



IFOA RESPONSE TO EAC INQUIRY INTO CLIMATE ADAPTATION

The Institute and Faculty of Actuaries (IFoA) is a royal chartered, not-for-profit, professional body. We represent and regulate over 34,000 actuaries worldwide, and oversee their education at all stages of qualification and development throughout their careers. Actuaries are big-picture thinkers who use mathematical and risk analysis, behavioural insight and business acumen to draw insight from complexity. Our rigorous approach and expertise help the organisations, communities and governments we work with to make better-informed decisions. In an increasingly uncertain world, it allows them to act in a way that makes sense of the present and plans for the future.

The Institute and Faculty of Actuaries (IFoA) welcomes the opportunity to input into the Environmental Audit Committee's inquiry into Climate Adaptation. This response is prepared by the IFoA Sustainability Board. It is written in the public interest.

Actuaries have a crucial role to play in promoting the understanding and integration of climate risks and opportunities within decision-making, and in making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development. By evaluating systemic sustainability impacts on the financial systems, actuaries are involved in assessing how sustainability topics and the transition to net zero may impact on our assessment of future liabilities and the adequacy of returns to meet these future liabilities.

This submission focuses primarily on the governance, funding and progress measurement aspects of climate adaptation, viewed through an actuarial lens of risk management, resilience and long-term fiscal sustainability. While we do not seek to provide a comprehensive assessment of specific climate hazards or sectoral adaptation needs, we offer perspectives that may help inform decisions relating to resilience investment, adaptation appraisal, public finance and the measurement of adaptation outcomes.

Beijing	Room 512 · 5/F Block A · Landgentbldg Center · No. 20 East Middle 3rd Ring Road · Chaoyang District Beijing · 100022 · People's Republic of China	Tel: + 86 10 5878 3008
Edinburgh	Space · 1 Lochrin Square · 92-94 Fountainbridge · Edinburgh · EH3 9QA	Tel: +44 (0) 7632 2100
London (registered office)	1-3 Staple Inn Hall · High Holborn · London · WC1V 7QJ	Tel: +44 (0) 7632 2100
Malaysia	Arcc Spaces · Level 30 · Vancouver suite · The Gardens North Tower · Lingkaran Syed Putra · 59200 Kuala Lumpur	Tel: +60 12 591 3032
Oxford	Belsyre Court · 1st Floor · 57 Woodstock Road · Oxford · OX2 6HJ	Tel: +44 (0) 7632 2100
Singapore	Pacific Tech Centre · 1 Jln Kilang Timor · #06-01 · Singapore 159303	Tel: +65 8778 1784

Executive summary

The UK faces increasing physical climate risks from flooding, heat, drought, coastal change and other hazards. While climate mitigation remains essential, adaptation is also critical to protecting people, communities, infrastructure, public services and economic activity.

This submission offers an actuarial perspective on climate adaptation as a resilience, risk management and fiscal sustainability challenge. It explores three related themes:

- **Adaptation as an investment in resilience and public value**, recognising that resilience is a public good that delivers economic, social and fiscal benefits.
- **Insurability (both availability and affordability) as an indicator of resilience**, with insurance markets providing signals of increasing vulnerability and exposure.
- **Climate adaptation as social insurance and fiscal risk management**, reflecting the role of government in absorbing losses and reducing future fiscal pressures.

From an actuarial perspective, the benefits of adaptation extend beyond avoiding physical damage. They include reducing disruption to communities and businesses, improving public-service resilience, supporting insurability, protecting economic activity and reducing future demands on public resources.

This perspective is consistent with work undertaken by the Institute and Faculty of Actuaries (IFoA) on Green Book reform, which has highlighted the importance of long-term decision-making, future societal impacts and the role of government in managing risks that cannot be efficiently absorbed elsewhere.

As climate risks increase, some costs may ultimately fall on the public sector through disaster recovery, infrastructure repair, healthcare expenditure, social support mechanisms, emergency response and the continued provision of essential public services. Where resilience is insufficient, climate impacts may also lead to wider economic disruption and increased pressures on public finances. Together, these perspectives suggest that adaptation should be viewed not only as an environmental policy issue, but also as an investment in long-term societal resilience, economic stability and sustainable public finances.

