

Nature degradation could cause a 12% loss to UK GDP

- Damage to the natural environment is slowing the UK economy, and could lead to an estimated 12% reduction to GDP in the years ahead - larger than the hit to GDP from the global financial crisis or Covid-19.
- First-of-its-kind analysis quantifies the impact that nature degradation, both domestically and internationally, could have on the UK's economy and financial sector.
- These risks need to be acknowledged and addressed to strengthen the UK's economic and financial resiliency.
- The work was led by the Green Finance Institute (GFI), with a technical team involving the UK's top researchers: the Environmental Change Institute at the University of Oxford, the University of Reading, the UN Environment Programme World Conservation Monitoring Centre (UNEP-WCMC), and the National Institute of Economic and Social Research (NIESR).

The deterioration of the UK's natural environment could lead to an estimated 12% loss to GDP, according to new analysis. In comparison, the financial crisis of 2008 took around 5%¹ off the value of the UK GDP, while the Covid-19 pandemic cost the UK up to 11%² of its GDP in 2020.

This is according to a first-of-its-kind analysis, led by the GFI, with input from the scientific and financial community, as well as direction from the Department for Environment, Food and Rural Affairs (Defra), HM Treasury (HMT) and the Taskforce on Nature-related Financial Disclosures (TNFD), and input from the Financial Conduct Authority (FCA). The report – *Assessing the Materiality of Nature-Related Financial Risks for the UK* – analyses the impact of the degradation of natural ecosystems, both domestically and internationally, to the economy and financial sector in the UK.

Nature-related risks are as detrimental or more to the economy as those from climate risks, the analysis shows. Yet, while the economic costs of climate change are becoming increasingly accepted, the risks posed by nature degradation amount to a material cost that has not been sufficiently factored into financial and business decision-making. This is leaving the economy and financial sector exposed, while these risks continue to rise unchecked. The UK is one of the most nature-depleted countries in the world - three quarters of the UK has a high level of ecosystem degradation, with risks to financial services and the wider economy as a result. The analysis shows however, that half of the UK's nature-related financial risks originate overseas.

Within the analysis, a new inventory charts these domestic and international nature-related risks to the economy, many of which are not currently captured in national risk assessments. The inventory captures financial risks arising from the deterioration of nature and biodiversity, including: soil health decline; water shortages; global food security repercussions; zoonotic diseases that pass from animals to humans, like bird flu, swine flu, and Covid-19; and antimicrobial resistance, where bacteria and viruses no longer respond to medicines; as well as transition and litigation risks.

Some sectors in particular face higher levels of nature-related financial risk. Highlighted in the analysis are agriculture, manufacturing, and utilities. For example, the agricultural sector faces risks associated with water, climate regulation, soil quality, and pollution which could impact food production. The utilities sector is dependent on surface water for cooling power stations, and any constraint in water supplies could impede production and raise energy prices.

These impacts on the real economy will also have a material financial impact on banks and other financial institutions. The analysis estimates that some banks could see reductions in the value of their domestic portfolios of up to around 4 - 5% in some cases. Noting that these estimates are likely to be conservative, this indicates that nature-related risk will not just impact the economy, but potentially financial resilience. Demonstrating the significance of the risks, these findings present an opportunity for swift action from governments, central banks, regulators and the financial sector to proactively manage nature-related risks and

¹ [UK Parliament](#), 2010

² [ONS](#), 2021; [Reuters](#), 2022; [Sky News](#), 2023.

to position the UK as a global leader in addressing them. For businesses there are early-mover advantages for those that act to improve and support resiliency, particularly within their supply chains.

The GFI and technical team make several recommendations for the public and private sectors. These include disclosures of nature-related risks and taking urgent action to meet the targets included within the Global Biodiversity Framework (GBF).

SUPPORTIVE QUOTES

Rhian-Mari Thomas OBE, Chief Executive Officer of the Green Finance Institute, said: *“For the first time, we now have the empirical evidence that nature-related risks are having a significant material impact on our economy and financial system. Not only that, but the impacts of these nature-related risks are commensurate with, and exacerbate climate-risks. This is a decisive moment and shows that we must start integrating these nature-related risks into financial risk management and investment decisions – to both reduce exposure and transition our economy to one that invests in the natural environment.”*

Emma Howard Boyd CBE, Chair of the Green Finance Institute, said: *“In 2023, research in the US showed that ChatGPT uses around half a litre water every time you ask it 5 to 50 questions. Stories like that demonstrate how reliant we are on nature, even when we feel far removed from the natural world.”*

“Today’s report led by the Green Finance Institute quantifies for the first time that the material risk that the economy faces from nature degradation and shows how much the UK’s economic resilience and financial stability rests on ecosystems. I hope these findings operate as a vehicle for change for business, finance, policymakers and consumers. We all need to transform our relationship with nature at pace.”

