SOUTH AFRICAN RESERVE BANK

Address by Fundi Tshazibana,

Deputy Governor of the South African Reserve Bank,

at the School of Oriental and African Studies, University of London,

15 October 2025

Financial policy in the era of the climate crisis: An African perspective

Good evening.

It is a great pleasure to be here at the School of Oriental and African Studies (SOAS). I would like to thank Vice-Chancellor Adam Habib and Provost Joanna Newman for their kind invitation.

Throughout its history, SOAS has nurtured leaders who are committed to tackling the systemic causes of social injustice and economic underdevelopment. This legacy is particularly visible in South Africa, where distinguished alumni include both our serving Minister of Finance and the Governor of the South African Reserve Bank (SARB).

Today, the call for such leadership is especially urgent as we confront the challenges of climate change.

While my main focus will be on the issues we face in South Africa, it is important to note that climate change creates similar challenges across other African countries. This year, under our Group of Twenty (G20) Presidency, we have prioritised scaling up sustainable finance to address Africa's key development challenges. The Sustainable Finance Working Group is actively developing recommendations to strengthen the global financial architecture, boost financing for climate adaptation, and unlock the potential of carbon credit markets. This focus has also been mirrored in other G20 groups.

South Africa is leveraging its leadership role to forge the global partnerships necessary to dismantle financial barriers to climate action. In this regard, we have partnered with institutions such as the African Development Bank, the Network for Greening the Financial System (NGFS), the International Association for Insurance Supervisors, the

World Bank, and the Organisation for Economic Co-operation and Development, among others.

Climate change is a global problem, yet the ways in which climate-related risks materialise are diverse. The scenarios developed by the NGFS highlight that climate-related risks are likely to be larger in many emerging market and developing countries. In the G20 work we did with the African Development Bank, it was clear that Africa is especially vulnerable, not only due to its geography and reliance on climate-sensitive sectors such as agriculture, but also due to historical underinvestment in resilience-building and structural inequalities. Several systemic barriers, such as financial system vulnerability and the high cost of capital, amplify Africa's vulnerability to the impacts of climate change. One might argue that, while there may be homogenous regional elements, each country on the continent has its own unique vulnerabilities and different capacities to respond. This means that, to be effective, policy responses must be tailored to the specific circumstances of each nation. With that in mind, please note that many of the points I make today will be applicable to some countries, but not all. Much of my focus will be on highlighting Africa's diversity as a region.

At the SARB, we take great pride in our steadfast commitment to advancing our country's green agenda. Many other central banks have taken similar positions, as demonstrated by the establishment of the Network for Greening the Financial System in 2017.[1]

This central bank focus on climate, however, raises a crucial question: Does this expanded focus align with their primary mandate of maintaining price stability, as well as with their clearly defined legislative responsibilities?

After all, in recent times, central banks' objectives have given the greatest weight to controlling inflation and financial stability. Their widespread adoption of inflation-targeting frameworks has led to significant successes – so why divert their focus from this main task? There have also been arguments that the current inflation-management toolbox was not designed to address climate-related objectives, and these new goals are likely to clash with anti-inflation measures or, at the very least, muddy the waters.

[1] NGFS, 'Joint statement by the Founding Members of the Central Banks and Supervisors Network for Greening the Financial System', 12 December 2017, https://www.ngfs.net/en/press-release/joint-statement-founding-members-central-banks-and-supervisors-network-greening-financial-system

In this regard, while most central banks now implement climate-related strategies and actions, there are also informed voices[2,3] arguing that central banks should play little or no role in their countries' climate change strategies.[4,5]

So, what is the right approach? More importantly, which side is right for central banks in Africa?

That is the question I will be looking at this evening, drawing on my experience as an African central banker.

Let me simplify things by providing my conclusions upfront. Both sides are right. Central banks have important roles to play in a country's climate strategy, but they are indirect roles aimed at strengthening the long-term financial resilience of the economy, instead of modifying central banks' direct short-term inflation targeting measures.

The logic is straightforward:

> If climate risks – both physical and transition risks – contribute to price and financial instability, they become the concern of central banks.
>
> An economy with high inflation and financial instability cripples investment.

Historically, we have observed that these conditions drive up borrowing costs, halt long-term funding, and trigger capital flight – all of which affect structural foundations of any economy. A stable economy is the foundation of development finance. Yet as climate change and the responses to it change price formation, reshape markets and affect investor confidence, central banks have no choice but to address these risks – both to safeguard financial stability and steer the transition towards a more resilient economy.