At a glance: three indicators of national climate resilience

1. **Insurance affordability and availability:** Provides insights into whether climate-related risks remain manageable and whether households and businesses can access financial protection.
2. **Climate-related fiscal exposure:** Provides insights into potential future pressures on public expenditure, including contingent and implicit liabilities associated with climate-related impacts.
3. **Recovery and service restoration times:** Measures how quickly communities, infrastructure and public services recover following extreme events.

Together, these indicators could complement existing adaptation measures by providing insights into changes in societal resilience and potential future fiscal risks.

Climate adaptation as a resilience challenge

1. Climate adaptation is fundamentally about maintaining the resilience of society under changing environmental conditions. In this context, adaptation encompasses both operational measures, such as investing in resilient infrastructure, strengthening planning and building standards, and enhancing emergency preparedness, and financial measures, such as insurance arrangements, risk-sharing mechanisms and funding approaches that help communities and organisations recover from climate-related shocks.
2. The impacts of climate change are experienced through their effects on people and systems. Flooding, extreme heat, drought and coastal change can all damage homes, businesses and infrastructure, disrupt critical services, affect human health and productivity, and place pressure on ecosystems and natural resources. Adaptation therefore requires a holistic approach focused not only on managing individual hazards, but on strengthening the resilience of the social, economic and environmental systems upon which society depends.
3. These impacts can create cascading consequences across society. Disruption to critical infrastructure may impair access to healthcare, transport, communications and essential services. Damage to homes and businesses may have implications for local economies, employment and community wellbeing. Public authorities may face increasing demands on emergency response, social support and recovery programmes.
4. Adaptation seeks to reduce these consequences by strengthening the ability of systems to anticipate, withstand, respond to and recover from shocks. Seen through this lens, adaptation is less about responding to environmental change in isolation and more about maintaining the resilience of the social and economic systems upon which society depends. This suggests that resilience may usefully be considered a core objective of climate adaptation policy.

Adaptation as an investment in public value

5. Adaptation is often viewed primarily through the lens of expenditure now versus avoided future costs. However, adaptation investments generate public value through both the reduction of future losses and the protection of critical societal functions. Investment in flood resilience may reduce property damage, business interruption and recovery costs. Measures to reduce overheating can improve health outcomes, reduce pressure on healthcare services and maintain productivity during heat events. Investments in resilient infrastructure can reduce disruption, strengthen service reliability and protect economic activity.
6. Many of these benefits are preventative in nature. Their value arises because adverse outcomes do not occur. This presents challenges for traditional appraisal approaches, which can favour investments with easily measurable short-term returns. The benefits of resilience investments are often realised over long periods and across multiple sectors. They may be distributed among households, businesses, public services and future generations.
7. This issue has been recognised in the Institute and Faculty of Actuaries' work on Green Book reform (including the group's [Green Book Reform paper](#) and follow up ['Note to Treasury'](#)). Such work has highlighted the importance of appropriately valuing long-term societal outcomes and recognising that investments may create value by reducing future risks and liabilities rather than generating immediate financial returns. This principle applies across many areas of public policy, where preventative interventions may avoid or reduce future costs. Climate adaptation investments frequently exhibit these characteristics. Delays in resilience investment may increase the likelihood that climate-related costs emerge at a later date. An actuarial perspective on risk therefore suggests

that adaptation can be viewed as a form of preventative investment that generates public value through reduced vulnerability, reduced disruption and lower future expenditure.