Helen Avery, Director of Nature Programmes at the Green Finance Institute, said: *“The erosion of natural capital generates significant and long-term risks to society, our economy and, therefore to financial institutions and potentially our financial resilience. This is the first time the material risk posed by nature degradation to the UK economy and financial stability has been comprehensively assessed. Evidencing this material risk is a vital step towards transitioning our economic and financial system to one that values and invests in the natural environment.”*

Lord Benyon, Minister of State at the Department for Environment, Food and Rural Affairs, said: *“Nature underpins the health of our economy, and it is under threat from a global nature crisis. The responsibility to conserve nature lies with all sectors and sections of society, and green finance has a crucial role to play. The findings in this report will help people and institutions across the corporate and finance sectors understand that it is in their own interests to go further and faster for the planet to protect it for future generations.”*

Baroness Vere of Norbiton, Parliamentary Secretary at HM Treasury, said: *“Nature sustains economies and livelihoods, that is why the Government’s Green Finance Strategy incorporates both nature and climate adaptation. It is in the interests of corporates and financial institutions to prepare for the global transition to a net zero, resilient and nature positive economy, so I welcome this report.”*

David Craig, Chair of the Taskforce for Nature-related Financial Disclosures said: *“I commend the technical team and the Green Finance Institute on this groundbreaking report. It illustrates the importance of addressing both nature and climate risks to the UK economy and financial system, and is a call to action for UK financial institutions to take an integrated approach to transition planning and disclosures.”*

Tony Juniper, Chair of Natural England, said: *“Thriving Nature is the bedrock of a strong and sustainable economy, and we need to invest now to tackle the twin Nature and climate crisis. The profound impact that the decline of many of our ecosystems can have on our economy, livelihoods, health and wellbeing, detailed in this report, shows that we cannot afford to delay action. Mobilising finance to protect our environment and natural resources is essential to help protect our planet for the future and avoid a bigger cost down the line.”*

HE Razan Al Mubarak, UN Climate Change High-Level Champion for COP28, said: *“The objectives of the Paris Agreement cannot be met without nature. It remains undervalued and underutilized as a climate mitigation*

and adaptation solution. This important contribution from the Green Finance Institute underscores the need to address nature-related risks and opportunities. Businesses and financial institutions now have the tools they need to take action and re-direct capital towards a net-zero and nature-positive economy."

Sacha Sadan, Director of Environmental, Social and Governance, FCA, said: *"Growing evidence shows that business and finance depend on a healthy climate and natural environment to carry on their commercial and investment activities without disruption. We welcome the publication of this report which provides a much better understanding of how UK firms are exposed to nature-related risks."*

Technical Team

Nicola Ranger, Director for Greening Finance at the UK Integrating Finance and Biodiversity Programme and the Environmental Change Institute, University of Oxford, one of the lead authors of the report said: *"Over the last decade, Central Banks and financial institutions woke up to the risks posed by climate change and we've seen meaningful steps to address them, including mandating disclosures, and beginning to shift capital flows toward green sectors and technologies. With this report, we comprehensively demonstrate that risks from environmental degradation and biodiversity loss are at least as severe and urgent, and indeed that if not addressed, will double climate change losses."*

Tom Oliver, Professor of Applied Ecology at the University of Reading, one of the lead authors of the report said: *"This analysis shows that nature is not a luxury– it provides the foundations for a stable economy. We found that nature-related risks, such as soil health decline, antimicrobial resistance and animal-borne disease interact with each other and present significant threats to UK citizens within the next decade. This highlights the need to really step up implementation of domestic environmental protection as well as working internationally to mitigate risks at their source"*

Neville Ash, Director of the UN Environment Programme World Conservation Monitoring Centre, said: *"The findings of this important analysis are striking and drive home how vital it is to integrate nature into decision-making. If the UK is to avoid GDP losses over the coming decade greater than those during the global financial crisis and Covid-19 pandemic, steps will need to be taken to reduce negative impacts on the ecosystems that sustain the UK economy. UNEP-WCMC is proud to have contributed the methodology that underpinned this vital work through our ENCORE tool, and we hope this first-of-its-kind analysis will inspire other countries to assess the risks posed to their economies by the degradation of nature."*

Dr Mike Perring, Ecologist at UK Centre For Ecology & Hydrology (UKCEH), said: *"Although the dependence of the economy on nature is increasingly recognised and quantified, the risks to financial stability from nature-related degradation are not. Crucially, this new report takes account of complex and cascading risks, including from climate change and biodiversity loss, by underpinning its analyses through the use of an innovative nature-related risk inventory. The risks need to be acknowledged and addressed to strengthen the UK's economic resilience. The report provides an opportunity for the UK to be a global leader in proactively managing nature-related risks."*

Business & Finance

Paul Polman, Business leader and co-author of Net Positive, said: *"This new report, led by the Green Finance Institute, makes for sobering reading for C-Suites across the UK, but it equally shows the immense advantage for companies which recognise their dependence on natural ecosystems, and which work to restore and regenerate natural capital. It's in businesses' clear interest to urgently partner with government, as we work together to create policies and business models that value and invest in the natural environment, for all our sakes."*

Jenny McInnes, Group Head of Sustainability Policy and Partnerships at HSBC said: *"This analysis from the Green Finance Institute is much needed to further inform industry thinking on integrating nature related financial risks and on how to best embed nature considerations into management frameworks."*

Abigail Herron, Global Head of Health and Nature Policy at Aviva Investors, said: *"This report is bold and ambitious in its scope. I'm especially pleased to see antimicrobial resistance included as a nature-related financial risk. Quantifying the cost of nature-related financial risks is vital work in the drive to begin to mobilise the financial flows needed to protect and restore nature."*

