Looking back and moving forward: reflections on forty years of changing climate, law and finance

Insight Investment – University of Oxford Prize for the Greening of the Financial System
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Introduction

It's an honor to accept this award at one of the world's great seats of learning. Universities are the greatest institutions we have for driving forward our understanding of the world around us and expanding the frontier of what it is possible for us, as humans, to achieve.

I feel privileged to speak to an audience that contains both those academics who are innovating, thinking, and delivering us the ideas of tomorrow, as well as students who are studying and challenging the concepts of today, which you will take into the long careers ahead of you, and which I hope will be focused on making a positive contribution to the world.

I would like to take this opportunity to reflect on what has shaped my own career.

Most recently, I have been focused on climate change; an issue that challenges the traditional distinction that universities make between physical sciences and social sciences. This distinction is still manifest in the split between 2 of Oxford University's 4 departments. **Physical and earth sciences** seek to understand the universe and planet's fundamental truths and laws; whereas **social sciences** seek to understand the world as we humans make it. How we live, govern, build, interact with each other and with the world around us.

Whilst humans have always impacted the physical, the extent of that has recently catapulted us into a new geological age: the Anthropocene, an era of rapid human-caused climate change and the sixth mass extinction of species. Climate change is no longer a far-off scenario but our lived experience.

To understand what is happening to our world, and critically, how we might address it, requires multidisciplinary collaboration and models that incorporate our best understanding of physics, biological sciences, meteorology, geology, engineering, economics, finance, law, behavioral science, computer science, and many other disciplines from both physical and social sciences - and beyond.

It is thanks to the tireless work of academics, researchers, policymakers, and practitioners, across disciplines, that we can see the state of the climate as it is today, the dangerous pathway that we are on, and more optimistically, that we have developed the tools to change that pathway and bend the arc of history.

While it makes grim reading, it is worth pausing a minute to consider what is happening out there in the real world.

- *The planet is heating, rapidly***.** Last year the Earth's temperature reached 1.5 degrees celsius above pre-industrial levels with this year on course to be the

hottest on record.[1] Global average ocean temperatures have been the highest on record every single day since March 2023.[2]

- *This is contributing to ever more natural disasters.* Last year saw record wildfires, including in Europe, the US, North Africa, and blazes in Canada that burnt an area three quarters the size of the UK and produced three times Canada's annual carbon emissions. [3]

- Rainfall from Storm Daniel caused two dams to collapse in Libya, killing more than 5,000 people[4] and China saw catastrophic floods following the heaviest rains in over 140 years. [5]

- East Africa, China, India, Iran, Afghanistan all suffered severe droughts placing millions in situations of food insecurity. In recent months we've had significant fatalities from severe flooding in Brazil, record tornadoes in the US and a record heatwave across India and other parts of Asia.

This is all having a very real impact on real people. At present, 20 million people are displaced by natural disasters each year.[6] Mass migration of climate refugees will become particularly acute. Today, just 1% of the world is in an inhospitable zone of extreme heat, but

[1] https://climate.copernicus.eu/surface-air-temperature-may-2024
[2] https://climate.copernicus.eu/copernicus-may-2024-streak-global-records-surface-air-and-ocean-temperatures-continues
[3] https://ciffc.net/statistics
https://www.theguardian.com/world/2023/sep/22/canada-wildfires-forests-carbon-emissions
[4] https://edition.cnn.com/2023/09/11/africa/libya-flooding-storm-daniel-climate-intl/index.html
[5] https://apnews.com/article/china-beijing-rainfall-floods-1a8f968799bd539d11f3421010b8f2a9
[6] https://www.migrationpolicy.org/article/climate-migration-101-explainer

every 0.1 degree Celsius exposes 140 million more people.[7] The UN estimates that even if countries follow through on their current policies, we are on course for 2.5C of warming, exposing a fifth of the global population.[8] The scale of climate refugees creates risks of political instability and war.

