entire businesses, both their liabilities and assets, and over sufficiently long-time horizons. We aim to highlight examples of good practice and to articulate our supervisory expectations later this year.

We are also considering our approach to assessing risks across the system as a whole.

The Bank has routinely included weather-related shocks in the scenarios for its biennial general insurance stress test, including three North American hurricanes in 2017. This meant we had a good sense of the likely resilience of the market and individual firms when Harvey, Irma and Maria hit – both in terms of exposures and mitigating actions⁸. On climate, remember, past is not prologue. In the depressing spirit of Bayesian updating that the current climate change trajectory demands, when considering scenarios for 2019, that we include weather-related events that are more severe and clustered.

To help firms improve their own testing, the Bank has been encouraging knowledge sharing on the types of scenario analysis envisaged under the TCFD⁹. This will allow firms to explore how 2°C and other transition scenarios might impact their strategy and financials.

More broadly, and like the other financial authorities represented here today, we recognise the value in sharing expertise and best practice to increase the rate at which firms, and indeed ourselves as regulators, move to embed more thoroughly climate-related financial risks into our risk assessment and mitigation.

Conclusion

Given this heavy agenda, it is encouraging that central banks and supervisors – from eight countries that together

account for over a third of both global financial assets and carbon emissions – have come together to found the Network for Greening the Financial System (NGFS) to take forward coordination.

There are, however, limits to our roles. Financial policymakers will not drive the transition to a low- carbon economy. Our efforts cannot substitute for those of governments who have direct responsibilities to deliver the policies to achieve their Paris commitments.

The good news is that governments are now establishing the policy frameworks, and the private sector is beginning to allocate capital accordingly.

Our efforts will help smooth the transition prompted by these actions. With better information and risk management as the foundations, a virtuous circle is being built with better understanding of tomorrow's risks, better pricing for investors, better decisions by policymakers and a smooth transition to a low carbon economy.

Financing the transition to a low carbon economy is a major opportunity for investors and creditors. It implies a sweeping technological revolution, including investments in long-term infrastructure at roughly quadruple the current rate.

As the International Climate Risk Conference testifies, climate finance and risk management is moving into the mainstream. There has been a transition in thinking. And this is now beginning to be translated into action, and the NGFS will play an important role in this. ■

Mark Carney is Governor of the Bank of England

Endnotes

1. See Carney (2015), “Breaking the Tragedy of the Horizon – climate change and financial stability”, speech given at Lloyd’s of London, September 2015.
2. For a full list of current supporters see: <https://www.fsb-tcf.org/tcf-supporters-april-2018/> and supporters at the Paris Summit see: https://www.fsb-tcf.org/wp-content/uploads/2017/12/TCFD-Press-Release-One-Planet-Summit-12-Dec-2017_FINAL.pdf
3. It also sees US\$69 trillion of investment in clean energy technologies and energy efficiency – and the share of oil and coal in power generation falls to 6%, which is burned with accompanying carbon capture and storage technology.
4. See PWC (2018), 21st CEO Survey, The Anxious Optimist in the Corner Office, <https://www.pwc.com/gx/en/ceo-survey/2018/pwc-ceo-survey-report-2018.pdf>
5. See ISS, (2018), United States Proxy Voting Guidelines, Benchmark Policy Recommendations, and Glass Lewis, (2018), Guidelines: An Overview of the Glass Lewis Approach to Proxy Advice.
6. Bank Underground post, forthcoming.
7. See PRA (2015), The Impact of Climate Change on the UK Insurance Sector, <https://www.bankofengland.co.uk/prudential-regulation/publication/2015/the-impact-of-climate-change-on-the-uk-insurance-sector>
8. <https://www.bankofengland.co.uk/prudential-regulation/letter/2017/general-insurance-stress-test-2017-feedback>
9. This included co-hosting a conference with TCFD in late 2017. For further details see: <https://www.fsb-tcf.org/event/tcf-boe-conference-climate-scenarios-financial-risk-strategic-planning/>

I am grateful to Alice Carr, Edd Denbee, Tanveer Hussain, Carsten Jung, Krish Kistnassamy, Alex Michie, Alex Ntelekos, Dimitris Papachristou and Matt Scott for their assistance in preparing these remarks.

Based on a [speech](#) given at International Climate Risk Conference for Supervisors, De Nederlandsche Bank, Amsterdam, 06 April 2018