Emmanuelle Bury, UK Country Head of BNP Paribas, said: *"Supporting companies and investors in addressing nature-related risk is critical in tackling the climate and biodiversity challenges facing the economy and society in the coming years. The developments we're seeing across TNFD, alongside innovations in sustainable finance and managing physical climate risk across sectors is encouraging, and this important report led by the GFI provides a valuable contribution to the discussion in a practical way in the UK."*

Bevis Watts, Chief Executive of Triodos Bank UK, said: *"This report shows that the continued degradation of nature will create extraordinary risks to our shared wellbeing and to financial stability. The findings in relation to banks are a wake-up call to those not already carefully considering the impact of nature loss on their portfolios. Given the material risks to our economy, it is also a reminder that many banks are still financing the destruction of nature without full consideration for the broader implications and urgent need to protect our natural world."*

Martin Berg, CEO of Climate Asset Management, said: *"More than half of the world's total GDP relies on nature and ecosystem services, making it vulnerable to continued degradation of nature. The GFI report is one of the first of its kind, quantifying the impact of nature degradation, both domestically and internationally, on economic sustainability. This underscores the importance of understanding nature-related risks in investment decisions and effectively managing them by prioritising in nature-based solutions. We believe that increasing investment allocation to nature restoration and sustainable use of natural capital, which serve as the planetary infrastructure and backbone of the economy, is crucial in reducing nature risk and building a healthy, sustainable planet."*

Ben Goldsmith, Chief Executive Officer of Menhaden Capital, said: *"We depend upon nature for everything we have and everything we do. Just as the degradation of nature goes hand in hand with human deprivation, so the restoration of nature inevitably leads to economic and social renewal."*

Tim Coates, Chief Customer and Regulatory Officer at Oxbury Bank, said: *As a bank focused on supporting the resiliency of the agri-food sector and rural economy, we have long known that the sector is materially exposed to chronic and acute nature-related risks, some of which are already considerations for how we support our customers build long-term financial and environmental resilience. We have independently used components of these scenarios in our internal capital adequacy assessment process (ICAAP) for 2024 and will be incorporating more details in future risk planning and material disclosures. These scenarios focus attention on the importance of considering nature-related risks within a wider risk universe."*

Phil Aspin, Chief Financial Officer of United Utilities, said: *"United Utilities were early adopters of the Taskforce on Nature Related Financial Decision and welcome this groundbreaking report by the Green Finance Institute which makes clear that environmental protection and economic development are two sides of the same coin. As a water company with a core dependency on the natural environment, we acknowledge the risks posed by climate change and nature depletion and we are investing across all areas of the business to strengthen the North West's environmental, economic, and financial resilience."*

Rich Speak, co-founder and Managing Director at Finance Earth, said: *"This important report is a wake up call for financial institutions. It has quantified what many of us suspected – that once natural capital is properly accounted for, allowing nature's decline to continue is potentially disastrous for the economy. It has never been so clear and urgent that banks, investors and insurers have a duty of care to shift capital away from activities that harm biodiversity and into nature-based infrastructure, which is rapidly emerging as a vital asset class."*

Chris Hayward, Policy Chairman of the City of London Corporation, said: *"The findings of this report highlight the urgency at which the finance sector must act to develop innovative nature finance solutions as well as placing nature at the forefront of investment decisions. Green spaces in the City of London alone are worth*

more than £126.8 million every year in benefits to society. Government and the private sector must work together to reverse the erosion of natural capital that is increasingly hindering our economic growth."

Alex Veitch, Director of Policy at the British Chambers of Commerce, said: *"We are pleased to see this important issue being explored in detail. In our 2023 Net Zero Survey of 1,000 businesses, around a quarter (24%) reported exposure to severe weather events such as flooding, temperature change, or water shortages. A more comprehensive understanding of these risks is crucial for long-term planning."*

Miles Celic, Chief Executive Officer of TheCityUK, said: *"This analysis underlines the significant financial impact of nature degradation to the UK economy, society and the financial sector. Given the risks posed, it is crucial that our industry works together to tackle nature and climate risks, as well as ensuring that nature-related considerations are factored into decision making, risk management frameworks and transition plans. We have a key role to play in accelerating efforts to protect and restore nature and look forward to working with government and regulators to take a proactive approach on this important issue."*

Oscar Warwick Thompson, Head of Policy and Regulatory Affairs at UKSIF, said: *"We applaud the GFI for the depth of their research on nature-related economic risks, and the implications for the financial services and investment industry. The findings of this report are stark. The potential damage to UK GDP and financial stability posed by nature risks, such as biodiversity loss, could exceed those seen in the 2008 financial crisis. This underscores the urgency of policymakers, the private finance industry, businesses, and other actors quickly stepping up collective efforts in addressing these risks, including through better quality and decision-useful disclosures on nature. UKSIF applauds the report's innovative methodology for assessing nature-related financial risks, which will be crucial for building a more sustainable financial system."*