In many parts of the world, women are at particular risk from the impacts of climate change. According to the UN, 80% of those displaced by climate change are women or girls facing heightened risks of poverty, violence or unintended pregnancies as they migrate to safer locations.[9]

The bitter irony is that the most vulnerable are those most impacted by the effects of climate change, while the most comfortable are those who hold the largest historical responsibility for it. It is these human impacts which have always been a driving motivator for me throughout my career.

While I majored in anthropology at university, I have been fortunate that my career has spanned three of the most fundamental building blocks of social science: law; finance; and information and data.

These three areas are also key determinants of progress across society.

- Law provides the basic framework that shapes our norms, how people in society act, as well as the foundations for commerce.

[7] https://www.nature.com/articles/s41893-023-01132-6
[8] https://unfccc.int/news/climate-plans-remain-insufficient-more-ambitious-action-needed-now
[9] https://www.ohchr.org/en/stories/2022/07/climate-change-exacerbates-violence-against-women-and-girls

- The creation and dissemination of information and data determines what we know, or what we think we know.
- Markets and finance determine what we spend our resources and focus our productive efforts on.

The nexus of these three fields ultimately determine what we produce and consume, how we spend our time, the innovations and discoveries we make, and therefore the impact we have on the natural world and each other.

If we are to solve what may be the greatest collective challenge humankind has ever faced - that of climate change - we will need to understand and leverage what we know from these disciplines.

If we are to make the profound changes necessary to avert disaster, we need to understand how change happens.

I have been privileged not only to spend decades working across these three fields, but to do so both in the private sector and in the official sector - including at the helm of some of the most important regulators in the world.

I am not sure how many more times I will have the honor of speaking to such an esteemed audience dedicated to exploring, understanding and solving these issues. So, I would like to take this opportunity to outline the changes I have seen and been part of over the last four decades, and try to draw some conclusions that I hope will be helpful for those of you who will take forward the fight in the next four.

For if we are to avert the most catastrophic impacts of climate change, by the time those students amongst you are receiving an award in forty years' time, the global economy will need to have transitioned to a post-carbon economy, powered by abundant clean energy.

Law, information, finance, and the importance of trust

One thing history's greatest social scientists agree on, no matter their political philosophy, is that money makes the world go round. From Friedman to Keynes, Adam Smith to Karl Marx, all understood that finance and economics are amongst, if not are *the,* most important determinants of the outcomes and structures of our societies, and so our lives.

This means that if we want green and sustainable societies, we *do* need to green finance - which is perhaps why Oxford University created the award for Greening Finance, which I am honored to receive.

Markets, money and finance are human constructs which allow us to record, to value and to allocate resources — to support what economists call 'allocative efficiency', or for the rest of us, good decision making. And in order to make good decisions, we need timely and reliable information. The price signal in well-functioning markets shows what things people *want* relative to how much of that thing can be *supplied*. But for markets to function well, they need to be underpinned by trust.

Indeed, the word credit, so central to the modern financial system, is derived from the latin word "credere" or "to believe". When I grant you credit, I am trusting, believing, that you will pay it back. And having that trust relies on the integrity of information, which is the lifeblood for successful market mechanisms and money in particular.

If that integrity is called into question, confidence can collapse. This has been the root of crises from hyperinflation to financial instability, to countless scams and frauds. And when exchange through markets breaks down we get bad economic and societal outcomes.

Conversely, the ability of institutions to buttress and ensure the information and trust in markets on an impersonal and thus global scale led to the rapid, unprecedented rise in living standards from the turn of the 19th century.

This is a crucial point. Money is a truly ancient invention. It was an alumnus of this institution, Sir Austen Henry Layard, who discovered stone tablets from Mesopotamia dating back to 3000 BC that disclosed investments, trades, and payments of sheep, grain, cattle, and even beer. But it took thousands more years, until the 1800s, that institutions were able to provide the trust and information necessary to create the truly global markets that have enabled exponential growth.