Understanding the impact of climate-related risks on livelihoods, infrastructure and public policy is particularly crucial in an African context. In just these past three years, we have experienced on our continent how drought not only affects agricultural output and exports, but also has significant inflationary effects, impacts electricity production across sectors, and undermines the soundness of financial institutions and tax collection. All these issues, save one, are the business of central banks. Understanding these country-specific differences implies that, in policy application, we cannot have a copy-and-paste approach. Financial policies for climate resilience in Africa will fail if they simply copy models from advanced economies. Success requires

---

[2] L P Hansen, 'Central banking challenges posed by uncertain climate change and natural disasters' *Journal of Monetary Economics*, 125(C), 2022, pp 1–15. DOI: 10.1016/j.jmoneco.2021.09.010

[3] H Davies, 'Central Bankers' Green Lines', *Project Syndicate*, 19 January 2023, https://www.project-syndicate.org/commentary/central-banks-increasingly-divided-over-climate-change-by-howard-davies-2023-01

[4] Ibid

[5] O Issing, 'Central banks aren't responsible for fighting climate change – governments are', World Economic Forum Stories, 5 December 2019, https://www.weforum.org/stories/2019/12/this-is-the-problem-with-central-banks-fighting-climate-change/

simultaneously addressing the continent's broader barriers to finance and economic growth.

By positioning things in this way, I am not suggesting that central banks should take over the role of other public institutions in climate policy. Rather, I am saying they must be in a position to manage risks, as these risks will affect their mandates – both directly and indirectly.

To support these policy conclusions, let me set the context.

Rising risks and the cost of inaction

The world is facing rapidly deteriorating climate and weather conditions. Global efforts to mitigate emissions are faltering, while the frequency and severity of extreme events are growing at an alarming rate. What is particularly concerning is that, every year estimates are made about the frequency and severity of extreme weather events over the next 30 years, only for us to realise a year later that the actual impacts have been underestimated.

Meanwhile, the cost of inaction is rising. Between 1997 and 2006, the average annual economic cost of global extreme weather events was US$45.1 billion.[6] In 2024, the economic cost of extreme climate events reached US$417 billion.[7]

Less mitigation requires more adaptation, yet the funding gaps for adaptation measures such as flood prevention are extremely large. In its 2023 Adaptation Gap Report, UNEP estimates the financing needs of developing countries to be US$387 billion per year in this decade, which is significantly higher than earlier estimates.[8] Africa alone requires at least US$70 billion annually for climate adaptation, but currently, tracked financing covers less than a quarter of this need.[9]

Africa's disproportionate burden

Although Africa contributes only about 4% of global emissions, it is experiencing a disproportionately rapid rise in temperatures and faster-than-average sea level increases. In 2024, 11 million people across the continent were impacted by abnormal

[6] Pielke, Jr., R.A et al. 2007. Catastrophe losses in the context of demographics, climate, and policies. Conference paper: Managing the changing landscape of catastrophe risk. Available here: https://sciencepolicy.colorado.edu/admin/publication_files/resource-2591-2008.06.pdf

[7] Oxera 2004. The economic cost of extreme weather. Available here: https://iccwbo.org/wp-content/uploads/sites/3/2024/11/2024-ICC-Oxera-The-economic-cost-of-extreme-weather-events.pdf

[8] United Nations Environment Programme (UNEP), *Adaptation Gap Report 2023,* 2 November 2023, https://www.unep.org/resources/adaptation-gap-report-2023

[9] Climate Policy Initiative (CPI) and Global Centre on Adaptation (GCA), Technical brief: Adaptation Finance Flows to Africa – State and Future Trends, 2025, https://gca.org/wp-content/uploads/2025/09/CPI-Report-Adaptation-Finance-Flows-to-Africa.pdf

rainfall,[10] while the 2023/24 Southern African drought left 27 million people food insecure.[11]

Without ambitious and coordinated action, such crises are likely to intensify.

There are several geographic, social and economic factors that contribute to Africa's heightened vulnerability to climate change. The continent's heavy dependence on rain-fed agriculture makes food security and livelihoods highly susceptible to shifts in rainfall patterns.

Poverty, combined with a lack of access to financial services, makes it difficult for people to recover from climate-related shocks. When a flood destroys a home or a drought ruins a harvest, families often lack the savings or the insurance coverage to rebuild their homes and their livelihoods. At around 3%, Africa's insurance penetration is far below global averages, leaving households, businesses and governments dangerously exposed.[12] This is made worse by governance challenges that can prevent effective climate solutions before they even begin.