Rebecca Lea, Investment & Climate Manager at the Association of British Insurers, said: *"The GFI's report is a timely and welcome analysis, delving into the risks nature degradation poses to the UK financial institutions. As insurers and long-term savings providers, our members are on the front line – both for the impact these risks can have on their balance sheets, but also on consumers and policyholders. The industry can play a pivotal role in the solution to stop and reverse the shocking erosion to our natural world, which arguably underpins our entire economy. This report's contribution to understanding the channels and how these risks manifest is an important first step and, alongside our Guide to Action on Nature, can help firms to develop a strategy for action."*

Simon Thompson, CEO of the Chartered Banker Institute, said: *"We welcome this timely new report from the Green Finance Institute, which highlights the impacts of nature degradation risks to the UK's economy. As we've seen from the heightened interest in the nature-related content provided by our Principles for Responsible Banking (PRB) Academy, this is clearly an area that we need to focus on faster to rapidly increase the knowledge capability and capacity of the finance sector, so banks and bankers can apply a nature lens to their decisions and financing activities."*

Andrew W. Mitchell, Founder Global Canopy & Senior Adviser to the TNFD, said: *"The report is a wake up call to anyone who still thinks nature's loss is just about agribusiness. It shows that within a decade, Britain's GDP could decline by 12%, that's 20 times bigger than our entire agricultural sector. A big nature turn around could realign \$7 trillion dollars of nature-negative public and private finance currently driving nature's decline. Central banks, especially our own, need to take serious account of the scenarios offered in this ground breaking research or, like the giant sandworm in Dune, nature's risk will surface unexpectedly, and bite away at our resilience, just when we need it most."*

Dr Helen Barber, UK Business and Biodiversity Forum (UKBBF) steering committee member, and Nature Positive Lead at Tetra Tech, said: *"This report is glass-ceiling smashing for nature, in terms of both levelling prioritisation in relation to the climate change agenda, but also in providing the essential robust financial evidence base, for businesses to instigate their action now. This report will help businesses with their biodiversity transitions, alongside carbon transition planning."*

"At UKBBF, I sit on the Nature Positive work package, where we bring together businesses who want to understand their impacts and dependencies on nature - so they can plan on improving both their 'business' risks

and opportunities, as well as that of 'biodiversity' risks and opportunities (double materiality). In my role as Nature Positive Lead at Tetra Tech we are Leading with Science® to recognise the necessity of Nature Positive business planning, which is why my new role as Nature Positive Lead is so important."

Environmental NGOs and campaigners

Chris Packham, Broadcaster and Environmental Campaigner, said: *"For too long we have been weeping over the data which betrays catastrophic declines in nature and biodiversity, and we have failed to make this relevant to the wider world. We miss our bats and butterflies and birds, but we just couldn't make it matter to those who don't love them as much as we do. Because money, the economy and growth were always more important. Well hello, guess what, destroying nature actually comes at a terrible cost financially too. Surely now the economists will wake up and start talking to the ecologists? This is groundbreaking work which must compel the bean counters to act to make a difference - now."*

Karen Ellis, Chief Economist at WWF, said: *"This analysis shows for the first time the potential costs to the UK economy from nature loss – and the figures are shocking. The Government must urgently address these risks to our economy, starting with a nature-positive economic strategy that supports and incentivises the business and finance community to reduce negative impacts, especially deforestation which is a big threat to climate change and food security. The Government must also introduce a due diligence obligation on companies and financial institutions to address the deforestation risks associated with their activities."*

Richard Benwell, Chief Executive of Wildlife and Countryside Link, said: *"GFI's brilliant report gives scientific weight to a truth that millions of UK voters know instinctively: restoring nature is an economic imperative. If we continue to neglect nature, almost a fifth of UK GDP is at stake. By contrast, investing in nature would save billions for businesses and the NHS."*

"There's a yawning gap where the main political parties should have a nature investment strategy and that's utterly economically irresponsible. Every political party must commit to redouble public investment in nature-recovery, particularly in the most vulnerable sectors like agriculture. But private investment is essential too. Mandatory disclosure of corporate impacts on nature and stronger laws to make polluters to pay for nature recovery must surely be a top priority for the next Government."

Beccy Speight, Chief Executive of RSPB, said: *"We are in a Nature and Climate Emergency, and as this report further proves, we simply cannot afford to leave nature in freefall. Over half of our economy is dependent on nature – it pollinates our crops, provides us with raw materials, gives us clean air and water and, when invested in, can provide quality nature-based solutions to adapt to the impacts of climate change."*

Craig Bennett, Chief Executive of The Wildlife Trusts, said: *"The dramatic loss of nature over recent decades has seriously damaging consequences for us all. Taxpayers and business alike are footing the bill for increasingly harmful floods, wildfires and droughts – so it is vital that huge investment is made in restoring natural habitats which allow our country to tackle and adapt to climate change, rather than just suffer its consequences."*

"Restoring the UK's rainforests, re-naturalising rivers and floodplains, and reviving uplands through smaller numbers of grazing animals will all help slow the flow of water and reduce the impacts of sudden heavy rain or long periods of no rainfall. We all have a part to play – whether it's rewarding farmers who invest in nature recovery or green finance that funds beaver-created wetlands."

"While business must dig deep to provide green finance, the Government has promised to play its part by protecting 30% of land and sea for nature by 2030. But, unfortunately, only 3% of land has been protected for nature so far. We need better than broken promises if our country is to adapt and thrive in a changing climate."