Key developments in the history of finance are typically designed to improve trust, often following a period of crisis when trust is damaged or lacking:

- The Gold Standard, that saw currencies backed by gold, aimed to bring trust to international trade and standardization of payments at the advent of industrialisation
- Government mandated disclosures were introduced in the US in the 1930s in response to the stock market crash of 1929 and the Great Depression that followed.

- Capital requirements for banks were introduced in the 1980s in light of deteriorating capital levels and a sharp increase in bank failures, crushing consumer confidence. These regulations have been further enhanced to decrease both the probability of failure and the impact of failure in response to further crises, notably the Global Financial Crisis in 2008.

Information, data, and disclosures

The fundamental importance of information and trust to functioning markets is what makes disclosures so integral. Accurate disclosures allow people and organizations to assess the quality of companies' operations and future plans and invest in them accordingly.

It is the role of securities regulators to ensure companies' disclosures provide useful, reliable, consistent and accurate information. This is integral to the 'allocative efficiency' of markets. Disclosures also play an important role in allowing the public, employees, and other stakeholders to hold companies to account, in line with both the legal-regulatory system and broader but softer 'values' of the societies they operate in. It allows them to understand the nature and scale of externalities associated with different activities.

This link between disclosures and honesty has been explicit since the first disclosure laws: President Franklin Roosevelt said to Congress that the purpose of the 1933 Truth in Securities Act "is to protect the public with the least possible interference to honest business."[10]

[10] See in my fellow former Chairman of the SEC, David S Ruder, speech *The Evolution of Disclosure Regulation by the Securities and Exchange Commission.*

Putting in place the institutional building blocks of trust was essential to financing the Industrial Revolution in the nineteenth century. The rise of fractional reserve banking required central banks to act as lenders of last resort (and in some cases informal supervisors) - and as mentioned the Gold Standard initially enabled the flow of capital to support cross-border trade and investment.

But disclosure is not just about transparency, it also incentivises firms to change their behaviour. In 2003, the SEC introduced rules relating to the nomination of directors, including both the process for nominations and disclosure of the qualifications of appointed candidates.[11] These revealed oddities such as the risk committee of a major US bank being under the purview of a museum director. The mere existence of a disclosure requirement had a significant impact on how company boards were appointed.

The Net Zero Revolution requires changes at least as bold as those of the Industrial Revolution. We will need the information, tools, and markets so that every financial decision takes climate change into account – to create a financial system in which a company's contributions to climate change and climate solutions and its exposure to climate-related financial risks are fundamental determinants of its value.

We are making huge progress on this essential plumbing. And we're quickly mainstreaming the imperative that all major financial institutions develop and implement aggressive plans to enable decarbonisation across the economy.

[11] http://www.sec.gov/rules/proposed/34-48301.htm

In the United States, publicly traded companies are required to transparently disclose material business risks to their investors. I learned as a regulator that sometimes it is necessary to remind them what those material risks are. Shortly after being appointed Chair of the U.S. Securities & Exchange Commission (SEC) in 2009, it was apparent to me that climate change and the policy response to it could have material impacts on businesses, yet few companies were disclosing anything on these implications.

In 2010, we published guidance that aimed to clarify how, under existing rules, climate change risks should be disclosed.[12] This was very much the start of a journey on climate disclosures that continues today - companies had little experience thinking through these risks and how to communicate them and the outlook for policy was unclear. Even then, before the deepening polarisation of climate issues in the US, the political response was quick and vicious.

Yet we weathered the immediate political storm and the foundation of thinking about climate change as a material financial risk was laid. But companies needed more guidance on what to disclose. As is often the case for corporate governance, where best practices are beneficial and desired by investors, firms competing for scarce capital will implement them voluntarily.[13] But how does such best practice develop?

In 2014, following my SEC tenure, Mike Bloomberg and I joined the Sustainability Accounting Standards Board (SASB). Mike had built a world leading financial data and information company and shares my passion for using philanthropic efforts to support transparency in the aid of functioning markets.