Insurability as an indicator of resilience

8. Insurance plays a critical role in economic resilience. By enabling households and businesses to recover from losses, it supports economic activity, investment and financial stability. It also underpins lending, particularly in housing markets where insurance is often a prerequisite for mortgage provision.
9. However, insurance can only perform this function while coverage remains both available and affordable. As climate-related hazards become more frequent or severe, insurance may become less affordable, more restricted in scope, or unavailable altogether. This can have significant consequences for households, businesses and communities.
10. Insurability should therefore be viewed not only as a private market issue but also as an indicator of societal resilience. Insurance markets provide valuable risk signals, with changes in premiums, coverage restrictions and market participation often providing early indications of increasing vulnerability and exposure.
11. This relationship is increasingly recognised by regulators. The [Financial Conduct Authority has highlighted](#) that physical climate risks may affect the availability and affordability of both property insurance and mortgages. Similarly, the [Climate Change Committee's latest assessment](#) has identified growing risks from flooding, overheating, drought and other climate hazards across households, infrastructure and the wider economy.
12. Adaptation measures that reduce underlying physical risks can help maintain insurability and preserve the economic and social benefits that insurance supports. Maintaining access to affordable and effective insurance may therefore be considered an important adaptation outcome.
13. Therefore, trends in insurance affordability, coverage availability, claims experience and market participation could usefully be considered alongside more traditional adaptation indicators. Together, these measures may help assess whether climate risks are being successfully managed or whether vulnerabilities are increasing.
14. Insurance indicators should, however, be interpreted alongside measures of underlying physical risk, vulnerability and adaptation outcomes. Changes in affordability and availability may also reflect wider market conditions, regulatory arrangements and policy interventions. Insurability is therefore best understood as one component of a broader assessment of societal resilience, rather than a standalone measure of adaptation effectiveness.

Government as society's provider of social insurance

15. While insurance markets perform an important role in risk transfer, governments may face pressure to become the provider of last-resort protection when losses exceed the ability of individuals, businesses or private markets to absorb them. Following major climate-related events, governments may fund emergency response measures, support recovery efforts, rebuild public infrastructure, provide financial assistance to affected communities and maintain essential public services.
16. In practice, government may perform functions analogous to social insurance. This role extends beyond direct disaster response. Public healthcare systems absorb climate-related health impacts. Welfare systems support affected households. Infrastructure owners bear repair and replacement costs. Public services respond to and manage the consequences of disruption. When severe shocks

occur, the consequences are rarely borne solely by those directly affected. Instead, costs are often distributed across society through public services, public expenditure and collective support mechanisms. As climate risks increase, the importance of these societal risk-sharing functions may also increase.

17. Recent discussions surrounding Green Book reform have increasingly recognised this role. The HM Treasury commissioned [review of the Green Book discount rate](#) introduced the concept of "social insurance" as a relevant consideration when assessing long-term public investment decisions. It describes social insurance interventions as public investments that mitigate severe downside systemic risks to society and provide their greatest benefits during periods of significant societal stress. Examples include mechanisms such as Flood Re, which helps maintain the availability and affordability of flood insurance in high-risk areas, and investments in critical resilience infrastructure that may only demonstrate their full value when extreme events occur. Such interventions can be difficult to appraise using conventional approaches because much of their value arises through avoided losses and improved societal resilience rather than directly observable economic returns.
18. Alongside investment in physical resilience and risk reduction, continued consideration may be required regarding the role of insurance and other societal risk-sharing mechanisms where climate risks cannot be fully avoided or transferred through private markets alone.
19. Climate adaptation shares many of these characteristics. Adaptation investment can therefore be viewed, in part, as a form of social insurance that reduces the likelihood and severity of losses that society ultimately bears. Viewed through this lens, adaptation is not simply an environmental policy issue. It is also a means of protecting societal wellbeing, supporting community resilience and reducing the consequences of severe climate impacts. This framing broadens the discussion beyond physical assets and economic losses and highlights adaptation's role in supporting the long-term resilience of society as a whole.

Adaptation as climate fiscal risk management

20. The social insurance perspective focuses on government's role in helping society absorb and recover from climate-related losses. A related but distinct perspective concerns the implications of those losses for public finances. As governments increasingly provide support following climate-related shocks, physical climate risks may also create significant fiscal risks.
21. Climate change is increasingly being recognised as a source of fiscal risk. Governments routinely assess risks arising from economic downturns, financial instability and geopolitical events because of their implications for public expenditure and revenues. Similarly, the UK's Office for Budget Responsibility considers implications of climate change for public finances through its [Fiscal Risks and Sustainability](#) report.
22. HM Treasury has also recognised potential fiscal implications of risks that may not be formally recognised on the public balance sheet. Its [Guidance for managing government's implicit liabilities](#) notes government may face strong expectations to intervene following significant losses or disruption, even where no legal obligation exists. Climate-related risks can create such exposures, particularly where households, businesses, infrastructure systems or local authorities are unable to absorb losses independently.
23. Climate adaptation can be viewed through a fiscal risk management lens, reflecting its potential to reduce future public expenditure, implicit contingent liabilities and wider economic disruption. Flooding, heat stress, drought and infrastructure failures can generate pressures on public finances through emergency response costs, infrastructure repair, healthcare expenditure, reduced economic

activity and increased demands for public support. Many of these costs emerge gradually and may only become fully apparent after a significant shock.