Mark Lloyd, CEO of The Rivers, Trust said: *"There are countless reasons why we need to reverse the inexorable decline in nature, but this report very usefully sets out a powerful economic case for taking concerted action to restore our natural systems so that they can continue to sustain us. Nature is not a 'nice to have'; it is fundamental to the survival and prosperity of human existence on this planet."*

Justin Adams OBE, Chair of Trust for Oxfordshire's Environment, said: *"Another clarion call from leading researchers on the near-term risks to our entire way of life of the continued degradation of nature. My fear is that politicians and others with the power to change course will pay lip service to the report while continuing to double down on the models that are driving the degradation. What we really need at this time is leaders with the courage to begin to reimagine the system"*

Jeremy Leggett, CEO of Highlands Rewilding, said: *"This groundbreaking evidence shows that the form of capitalism that most economies pursue today is killing the natural world – with material implications for our economy and financial resilience. We need to engineer a root to branch change in our economic system so that we restore and protect the ecosystems on which we are fundamentally dependent. This starts with the understanding and disclosure of how businesses are dependent on nature; mitigating these risks; and then investing in the natural capital assets upon which we rely. The Highlands Rewilding project offers a vision for this kind of economy – generating returns for investors and local communities, while playing a leading role in saving the planet and its people, right here in the UK."*

Edward Asseily, Chief Executive of Zulu Ecosystems, said: *"This is an important step forward in recognising the true value of nature, and the direct impact that rectifying the degradation of our natural environment will have on our welfare and livelihoods."*

Clare Dinnis, WWT Director of Wetland Conservation, said: *"Healthy nature underpins so much of the UK economy and our day-to-day lives. This vital report from the Green Finance Institute recognises this, and clearly evidences the alarming consequences for society of ignoring this. Its findings are a wake-up call that helps build a strong case for action to happen at pace and with urgency."*

"At WWT we know that wetlands offer a solution, and that's why we're working towards an ambitious goal of creating over 100,000 hectares of new and restored wetland habitat in the UK, by 2050. Wetlands can help protect against the risk of flooding, clean our water naturally and provide important spaces for us to restore our mental health. Our coastal wetlands also store carbon 40 times faster than forests. Creating wetlands in our communities helps reduce the impact of climate change, build resilience and make us better equipped to deal with the challenges of the future."

Harriet Lamb, CEO of WRAP, said: *"Whilst it's impossible to put a price on nature, this ground-breaking Green Finance Institute report underscores the hefty toll our actions take on the environment and biodiversity. It is a shocking wake-up call to Boardrooms to integrate nature into all decisions. With collaborative efforts across supply chains, we can heal nature, safeguard our economy, and secure a sustainable future if we act now, decisively and together."*

Claudia Gray, Head of Financial Sector Research at ShareAction, said: *"This report highlights the destruction of our natural habitat and the impact that is having on the world's ecosystems that protect both people and planet. The financial sector must recognise the vital role it has to play in protecting the environment. UK financial institutions should heed the recommendations set out in the report. The implications for banks are clearly presented, and we know from our research that the insurance and asset management sectors also have a long way to go in addressing biodiversity loss. We need to see more ambition across the finance community to address nature loss to protect the public interest and avoid considerable negative economic impacts."*

Agriculture

Sue Pritchard, CEO Of the Food, Farming and Countryside Commission, said: *"As well as risks identified so clearly in this timely and important report, we must also face the tragedy of significance. We all need food; and a government that cannot secure food resilience for its citizens will very quickly be in a very precarious position indeed. Government and business must work effectively together to anticipate and respond to the risks already impacting on agriculture and food systems for a safer and more sustainable future."*

Martin Lines, CEO of the Nature Friendly Farming Network (NFFN), said: *"The alarm bells are ringing when it comes to the nature and biodiversity crises, and the sound is getting louder and louder. This report spells out exactly why."*

"It is clear that the nature-related risks to agriculture and the economy are extremely high, with the shocking possibility that soil degradation could have an economic impact equivalent to that of the Covid-19 pandemic. This report shows why the emphasis cannot just be on food security, but must also include investing in nature and landscape-scale recovery. We need to recognise that sustainable food production and the restoration of nature and biodiversity are inextricably linked."

"It is clear that what is required is concerted action and investment to address the long-term problems, not just within agriculture but also in the sectors that depend on it to sustain our broader economy. We cannot just continue to compensate farmers for short-term losses with half measures and temporary fixes. We need to look at the bigger picture of how climate change, agriculture and the economy are intertwined. Investing in the resilience of our agriculture is a direct investment in the future prosperity of our nation."