[12] https://www.sec.gov/files/rules/interp/2010/33-9106.pdf
[13] Anand, Voluntary vs Mandatory Corporate Governance. Towards an Optimal Regulatory Framework (2005)

The SASB aimed to set standards to guide the voluntary disclosure of financially material sustainability information by companies to their investors. The genius of its approach was in developing standards specific to different sectors of the economy to ensure the information provided was relevant and useful for decision making.

Building on the success of SASB, the G20 asked the Financial Stability Board to establish the Taskforce on Climate-related Financial Disclosures (TCFD) which was launched alongside the Paris Agreement in 2015.[14]

The TCFD's mission was to bring a cohesion to the diffuse climate disclosure landscape and provide a framework for firms to disclose consistent information that was decision useful for investors, prudential regulators, and other stakeholders.

The TCFD's practical, industry-led disclosure framework aligned with how the private sector thought about managing the risks and opportunities associated with climate change. Our four pillars: governance, strategy, risk management, and metrics and targets quickly entered into the lexicon of climate disclosures. And have now become the basis of regulation in multiple jurisdictions, as well as the foundation for the International Sustainability Standards Board (ISSB) and European standards.

The key to success for TCFD was in its links to both the private and official sector: a practical, industry-led disclosure framework that had the backing of G20 governments and the financial regulatory community. As more companies gave their support to TCFD and voluntarily

[14] https://www.fsb-tcfd.org/

adopted its recommendations, the more financial institutions and investors were empowered to ask for these disclosures from others and the more confident regulators in the official sector were to adopt the recommendations as part of their own requirements to ensure their financial systems would have this vital information. We created a virtuous circle of supply and demand.

But voluntary actions can only take us so far. At some point there needs to be minimum requirements to ensure a baseline of information across the system, as well as a level-playing field across comparable companies. Drawing on best practice established through voluntary initiatives can help ensure we strike the right balance of costs and benefits in disclosure requirements focusing on the information that is most important.

This process of mandating disclosures has begun in some countries: ISSB, whose standards are based on TCFD, recently announced that jurisdictions representing over half the global economy are using or aligning their disclosure standards with those of the ISSB.[15] Ensuring widespread implementation, with minimal deviations will be key to ensuring that ISSB acts as the global baseline we are all hoping for.

The next priority on climate disclosures is ensuring that every stakeholder has free and easy access to the emissions data of companies, their targets for reducing emissions, and their performance against those targets. To that end, we are developing the Net Zero Data Public Utility, a public good database and platform to provide key, consistent climate data, freely accessible to all.[16]

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[15] https://www.ifrs.org/news-and-events/news/2024/05/jurisdictions-representing-over-half-the-global-economy-by-gdp-take-steps-towards-issb-standards/

[16] https://nzdpu.com/home

Climate finance and climate policy

Whilst disclosures are a necessary component of greening the financial system, they are not sufficient. Disclosure is the start — it defines the problem. Action is required to fix it.

The momentum behind net zero has become enormous. Around 90% of emissions are covered by countries committed to net zero.[17] These country commitments provide a 'North Star' for non-state actors including over 9000 companies making parallel net zero pledges.[18] But the world is rightly skeptical of lofty, high-level commitments without concrete plans or actions to back them up. This was the gap that we knew needed to be filled.

At COP26 in Glasgow in 2021, I became the Vice Chair of the Glasgow Financial Alliance for Net Zero (GFANZ).[19] GFANZ is a coalition of leading financial institutions committed to accelerating the decarbonization of the economy bringing together net zero alliances covering the breadth of the financial system - banks, insurers, pension funds, asset managers, export credit agencies, service providers - all of whom have made independent commitments to net zero. Today there are over 675 financial institutions from over 50 countries who are a member of one of the net zero alliances.[20]

[17] https://climateactiontracker.org/global/cat-net-zero-target-evaluations/
[18] https://racetozero.unfccc.int/system/race-to-zero/
[19] https://www.gfanzero.com/
[20] https://assets.bbhub.io/company/sites/63/2023/11/GFANZ-2023-Progress-Report.pdf

To achieve net zero by 2050 or sooner countries, companies, and institutions - including Oxford University - will need a plan to align their activities with a pathway that will get us there. GFANZ has developed a framework for a net zero transition plan.[21]

- This starts by setting clear decarbonisation objectives, including both long term and interim targets.
- It needs a clear set of implementing actions to meet those targets.
- It recognises that financial firms cannot meet their net zero targets on their own, and so they need to engage with the companies they finance, their supply chains, and relevant policymakers.
- It needs consistent metrics to monitor and report on progress.
- And it needs a robust governance framework to ensure that the firm's leadership, from Board level down, are fully engaged in the plan and have appropriate incentives to ensure that it is delivered upon.