Finally, all of this is compounded by a low capacity to adapt, given that states often lack the technology, infrastructure, funding and skills to manage all these challenges.

In many African countries, the financial sector is underdeveloped, which makes the cost of finance high for climate-related investment projects. The average weighted cost of capital projections for energy infrastructure in Africa is 15.6%, whereas in developed regions such as Western Europe and the United States, the cost is approximately 5%.[13]

With limited fiscal space, public finance alone cannot shoulder the climate financing burden. In this context, calls for central banks to promote climate-related financing are justified.

But should they? Or even, can they?

Central bank direct measures

In this context, as is often the case when states are weak and resources are limited, we see proposals for central bank intervention.

---

[10] Africa Center for Strategic Studies, 'Record Levels of Flooding in Africa Compounds Stress on Fragile Countries' 10 December 2024, https://africacenter.org/spotlight/record-levels-of-flooding-in-africa-compounds-stress-on-fragile-countries/

[11] World Food Programme, 'Emergency: Southern Africa Drought', 2025, https://www.wfp.org/emergencies/southern-africa-drought

[12] African Development Bank and OECD, 'Scaling finance and investment for climate adaptation: Input paper for the G20 Sustainable Finance Working Group', 2025, https://g20sfwg.org/wp-content/uploads/2025/07/Financing-climate-adaptation-ENG.PDFO_.pdf

[13] Ibid

One such proposal is to modify inflation targeting by adding climate objectives to central banks' rate-setting decisions. This would be expected to lower rates in the near term, thereby reducing the cost of finance for climate-related investment. Another proposal is to implement 'Green QE', which essentially involves funding climate projects directly off the central bank's balance sheet and issuing own debt to do so.

In my experience, these proposals are non-starters. If you set rates too low, over time you get inflation. If you do not deal with that inflation, people begin to doubt your commitment to inflation targets and they start to set prices with higher inflation in mind. If you tell everyone that you are deliberately setting rates low to finance green interventions, that process of dismantling credibility just spirals faster. Ultimately, you end up levying an inflation tax to fund sustainability initiatives, and that tax is both inefficient and regressive. It is pretty much the worst option in the toolkit.

Central bank credibility has been hard won and remains potentially fragile, even in my country where inflation targeting has been successful. In many other African countries, this fragility is even more pronounced. Compromising it by adding climate objectives to those of interest rate policy would effectively mean abandoning the main tool that African central banks have to fight inflation.

And it could worsen, rather than ease, the cost of finance for climate-related investments. How so? Because such investments are long term, and their cost of capital is affected by long-term interest rates, not short-term instruments of monetary policy. If a central bank keeps short-term rates too low to achieve climate goals, it risks losing its credibility in managing inflation expectations. This would prompt people to expect higher inflation in the future, causing an immediate rise in long-term interest rates as lenders demand compensation.

But this does not mean central banks must be bystanders. There are choices between the two extremes of radical, irresponsible action and turning a blind eye. Central banks are deeply embedded in financial markets, have more financial expertise than most parts of government, and have financial stability mandates. There is plenty of material here for an effective climate strategy, built around three core elements: developing capital markets, addressing insurance gaps, and increasing the resilience of the financial sector.

Developing capital markets and carbon markets

Deep and liquid capital markets are essential for mobilising climate finance. Unfortunately, many African capital markets are still in their infancy. Two of the most important drivers of capital market development are macroeconomic stability and effective regulation. Here, central banks can play a strong and critical role.

Often, the best financial sector policy is simply to get monetary and fiscal policy right. A stable price environment protects savings, drives investment, lowers interest rates, and enhances international competitiveness. It also provides the necessary flexibility for a central bank to counter financial and economic shocks, and ensures that capital markets can allocate funding to its most productive uses.

An equally important determinant of macroeconomic stability is fiscal sustainability, which ultimately means avoiding levels of sovereign borrowing that would lead to debt crises.

The International Monetary Fund classifies seven countries in Africa as being in debt distress as of March this year.[14] A couple of countries have also applied for debt restructuring under the G20 Common Framework. If we want more developed capital markets in Africa, we need to improve fiscal policymaking. We also need faster debt restructuring processes that enable countries to rebuild their finances and their economies quickly if a debt crisis occurs. Despite significant progress being made over the past couple of years, the restructuring process remains slow.[15]

Turning to the regulatory environment, we need clear and consistent rules for how companies report their climate risks and plans.