24. Therefore, adaptation investment may be understood as a means of reducing future fiscal exposure by strengthening resilience before losses crystallise. By lowering likelihood and severity of future costs, adaptation can reduce the extent to which climate risks translate into pressures on public finances.
25. The scale of future adaptation requirements is not independent of mitigation outcomes. Successful mitigation can reduce the severity of future climate impacts and therefore the scale of resilience investments and fiscal costs required over time. Adaptation and mitigation should therefore be viewed as complementary components of long-term risk management rather than competing priorities.
26. This interpretation is consistent with the social insurance concept identified in the [Green Book Discount Rate Review](#), but the emphasis is different. The social insurance perspective focuses on government's role in protecting society from severe losses, whereas the fiscal risk perspective focuses on the potential consequences of those losses for public finances. Together, these perspectives suggest adaptation should be viewed not only as resilience policy but also as a component of prudent long-term fiscal risk management. They also highlight the potential role of mechanisms that distribute or absorb climate-related risks, such as insurance arrangements and other risk-sharing structures, which may help reduce the extent to which future climate losses fall directly on the public purse.
27. Therefore, a stronger understanding of climate-related fiscal exposure may support more informed decision-making across government and help prioritise resilience investments that reduce future societal and fiscal costs. Embedding climate resilience within decision-making processes is necessary but may not be sufficient. Given the cross-cutting nature of climate risks, effective adaptation also requires coordinated implementation across government departments and agencies. Adaptation should therefore be viewed not only as an environmental policy objective, but also as an investment in societal resilience and long-term fiscal sustainability.

Key considerations

28. **Adaptation as resilience investment:** The Committee may wish to consider whether adaptation appraisal frameworks sufficiently capture the value of resilience, including avoided future losses, reduced disruption and wider societal benefits.
29. **Measuring insurability:** Evidence from insurance markets may provide useful insights into changing levels of climate risk and resilience. Trends in insurance affordability, availability and coverage could potentially complement existing adaptation indicators.
30. **Climate-related fiscal exposure:** The Committee may wish to consider whether existing approaches to fiscal risk assessment adequately capture climate-related exposures, including contingent and implicit liabilities arising from severe physical climate risks.
31. **Long-term decision-making:** An actuarial perspective highlights the value of long-term approaches to risk management and investment appraisal when considering climate adaptation and resilience.
32. **Cross-government resilience:** Climate adaptation affects a range of policy areas, including infrastructure, housing, public services, insurance and public finances. The Committee may therefore wish to consider the extent to which resilience considerations are embedded consistently across government decision-making processes.

33. **Measuring resilience outcomes:** Traditional adaptation metrics often focus on actions taken rather than resilience achieved. The Committee may wish to consider whether outcome-based indicators, such as insurability, fiscal exposure and recovery times, could complement existing measures and provide a clearer picture of adaptation effectiveness.

Conclusion

34. Climate adaptation is often discussed as an environmental challenge. However, it can also be considered from the perspectives of resilience, risk management and long-term fiscal sustainability. Evidence from insurance markets, fiscal risk assessment and public investment appraisal suggests adaptation may play an important role in reducing future losses and strengthening societal resilience.
35. From an actuarial perspective, adaptation represents an investment in resilience that can help maintain the availability and affordability of insurance, reduce the risk of future fiscal pressures and support the long-term functioning of communities, infrastructure and the wider economy. The Committee may wish to consider how concepts such as social insurance, fiscal risk management and insurability can contribute to future approaches to climate adaptation policy.

Should you wish to discuss any of these points further, please contact Caroline Winchester in the first instance, caroline.winchester@actuaries.org.uk