To be clear - achieving the transition to net zero will require investment in *every* sector of the economy, not just the green bits. Heavy emitting sectors like construction, agriculture, transport, and industry will require considerable investment in order to decarbonise. That is why GFANZ has also worked to define what credible 'transition finance' looks like, including the responsible, managed phaseout of high-emitting assets that cannot align with a net zero economy.[22]

[21] https://assets.bbhub.io/company/sites/63/2022/10/GFANZ_Towards-a-Global-Baseline-for-Net-Zero-Transition-Planning_November2022.pdf

[22] https://assets.bbhub.io/company/sites/63/2023/11/Transition-Finance-and-Real-Economy-Decarbonization-December-2023.pdf

While it may be uncomfortable, it is vitally important to recognise that a large amount of finance needs to go to where the emissions are, in order to decarbonise those sectors and companies.

And we are having an impact. Just a few years ago, very few policymakers talked about transition planning. Now, we are seeing growing recognition from the official sector of the importance of corporate transition planning, including from the G7 and the G20, as well as from global standard setters, and jurisdictions including the UK, EU, Japan and the US.

Returning to the theme of my remarks today, this comes back to trust. GFANZ works to support firms in voluntarily developing their transition plans so that they can deliver on those net zero commitments. But we also aim to be a credible, trusted voice on what private finance needs to support an orderly transition.

Beyond corporate transition planning and transition finance we will need further progress by policymakers:

- First, forging broader recognition of the need for national-level transition planning, where progress has been more limited. Transition planning by governments is critical for providing corporates and financial institutions with the confidence, clarity, and incentives they need to plan their own transition.

- Second, if we are to align private finance with the goals of limiting warming to 1.5 degrees, we need a marked increase in financial flows to emerging markets and

developing economies, which need an additional $1.8 trillion per year in climate related investment by 2030, almost four times current levels.[23]

- Much of that will need to come from external sources, including scaling financing from Multilateral Development Banks which should crowd-in private finance as a way to maximize the *total* financing deployed in support of climate goals.

- Third, high-integrity voluntary carbon markets (VCMs) are essential. VCMs can provide the finance necessary to protect rainforests, restore abandoned and degraded land, accelerate the closure of coal power stations to support transition to renewables, and to catalyse investments in innovative technologies. They have the potential to provide hundreds of billions of dollars of annual cross-border capital flows from advanced to emerging market economies where many of the best decarbonisation opportunities are located. But they suffer from huge issues of trust and integrity.

At the heart of all of these issues are the need for collaboration and mechanisms to build trust between the public and private sector, while placing policy at the heart of solutions, alongside financial innovation.

How change happens

This policy work of course builds on the enormous progress that has happened since the Paris Agreement was signed in 2015. At that point the world was on course for a catastrophic

[23] Blended Finance Taskforce (2023)

3.6C of global warming.[24] Since then, if governments follow through on their stated commitments, the International Energy Agency estimates that we are on track for 1.7C by the end of the century.[25]

While this progress is commendable, current policies lead to a far more dangerous 2.4C of warming - hard work is needed to ensure the policy gap is closed rapidly.[26] It is also important to point out that 1.7C heating would also still cause enormous damage to many countries and communities.

That said, the course correction over the last decade is often underestimated. Looked at from a historical perspective, the global economy is in the middle of a handbrake turn. The strengthening of the social consensus for addressing climate change has been a catalyst for an explosion in clean energy investment, bringing the energy transition to an inflection point. This momentum is driving a surge of investment in clean tech manufacturing capacity.