This means all companies – financial or otherwise – must disclose their climate vulnerabilities and their strategies to manage them using a standardised format. This will create comparable data, allowing investors to see which firms are truly prepared for climate change and to fund them accordingly.

Without reliable information, markets cannot price risk, regulators cannot anticipate vulnerabilities, and investors cannot channel financing towards the sectors most critical for both mitigating carbon emissions and adapting to the effects of physical risks.

In its recent input paper to the G20 Sustainable Finance Working Group, the Network for Greening the Financial System identifies the following five pillars for integrating adaptation considerations into transition plans[16]:

1. Setting up appropriate governance mechanisms to track progress against adaptation targets.
2. Setting objectives and assessing physical risks and opportunities.
3. Responding to the identified risks and opportunities by managing actions and adjusting business strategies.
4. Developing appropriate engagement strategies.
5. Developing appropriate measures and targets and continually improving them.

Central banks and regulators are responsible for embedding these pillars in the decision-making and operational models of financial firms. However, these will only be

[14] International Monetary Fund (IMF), 'List of LIC DSAs for PRGT-Eligible Countries as of March 31, 2025', https://www.imf.org/external/Pubs/ft/dsa/DSAlist.pdf

[15] World Bank Group, 'The Global Sovereign Debt Roundtable (GSDR)', 14 February 2025, https://www.worldbank.org/en/topic/debt/brief/the-global-sovereign-debt-roundtable-gsdr

[16] Network for Greening the Financial System, 'Integrating adaptation and resilience into transition plans', July 2025, https://g20sfwg.org/wp-content/uploads/2025/07/SFWG-P2a_Adaptation-and-Transition-Plans-2.pdf

effective if governments ensure that non-financial firms also report on physical risks, again highlighting the importance of policy coordination.

Carbon markets

Developing carbon markets is another crucial part of advancing Africa's capital markets. They markets offer significant value to a country's green agenda and can provide governments with new revenue through the regulated sale of carbon permits.

Carbon markets are being established worldwide. While the largest systems are in the European Union and China, we are also seeing the development of smaller regional markets. At present, the African continent accounts for just 16% of the global carbon market.[17]

Developing effective carbon markets depends on international cooperation to ensure both environmental and financial integrity. Global bodies such as the International Organization of Securities Commissions are supporting this by establishing best practices. Building on this momentum, through South Africa's G20 Presidency, we are leading efforts to improve carbon credit data – a crucial step towards building transparent and trustworthy markets.

For Africa's carbon market to grow, the major economies must allow their largest emitters to buy more carbon credits from the continent. This demand would not only build the market itself, but also generate crucial funding for development projects on the continent.

Given their central role in financial markets, central banks are well positioned to help develop carbon credit markets.

Insurance markets

Another important focus area for financial sector policy should be improving insurance coverage in Africa. Insurance penetration rates on the continent are far below the global average, leaving the continent more exposed to climate risk losses.[18] Insurance is also important for investment, as lenders often make insurance coverage a prerequisite for funding.

Unfortunately – and this is another priority area for our G20 Presidency – insurance gaps are widening.

It is becoming increasingly difficult globally to insure against natural disasters, with the problem being especially severe in developing markets. Rising risks make insurance

[17] United Nations University Institute for Natural Resources in Africa (UNU INRA), *Carbon Market Economics: Crafting a New Narrative of Opportunity and Sustainable Growth for Climate Action in Africa*, 2024, https://collections.unu.edu/eserv/UNU:10036/Carbon_Market_Economies_____Nov_2024__Web_.pdf

[18] Deloitte Africa Insurance Outlook 2024/25. Available here: https://www.deloitte.com/za/en/Industries/insurance/perspectives/africa-insurance-outlook-2024-2025.html

more expensive, which further widens the coverage gap. People in developing economies often do not buy insurance due to low incomes, limited access, a lack of risk awareness, and mistrust in financial products. Local insurance companies are often held back by underdeveloped markets, limited technical skills, and a lack of quality data needed to accurately price their products.[19]

Yet, there are already practical examples of how insurance gaps can be addressed, despite these constraints. For instance, in Senegal, the government has established an agricultural insurance company that is 45% government owned and 55% privately owned. This insurance company offers various insurance products to farmers, including parametric insurance against drought – a simple system that pays out when certain conditions are met, such as soil moisture levels being above or below a specific threshold. Policies taken by farmers through the insurance company are subsided by the government. This is a powerful example of how shared responsibility and policy coordination can strengthen resilience.[20] Of course, it relies on the fiscal strength I mentioned previously.