Jake Fiennes, Director Conservation at Holkham Estate, said: *"Everyone requires a return on investment and the greatest investment we could make with the largest return is in our Natural Capital. The Natural World underpins the whole of society, from the food we grow, the water we drink and the air we breathe. For a healthy economy we require a healthy environment. We must invest domestically and globally for the benefit of our planet but also humanity. It is the responsibility all financial institutions, businesses, corporations, and Governments to recognise the importance of this investment. Not only for their benefit but for the benefit of us all."*

Glen Anderson, Project Lead for the Wendling Beck Environment Project, said: *"This leading-edge research really underlines to Government the importance of pro-actively investing in nature, to help mitigate catastrophic financial risks posed by climate change and biodiversity loss. The UK is well positioned to become a world-leader in a green economy that builds both financial and environmental resilience for future generations. We only have one chance at this, and the time is now."*

Mark Suthern, Non-Executive Director at the Environment Agency, said: *"This new report demonstrates clearly that there are some significant challenges to our natural environment - be that soil degradation, air quality, or water management. We need to focus on supporting farmers and growers, who are on the frontlines of restoring and protecting nature. For despite these challenges, we have significant social and economic opportunities in the UK, which can be leveraged to ensure we continue to have a vibrant rural economy."*

Stuart Roberts, Cereal, beef and sheep farmer in Hertfordshire & former Deputy President of the NFU, said: *"As custodians of the countryside, farmers are in a prime position to deliver multiple outcomes for the UK – producing food for people across the country, whilst simultaneously delivering environmental benefits. There is so much potential for our rural areas to unlock an exciting future for UK agriculture and UK nature, but this will require farmers, financiers, supply chain partners, and politicians to embrace the opportunities and manage the risks equitably. This report highlights the importance of building trust between farmers and the private sector, and reimagining a collaboration to deliver these multiple outcomes, for people and planet."*

Brendan Costelloe, Policy Director at the Soil Association, said: *"This report shows that we cannot survive without nature and highlights the folly of investing in industrial farming practices that deplete the wildlife we depend on to produce food. UK food production, and every business that depends on that, is threatened by the catastrophic declines in wildlife we are seeing and by degradation of one of our most vital resources for survival – soil. Farmland makes up 70% of Britain and we can't fix the decline in nature and reduce the associated financial risks without a transformation in food and farming. Many farmers are working with nature and many more are keen to do. But we remain too dependent on over-intensive, chemical-reliant methods that destroy habitats such as industrial livestock systems fed on imported soy."*

"These new findings are a rallying call to investors to back nature-friendly farming. If they want if they want to safeguard our precious natural capital and secure long-term returns on their investments, they must divest from agricultural practices drive biodiversity decline, and invest in agroecological and organic farming that

allows food production and nature to flourish together, while also delivering resilience in the face of climate change. It is also vital that the government acts on its promise to deliver a land use framework, which can help to scale agroecological farming across the country and give greater protection from harmful farming to sensitive locations. The consequences of not acting now are dire, for the whole of society."

Tim Hopkin, Founder and CEO of LandApp, said: *"The insights from this report offer a compelling argument for integrating nature into economic strategies and financial systems, ensuring sustainability and resilience for future generations. We hope these findings act as a call to action for government and financial institutions to recognise that investing in nature as an asset class is pivotal for our economic future."*

Claire Birch, Partner Doddington Farms LLP and Co-founder of Wilder Doddington, said: *"At [Wilder Doddington](#) we have always aspired to demonstrate the full value of nature: ecological, social and economic. This first-of-its kind analysis quantifies the massive financial impact of ignoring this; it is essential that nature related financial risks are accounted for and disclosed, and in turn this will help direct investment into projects like ours that protect, enhance and realise those vital services that nature provides us with."*

Think tanks and academics

Professor Lord Nicholas Stern, Chair of the Grantham Research Institute on Climate Change and the Environment at the London School of Economics and Political Science, said: *"These results show the huge benefits in terms of economic output of actions that tackle both climate change and biodiversity loss. And we must also recognise the important wider benefits associated with boosting our natural capital, such as our forests and rivers, and our human capital, such as health."*

Steve Coulter, Head of Economy at the Green Alliance, said: *"This report shows the enormous damage our current economic trajectory is causing to nature, and the rebounding effect this will have on our way of life. It is time we heeded the warnings from the Treasury-sponsored Dasgupta review and changed our way of thinking on the economy so we properly value nature before it's too late."*

Dr Iain Williams, Director of Strategic Partnerships, at NERC-UKRI, said: *"Congratulations and many thanks to the teams involved in this seminal report, which provides critical evidence that protecting and restoring nature and the environment is imperative for a healthy and strong economy and financial system. It also highlights the enormous value of academia, researchers, government departments and practitioners working closely in partnership to understand the links between the economy and nature to accelerate the transition of the economic and financial systems to those that value and support the natural environment."*

Professor Danny M. Altmann, Professor of Immunology at Imperial College London, said: *"Recent events in the form of the pandemic and the ongoing costs of its legacy, including the considerable global burden of Long Covid, remind us of the enhanced pandemic risk of yet more zoonotic spillovers through under-estimating the contributions to human disease of climate change, urbanisation and destruction of natural habitats. This new report offers evidence of how nature degradation contributes to an increased risk of another pandemic; risks which we must urgently integrate into our risk management and decision making to mitigate. If we don't, we risk heightening our susceptibility to a repeat of 2020."*

Dr Bruce Howard, Director of Ecosystems Knowledge Network, said: *"Leading scientists have been banging the drum on nature-related risk for years. Finally, the Green Finance Institute and its research partners have crunched the numbers that express the concern in terms of GDP. Opportunity lies ahead for those smart enough not to brush this analysis into the bushes."*

"UK plc can respond positively to the increasingly brutal consequences of climate change and environmental decline. On this crucial matter of nature, being forewarned is to be forearmed. Habitat can't be repaired or created overnight, but, as the authors acknowledge, there is plenty we can do throughout these islands to mitigate the very serious risks that degradation of nature poses. Everyone has a part to play in harnessing the competitive advantage of a more nature-positive, resilient economy."