- After hundreds of years of fossil-fueled development, the global pace of investment in renewable energy is rising exponentially, with 50% more capacity added in 2023 than 2022, and the pace of additions set to continue to grow in the next 5 years.[27]

- Investment in clean energy technologies is around double that into fossil fuels, with solar investment alone overtaking oil and gas for the first time.[28]

[24] https://iea.blob.core.windows.net/assets/5a314029-69c2-42a9-98ac-d1c5deeb59b3/WEO2015.pdf
[25] https://www.iea.org/reports/credible-pathways-to-150c
[26] https://www.iea.org/reports/world-energy-outlook-2023/executive-summary
[27] https://www.iea.org/reports/renewables-2023/electricity
[28] https://www.iea.org/news/investment-in-clean-energy-this-year-is-set-to-be-twice-the-amount-going-to-fossil-fuels

- Countries like Kenya, Brazil, and Norway are already close to having clean grids, and countries like Namibia are scaling solar and wind faster than the average pace needed globally in 1.5C scenarios.[29]

- The Inflation Reduction Act in the US is turbo-charging decarbonisation in the world's largest economy, and renewable energy additions in China are breaking all records and forecasts in the world's largest emitter.[30]

- Here in the UK, emissions have more than halved since 1990, whilst the economy has grown by around 80%[31], and wind power has just overtaken gas to become the largest source of electricity in the UK.[32]

The clean energy revolution is also transforming other sectors of the economy. In 2020, 1 in 25 cars sold was an electric vehicle. Last year it was 1 in 5 and predicted to rise again by 20% this year.[33] This underlines three important things.

- First, that change is not linear - it happens exponentially once important tipping points are hit.

- Second, the impact of credible, far-sighted policy. In this case, jurisdictions like the EU, US, and China signaling an end to internal combustion engine sales

[29] https://systemschangelab.org/news/release-new-analysis-shows-renewable-deployment-surge-outpacing-net-zero-forecasts
[30] https://www.iea.org/reports/renewables-2023/executive-summary
[31] https://www.gov.uk/government/news/uk-first-major-economy-to-halve-emissions
[32] https://assets.publishing.service.gov.uk/media/6604334f91a320001182b0de/Energy_Trends_March_2024.pdf
[33] https://www.iea.org/reports/global-ev-outlook-2024/trends-in-electric-cars

more than a decade in the future pulled forward huge investments into electrifying the fleet.

- Third, the fundamental importance of economic realities to the transition: part of the exponential change has been that the total cost to consumers of EVs versus internal combustion engines has rapidly fallen and in some markets has flipped.[34] Similarly, solar-photovoltaic becoming the cheapest form of energy in the majority of economies resulted in the enormous rise in investment.[35]

As jurisdictions like the EU and the US bring climate considerations into trade policy, these dynamics will intensify.

Given that climate change is an existential risk, it follows that companies that are part of the solution will create enormous value. As the financial sector transforms, private finance is becoming a transition force multiplier by increasing the valuation premiums of companies that outperform in decarbonisation. Those companies that are moving from being climate laggards to leaders are generating excess returns.

Of course, finance can't transition the economy on its own. Finance is an enabler, a catalyst that will speed the transition, but catalysts still need the underlying components: in this case, the climate policies of countries, knowledge and technological development in universities and the private sector, and the power of people demanding change.

[34] https://www.iea.org/reports/global-ev-outlook-2024/trends-in-electric-cars
[35] https://www.iea.org/energy-system/renewables/solar-pv

Public support for those policies are crucial. Research suggests public support for climate action is not only high, but higher than people think, with well over two thirds of citizens across the world supporting policy to limit the effects of climate change - with even the lowest country-level support at 60% of citizens, and the vast majority over 70%.[36]

But that public support cannot be taken for granted. Policies must ensure that workers and communities are not left behind by the transition, as they have been in past structural economic transformations. It is also important we are honest in our communications. If trust in the necessity of the transition and its ability to deliver a cleaner, more inclusive economy is eroded - policymakers' ability to proceed at the pace and ambition necessary will be eroded. Like well-functioning markets, successful policies build, and rely on, trust.