Just as with capital markets, developing new and affordable insurance products and markets depends on effective collaboration between a wide range of partners. These groups – including the public sector, insurers, consumer groups, and international development institutions – all have distinct but complementary roles. Their collaboration is crucial for assessing gaps in insurance coverage, improving the quality of risk data, building consumer confidence, and strengthening financial literacy and risk awareness.

Increasing the resilience of the financial system to climate risks

Lastly, let me reflect on how we can increase the resilience of the financial system to climate risks. It will be impossible to develop capital markets and address insurance protection gaps unless the financial system is resilient to climate change shocks.

Although I have mainly highlighted the unique challenges Africa faces, building a resilient financial system also requires us to adopt best practices from other central banks and financial regulators. This includes establishing appropriate disclosure requirements, carrying out stress tests, and integrating climate considerations into the operational and governance frameworks of financial institutions. But there are some caveats to consider.

[19] African Development Bank and OECD, 'Scaling finance and investment for climate adaptation: Input paper for the G20 Sustainable Finance Working Group' 2025, https://g20sfwg.org/wp- /uploads/2025/07/Financing-climate-adaptation-ENG.PDFO .pdf

[20] Network for Greening the Financial System, 'Integrating adaptation and resilience into transition plans', July 2025, https://g20sfwg.org/wp-content/uploads/2025/07/SFWG-P2a_Adaptation-and-Transition-Plans-2.pdf

For example, African countries have unique constraints that must be addressed in the formulation of disclosure policy. Voluntary disclosures should come first to allow corporations to understand their data and capacity requirements and address these during the voluntary disclosure phase. Once data and capacity have been addressed, these climate-related disclosures should become mandatory and form part of our financial system's resilience infrastructure.

A one-size-fits-all approach to climate stress testing will not work for Africa. Standard tests focus on corporate loans, but our banks' main risk is in the **retail sector**. These tests also fail to capture our unique vulnerabilities, including:

- **greater physical risks –** we are more exposed to events such as droughts and floods; and
- **different transition risks: –** we are often impacted by capital flight caused by policy shifts in advanced economies.

As supervisors, we must design stress tests that are tailored to the challenges we face.

An area that is often not associated with the resilience of the financial system is financial inclusion. It is however essential to how African countries manage climate-related risks. Access to finance and insurance, as well as financial sector access, assist households and businesses with more risk management tools and allows governments and donors to provide assistance in the face of catastrophic events.

Finally, strengthening financial resilience in Africa through regional coordination is essential to mitigate shared vulnerabilities and amplify collective strengths. By harmonising regulatory frameworks, pooling resources for climate and debt-related shocks, and enhancing cross-border financial surveillance, African countries can build a more robust and integrated financial system.

Conclusion

So, should African central banks take on the challenges of climate change?

The answer is yes, but with limited and clearly defined parameters.

I hope I have persuaded you that proposals for central banks to finance the fight against climate change – by weakening their commitment to low inflation and setting rates low to make climate finance cheap – are misguided and sure to fail in their objective. That is a big no.

What we need is to improve our modelling to inform the calibration of monetary policy decisions.

There is also a compelling case for a strong affirmative when it comes to financial sector stability and development. We can help develop markets to better finance

climate-related investment, facilitate carbon trading, and improve insurance coverage. And we can help protect overall financial stability from the climate shocks that are coming our way. None of this requires sacrificing core mandates or stepping outside our area of comparative advantage. Indeed, it is closely connected to our pre-existing work and mandates.

The core challenge for African economies is managing high exposure to climate-related risks while having limited resources. While central banks may not be at the forefront of the battle against climate change, our involvement remains essential.

If you take away one thing that I have said tonight, it is that we are not flying blind as central banks. We know that there is much we do not know, and we are committed to learning. We recognise the plausible danger of mission creep, or even mission compromise. Where these efforts go awry and lead to inflation or financial losses, or the crowding out of other climate responders, they set central banks up for a blame game they cannot win.

Our core mandates remain clear and essential: safeguarding the public against inflation is paramount. Losing sight of this priority would not only harm our citizens, but also erode the effectiveness and independence of central banks. Therefore, we must avoid diverging from this focus. At the same time, our active roles in promoting financial stability and fostering market development present meaningful opportunities for positive impact. It is in these areas – where our expertise is strongest – that we should concentrate our efforts.