Michael Obersteiner, Director of the Environmental Change Institute at the University of Oxford, said: *"In an interconnected world, it is no surprise that cause and effect can go both ways, and that international issues can*

negatively impact our economy. We typically view nature as the victim, which suffers from competition for land and the effects of climate change. However, this report highlights the ways in which problems from the natural world can come back to cause difficulties for our economy."

"Some of these issues, such as crop, livestock and human diseases are long standing threats, likely exacerbated by a changing climate, but some, such as wildfires are playing out at larger, more impactful scales as our world changes. At both the national and international level, we are forced to consider that limiting land use and climate threats to biodiversity is in our own interests, as well as that of nature itself."

Dr Mike Perring, Ecologist at UK Centre For Ecology & Hydrology (UKCEH), said: *"Although the dependence of the economy on nature is increasingly recognised and quantified, the risks to financial stability from nature-related degradation are not. Crucially, this new report takes account of complex and cascading risks, including from climate change and biodiversity loss, by underpinning its analyses through the use of an innovative nature-related risk inventory. The risks need to be acknowledged and addressed to strengthen the UK's economic resilience. The report provides an opportunity for the UK to be a global leader in proactively managing nature-related risks."*

Ece Ozdemiroglu, CEO of eftec and co-founder of UKNEE – UK Network of Environmental Economists, said: *"This work is a stark reminder that nature is the foundation of our economy. Despite the risk that nature degradation poses, GDP still does not account for this. We urgently need new ways of measuring the success of our economy. If we think of what GDP doesn't measure, like the unwaged economy and health and wellbeing losses, we are looking at an even greater loss than the 12% the report quotes."*

"Policy makers should take this report seriously. Policies that continue to cause degradation and ignore its risks must be changed. I hope the report also encourages businesses and their investors to uncover what costs they are needlessly incurring when they ignore their dependency on nature."

- ENDS -

NOTES TO EDITORS:

This report presents the first quantitative evidence of the economic risk posed by nature degradation and the erosion of ecosystem services, both domestically and internationally, to the UK economy. In addition, it considers how this economic risk to GDP could translate to risk for the financial sector, as an indication of the potential impact of nature-related risk on financial resilience.

Today, these risks are not captured within UK prudential policies or wider risk management, including fiscal risk assessment. In the private sector, financial institutions neither account for nature-related risks in their decision-making nor routinely quantify them for the purpose of risk management, and companies do not routinely disclose or report on their nature-related risks.

By evidencing and quantifying the materiality of nature-related risks to GDP and the financial sector, the analysis aims to support the rapid improvement and adoption of nature-related risk assessment and management and, in turn, the restoration and conservation of our natural environment, simultaneously protecting the health of our economy and financial sector. While the impact to GDP from this analysis may seem bleak, it is worth pointing out that early recognition of risk, if acted on, offers an opportunity to the UK.

Evidencing this material risk is, therefore, a vital step towards transitioning our economic and financial system to one that values and invests in the natural environment.

Importantly, like climate change, acting early to mitigate nature-related risks is vital. Continued degradation of nature can lock-in future risks and if ecological tipping points are breached either globally or locally, the implications could be severe and irreversible.

Conversely, unlike climate change, acting now can bring immediate benefits for our economy in terms of reduced physical nature-related risks. Whereas for climate change, we are already committed to further

damages for the next decades from past emissions due to lags in the climate system; for nature, reducing pressures now should enable recovery and measurable benefits for people, planet and prosperity within a few years.

Building on several underlying pieces of analysis, and underpinned by the development of a first-of-its-kind UK Nature-related Risk Inventory and sectoral risk analysis, a set of three nature-related risk scenarios were produced, and their impact on GDP estimated, as well as preliminary indications for their impact on UK banks.

The scenarios explore different ways in which these risks could occur over time combining:

- chronic risks that are ongoing risks, such as soil health decline, with
- acute risks, or 'shocks', that are event-driven, such as a wildfire, or disease outbreak.

The impact of chronic risks builds over time and for the purposes of this analysis is taken to commence in 2023 to capture the fact that these risks are already occurring. The acute shocks are taken within these scenarios as occurring in 2030 through 2035 - though based on the latest scientific evidence, such events could plausibly occur sooner (or later).

The scenarios comprise:

- a UK domestic scenario that captures continued chronic risks, such as soil health decline, water pollution, water scarcity, air pollution and biodiversity loss, combined with an acute shock of heatwave and drought and wildfires.
- an international supply chain scenario that explores how increased pressure on the global food system can have significant repercussions for the UK economy, driven by chronic risks of water quality and scarcity, soil health, pollinator decline, fishery overexploitation, and biofuel-land use tensions and fiscal issues, alongside the failure of multiple global breadbasket countries (key staple food exporters), geopolitical instability, and trade wars.
- an anti-microbial resistance pandemic scenario that explores how increased anti-microbial resistance and outbreaks of major livestock and poultry disease could result in a global pandemic and lockdown.