Voluntary private-sector initiatives can help aid this dynamic, both by 'testing the waters' by supporting the development and roll-out of best practice, giving policymakers the confidence that the best practice works. Some have criticized voluntary initiatives as providing an 'alternative' to government action, and so delaying the implementation of necessary policy.

In my experience leading both regulatory authorities, and voluntary private-sector initiatives, that view simply does not reflect the facts. Regulators are rarely content to outsource important functions within their mandate to private actors. And knowing 'what works' accelerates their ability to implement necessary policies.

Philanthropy can also play an important role in accelerating and improving the policymaking process. In part by facilitating necessary work and research that can underpin good policy or

[36] https://pubmed.ncbi.nlm.nih.gov/38324680/

important technological innovations - including in universities like Oxford. Or by providing the 'public goods' that are undersupplied by the market, such as the NZDPU provision of high-quality climate data, funded by Bloomberg Philanthropies.

As I started this lecture by outlining the necessary collaboration between academic disciplines to solve climate change, so too it is important to have collaboration across society: governments; regulators; academia; the private sector; and civil society. Only through the combined efforts of all will we be able to create the changes needed to save the planet for future generations.

Conclusion: *Looking back and moving forward*

This lecture has been very heavy on concepts of finance, money, economics and regulation - it is after all about greening finance. I used to regularly remind the 32 members of the TCFD that we should always talk in the language of finance, of risk management, of financial materiality and not of stewardship and doing the right thing, because to do so we would not be taken seriously.

While this approach has served us well, one moment a few years ago reminded me that there is room for both. I had occasion to be in Paris where the Governor of the Banque de France, Francois Villeroy de Galhau, was delivering an address on climate risk to a cold-headed audience of financiers. In that speech, he quoted the American patriot Thomas Paine, and said: "if there must be trouble, let it be in my day, that my child may have peace". This simple quote silenced the room. It took the dry, abstract world of finance and brought it back to the personal, to our families, our children and our grandchildren.

I started this lecture reminding us of the human impact that climate change is already having - for women, for children, and the inequity of the biggest impacts falling on the world's most vulnerable, while the most comfortable are those with the largest historical responsibilities. The moral case for climate action is overwhelming. All of you in the room, and everyone involved in finance have our role to play.

As I conclude this lecture - which I hope hasn't felt as long as my career - I want to finish with more personal reflections, particularly for those who still have the majority of their careers ahead of them.

Those values that I have this evening argued play a central role in underpinning markets and which must play a central role in solving climate change - namely trust and a collaborative spirit - are also values that best serve you personally and professionally.

Trust is created through integrity - by saying what you mean, and doing what you say. When colleagues and counterparts trust you, they are more likely to entrust to you important tasks. To value your advice. To lend you their time and efforts - knowing that you would do the same if the roles were reversed.

Like with markets, trust is hard to build and easy to lose. That means you sometimes have to take a harder course, or say uncomfortable things, if you are to maintain that trust and integrity.

Collaboration is also key, as no one person or organization has the full set of information or answers needed. Throughout my career - whether at the SEC, the TCFD, or Bloomberg - we relied on the support of others to succeed at our goals. Even if they are operationally easier in

the short run, siloed approaches do not succeed in the long run. Universities can be an important connective tissue in sharing information and learning between institutions and countries, and this is a vital service they provide to the world.

Finally, courage and determination will be necessary. To make a positive difference in the world is difficult. The path is not always easy. But the path of least resistance is to go with the flow, and that is *not* how you turn the tide. And turning the tide is what we need to do. And as I remind my team often, it is amazing what you can accomplish if you don't care who gets the credit.

Thank you for giving me the honor of your time, for working with me on our shared endeavors, and good luck to those of you who will be working to avert climate catastrophe, long after I have retired. I trust you will do it.

Thank you.