References

Africa Center for Strategic Studies. 2024. 'Record Levels of Flooding in Africa Compounds Stress on Fragile Countries'. https://africacenter.org/spotlight/record-levels-of-flooding-in-africa-compounds-stress-on-fragile-countries/

African Development Bank and OECD. 2025. 'Scaling finance and investment for climate adaptation: Input paper for the G20 Sustainable Finance Working Group'. https://g20sfwg.org/wp-content/uploads/2025/07/Financing-climate-adaptation-ENG.PDFO_.pdf

Climate Policy Initiative (CPI) and Global Centre on Adaptation (GCA). 2025. 'Technical brief: Adaptation Finance Flows to Africa – State and Future Trends'. https://gca.org/wp-content/uploads/2025/09/CPI-Report-Adaptation-Finance-Flows-to-Africa.pdf

Davies, H. 2023. 'Central Bankers' Green Lines'. *Project Syndicate*. https://www.project-syndicate.org/commentary/central-banks-increasingly-divided-over-climate-change-by-howard-davies-2023-01

Deloitte Africa Insurance Outlook 2024/25. Available here: https://www.deloitte.com/za/en/Industries/insurance/perspectives/africa-insurance-outlook-2024-2025.html

Forster, P et al. 2025. 'Indicators of Global Climate Change 2024: Annual update of key indicators of the state of the climate system and human influence'. Earth Syst. Sci. Data, 17: 2641–2680, 2025. https://doi.org/10.5194/essd-17-2641-2025

Hansen, L P. 2022. 'Central banking challenges posed by uncertain climate change and natural disasters'. *Journal of Monetary Economics*, 125(C): 1–15. https://www.sciencedirect.com/science/article/pii/S0304393221001033

International Association of Insurance Supervisors (IAIS) and World Bank Group. 2025. 'Identify and address insurance protection gaps'. An input paper to the G20 Sustainable Finance Working Group. https://g20sfwg.org/wp-content/uploads/2025/07/SFWG-P2b_Insurance-Protection-Gap.pdf

International Monetary Fund (IMF). 2025. 'List of LIC DSAs for PRGT-Eligible Countries as of March 31, 2025'. https://www.imf.org/external/Pubs/ft/dsa/DSAlist.pdf

Issing, O. 2019. 'Central banks aren't responsible for fighting climate change – governments are'. World Economic Forum Stories. https://www.weforum.org/stories/2019/12/this-is-the-problem-with-central-banks-fighting-climate-change/

Koudalo, Y M A and Toure, M. 2023. 'Does financial inclusion promote financial stability? Evidence from Africa'. *Cogent Economics & Finance*, 11(2). https://doi.org/10.1080/23322039.2023.2225327

Network for Greening the Financial System (NGFS) 2025, 'Integrating adaptation and resilience into transition plans'. An input paper to the G20 Sustainable Finance Working Group. https://g20sfwg.org/wp-content/uploads/2025/07/SFWG-P2a_Adaptation-and-Transition-Plans-2.pdf

NGFS 2017, Joint statement by the Founding Members of the Central Banks and Supervisors Network for Greening the Financial System". Available at https://www.ngfs.net/en/press-release/joint-statement-founding-members-central-banks-and-supervisors-network-greening-financial-system

NGFS 2024, NGFS long-term scenarios for central banks and supervisors. Available here: https://www.ngfs.net/ngfs-scenarios-portal/

Oxera. 2004. 'The economic cost of extreme weather'. https://iccwbo.org/wp-content/uploads/sites/3/2024/11/2024-ICC-Oxera-The-economic-cost-of-extreme-weather-events.pdf

Pielke, Jr., R.A et al. 2007. 'Catastrophe losses in the context of demographics, climate, and policies'. Conference paper: Managing the changing landscape of catastrophe risk. https://sciencepolicy.colorado.edu/admin/publication_files/resource-2591-2008.06.pdf

United Nations Environment Programme (UNEP). 2023. *The Adaptation Gap Report.* https://www.unep.org/resources/adaptation-gap-report-2023

United Nations University Institute for Natural Resources in Africa. 2024. 'Carbon Market Economics: Crafting a New Narrative of Opportunity and Sustainable Growth for Climate Action in Africa'. https://collections.unu.edu/eserv/UNU:10036/Carbon_Market_Economies_____Nov_2024__Web_.pdf

World Bank Group. 2025. 'The Global Sovereign Debt Roundtable'. https://www.worldbank.org/en/topic/debt/brief/the-global-sovereign-debt-roundtable-gsdr

World Food Programme. 2025. 'Emergency: Southern Africa Drought'. https://www.wfp.org/emergencies/southern-africa-drought