Across the three scenarios, chronic nature-related risks are resulting in a slow down in economic growth, equivalent to an erosion of 1.5% to 3% of GDP (or £35bn to £70bn) compared to what it would have been otherwise by the late 2020s.

When acute risks, starting in 2030, are added to chronic nature-related risks, this loss to GDP increases to 6% (for the domestic and international scenarios) and 12% for the health scenario, equivalent to wiping out £140bn to £300bn of GDP.

As a result, the combination of chronic and acute risks could lead to an impact on GDP greater than that experienced in the Global Financial Crisis, in which UK GDP fell by around 5% over 2009, and (for the health scenario) greater than the GDP impact of the COVID-19 pandemic in which lockdown measures caused GDP to fall 11% over 2020.

In order to gauge the extent to which nature-related risk is also material for financial stability, the scenarios were applied to the portfolios of the seven largest UK banks as a preliminary stress-test.

The value of domestic lending portfolios (excluding finance and services) held by the largest UK banks is shown to potentially fall by as much as 4% to 5% by 2030 for the international and domestic scenarios in the coming decade. These risks will continue to increase over time.

The Methodology

The methodological approach taken provides several groundbreaking advances in nature-related risk assessment of interest to both private financial institutions and financial supervisors, as well as policy makers and environmental NGOs.

The building blocks are organised into three different parts that align with the chapters as laid out below.

- **A UK Nature-related Risk Inventory (NRRI) (1):** An inventory that identifies the long list of UK nature-related risks (including physical risk, transition risk and litigation risk) and a table capturing the cascading effects from the interconnection of the risks.
- **Part A: (2-3) Risk-Based Analysis:** This part of the analysis uses a risk-based approach to assess value at risk for specific sectors. This analysis is not contingent on any specific scenario, but instead represents the probability of a given level of loss to sector production based on what we know about sectoral exposure;
- **Part B: (4-6) Scenario-Based Analysis:** This part of the analysis takes a scenario-based approach, generating estimates of losses contingent on a specific set of events that are defined through the narrative scenarios. Through its narrative approach and use of the macroeconomic model, this part attempts to include second-order effects, such as changes in labour productivity, prices, trade, investment risk premia and public expenditures, alongside the sector-specific impacts.

About the Green Finance Institute

Established in 2019, the Green Finance Institute is accelerating the transition towards an environmentally sustainable and resilient economy by catalysing investment in net zero and nature positive outcomes. Uniquely positioned at the nexus of the public and private sectors, the Green Finance Institute is the UK and Europe's principal forum for innovation in green finance.

In line with the broader Green Finance Institute's vision of a greener future made possible by finance, the Nature Team (GFI Hive) is committed to supporting the transition of the global economy to one that values and invests in the natural environment. Our mission is to increase the role of the private sector in paying for and investing in nature restoration, nature-based solutions and nature-positive outcomes, ensuring that communities are engaged and rewarded within this new paradigm. We are wholly outcomes-focused, and work across the UK with the finance sector, government, academia, environmental NGOs and land managers to identify and unlock barriers to this mission, and increasingly work internationally to apply and gather learnings.

About the Environmental Change Institute

The Environmental Change Institute at the University of Oxford was established in 1991. Its aim is to organise and promote interdisciplinary research on the nature, causes and impact of environmental change and to contribute to the development of management strategies for coping with future environmental change.

About the University of Oxford

Oxford University has been placed number 1 in the Times Higher Education World University Rankings for the eighth year running, and number 3 in the QS World Rankings 2024. At the heart of this success are the twin-pillars of our ground-breaking research and innovation and our distinctive educational offer.

Oxford is world-famous for research and teaching excellence and home to some of the most talented people from across the globe. Our work helps the lives of millions, solving real-world problems through a huge network of partnerships and collaborations. The breadth and interdisciplinary nature of our research alongside our personalised approach to teaching sparks imaginative and inventive insights and solutions.

Through its research commercialisation arm, Oxford University Innovation, Oxford is the highest university patent filer in the UK and is ranked first in the UK for university spinouts, having created more than 200 new companies since 1988. Over a third of these companies have been created in the past three years. The university is a catalyst for prosperity in Oxfordshire and the United Kingdom, contributing £15.7 billion to the UK economy in 2018/19, and supports more than 28,000 full time jobs.

About the University of Reading

The University of Reading has been at the forefront of UK higher education for nearly a century. Over the decades we have become innovators and pioneers, pushing academic boundaries and leading social change. We are one of the leading centres for the study of the environment and sustainability, and are ranked #1 university in the UK in the People & Planet University League. www.reading.ac.uk

About UNEP-WCMC

The UN Environment Programme World Conservation Monitoring Centre (UNEP-WCMC) is a global centre of excellence on biodiversity and nature's contribution to society and the economy. It operates as a collaboration between the United Nations Environment Programme and UK charity WCMC.

UNEP-WCMC works at the interface of science, policy and practice to tackle the global crisis facing nature and support the transition to a sustainable future for people and the planet: www.unep-wcmc.org

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